HALEY ALDRICH

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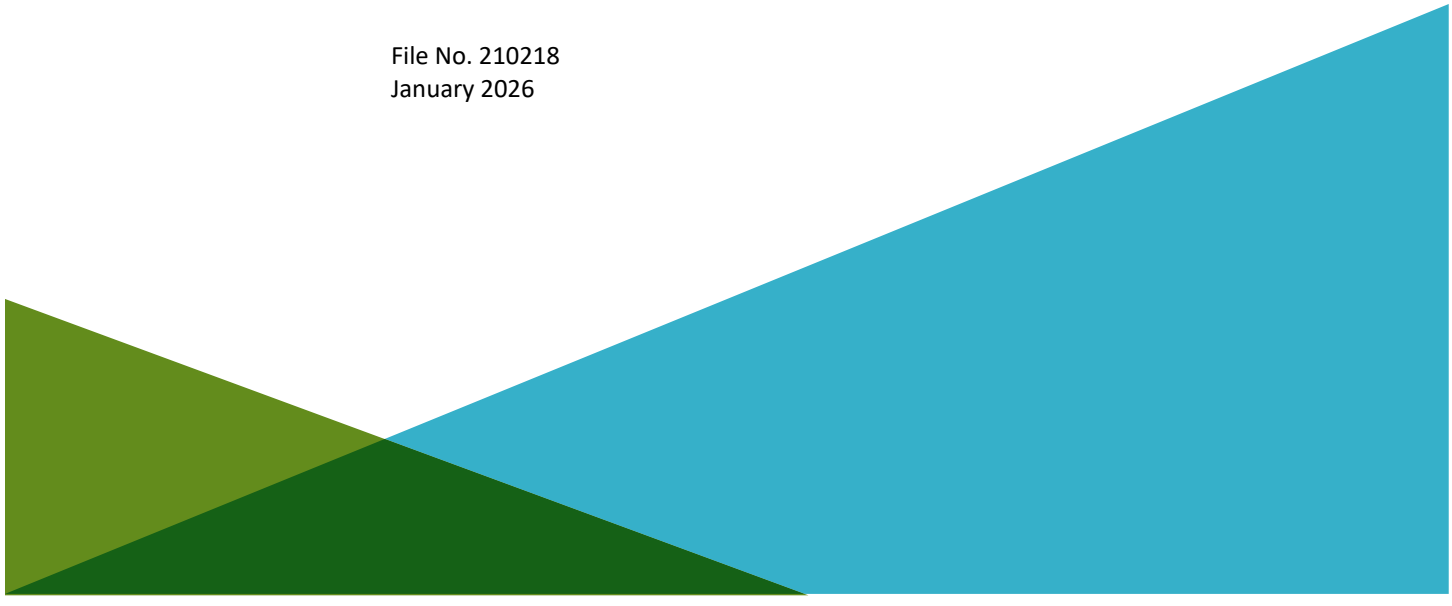
2025 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT FOR RETROFIT BOTTOM ASH POND (RBAP) CARDINAL POWER PLANT FACILITY BRILLIANT, OHIO

by
Haley & Aldrich, Inc.
Cleveland, Ohio

for
Cardinal Operating Company
Brilliant, Ohio

File No. 210218
January 2026



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1. Annual Groundwater Monitoring Report Summary

Haley & Aldrich, Inc. has prepared this 2025 Annual Groundwater Monitoring and Corrective Action Report (Report) for the Retrofit Bottom Ash Pond (RBAP), an existing coal combustion residual (CCR) unit at the Cardinal Power Plant Facility in Brilliant, Ohio. This Report was prepared to comply with the United States Environmental Protection Agency (EPA) Hazardous and Solid Waste Management System; Disposal of CCR from Electric Utilities, Title 40 Code of Federal Regulations (CFR) Part 257, Subpart D dated April 17, 2015 (Rule), specifically subsection § 257.90(e)(1) through (6).

This Report summarizes groundwater monitoring activities conducted pursuant to the CCR Rule from January 1 through December 31, 2025.

In accordance with § 257.90(e)(6), an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit is provided below:

- 40 CFR § 257.90(e)(6)(i) and (ii): For the entire year of 2025 (January 1 through December 31, 2025), the RBAP was operating under the detection monitoring program.
- Background levels for the RBAP were updated in February 2025 to incorporate data collected through April 2024 and were used for statistical comparisons beginning with the October 2024 monitoring event.[1]
- 40 CFR § 257.90(e)(6)(iii)(A): No statistically significant increases (SSIs) of Appendix III constituents above background levels were identified in the supplemental statistical report for the October 2024 sampling event, dated April 2025.
- 40 CFR § 257.90(e)(6)(iii)(A): No SSIs of Appendix III constituents above background levels were identified during statistical evaluation of the April 2025 sampling event.
- Statistical evaluation of the October 2025 sampling event is ongoing and will be presented in the 2026 Annual Report.
- No groundwater corrective measures monitoring activities were required to be completed in the annual reporting period in accordance with § 257.98(a)(1).

[1] Data quality review and statistical evaluation of the October 2024 sampling event, including resamples for statistical exceedances collected in December 2024, were completed in March 2025. An Addendum presenting a supplemental evaluation of additional resamples for statistical exceedances collected in March 2025 was completed in April 2025; therefore, results and any statistical exceedances associated with the October 2024 sampling event are presented in this report.

2. 40 CFR §257.90 Applicability

To report on the activities conducted during the prior calendar year and document progress complying with the CCR Rule, the specific requirements listed in § 257.90(e)(1) through (5) are provided in the next section in bold/italic type followed by a short narrative stating how that specific requirement was met.

2.1 40 CFR § 257.90(a) AND (c)

All CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under § 257.90 through § 257.98.

Once a groundwater monitoring system and groundwater monitoring program has been established at the CCR unit as required by this subpart, the owner or operator must conduct groundwater monitoring and, if necessary, corrective action through the active life and post-closure care period of the CCR unit.

The RBAP is a CCR surface impoundment. The groundwater system for the RBAP was established in March 2022. This document satisfies the requirement under § 257.90(e), which requires the CCR Unit Owner/Operator to prepare an Annual Groundwater Monitoring and Corrective Action Report.

3. 40 CFR § 257.90(e) Annual Groundwater Monitoring Report

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action 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, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1).

This Report documents the activities completed in 2025 for the RBAP as required by the subject regulations. Groundwater sampling and analysis were conducted per the requirements of § 257.93, and the status of the groundwater monitoring program, set forth in § 257.95, is provided in this Report.

3.1 STATUS OF THE GROUNDWATER MONITORING PROGRAM

SSIs of Appendix III constituents were not identified at the RBAP during supplemental statistical evaluation of the October 2024 semiannual sampling event, dated April 2025, or during statistical evaluation of the April 2025 semiannual sampling event. The RBAP remains in detection monitoring.

3.2 KEY ACTIONS COMPLETED

- Background levels were updated in February 2025 to incorporate data collected through April 2024 and were used for statistical comparisons beginning with the October 2024 monitoring event.
- The second resampling event associated with the October 2024 semiannual groundwater monitoring event was completed in March 2025 to verify sample concentrations in downgradient wells that exceeded background levels in October 2024 and December 2024.
- In 2025, two semiannual groundwater monitoring events were completed:
  - The first semiannual groundwater monitoring event was completed in April 2025.
  - The second semiannual groundwater monitoring event was completed in October 2025, with a resampling event completed in December 2025 to verify sample concentrations in downgradient wells that exceeded background levels in October 2025.
- Potentiometric monitoring was conducted during the semiannual sampling events, as detailed in Section 3.6.5.
- Two semiannual statistical evaluations and a supplemental statistical evaluation were completed in 2025.
  - The first statistical evaluation completed for the October 2024 sampling event and December 2024 resamples is dated March 2025, and the second supplemental statistical evaluation to incorporate the March 2025 resample data is dated April 2025.
  - Statistical evaluation of the April 2025 sampling event was completed in August 2025.

- The statistical evaluation of the October 2025 semiannual sampling event is ongoing and will be presented in the 2026 Annual Report.

3.3 PROBLEMS ENCOUNTERED

- During the October 2025 sampling event, monitoring well MW-BAP-3 exhibited elevated fluoride levels and monitoring well MW-BAP-1003 exhibited elevated sulfate levels. Resamples were taken in December 2025, as allowed by the RBAP's Statistical Analysis Plan.
  - December 2025 resample results showed elevated levels of fluoride at MW-BAP-3. Other resample results showed constituent concentrations less than background levels.
  - An additional resample may be collected in 2026 to verify this elevated fluoride level at MW-BAP-3 as RBAP background levels are calculated based on a 1-of-3 retesting scheme. Data quality review and statistical evaluation of this dataset are ongoing and final outcomes will be presented in the 2026 Annual Report.

3.4 ACTIONS TO RESOLVE PROBLEMS

- Results of the October 2025 sampling event and December 2025 resampling will be further evaluated as part of the forthcoming statistical report. An additional resample may be collected from MW-BAP-3 in 2026 to verify elevated fluoride levels, and an alternative source demonstration (ASD) may be prepared if deemed necessary following additional data review and statistical reporting.

3.5 PROJECT KEY ACTIVITIES FOR UPCOMING YEAR

Key activities to be completed in 2026 include the following:

- Prepare the 2025 annual report; place it in the record as required by § 257.105(h)(1); notify the state [§ 257.106(d)]; and post it to the website [§ 257.107(d)].
- Prepare the semiannual statistical report for the October 2025 sampling event.
- Collect an additional resample for fluoride at MW-BAP-3 associated with the second semiannual event of 2025 and prepare an ASD if deemed necessary following statistical reporting.
- Conduct semiannual groundwater monitoring and reporting as required by § 257.95.
- Conduct semiannual statistical analyses in accordance with the RBAP Statistical Analysis Plan.
- Review the background dataset and update if appropriate.

3.6 40 CFR § 257.90(e) – INFORMATION

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

3.6.1 40 CFR § 257.90(e)(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;

As required by § 257.90(e)(1), a map showing the location of the RBAP and associated upgradient and downgradient monitoring wells is presented as Figure 1.

3.6.2 40 CFR § 257.90(e)(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;

There was no change in the monitoring well network for the RBAP in 2025.

3.6.3 40 CFR § 257.90(e)(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;

In accordance with § 257.95(b) and § 257.95(d)(1), at least two independent samples from each background and downgradient monitoring well were collected and analyzed. A summary table, including the sample names, dates of sample collection, the reason for sample collection (detection or assessment), and monitoring data obtained for the groundwater monitoring program for the RBAP is presented in Table 1. A summary of the analytical results is presented in Table 2. Prediction limits used to identify SSIs during statistical evaluations completed in 2025, including for the fall 2024 and spring 2025 sampling events, are presented in Table 3.

3.6.4 40 CFR § 257.90(e)(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

The RBAP remained in detection monitoring throughout 2025.

3.6.5 40 CFR § 257.90(e)(5)

Other information required to be included in the annual report as specified in § 257.90 through § 257.98.

Other information specified in § 257.90 through § 257.98 is discussed in preceding sections.

As specified in § 257.93(c), the groundwater flow rates and directions are provided as Figures 2 and 3, and Tables 4 and 5 for each sampling event.

TABLES

TABLE 1
SUMMARY OF 2025 SAMPLES COLLECTED
RETROFIT BOTTOM ASH POND (RBAP)
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

Location Name	Type of Well	Sample Date	Constituents Analyzed	Purpose	Sample Type
MW-BAP-3	Downgradient	3/24/2025	Fluoride & pH, Field	Detection Monitoring	Resample
MW-BAP-3	Downgradient	4/23/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-3	Downgradient	10/22/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-3	Downgradient	12/5/2025	Fluoride & pH, Field	Detection Monitoring	Resample
MW-BAP-5	Background	4/23/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-5	Background	10/22/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-1001	Background	4/23/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-1001	Background	4/23/2025	Appendix III	Detection Monitoring	Duplicate
MW-BAP-1001	Background	10/22/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-1002	Downgradient	3/24/2025	pH, Field	Detection Monitoring	Resample
MW-BAP-1002	Downgradient	4/23/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-1002	Downgradient	10/22/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-1003	Downgradient	4/23/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-1003	Downgradient	10/22/2025	Appendix III	Detection Monitoring	Primary
MW-BAP-1003	Downgradient	10/22/2025	Appendix III	Detection Monitoring	Duplicate
MW-BAP-1003	Downgradient	12/5/2025	Sulfate & pH, Field	Detection Monitoring	Resample

TABLE 2
SUMMARY OF 2025 ANALYTICAL RESULTS
RETROFIT BOTTOM ASH POND (RBAP)
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

Location Name	MW-BAP-3	MW-BAP-3	MW-BAP-3	MW-BAP-3	MW-BAP-5	MW-BAP-5	MW-BAP-1001
Sample Name	MW-BAP-3_03242025_rBAP	MW-BAP-3-04232025	MW-BAP-3-10222025	HW-BAP-3-12052025	MW-BAP-5-04232025	MW-BAP-5-10222025	MW-BAP-1001-04232025
Sample Date	03/24/2025	04/23/2025	10/22/2025	12/05/2025	04/23/2025	10/22/2025	04/23/2025
Sample Type	Resample	Primary	Primary	Resample	Primary	Primary	Primary
Well Type	Downgradient	Downgradient	Downgradient	Downgradient	Background	Background	Background
APPENDIX III CONSTITUENTS (mg/L)							
Boron, Total	-	**2.23**	**1.65**	-	**0.139**	**0.119**	**0.0369**
Calcium, Total	-	**74.9**	**73.4**	-	**185**	**187**	**76.4**
Chloride	-	**62.4**	**65.3**	-	**15.7**	**15.7**	**9.8**
Fluoride	**0.13**	**0.087**	**0.21**	**0.16**	**0.078**	**0.082**	**0.14**
Sulfate	-	**175**	**146**	-	**408**	**449**	**49.2**
Total Dissolved Solids (TDS)	-	**446**	**446**	-	**889**	**920**	**321**
pH, Field (pH Units)	**6.72**	**6.57**	**6.61**	**6.6**	**6.45**	**6.46**	**6.82**

Notes and Abbreviations:

mg/L = milligram per liter

< = Not detected at reporting limit

***Bold** = detected*

- = Not Analyzed

TABLE 2
SUMMARY OF 2025 ANALYTICAL RESULTS
RETROFIT BOTTOM ASH POND (RBAP)
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

Location Name	MW-BAP-1001	MW-BAP-1001	MW-BAP-1002	MW-BAP-1002	MW-BAP-1002	MW-BAP-1003
Sample Name	MW-BAP-1001 A-04232025	MW-BAP-1001-10222025	MW-BAP-1002-03242025	MW-BAP-1002-04232025	MW-BAP-1002-10222025	MW-BAP-1003-04232025
Sample Date	04/23/2025	10/22/2025	03/24/2025	04/23/2025	10/22/2025	04/23/2025
Sample Type	Duplicate	Primary	Resample	Primary	Primary	Primary
Well Type	Background	Background	Downgradient	Downgradient	Downgradient	Downgradient
APPENDIX III CONSTITUENTS (mg/L)						
Boron, Total	**0.0377**	**0.0472**	-	**2.7**	**2.91**	**0.896**
Calcium, Total	**67.3**	**77**	-	**86.8**	**91.6**	**97.3**
Chloride	**16.4**	**10.4**	-	**58.5**	**67.6**	**56.6**
Fluoride	**0.13**	**0.18**	-	**0.19**	**0.17**	**0.12**
Sulfate	**82.3**	**50.8**	-	**106**	**67.5**	**54.9**
Total Dissolved Solids (TDS)	**317**	**342**	-	**443**	**475**	**479**
pH, Field (pH Units)	-	**6.89**	**6.73**	**6.84**	**6.82**	**6.98**

Notes and Abbreviations:

mg/L = milligram per liter

< = Not detected at reporting limit

***Bold** = detected*

- = Not Analyzed

TABLE 2
SUMMARY OF 2025 ANALYTICAL RESULTS
RETROFIT BOTTOM ASH POND (RBAP)
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

Location Name	MW-BAP-1003	MW-BAP-1003	MW-BAP-1003
Sample Name	MW-BAP-1003-10222025	MW-BAP-1003A-10222025	HW-BAP-1003-12052025
Sample Date	10/22/2025	10/22/2025	12/05/2025
Sample Type	Primary	Duplicate	Resample
Well Type	Downgradient	Downgradient	Downgradient
APPENDIX III CONSTITUENTS (mg/L)			
Boron, Total	**0.773**	**0.772**	-
Calcium, Total	**95.3**	**96.1**	-
Chloride	**59**	**59.4**	-
Fluoride	**0.14**	**0.14**	-
Sulfate	**64.9**	**65.1**	**58.8**
Total Dissolved Solids (TDS)	**480**	**479**	-
pH, Field (pH Units)	**6.98**	-	**6.84**

Notes and Abbreviations:

mg/L = milligram per liter

< = Not detected at reporting limit

***Bold** = detected*

- = Not Analyzed

TABLE 3
APPENDIX III PREDICTION LIMITS
RETROFIT BOTTOM ASH POND (RBAP)
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

Well ID	Appendix III Constituent	Units	Intrawell Prediction Limits [1]	
			Upper Prediction Limits	Lower Prediction Limits (pH only)
MW-BAP-1002	Boron, Total	mg/L	3.24	-
MW-BAP-1002	Calcium, Total	mg/L	106	-
MW-BAP-1002	Chloride	mg/L	77.4	-
MW-BAP-1002	Fluoride	mg/L	0.217	-
MW-BAP-1002	pH, Field	SI	7.15	6.54
MW-BAP-1002	Sulfate	mg/L	188	-
MW-BAP-1002	Total Dissolved Solids	mg/L	553	-
MW-BAP-1003	Boron, Total	mg/L	1.01	-
MW-BAP-1003	Calcium, Total	mg/L	108	-
MW-BAP-1003	Chloride	mg/L	73.0	-
MW-BAP-1003	Fluoride	mg/L	0.155	-
MW-BAP-1003	pH, Field	SI	7.33	6.77
MW-BAP-1003	Sulfate	mg/L	62.1	-
MW-BAP-1003	Total Dissolved Solids	mg/L	513	-
MW-BAP-3	Boron, Total	mg/L	2.35	-
MW-BAP-3	Calcium, Total	mg/L	85.7	-
MW-BAP-3	Chloride	mg/L	104	-
MW-BAP-3	Fluoride	mg/L	0.142	-
MW-BAP-3	pH, Field	SI	6.91	6.34
MW-BAP-3	Sulfate	mg/L	235	-
MW-BAP-3	Total Dissolved Solids	mg/L	513	-

Notes and Abbreviations:

[1] Intrawell prediction limits updated in February 2025 to incorporate samples collected through April 2024. These limits were used for statistical evaluations completed in 2025, including the fall 2024 and spring 2025 sampling events.

mg/L = milligrams per liter

SI = standard unit

- = not applicable

TABLE 4
GROUNDWATER FLOW CALCULATIONS - APRIL 2025
RETROFIT BOTTOM ASH POND (RBAP)
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

Program	Well	Hydraulic Location	Depth to Water (ft)	Potentiometric Elevation (ft)	DownGradient GW Elevation	Distance Between Well and Downgradient	Gradient[1] (ft/ft)	Hydraulic Conductivity[2] (cm/sec)			Effective Porosity
								Low	Representative	High	
RBAP	MW-BAP-1001	Upgradient	28.49	644.86	644.84	29	0.0007	0.0002	0.05	0.3	0.36
RBAP	MW-BAP-1002	Downgradient	28.19	644.71	644.72	85	0.0001	0.0002	0.05	0.3	0.36
RBAP	MW-BAP-1003	Downgradient	27.99	644.69	644.70	49	0.0002	0.0002	0.05	0.3	0.36
RBAP	MW-BAP-3	Downgradient	28.4	644.73	644.74	78	0.0001	0.0002	0.05	0.3	0.36
RBAP	MW-BAP-5	Upgradient	27.51	644.67	644.68	33	0.0003	0.0002	0.05	0.3	0.36

Notes and Abbreviations:

1. Hydraulic gradient was calculated from a potentiometric surface from the most recent representative conditions.

2. Low and high conductivity values are from the 2022 Groundwater Monitoring Network Evaluation, with a representative value chosen within this range that is consistent with previous velocity calculations.

3. Well diameter represents the diameter of the borehole (sandpack).

4. Residence time is an estimation of how long it would take groundwater to travel a distance equivalent to the well diameter at the calculated velocity.

Measurements and calculations represent conditions on April 21, 2025.

cm/sec = centimeters per second

ft = feet

ft/ft = feet per foot

ft/day = feet per day

in = inch

TABLE 4

GROUNDWATER FLOW CALCULATIONS - APRIL 2025

RETROFIT BOTTOM ASH POND (RBAP)

CARDINAL POWER PLANT FACILITY

BRILLIANT, OHIO

Program	Well	Hydraulic Location	Groundwater Velocity (ft/day)			Diameter[3] (in)	Residence Time in Well[4] (days)		
			Low	Representative	High		Low	Representative	High
RBAP	MW-BAP-1001	Upgradient	0.0011	**0.27**	1.63	8	0.41	**2.46**	614
RBAP	MW-BAP-1002	Downgradient	0.0002	**0.05**	0.28	8	2.40	**14.39**	3598
RBAP	MW-BAP-1003	Downgradient	0.0003	**0.08**	0.48	8	1.38	**8.30**	2074
RBAP	MW-BAP-3	Downgradient	0.0002	**0.05**	0.30	8	2.20	**13.21**	3302
RBAP	MW-BAP-5	Upgradient	0.0005	**0.12**	0.72	9	1.05	**6.29**	1572

Notes and Abbreviations:

1. *Hydraulic gradient was calculated from a potentiometric surface from the most recent representative conditions.*
2. *Low and high conductivity values are from the 2022 Groundwater Monitoring Network Evaluation, with a representative value chosen within this range that is consistent with previous velocity calculations.*
3. *Well diameter represents the diameter of the borehole (sandpack).*
4. *Residence time is an estimation of how long it would take groundwater to travel a distance equivalent to the well diameter at the calculated velocity.*

Measurements and calculations represent conditions on April 21, 2025.

cm/sec = centimeters per second

ft = feet

ft/ft = feet per foot

ft/day = feet per day

in = inch

TABLE 5

GROUNDWATER FLOW CALCULATIONS - OCTOBER 2025

RETROFIT BOTTOM ASH POND (RBAP)

CARDINAL POWER PLANT FACILITY

BRILLIANT, OHIO

Program	Well	Hydraulic Location	Depth to Water (ft)	Potentiometric Elevation (ft)	Gradient[1] (ft/ft)	Hydraulic Conductivity[2] (cm/sec)			Effective Porosity	Groundwater Velocity (ft/day)			Diameter[3] (in)
						Low	Representative	High		Low	Representative	High	
RBAP	MW-BAP-1001	Upgradient	28.31	645.04	0.0009	0.0002	0.05	0.3	0.36	0.0013	**0.34**	2.01	8
RBAP	MW-BAP-1002	Downgradient	28.25	644.65	0.0005	0.0002	0.05	0.3	0.36	0.0008	**0.20**	1.18	8
RBAP	MW-BAP-1003	Downgradient	28.05	644.63	0.0003	0.0002	0.05	0.3	0.36	0.0005	**0.11**	0.68	8
RBAP	MW-BAP-3	Downgradient	28.5	644.63	0.0014	0.0002	0.05	0.3	0.36	0.0022	**0.56**	3.37	8
RBAP	MW-BAP-5	Upgradient	27.5	644.68	0.0007	0.0002	0.05	0.3	0.36	0.0011	**0.27**	1.65	9

Notes and Abbreviations:

1. Hydraulic gradient was calculated from a potentiometric surface from the most recent representative conditions.

2. Low and high conductivity values are from the 2022 Groundwater Monitoring Network Evaluation, with a representative value chosen within this range that is consistent with previous velocity calculations.

3. Well diameter represents the diameter of the borehole (sandpack).

4. Residence time is an estimation of how long it would take groundwater to travel a distance equivalent to the well diameter at the calculated velocity.

Measurements and calculations represent conditions on October 21, 2025.

cm/sec = centimeters per second

ft = feet

ft/ft = feet per foot

ft/day = feet per day

in = inch

TABLE 5
GROUNDWATER FLOW CALCULATIONS - OCTOBER 2025
RETROFIT BOTTOM ASH POND (RBAP)
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

Program	Well	Hydraulic Location	Residence Time in Well[4] (days)		
			Low	Representative	High
RBAP	MW-BAP-1001	Upgradient	0.33	**1.99**	497
RBAP	MW-BAP-1002	Downgradient	0.56	**3.39**	847
RBAP	MW-BAP-1003	Downgradient	0.97	**5.84**	1461
RBAP	MW-BAP-3	Downgradient	0.20	**1.19**	296
RBAP	MW-BAP-5	Upgradient	0.46	**2.73**	683

Notes and Abbreviations:

1. Hydraulic gradient was calculated from a potentiometric surface from the most recent representative conditions.

2. Low and high conductivity values are from the 2022 Groundwater Monitoring Network Evaluation, with a representative value chosen within this range that is consistent with previous velocity calculations.

3. Well diameter represents the diameter of the borehole (sandpack).

4. Residence time is an estimation of how long it would take groundwater to travel a distance equivalent to the well diameter at the calculated velocity.

Measurements and calculations represent conditions on October 21, 2025.

cm/sec = centimeters per second

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FIGURES

LEGEND

- BAP MONITORING WELL
- RBAP MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- RAILROAD
- HISTORICAL BOTTOM ASH POND (BAP)
- RETROFIT BOTTOM ASH POND (RBAP)

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: NEARMAP, OCTOBER 27, 2025

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CARDINAL OPERATING COMPANY
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

CCR UNIT AND MONITORING WELLS
RETROFIT BOTTOM ASH POND (RBAP)

JANUARY 2026

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\CFI\Projects\0210218\GIS\210218_CARDINAL_PLANT_COLUMBUS_OH\210218_CARDINAL_PLANT_COLUMBUS_OH.aprx - USER: driverier - LAST SAVED: 1/28/2026 2:25 PM

LEGEND

- RBAP MONITORING WELL WITH **GROUNDWATER ELEVATION** IN FEET
- GROUNDWATER ELEVATION CONTOUR, 0.02-FT INTERVAL (NGVD29)
- RAILROAD
- HISTORICAL BOTTOM ASH POND (BAP)
- RETROFIT BOTTOM ASH POND (RBAP)

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. DEFINITIONS:
FT = FOOT
NGVD29 = NATIONAL GEODETIC VERTICAL DATUM 1929
3. GROUNDWATER ELEVATION MEASURE ON APRIL 21, 2025.
4. ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
5. AERIAL IMAGERY SOURCE: NEARMAP, OCTOBER 27, 2025

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CARDINAL OPERATING COMPANY
CARDINAL POWER PLANT FACILITY
BRILLIANT, OHIO

POTENTIOMETRIC SURFACE RETROFIT BOTTOM ASH POND (RBAP) UPPERMOST AQUIFER – APRIL 2025

JANUARY 2026

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\021016\GIS\210218_CARDINAL_PLANT_COLUMBUS_OH\210218_CARDINAL_PLANT_COLUMBUS_OH.aprx - USER: driehrer - LAST SAVED: 1/28/2026 2:25 PM

LEGEND

- RBAP MONITORING WELL WITH **GROUNDWATER ELEVATION** IN FEET
- GROUNDWATER ELEVATION CONTOUR, 0.05-FT INTERVAL (NGVD29)
- RAILROAD
- HISTORICAL BOTTOM ASH POND (BAP)
- RETROFIT BOTTOM ASH POND (RBAP)

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. DEFINITIONS:
   FT = FOOT
   NGVD29 = NATIONAL GEODETIC VERITCAL DATUM 1929
3. GROUNDWATER ELEVATIONS MEASURED OCTOBER 21, 2025.
4. ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
5. AERIAL IMAGERY SOURCE: NEARMAP, OCTOBER 27, 2025

N

0 150 300
SCALE IN FEET

HALEY ALDRICH

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