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2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

PLEASANT PRAIRIE POWER PLANT ASH LANDFILL

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2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
PLEASANT PRAIRIE POWER PLANT ASH LANDFILL

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ACRONYMS AND ABBREVIATIONS

ASD	Alternate Source Demonstration
B	Boron
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.
P4	Pleasant Prairie Power Plant
Ramboll	Ramboll Americas Engineering Solutions, Inc
SSI	Statistically Significant Increase
TBD	To be Determined

2021 MONITORING PROGRAM SUMMARY

The Pleasant Prairie Power Plant (P4) Ash Landfill 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 the P4 Ash Landfill. There were no SSIs detected in 2021. The P4 Ash Landfill 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 Pleasant Prairie Power Plant (P4) Ash Landfill located in Pleasant Prairie, Wisconsin.

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 P4 Ash Landfill for calendar year 2021.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The P4 Ash Landfill 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 are included in Table 2.

In accordance with 40 CFR 257.93(h)(2), the *Statistical Analysis Plan, Pleasant Prairie Power Plant Ash Landfill* (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 P4 Ash Landfill. 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 the P4 Ash Landfill on the date provided in Table 1.

Table 1. Detection Monitoring Program Summary

Detection Round	Sampling Date	Parameters Collected	Data Received	SSI Determination Date	SSI Parameters	Resample Date	ASD Date
7	10/12/20-10/13/20	Appendix III	11/11/20	2/9/21	None	NA	NA
8	4/12/21-4/13/21	Appendix III	5/7/21	8/6/21	None	NA	NA
9	10/12/21	Appendix III	11/16/21	TBD Before 2/14/22	TBD	TBD	TBD

NA – Not applicable
TBD – To Be Determined

The P4 Ash Landfill 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 the P4 Ash Landfill. 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 the P4 Ash Landfill 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 October 12-13, 2020 (Detection Monitoring Round 7) and April 12-13, 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, Pleasant Prairie Power Plant Ash Landfill* (Natural Resource Technology, an OBG Company, 2017).

No SSIs were identified during Detection Monitoring Rounds 7 and 8 and no Alternate Source Demonstrations were completed in 2021.

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 the P4 Ash Landfill, 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 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 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, Pleasant Prairie Power Plant Ash Landfill, Pleasant Prairie, Wisconsin, December 8, 2015.*

Natural Resource Technology, an OBG Company, 2017, *Statistical Analysis Plan, Pleasant Prairie Power Plant Ash Landfill, Pleasant Prairie, Wisconsin, October 17, 2017.*

TABLES

Pleasant Prairie CCR
Table 2. Pleasant Prairie Power Plant Ash Landfill: Appendix III Analytical Results

Date Range: 10/01/2020 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
W17BR	10/13/2020	AE49060	0.6080	12.4000	9.5	1.40	8.1	22.0
	4/13/2021	AE52539	0.6630	12.1000	9.6	1.40	8.3	20.7
	10/12/2021	AE56415	0.6440	11.8000	8.0	1.40	8.2	17.4
W20B	10/13/2020	AE49055	0.2930	59.4000	14.0	0.68	7.4	94.0
	4/13/2021	AE52544	0.3210	56.2000	16.7	0.78	7.5	112.0
	10/12/2021	AE56409	0.3060	92.9000	32.1	0.62	7.1	192.0
W20D	10/12/2020	AE49054	0.4300	25.1000	10.0	1.00	7.8	160.0
	4/13/2021	AE52543	0.4450	24.6000	11.3	1.10	7.7	182.0
	10/12/2021	AE56410	0.4440	25.3000	11.0	1.10	7.5	177.0
W31B	10/12/2020	AE49053	0.0864	95.2000	43.0	0.34	7.4	110.0
	4/13/2021	AE52545	0.0911	96.6000	55.3	0.32	7.4	133.0
	10/12/2021	AE56418	0.0806	104.0000	66.9	<0.48	7.4	130.0
W73	10/13/2020	AE49062	0.4100	21.1000	11.0	1.00	8.1	130.0
	4/13/2021	AE52538	0.4550	20.3000	11.4	1.10	7.9	115.0
	10/12/2021	AE56417	0.4390	18.8000	12.4	0.89	8.1	116.0
W74	10/13/2020	AE49056	0.3890	20.0000	12.0	0.94	7.8	150.0
	4/13/2021	AE52542	0.3970	18.7000	13.1	1.10	8.1	166.0
	10/12/2021	AE56411	0.4170	20.2000	12.5	0.98	8.0	156.0
W75	10/13/2020	AE49057	0.3950	20.5000	8.4	0.99	8.0	130.0
	4/13/2021	AE52541	0.4340	19.9000	9.2	1.10	8.2	136.0
	10/12/2021	AE56412	0.4220	20.3000	8.3	1.10	8.0	126.0
W76	10/13/2020	AE49058	0.4150	19.2000	10.0	0.99	8.2	130.0
	4/13/2021	AE52540	0.4550	19.1000	10.8	1.10	8.3	140.0

Pleasant Prairie CCR
Table 2. Pleasant Prairie Power Plant Ash Landfill: Appendix III Analytical Results

Date Range: 10/01/2020 to 12/31/2021

Lab Methods:

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
W76	10/12/2021	AE56413	0.4360	19.2000	10.4	0.98	8.3	133.0
W77	10/13/2020	AE49061	0.4070	27.0000	9.0	1.00	7.5	130.0
	4/13/2021	AE52536	0.4180	25.3000	9.2	1.10	7.6	133.0
	10/12/2021	AE56416	0.3960	25.5000	8.0	1.00	7.6	123.0

Pleasant Prairie CCR
Table 2. Pleasant Prairie Power Plant Ash Landfill: Appendix III Analytical Results

Date Range: 10/01/2020 to 12/31/2021

Lab Methods:

Well Id	Date Sampled	Lab Id	TDS, mg/L
W17BR	10/13/2020	AE49060	210.0
	4/13/2021	AE52539	140.0
	10/12/2021	AE56415	190.0
W20B	10/13/2020	AE49055	440.0
	4/13/2021	AE52544	400.0
	10/12/2021	AE56409	1060.0
W20D	10/12/2020	AE49054	380.0
	4/13/2021	AE52543	348.0
	10/12/2021	AE56410	602.0
W31B	10/12/2020	AE49053	590.0
	4/13/2021	AE52545	530.0
	10/12/2021	AE56418	592.0
W73	10/13/2020	AE49062	350.0
	4/13/2021	AE52538	304.0
	10/12/2021	AE56417	322.0
W74	10/13/2020	AE49056	350.0
	4/13/2021	AE52542	314.0
	10/12/2021	AE56411	402.0
W75	10/13/2020	AE49057	310.0
	4/13/2021	AE52541	288.0
	10/12/2021	AE56412	382.0
W76	10/13/2020	AE49058	310.0
	4/13/2021	AE52540	290.0

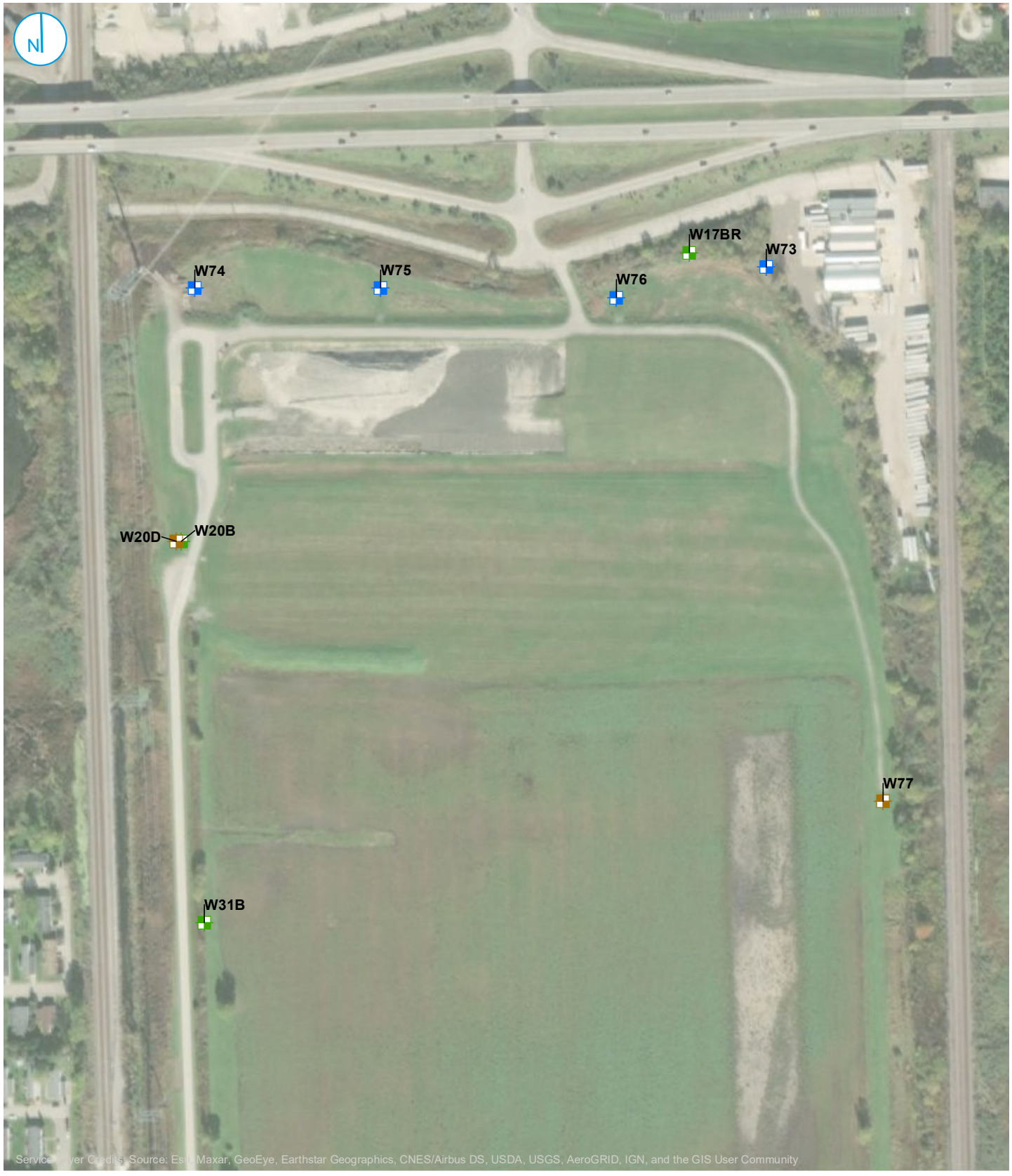
Pleasant Prairie CCR
Table 2. Pleasant Prairie Power Plant Ash Landfill: Appendix III Analytical Results

Date Range: 10/01/2020 to 12/31/2021

Lab Methods:

			TDS, mg/L
W76	10/12/2021	AE56413	362.0
W77	10/13/2020	AE49061	370.0
	4/13/2021	AE52536	334.0
	10/12/2021	AE56416	362.0

FIGURES



CCR RULE DOWNGRADIENT MONITORING WELL LOCATION

CCR RULE UPGRADIENT MONITORING WELL LOCATION

CCR RULE POTENTIAL CONTAMINANT PATHWAY MONITORING WELL

0 150 300 Feet

GROUNDWATER SAMPLING WELL LOCATION MAP

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
WE ENERGIES P4 ASH LANDFILL
PLEASANT PRAIRIE, WISCONSIN

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL