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2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

PRESQUE ISLE POWER PLANT ASH LANDFILL NO. 3

**2019 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
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	O'Brien & Gere Engineers, Inc., a Ramboll Company
SO ₄	Sulfate
SSI	Statistically Significant Increase
TBD	To be Determined
TDS	Total Dissolved Solids

1. INTRODUCTION

This report has been prepared on behalf of We Energies by O'Brien & Gere Engineers, Inc., a Ramboll Company (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 2019.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

PIPP Ash Landfill No. 3 remained in Detection Monitoring (40 CFR 257.94) during 2019. Detection Monitoring Program sampling dates and parameters collected are provided in Table 1. Analytical results from the two sampling rounds collected and those statistically analyzed in 2019 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 the 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 ASD document for 2019 is provided in Appendix A. The April 15, 2018 ASD was included in the 2018 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
3	11/8/18	Appendix III	11/29/18	2/27/19	Ca, pH (low), SO ₄ , TDS	NA	5/28/19
4	5/21/19-5/22/19	Appendix III	7/8/19	10/6/19	Ca, SO ₄ , TDS	NA	4/15/18 ¹
5	11/19/19-11/20/19	Appendix III	12/12/19	TBD (before 3/11/20)	TBD	TBD	TBD

Ca – Calcium

NA – Not applicable

SO₄ - Sulfate

TBD – To Be Determined

TDS – Total Dissolved Solids

- 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 3-4. 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 2019

Two groundwater sampling events were completed in 2019 as part of the Detection Monitoring Program, Rounds 4 and 5. 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 2019 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 2019.

Statistical evaluation, including SSI determinations, of analytical data from the Detection Monitoring Program for November 8, 2018 (Detection Monitoring Round 3) and May 21-22, 2019 (Detection Monitoring Round 4) were completed in 2019 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).

An Alternate Source Demonstration for Detection Monitoring Round 3 was prepared for PIPP Ash Landfill No. 3 in 2019 and is provided in Appendix A. The ASD was prepared in accordance with 40 CFR 257.94(e)(2) and provides a description, data, and pertinent information to support an alternate source for wells and parameters with SSIs at PIPP Ash Landfill No. 3. The ASD provides justification that the SSIs observed during the Detection Monitoring Program were not due to a release from the CCR unit but were from either an error in sampling or analysis or 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 2019. 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 2020

The following key activities are planned for 2020:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the 2nd and 4th quarters of 2020.
- Complete statistical evaluation of analytical data from the downgradient wells, using background data to determine whether a 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 2020.
 - 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 2020, 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 Landfill No. 3: Appendix III Analytical Results

Date Range: 11/01/2018 to 12/31/2019

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	11/08/2018	AE31689	0.0120	33.0000	0.50	0.06	7.50	5.0
	05/21/2019	AE38411	0.0130	24.0000	0.24	<0.06	6.50	4.6
	11/20/2019	AE42118	0.0130	39.0000	0.35	0.04	7.70	4.6
MW79	11/08/2018	AE31687	0.0380	10.0000	1.20	<0.04	5.17	15.0
	05/21/2019	AE38408	0.0440	7.9000	0.50	<0.06	5.20	14.0
	11/19/2019	AE42115	0.0380	9.0000	0.27	0.04	5.50	7.4
MW80PR	11/08/2018	AE31688	0.0110	52.0000	6.00	<0.04	7.57	5.4
	05/21/2019	AE38410	0.0120	52.0000	6.00	<0.06	7.50	7.0
	11/19/2019	AE42114	0.0160	48.0000	5.70	0.04	7.80	5.8
MW85	11/08/2018	AE31693	0.0280	10.0000	0.44	<0.04	6.59	4.0
	05/22/2019	AE38413	0.0200	9.1000	0.24	<0.06	6.70	4.1
	11/20/2019	AE42112	0.0180	10.0000	0.27	<0.01	6.20	3.7
MW86	11/08/2018	AE31692	0.0091	2.0000	1.00	<0.04	6.32	0.5
	05/22/2019	AE38414	0.0120	2.1000	0.90	<0.06	6.30	<0.2
	11/20/2019	AE42113	0.0200	3.1000	0.73	0.07	5.80	0.1
MW87	11/08/2018	AE31691	0.0390	10.0000	0.50	0.07	6.91	5.8
	05/21/2019	AE38412	0.0170	3.6000	0.26	<0.06	5.70	4.5
	11/20/2019	AE42117	0.0510	10.0000	0.46	0.07	6.80	5.1
MW95	11/08/2018	AE31686	0.0290	5.0000	0.41	0.05	5.10	7.5
	05/21/2019	AE38407	0.0300	8.0000	0.29	<0.06	5.50	7.4
	11/19/2019	AE42116	0.0790	7.5000	0.25	0.05	5.40	6.3

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




Date Range: 11/01/2018 to 12/31/2019

Well Id	Date Sampled	Lab Id	TDS, mg/L
MW70	11/08/2018	AE31689	120.0
	05/21/2019	AE38411	84.0
	11/20/2019	AE42118	130.0
MW79	11/08/2018	AE31687	62.0
	05/21/2019	AE38408	54.0
	11/19/2019	AE42115	60.0
MW80PR	11/08/2018	AE31688	160.0
	05/21/2019	AE38410	180.0
	11/19/2019	AE42114	170.0
MW85	11/08/2018	AE31693	46.0
	05/22/2019	AE38413	<20.0
	11/20/2019	AE42112	46.0
MW86	11/08/2018	AE31692	58.0
	05/22/2019	AE38414	88.0
	11/20/2019	AE42113	130.0
MW87	11/08/2018	AE31691	36.0
	05/21/2019	AE38412	28.0
	11/20/2019	AE42117	54.0
MW95	11/08/2018	AE31686	34.0
	05/21/2019	AE38407	70.0
	11/19/2019	AE42116	46.0

FIGURES



Service Layer Credits: USGS The National Map: Imagery

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

0 200 400
 Feet

GROUNDWATER SAMPLING WELL LOCATION MAP

**2019 ANNUAL GROUNDWATER MONITORING
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 MARQUETTE COUNTY, MICHIGAN**

FIGURE 1

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



APPENDIX A
ALTERNATE SOURCE DEMONSTRATIONS (ASD)

APPENDIX A1
40 CFR SECTION 257.94(E)(2) ALTERNATE SOURCE DEMONSTRATION
(ASD) DETECTION MONITORING ROUND 3, WE ENERGIES PRESQUE ISLE
POWER PLANT ASH LANDFILL NO. 3

May 28, 2019

Mr. Tim Muehlfeld, PE

WEC Business Services, LLC
333 W. Everett Street – A321
Milwaukee, WI 53226

RE: 40 CFR Section 257.94(e)(2) Alternate Source Demonstration (ASD)
Detection Monitoring Round 3, We Energies Presque Isle Power Plant Ash Landfill No. 3

Dear **Mr. Muehlfeld**:

This letter has been prepared by O'Brien & Gere Engineers, Inc., a Part of Ramboll (OBG) to provide pertinent information for an alternate source demonstration (ASD) as allowed by Title 40 Code of Federal Regulations (40 CFR) Part 257, Subpart D, Section 257.94(e)(2) for the Presque Isle Power Plant (PIPP) Ash Landfill No. 3 located in Marquette, Michigan.

The third semi-annual detection monitoring samples (Detection Monitoring Round 3) were collected on November 8, 2018 for which analytical data was received on November 29, 2018. Analytical data is presented in the attached Table 1. In accordance with 40 CFR Section 257.93(h)(2), statistical analysis of the data from Detection Monitoring Round 3 to identify statistically significant increases (SSIs) of 40 CFR Part 257 Subpart D Appendix III parameters over background concentrations was completed within 90 days of receipt of the analytical data (February 27, 2019). The statistical determination identified the following SSI at downgradient monitoring wells:

- Calcium above the background prediction limit at wells MW70 and MW80PR
- Sulfate above the background prediction limit at well MW79
- Total dissolved solids (TDS) above the background prediction limit at well MW80PR
- pH above (or below) the background prediction limit at wells MW79 and MW95

The SSIs above background identified during Detection Monitoring Round 3 are consistent with Detection Monitoring Rounds 1 and 2, except for the pH reported at MW95. The pH was not measured at a level indicative of a SSI above (or below) background at this location during Detection Monitoring Round 1 or 2.

For the wells and parameters listed above that were detected in multiple Detection Monitoring Rounds, Alternate Source Demonstrations (ASDs), *Alternate Source Demonstration, Presque Isle Power Plant Ash Landfill No. 3, Marquette, Michigan*; dated April 15, 2018 (OBG, 2018a) or December 4, 2018 (OBG, 2018b), have been prepared in accordance with 40 CFR Section 257.94(e)(2). These ASDs provide a description, data, and pertinent information that support an alternate source which applies to the wells and parameters with SSIs in Detection Monitoring Round 3 (as wells as Round 1 and/or 2, as appropriate). The ASD supports the position that the SSIs observed during the Detection Monitoring Rounds 1 and/or 2 and Round 3, except for pH at MW95 were not due to a release from the CCR unit but were from naturally occurring conditions in the uppermost aquifer and potentially unrelated anthropogenic effects in the area of the PIPP Ash Landfill No. 3.

40 CFR Section 257.94(e)(2) allows 90 days to demonstrate that an SSI was caused by a source other than the CCR unit or resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Accordingly, an alternate source demonstration for pH at MW95 was evaluated and completed within 90 days of the SSI determination, by May 28, 2019.



EVALUATION OF pH AT MW95

Based on the February 27, 2019 statistical analysis, the measurement of pH from Detection Monitoring Round 3 at MW95 exceeded (the lower limit) background. However, the pH measured in the MW95 sample (5.1 S.U.) is lower than measurements in background wells MW85, MW86, and MW87. Leachate from PIPP Ash Landfill No. 3 is alkaline as demonstrated by the measured pH since 2005, shown in Figure 1. The leachate pH generally ranges from 9-12. Measured pH at MW95 is presented on Figure 2, pH measurements during CCR Rule sampling events have ranged from 5-8. If groundwater at MW95 has been impacted by PIPP Ash Landfill No. 3 leachate, elevated or rising pH measurements would be expected in downgradient well MW95.

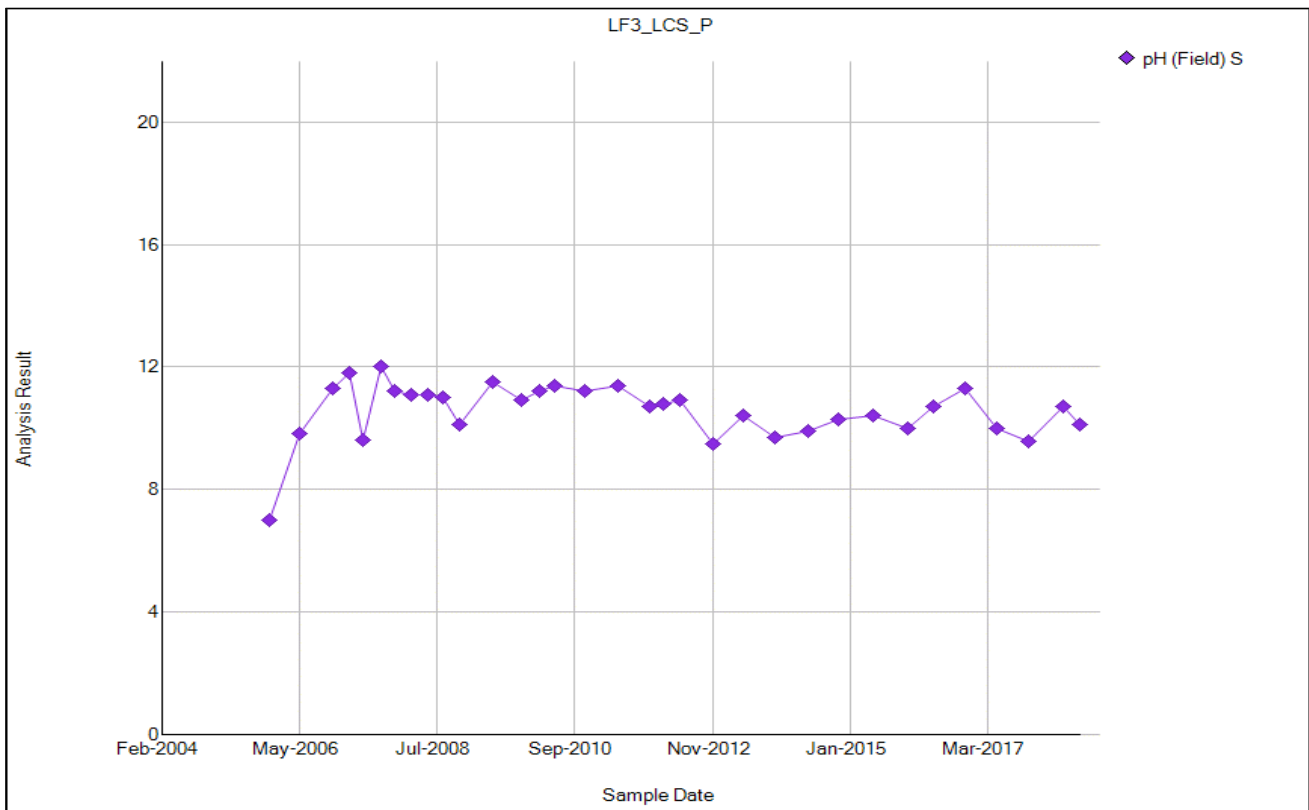


Figure 1. Time Series Plot of pH in PIPP Ash Landfill No. 3 Leachate.

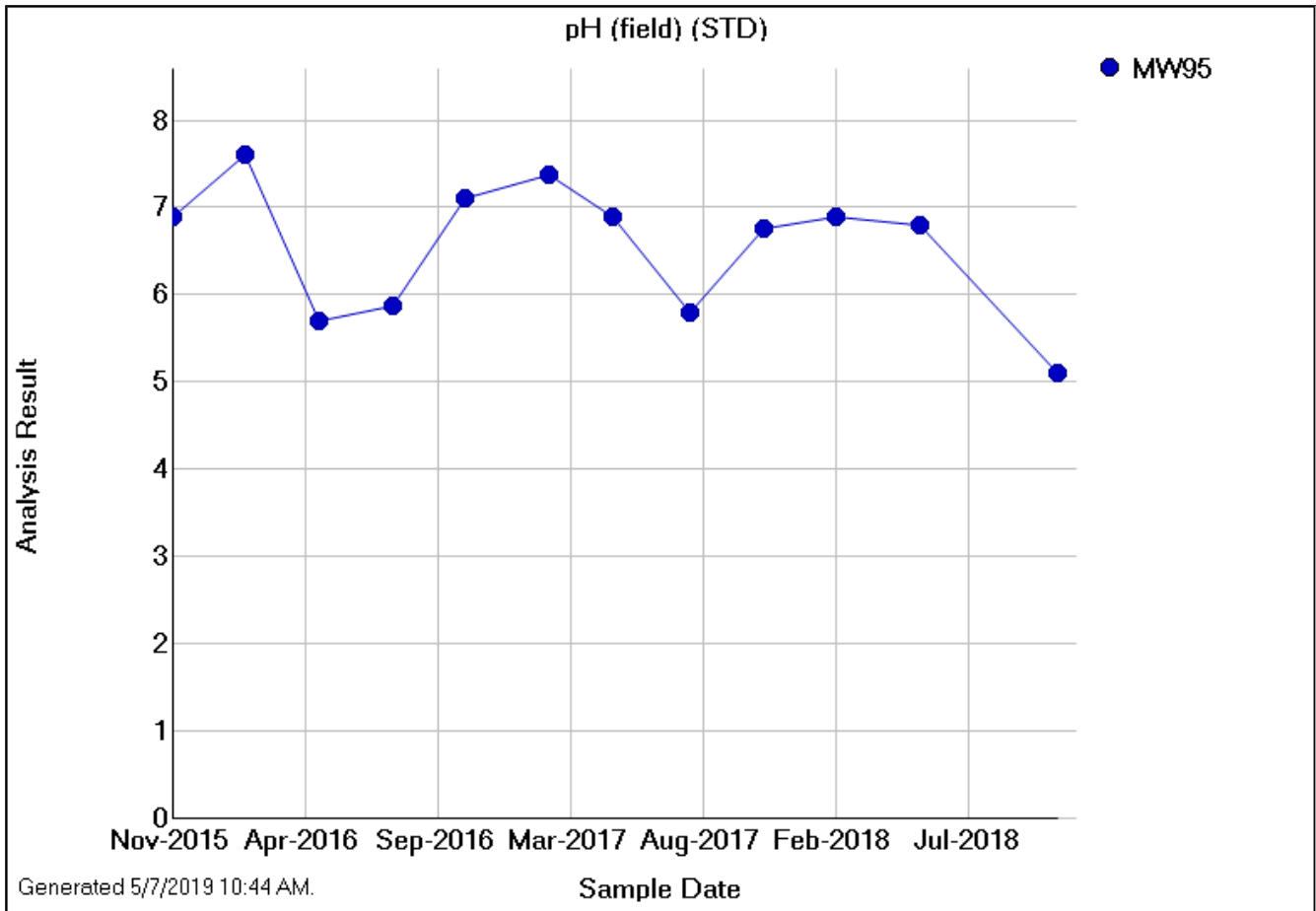


Figure 2. Time Series Plot of pH at MW95.

Low pH measured at MW95 is generally correlated with higher groundwater elevations (i.e. > 822 ft) and lower calcium concentrations as shown in Figure 3 and Figure 4 below. The boring log for this well indicates that below an elevation of approximately 822 ft, groundwater is mostly present in sandy silt, whereas above 822 ft groundwater is present in silty sand (Attachment 1). During periods of high groundwater elevation, the groundwater within the silty sand is more acidic (lower pH) because there is less interaction with carbonate minerals that are more prevalent in finer grained materials. Groundwater (which infiltrates with low pH) dissolves calcium carbonate within the silt, and results in higher pH (addition of CO₃⁻) and calcium concentrations (Ca⁺) when water elevations are within the silt layer. Low pH measurements are a result of natural variability in groundwater elevations and geochemical conditions and not attributable to PIPP Ash Landfill No. 3.

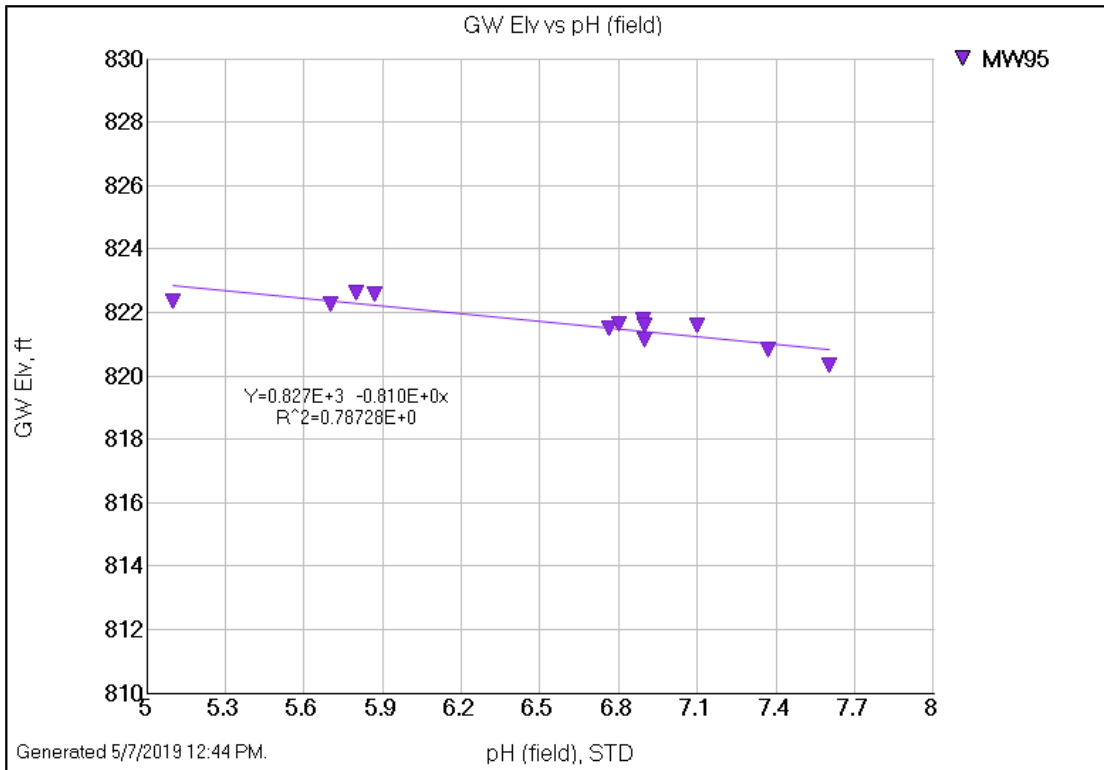


Figure 3. Scatter Plot of pH and Groundwater Elevations measured in MW95.

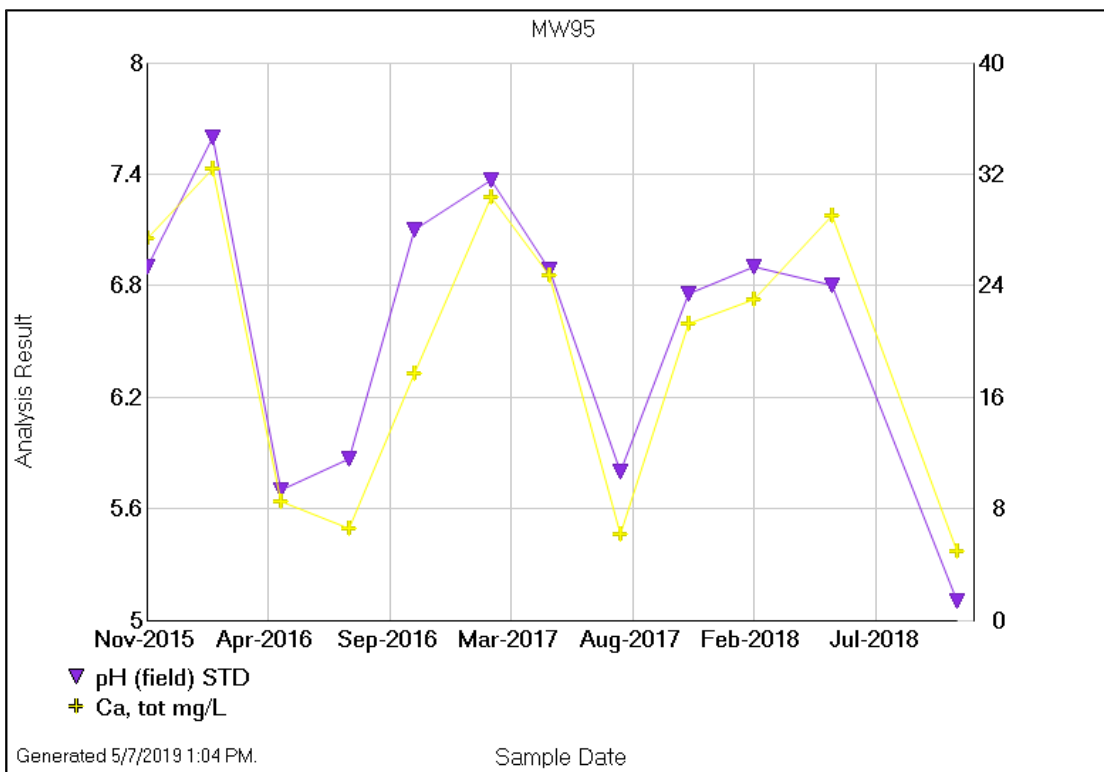


Figure 4. Time Series Plot of pH and Calcium for MW95 at PIPP Ash Landfill No. 3.

CONCLUSIONS AND CERTIFICATION

The presented lines of evidence are applicable as a potential source of low pH measured in MW95 and provide an ASD for pH in MW95.

The preceding information serves as the ASD prepared in accordance with 40 CFR Section 257.94(e)(2) and supports the position that the SSI reported during Detection Monitoring Round 3 was not due to a release from the CCR unit but was from either an error in sampling or analysis or naturally occurring conditions (e.g. natural variation in groundwater quality). Therefore, no further action (i.e. assessment monitoring) is warranted and the PIPP Landfill No. 3 will remain in detection monitoring.

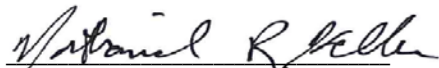
If you have any questions regarding this document, please do not hesitate to contact us.

Sincerely,
O'BRIEN & GERE ENGINEERS, INC.



Glenn R. Luke, PE
Professional Engineer No. 6201068426
State of Michigan
O'Brien & Gere Engineers, Inc., a Part of Ramboll
Date: May 28, 2019

I, Glenn R. Luke, a qualified professional engineer in good standing in the State of Michigan, certify that enclosed information is accurate as of the date of my signature below. The content of this report is not to be used for other than its intended purpose and meaning, or for extrapolations beyond the interpretations contained herein.



Nathaniel R. Keller, PG
Qualified Professional Geologist
O'Brien & Gere Engineers, Inc., a Part of Ramboll
Date: May 28, 2019

I, Nathaniel R. Keller, a qualified professional geologist, certify that the enclosed information is accurate as of the date of my signature below. The content of this report is not to be used for other than its intended purpose and meaning, or for extrapolations beyond the interpretations contained herein.

Attachments: Table 1. PIPP Ash Landfill No. 3: Appendix III Analytical Results
Attachment 1. MW95 Boring Log with Approximate Elevations

Presque Isle-CCR
Table 1. Presque Isle Power Plant Landfill No. 3: Appendix III Analytical Results

Date Range: 01/01/1983 to 11/08/2018

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	11/04/2015	40124163003	0.0183	33.7000	2.40	<0.20	7.60	6.2
	02/02/2016	40127847001	0.0137	24.7000	3.00	<0.20	7.90	7.2
	05/05/2016	40131961001	0.0273	49.2000	2.60	<0.20	7.20	5.8
	08/04/2016	40136329001	0.0151	38.4000	<2.00	<0.20	7.19	5.5
	11/02/2016	40141308001	0.0116	43.6000	0.97	<0.10	7.90	5.7
	02/14/2017	40145701001	0.0130	30.9000	1.50	<0.10	7.10	7.0
	05/04/2017	40149461001	0.0160	45.2000	0.86	<0.10	6.70	4.7
	08/08/2017	40154700001	0.0130	37.4000	1.20	<0.10	6.78	5.5
	11/08/2017	40160512001	0.0166	21.7000	0.93	<0.10	6.41	6.6
	02/07/2018	40164451008		40.4000			7.30	
	05/23/2018	AE27756	0.0180	45.0000	0.55	<0.05	7.50	4.8
	08/28/2018	AE30009					7.40	
	11/08/2018	AE31689	0.0120	33.0000	0.50	0.06	7.50	5.0
MW79	11/04/2015	40124163008	0.0394	10.6000	2.50	<0.20	5.20	14.7
	02/02/2016	40127847007	0.0355	16.2000	3.50	<0.20	6.00	17.2
	05/05/2016	40131961002	0.0511	20.9000	3.00	<0.20	5.40	50.6
	08/04/2016	40136329007	0.0435	15.4000	2.40	<0.20	5.78	35.7
	11/02/2016	40141308007	0.0384	12.7000	1.10	<0.10	5.90	22.7
	02/14/2017	40145703001	0.0310	18.0000	2.20	<0.10	5.85	40.1
	05/04/2017	40149461002	0.0360	28.3000	1.70	<0.10	5.55	75.8
	08/08/2017	40154700008	0.0390	15.2000	1.30	<0.10	5.09	36.3
	11/08/2017	40160512007	0.0420	14.9000	0.85	<0.10	5.54	35.9
	02/06/2018	40164451003					5.68	41.2
	05/23/2018	AE27757	0.0390	18.0000	0.64	<0.05	5.10	38.0
	08/28/2018	AE30008		18.0000			5.60	
	11/08/2018	AE31687	0.0380	10.0000	1.20	<0.04	5.17	15.0
MW80PR	11/04/2015	40124163001	0.0206	48.7000	4.80	<0.20	7.90	5.9
	02/02/2016	40127847003	0.0125	50.2000	5.80	<0.20	8.10	6.3
	05/05/2016	40131961003	0.0193	52.1000	4.80	<0.20	7.80	6.3
	08/04/2016	40136329006	0.0134	49.6000	4.20	<0.20	8.03	5.8
	11/02/2016	40141308006	0.0106	50.0000	3.80	<0.10	8.30	5.6
	02/14/2017	40145701005	0.0099	48.4000	4.40	<0.10	8.07	6.1
	05/04/2017	40149461003	0.0120	51.9000	4.60	<0.10	7.37	6.0
	08/08/2017	40154700009	0.0120	50.1000	4.60	<0.10	7.58	5.7
	11/08/2017	40160512008	0.0140	49.9000	4.80	<0.10	7.87	5.5
	02/06/2018	40164451001		52.0000			7.89	

Presque Isle-CCR
Table 1. Presque Isle Power Plant Landfill No. 3: Appendix III Analytical Results

Date Range: 01/01/1983 to 11/08/2018

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW80PR	05/22/2018	AE27751	0.0190	53.0000	6.00	<0.10	7.90	5.5
	11/08/2018	AE31688	0.0110	52.0000	6.00	<0.04	7.57	5.4
MW85	11/04/2015	40124163007	0.0216	7.0800	2.30	<0.20	6.20	4.7
	02/02/2016	40127847006	0.0205	5.5500	2.90	<0.20	6.70	5.0
	05/05/2016	40131961004	0.0293	9.3800	2.50	<0.20	6.40	4.6
	08/04/2016	40136329005	0.0208	13.2000	<2.00	<0.20	6.86	4.7
	11/02/2016	40141308005	0.0196	6.9500	0.77	<0.10	6.90	4.1
	02/14/2017	40145701004	0.0220	5.0000	1.20	<0.10	6.70	4.2
	05/04/2017	40149461004	0.0220	9.0000	0.80	<0.10	6.55	4.3
	08/08/2017	40154700005	0.0190	12.5000	1.30	<0.10	6.33	4.2
	11/08/2017	40160512004	0.0249	6.5200	0.55	<0.10	6.41	3.9
	02/07/2018	40164451004		6.4800			6.14	3.7
	05/23/2018	AE27753	0.0240	6.4000	0.38	<0.10	6.00	3.8
	11/08/2018	AE31693	0.0280	10.0000	0.44	<0.04	6.59	4.0
	MW86	11/04/2015	40124163006	0.0178	7.1900	11.40	<1.00	5.50
02/02/2016		40127847005	0.0152	4.6700	3.40	<0.20	5.90	6.3
05/05/2016		40131961006	0.0186	1.2800	3.20	<0.20	5.10	3.9
08/04/2016		40136329003	0.0201	4.0000	<10.00	<1.00	5.87	<10.0
11/02/2016		40141308003	0.0181	4.4500	3.30	<0.50	5.90	<5.0
02/14/2017		40145701002	0.0130	5.0000	5.70	<0.50	6.45	5.4
05/04/2017		40149461007	0.0120	2.1000	3.20	<0.50	5.65	<5.0
08/08/2017		40154700003	0.0170	3.6000	4.70	<0.50	5.83	<5.0
11/08/2017		40160512003	0.0147	4.1600	2.50	<0.50	5.84	<5.0
02/07/2018		40164451006		3.3400			6.04	<1.0
05/23/2018		AE27754	0.0210	2.4000	1.30	<0.05	5.60	0.7
11/08/2018		AE31692	0.0091	2.0000	1.00	<0.04	6.32	0.5
MW87		11/04/2015	40124163004	0.1070	12.4000	2.50	<0.20	7.20
	02/02/2016	40127847004	0.1910	15.4000	3.10	<0.20	7.30	9.6
	05/05/2016	40131961007	0.0252	4.0800	2.80	<0.20	7.00	10.5
	08/04/2016	40136329002	0.1040	11.8000	2.10	<0.20	6.82	9.6
	11/02/2016	40141308002	0.1030	12.9000			7.40	
	11/10/2016	40141831001			1.10	0.12		7.9
	02/14/2017	40145703003	0.2800	18.6000	5.60	<0.50	7.67	16.1
	05/04/2017	40149461008	0.0210	5.4000	1.50	<0.10	6.55	7.3
	08/08/2017	40154700002	0.0360	12.3000	1.20	<0.10	6.60	6.6
	11/08/2017	40160512002	0.0474	15.1000	0.96	<0.10	6.20	8.6

Presque Isle-CCR
Table 1. Presque Isle Power Plant Landfill No. 3: Appendix III Analytical Results

Date Range: 01/01/1983 to 11/08/2018

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
MW87	02/07/2018	40164451007		17.6000			6.83	13.3
	05/23/2018	AE27755	0.0380	11.0000	0.78	<0.05	6.70	7.2
	11/08/2018	AE31691	0.0390	10.0000	0.50	0.07	6.91	5.8
MW95	11/04/2015	40124163009	0.0272	27.4000	2.40	<0.20	6.90	6.6
	02/02/2016	40127847008	0.0272	32.4000	2.90	<0.20	7.60	7.0
	05/05/2016	40131961008	0.0357	8.5500	2.50	<0.20	5.70	8.0
	08/04/2016	40136329008	0.0336	6.5600	<2.00	<0.20	5.87	7.2
	11/02/2016	40141308008	0.0268	17.7000	0.82	<0.10	7.10	7.7
	02/14/2017	40145703002	0.0270	30.4000	1.30	0.10	7.37	8.7
	05/04/2017	40149461009	0.0280	24.7000	0.89	<0.10	6.89	9.5
	08/08/2017	40154700006	0.0300	6.2000	1.10	<0.10	5.80	8.1
	11/08/2017	40160512006	0.0332	21.3000	0.66	<0.10	6.76	7.9
	02/06/2018	40164451002		23.0000			6.90	
	05/22/2018	AE27750	0.0330	29.0000	0.48	<0.10	6.80	8.7
11/08/2018	AE31686	0.0290	5.0000	0.41	0.05	5.10	7.5	

Presque Isle-CCR
Table 1. Presque Isle Power Plant Landfill No. 3: Appendix III Analytical Results

Date Range: 01/01/1983 to 11/08/2018

Well Id	Date Sampled	Lab Id	TDS, mg/L
MW70	11/04/2015	40124163003	120.0
	02/02/2016	40127847001	96.0
	05/05/2016	40131961001	144.0
	08/04/2016	40136329001	122.0
	11/02/2016	40141308001	152.0
	02/14/2017	40145701001	110.0
	05/04/2017	40149461001	134.0
	08/08/2017	40154700001	122.0
	11/08/2017	40160512001	108.0
	05/23/2018	AE27756	230.0
	08/28/2018	AE30009	140.0
	11/08/2018	AE31689	120.0
	MW79	11/04/2015	40124163008
02/02/2016		40127847007	78.0
05/05/2016		40131961002	122.0
08/04/2016		40136329007	90.0
11/02/2016		40141308007	90.0
02/14/2017		40145703001	108.0
05/04/2017		40149461002	156.0
08/08/2017		40154700008	88.0
11/08/2017		40160512007	74.0
05/23/2018		AE27757	130.0
11/08/2018		AE31687	62.0
MW80PR	11/04/2015	40124163001	164.0
	02/02/2016	40127847003	156.0
	05/05/2016	40131961003	170.0
	08/04/2016	40136329006	166.0
	11/02/2016	40141308006	176.0
	02/14/2017	40145701005	164.0
	05/04/2017	40149461003	170.0
	08/08/2017	40154700009	166.0
	11/08/2017	40160512008	148.0
	02/06/2018	40164451001	178.0
	05/22/2018	AE27751	180.0
	11/08/2018	AE31688	160.0
	MW85	11/04/2015	40124163007

Presque Isle-CCR
Table 1. Presque Isle Power Plant Landfill No. 3: Appendix III Analytical Results

Date Range: 01/01/1983 to 11/08/2018

			TDS, mg/L	
MW85	02/02/2016	40127847006	38.0	
	05/05/2016	40131961004	44.0	
	08/04/2016	40136329005	50.0	
	11/02/2016	40141308005	50.0	
	02/14/2017	40145701004	20.0	
	05/04/2017	40149461004	38.0	
	08/08/2017	40154700005	50.0	
	11/08/2017	40160512004	58.0	
	02/07/2018	40164451004	44.0	
	05/23/2018	AE27753	30.0	
	11/08/2018	AE31693	46.0	
	MW86	11/04/2015	40124163006	110.0
		02/02/2016	40127847005	52.0
05/05/2016		40131961006	44.0	
08/04/2016		40136329003	114.0	
11/02/2016		40141308003	114.0	
02/14/2017		40145701002	94.0	
05/04/2017		40149461007	72.0	
08/08/2017		40154700003	148.0	
11/08/2017		40160512003	154.0	
02/07/2018		40164451006	148.0	
05/23/2018		AE27754	140.0	
11/08/2018		AE31692	58.0	
MW87		11/04/2015	40124163004	86.0
	02/02/2016	40127847004	112.0	
	05/05/2016	40131961007	82.0	
	08/04/2016	40136329002	82.0	
	11/10/2016	40141831001	106.0	
	02/14/2017	40145703003	156.0	
	05/04/2017	40149461008	58.0	
	08/08/2017	40154700002	82.0	
	11/08/2017	40160512002	106.0	
	02/07/2018	40164451007	126.0	
	05/23/2018	AE27755	120.0	
	11/08/2018	AE31691	36.0	
	MW95	11/04/2015	40124163009	120.0

Presque Isle-CCR
Table 1. Presque Isle Power Plant Landfill No. 3: Appendix III Analytical Results

Date Range: 01/01/1983 to 11/08/2018

			TDS, mg/L
MW95	02/02/2016	40127847008	124.0
	05/05/2016	40131961008	46.0
	08/04/2016	40136329008	38.0
	11/02/2016	40141308008	82.0
	02/14/2017	40145703002	110.0
	05/04/2017	40149461009	92.0
	08/08/2017	40154700006	40.0
	11/08/2017	40160512006	122.0
	05/22/2018	AE27750	120.0
	11/08/2018	AE31686	34.0

FIELD BORING LOG

FOR Wisconsin Electric Presque Isle Power Plant

Job No. 10749

LOCATION Marquette MI Elev. _____

Boring No. MW-95

GROUND	While drilling	<u>28</u>	Time after drilling	_____
WATER	Before casing removal	_____	Depth to water	_____
	After casing removal	_____	Depth to cave-in	_____

Start 10-9-00
 Unit 811
 Chief MM

Sample No.	Moisture	Blows on Sampler		Sample Recovery	Total Blows	VISUAL FIELD CLASSIFICATION AND REMARKS	Casing/Probe <u>2</u> Weight <u>300</u> Drop <u>30</u>	Symbol	Unconfined Strength	Boulders	Blows on			Drilling Method
		0/6 12/18	6/12 18/24								Casing Size	Probe Size	Drilling Method	
						Red Br F-C SAND w/Trc Gravel								4 1/4" HSA
1	M	2	2	24										
		2	2		4									
2	M	3	5	24										
		5	8		10									
3	M	3	3	22		Lt Br F Silty SAND								
		4	3		7									
4	M	1	2	18										
		2	4		4									
5	M	1	1	23		841.30								
		2	2		3									
6	M	2	2	22										
		2	1		4									
7	M	2	2	24		Lt Br F SAND								
		3	3		5									
8	M	1	3	19										
		4	4		7									
9	M	2	2	20										
		2	3		4									
10	M	3	3	18		831.30								
		4	3		7									
11	M	2	3	20		Red Br SILT w/F Sand Lt Br F SAND								
		3	3		6									
12	MW	3	2	22										
		1	1		3									
13	W	2	2	19		Red Br SILT w/F Sand Red Br Silty SAND								
		3	3		5									
14	W	2	1	20		Red Br SILT w/F Sand								
		1	1		2									
15	W	1	1	16		821.30								
		1	1		2									
16	W	2	2	18										
		3	4		5									
						Red Br F-C Silty SAND w/Some Gravel								
						EOB 35.0' Well Set 34.0'								

FIELD BORING LOG - D...IED BY GCA 10749.GPJ BOART.GDT 10/19/00