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**2021 ANNUAL GROUNDWATER
MONITORING AND CORRECTIVE
ACTION REPORT**
**PRESQUE ISLE POWER PLANT
ASH LANDFILL NO. 3**

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PRESQUE ISLE POWER PLANT ASH LANDFILL NO. 3**

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ACRONYMS AND ABBREVIATIONS

| | |
|-----------------|---|
| ASD | Alternate Source Demonstration |
| Ca | Calcium |
| CCR | Coal Combustion Residuals |
| CFR | Code of Federal Regulations |
| mg/L | milligrams per liter |
| NRT | Natural Resource Technology, an OBG Company |
| OBG | O'Brien & Gere Engineers, Inc. |
| PIPP | Presque Isle Power Plant |
| Ramboll | Ramboll Americas Engineering Solutions, Inc |
| SO ₄ | Sulfate |
| SSI | Statistically Significant Increase |
| TBD | To be Determined |
| TDS | Total Dissolved Solids |

2021 MONITORING PROGRAM SUMMARY

Presque Isle Power Plant (PIPP) Ash Landfill No. 3 operated in the Detection Monitoring Program in accordance with Title 40 of the Code of Federal Regulations (40 CFR) 257.94 for the calendar year 2021. In 2021, groundwater analytical data was evaluated for statistically significant increases (SSIs) over background concentrations for Appendix III constituents in groundwater monitoring wells at PIPP Ash Landfill No. 3. The following constituents and wells had SSIs detected in 2021:

- Calcium – MW70, MW79, and MW80PR
- pH (low) – MW95
- Sulfate – MW79
- Total Dissolved Solids (TDS) – MW80PR

Alternate Source Demonstrations (ASDs) prepared on April 15, and December 4, 2018; and May 28, 2019 provided justification that the SSIs observed during the Detection Monitoring Program were not due to a release from the CCR unit but were either from an error in sampling or analysis or from naturally occurring conditions (e.g. natural variation in groundwater quality).

PIPP Ash Landfill No. 3 remains in the Detection Monitoring Program in accordance with 40 CFR 257.94.

1. INTRODUCTION

This report has been prepared on behalf of We Energies by Ramboll Americas Engineering Solutions, Inc. (Ramboll) to provide the information required by Title 40 of the Code of Federal Regulations (40 CFR) 257.90(e) for the Presque Isle Power Plant (PIPP) Ash Landfill No. 3 located near Marquette, Michigan.

In accordance with 40 CFR 257.90(e), the owner or operator of an existing coal combustion residual (CCR) unit must prepare an annual groundwater monitoring and corrective action report (Annual Report) for the preceding calendar year. The Annual Report must document the status of the groundwater monitoring and corrective action program for the CCR unit and summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Report must contain the following information, to the extent available:

1. A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
2. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
3. In addition to all the monitoring data obtained under 40 CFR 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
4. A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and
5. Other information required to be included in the annual report as specified in 40 CFR 257.90 through 257.98.

This report provides the required information for the PIPP Ash Landfill No. 3 for calendar year 2021.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

PIPP Ash Landfill No. 3 remained in Detection Monitoring (40 CFR 257.94) during 2021. Detection Monitoring Program sampling dates and parameters analyzed are provided in Table 1. Analytical results from the two sampling rounds collected and those statistically analyzed in 2021 (i.e. Detection Monitoring Round 7) are included in Table 2.

In accordance with 40 CFR 257.93(h)(2), the *Statistical Analysis Plan, Presque Isle Power Plant Ash Landfill No. 3* (Natural Resource Technology, an OBG Company, 2017), and within 90 days of completing sampling and analysis (receipt of data); analytical data was evaluated for statistically significant increases (SSIs) over background concentrations for Appendix III constituents in groundwater monitoring wells at PIPP Ash Landfill No. 3. SSIs and the SSI determination dates are provided in Table 1.

40 CFR 257.94(e)(2) allows 90 days to demonstrate that a SSI was caused by a source other than the CCR unit or resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality (i.e., an alternate source demonstration). An alternate source demonstration (ASD) was completed for PIPP Ash Landfill No. 3 on the date provided in Table 1. The April 15, and December 4, 2018 ASDs were included in the 2018 Annual Groundwater Monitoring and Corrective Action Report, and the May 28, 2019 ASD was included in the 2019 Annual Groundwater Monitoring and Corrective Action Report.

Table 1. Detection Monitoring Program Summary

| Detection Round | Sampling Date | Parameters Collected | Data Received | SSI Determination Date | SSI Parameters | Resample Date | ASD Date |
|-----------------|---------------------|----------------------|---------------|------------------------|-------------------------------------|---------------|----------------------|
| 7 | 11/4/20 | Appendix III | 12/9/20 | 3/9/21 | Ca, TDS | NA | 4/15/18 ¹ |
| 8 | 5/5/21 | Appendix III | 6/10/21 | 9/7/21 | Ca, SO ₄ , pH (low), TDS | NA | 4/15/18 ¹ |
| 9 | 11/3/21- 11/4/21 | Appendix III | 11/30/21 | TBD Before 2/28/22 | TBD | TBD | TBD |

Ca – Calcium

NA – Not applicable

SO₄ - Sulfate

TBD – To Be Determined

TDS – Total Dissolved Solids

1. The April 15, 2018 ASD for Presque Isle Power Plant Ash Landfill No. 3 provided a description, data, and pertinent information supporting an alternate source for the wells and parameters with SSIs in Detection Monitoring Rounds 7-8. Data resulting in SSIs above background are consistent with analytical results observed in previous detection monitoring rounds.

PIPP Ash Landfill No. 3 remains in the Detection Monitoring Program in accordance with 40 CFR 257.94.

3. KEY ACTIONS COMPLETED IN 2021

Two groundwater sampling events were completed in 2021 as part of the Detection Monitoring Program, Rounds 8 and 9. One groundwater sample was collected from each background and downgradient well in the monitoring system during each event. Sampling dates are summarized in Table 1. All samples were collected and analyzed in accordance with the *Sampling and Analysis Plan* (Natural Resource Technology, Inc., 2015) prepared for PIPP Ash Landfill No. 3. All monitoring data obtained under 40 CFR 257.90 through 257.98 (as applicable) in 2021 are presented in Table 2.

A map showing the groundwater monitoring system, including the CCR unit and all background (upgradient) and downgradient monitoring wells with well identification numbers, for PIPP Ash Landfill No. 3 is presented on Figure 1. There were no changes to the monitoring system in 2021.

Statistical evaluation, including SSI determinations, of analytical data from the Detection Monitoring Program for November 19-20, 2019 (Detection Monitoring Round 7) and May 5, 2021 (Detection Monitoring Round 8) were completed in 2021 and within 90 days of receipt of the analytical data. Statistical evaluation of analytical data was performed in accordance with the *Statistical Analysis Plan, Presque Isle Power Plant Ash Landfill No. 3* (Natural Resource Technology, an OBG Company, 2017).

The ASDs, dated April 15, and December 4, 2018; and May 28, 2019 prepared for PIPP Ash Landfill No. 3 were prepared in accordance with 40 CFR 257.94(e)(2) and provide a description, data, and pertinent information to support an alternate source for wells and parameters with SSIs at PIPP Ash Landfill No. 3. The ASDs provide justification that the SSIs observed during the Detection Monitoring Program were not due to a release from the CCR unit but were either from an error in sampling or analysis or from naturally occurring conditions (e.g. natural variation in groundwater quality).

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS

No problems were encountered during implementation of the Detection Monitoring Program during 2021. Groundwater samples were collected and analyzed in accordance with the *Sampling and Analysis Plan* (Natural Resource Technology, Inc., 2015) prepared for PIPP Ash Landfill No. 3, and all data was accepted.

5. KEY ACTIVITIES FOR 2022

The following key activities are planned for 2022:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the 2nd and 4th quarters of 2022.
- Complete statistical evaluation of analytical data from the downgradient wells, using background data to determine whether an SSI over background concentrations has occurred for Appendix III parameters.
- If an SSI is identified, potential alternate sources (i.e., a source other than the CCR unit caused the SSI or that that SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is demonstrated to be the cause of the SSI, a written demonstration will be completed within 90 days of the SSI determination and will be included in the annual groundwater monitoring and corrective action report for 2022.
 - If an alternate source(s) is not identified to be the cause of the SSI, the applicable requirements of 40 CFR 257.94 through 257.98 (e.g., assessment monitoring) will apply in 2022, including associated recordkeeping/notifications required by 40 CFR 257.105 through 257.108.

6. REFERENCES

Natural Resource Technology, Inc., 2015, *Sampling and Analysis Plan-Revision 1, Presque Isle Power Plant Ash Landfill No. 3, Marquette, Michigan, December 8, 2015.*

Natural Resource Technology, an OBG Company, 2017, *Statistical Analysis Plan, Presque Isle Power Plant Ash Landfill No. 3, Marquette, Michigan, October 17, 2017.*

TABLES

Presque Isle-CCR
Table 2. Presque Isle Power Plant Ash Landfill No. 3: Appendix III Analytical Results

Date Range: 11/01/2020 to 12/31/2021

Lab Methods:

| Well Id | Date Sampled | Lab Id | B, tot, mg/L | Ca, tot, mg/L | Cl, tot, mg/L | F, tot, mg/L | pH (field), STD | SO4, tot, mg/L |
|---------|--------------|---------|--------------|---------------|---------------|--------------|-----------------|----------------|
| MW70 | 11/4/2020 | AE49560 | 0.0186 | 35.5000 | 0.31 | 0.05 | 7.5 | 3.8 |
| | 5/5/2021 | AE53399 | <0.0173 | 33.1000 | 0.76 | <0.10 | 7.4 | 3.6 |
| | 11/4/2021 | AE57282 | 0.0129 | 24.4000 | 1.00 | <0.10 | 7.2 | 4.2 |
| MW79 | 11/4/2020 | AE49558 | 0.0365 | 13.6000 | 0.38 | 0.04 | 5.6 | 9.8 |
| | 5/5/2021 | AE53397 | 0.0262 | 19.3000 | 1.10 | <0.10 | 5.3 | 15.1 |
| | 11/3/2021 | AE57280 | 0.0252 | 13.4000 | 1.20 | <0.10 | 5.8 | 14.2 |
| MW80PR | 11/4/2020 | AE49559 | 0.0178 | 50.3000 | 3.20 | 0.03 | 7.7 | 7.6 |
| | 5/5/2021 | AE53398 | <0.0173 | 47.1000 | 3.90 | <0.10 | 7.3 | 5.6 |
| | 11/3/2021 | AE57281 | 0.0117 | 50.5000 | 4.40 | <0.10 | 7.7 | 5.9 |
| MW85 | 11/4/2020 | AE49562 | 0.0184 | 12.4000 | 0.18 | 0.03 | 6.7 | 2.6 |
| | 5/5/2021 | AE53401 | <0.0035 | 7.5600 | 0.73 | <0.10 | 6.4 | 2.9 |
| | 11/4/2021 | AE57284 | 0.0148 | 7.2500 | 1.30 | <0.10 | 6.5 | 2.9 |
| MW86 | 11/4/2020 | AE49563 | <0.0173 | 3.1500 | 0.67 | 0.07 | 6.1 | 0.3 |
| | 5/5/2021 | AE53402 | <0.0173 | 2.1100 | 3.00 | <0.48 | 6.1 | <2.2 |
| | 11/4/2021 | AE57285 | 0.0140 | 5.8500 | 5.30 | <0.48 | 5.9 | 2.8 |
| MW87 | 11/4/2020 | AE49564 | 0.0174 | 2.7400 | 0.37 | 0.03 | 6.0 | 4.2 |
| | 5/5/2021 | AE53403 | 0.0599 | 13.0000 | 0.87 | <0.10 | 6.3 | 4.4 |
| | 11/4/2021 | AE57286 | 0.0906 | 11.5000 | 1.20 | <0.10 | 6.9 | 5.3 |
| MW95 | 11/4/2020 | AE49557 | 0.0420 | 6.0100 | 0.19 | 0.03 | 5.6 | 4.7 |
| | 5/5/2021 | AE53396 | 0.0269 | 5.1000 | 0.64 | <0.10 | 5.1 | 4.3 |
| | 11/3/2021 | AE57279 | 0.0292 | 29.0000 | 0.95 | <0.10 | 7.4 | 5.0 |

Presque Isle-CCR
Table 2. Presque Isle Power Plant Ash Landfill No. 3: Appendix III Analytical Results

Date Range: 11/01/2020 to 12/31/2021

Lab Methods:

| Well Id | Date Sampled | Lab Id | TDS, mg/L |
|----------------|---------------------|---------------|------------------|
| MW70 | 11/4/2020 | AE49560 | 74.0 |
| | 5/5/2021 | AE53399 | 104.0 |
| | 11/4/2021 | AE57282 | 88.0 |
| MW79 | 11/4/2020 | AE49558 | 40.0 |
| | 5/5/2021 | AE53397 | 82.0 |
| | 11/3/2021 | AE57280 | 58.0 |
| MW80PR | 11/4/2020 | AE49559 | 140.0 |
| | 5/5/2021 | AE53398 | 158.0 |
| | 11/3/2021 | AE57281 | 158.0 |
| MW85 | 11/4/2020 | AE49562 | 26.0 |
| | 5/5/2021 | AE53401 | 36.0 |
| | 11/4/2021 | AE57284 | 32.0 |
| MW86 | 11/4/2020 | AE49563 | 92.0 |
| | 5/5/2021 | AE53402 | 140.0 |
| | 11/4/2021 | AE57285 | 152.0 |
| MW87 | 11/4/2020 | AE49564 | <20.0 |
| | 5/5/2021 | AE53403 | 80.0 |
| | 11/4/2021 | AE57286 | 74.0 |
| MW95 | 11/4/2020 | AE49557 | <20.0 |
| | 5/5/2021 | AE53396 | 102.0 |
| | 11/3/2021 | AE57279 | 108.0 |

FIGURES



-  DOWNGRAIDENT MONITORING WELL LOCATION
-  UPGRADIENT MONITORING WELL LOCATION
-  LANDFILL NO. 3



GROUNDWATER SAMPLING WELL LOCATION MAP

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT PRESQUE ISLE POWER PLANT ASH LANDFILL NO. 3 MARQUETTE COUNTY, MICHIGAN

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

