

ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
EAST ASH POND
F.B. CULLEY GENERATING STATION
WARRICK COUNTY, INDIANA

by
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for
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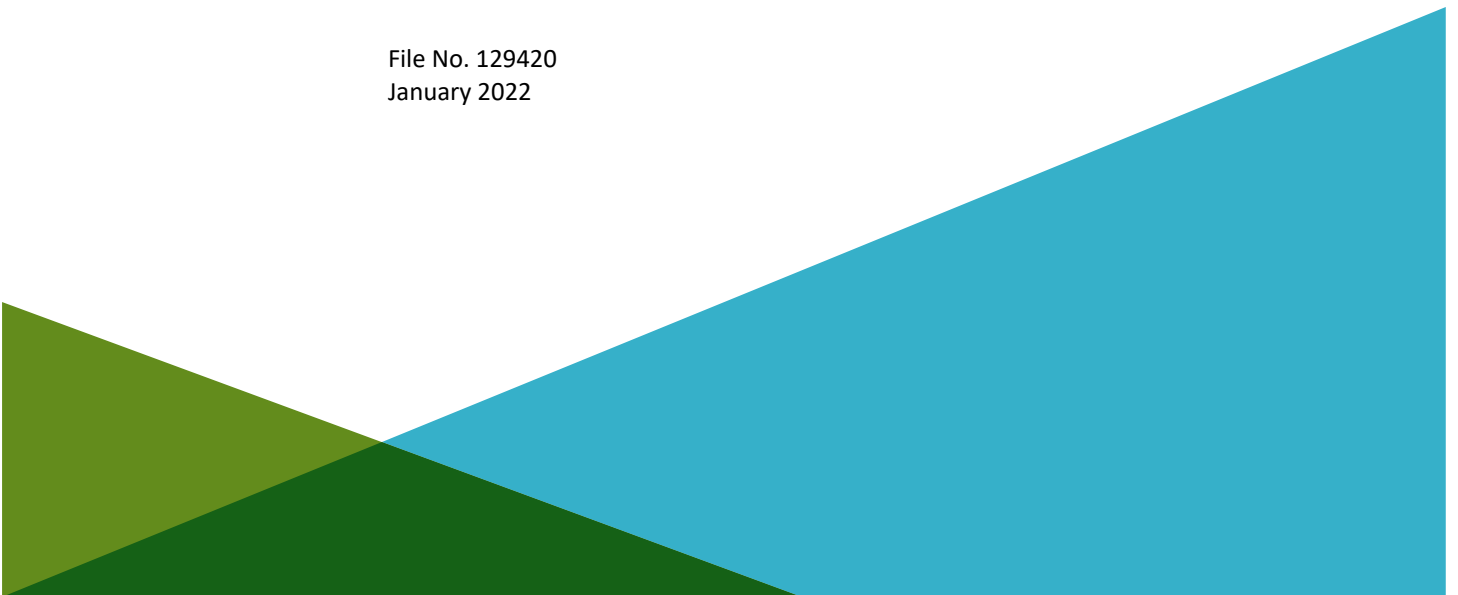


Table of Contents

	Page
List of Tables	ii
List of Figures	ii
1. Annual Groundwater Monitoring Report Summary	1
1.1 CODE OF FEDERAL REGULATIONS TITLE 40 (40 CFR) § 257.90(E)(6) SUMMARY	1
1.1.1 40 CFR § 257.90(e)(6)(i) – Status of Monitoring Program at Start of Reporting Period	1
1.1.2 40 CFR § 257.90(e)(6)(ii) – Status of Monitoring Program at End of Reporting Period	1
1.1.3 40 CFR § 257.90(e)(6)(iii) – Statistically Significant Increases	1
1.1.4 40 CFR § 257.90(e)(6)(iv) – Statistically Significant Levels	2
1.1.5 40 CFR § 257.90(e)(6)(v) – Selection of Remedy	2
1.1.6 40 CFR § 257.90(e)(6)(vi) – Remedial Activities	3
1.2 40 CFR § 257.90(A)	3
1.3 40 CFR § 257.90(E) – SUMMARY	3
1.3.1 Status of the Groundwater Monitoring Program	3
1.3.2 Key Actions Completed	4
1.3.3 Problems Encountered	4
1.3.4 Actions to Resolve Problems	4
1.3.5 Project Key Activities for Upcoming Year	5
1.4 40 CFR § 257.90(E) – INFORMATION	5
1.4.1 40 CFR § 257.90(e)(1)	5
1.4.2 40 CFR § 257.90(e)(2)	5
1.4.3 40 CFR § 257.90(e)(3)	6
1.4.4 40 CFR § 257.90(e)(4)	6
1.4.5 40 CFR § 257.90(e)(5)	6

Tables
Figures

List of Tables

Table No.	Title
I	Groundwater Monitoring Well Location and Construction Details
II	Summary of Groundwater Quality Data

List of Figures

Figure No.	Title
1	Groundwater Monitoring Well Locations

1. Annual Groundwater Monitoring Report Summary

1.1 CODE OF FEDERAL REGULATIONS TITLE 40 (40 CFR) § 257.90(e)(6) SUMMARY

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. At a minimum, the summary must specify all of the following:

1.1.1 40 CFR § 257.90(e)(6)(i) – Status of Monitoring Program at Start of Reporting Period

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;

At the start of the current annual reporting period (1 January 2021), the East Ash Pond (EAP) at F.B. Culley (FBC) Generating Station was operating under an assessment monitoring program in compliance with 40 CFR § 257.95.

1.1.2 40 CFR § 257.90(e)(6)(ii) – Status of Monitoring Program at End of Reporting Period

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;

At the end of the current annual reporting period (31 December 2021), the EAP was operating under an assessment monitoring program in compliance with 40 CFR § 257.95.

1.1.3 40 CFR § 257.90(e)(6)(iii) – Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):

1.1.3.1 40 CFR § 257.90(e)(6)(iii)(A)

Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and

The EAP was operating under an assessment monitoring program throughout 2021; therefore, no statistical evaluations were conducted on Appendix III constituents in 2021.

1.1.3.2 40 CFR § 257.90(e)(6)(iii)(B)

Provide the date when the assessment monitoring program was initiated for the CCR unit.

An assessment monitoring program was established on 15 August 2018 for the EAP to meet the requirements of 40 CFR § 257.95. The EAP has remained in assessment monitoring since that time.

1.1.4 40 CFR § 257.90(e)(6)(iv) – Statistically Significant Levels

If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:

1.1.4.1 40 CFR § 257.90(e)(6)(iv)(A) – Statistically Significant Level Constituents

Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;

Statistical analyses of Appendix IV constituents were completed in 2021 following the November 2020 and May 2021 semiannual assessment monitoring events as described in § 257.93(h)(2) and statistically significant levels (SSLs) of molybdenum were identified downgradient of the EAP at monitoring well CCR-AP-5.

1.1.4.2 40 CFR § 257.90(e)(6)(iv)(B) – Initiation of the Assessment of Corrective Measures

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

Assessment of corrective measures was initiated on 15 May 2019 for the EAP.

1.1.4.3 40 CFR § 257.90(e)(6)(iv)(C) – Assessment of Corrective Measures Public Meeting

Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

The public was given the opportunity to comment on the assessment of corrective measures prepared for the EAP during a public meeting held on 18 October 2021.

1.1.4.4 40 CFR § 257.90(e)(6)(iv)(D) – Completion of the Assessment of Corrective Measures

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

The assessment of corrective measures was completed on 13 September 2019 and placed into the facility's Operating Record, posted to the publicly available website, and the notification sent to the state agency.

1.1.5 40 CFR § 257.90(e)(6)(v) – Selection of Remedy

Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

The selection of remedy required under § 257.97 was ongoing in 2021 for molybdenum at the EAP. A summary of actions completed associated with selection of remedy are provided in the March 2021 and September 2021 Semi-annual Remedy Selection Progress Reports.

1.1.6 40 CFR § 257.90(e)(6)(vi) – Remedial Activities

Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

Remedial activities were not initiated in 2021; therefore, no demonstration or certification is applicable for this unit at this time.

1.2 40 CFR § 257.90(a)

Except as provided for in § 257.100 for inactive CCR surface impoundments, 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.

The EAP at FBC is subject to the groundwater monitoring and corrective action requirements described under 40 CFR § 257.90 through § 257.98 (Rule). The remainder of this document addresses the specific requirements for the Owner/Operator to prepare an Annual Groundwater Monitoring and Corrective Action Report per § 257.90(e).

1.3 40 CFR § 257.90(e) – SUMMARY

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 new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. 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 Annual Groundwater Monitoring and Corrective Action Report documents the activities completed in 2021 for the EAP as required by the Rule. Semiannual groundwater sampling and analysis was conducted per the requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.95 is provided in this report.

1.3.1 Status of the Groundwater Monitoring Program

Following completion of the Assessment of Corrective Measures in September 2019, annual and semi-annual groundwater sampling continued in May 2021 and November 2021 as outlined in § 257.95(b) and 257.95(d)(1). Statistical analyses of Appendix IV constituents were completed within 90-days following completion of the sampling and analysis events as described in § 257.93(h)(2) and SSLs of

molybdenum continue to be observed downgradient of the EAP consistent with previous results. In addition, the selection of remedy required under § 257.97 was ongoing in 2021.

1.3.2 Key Actions Completed

The following key actions were completed in 2021:

- Per the requirements of 257.93(c) of the Rule, static water level measurements were collected during each sampling event to evaluate groundwater flow direction and rate.
- Completed statistical analyses of assessment monitoring results to evaluate potential SSLs.
- Prepared 2020 Annual Report including:
 - Pursuant to § 257.105(h)(1), the Annual Report was placed in the facility's operating record;
 - Pursuant to § 257.106(h)(1), the notification was sent to the relevant State Director and/or Tribal authority within 30 days of the Annual Report being placed in the facility's operating record [§ 257.106(d)];
 - Pursuant to § 257.107(h)(1), the Annual Report was posted to the CCR Website within 30 days of the Annual Report being placed in the facility's operating record [§ 257.107(d) and 257.107(h)(1)];
- Collected and analyzed two rounds of groundwater samples in accordance with § 257.95.
- Prepared semiannual selection of remedy progress reports in March 2021 and September 2021 in accordance with § 257.97(a) to document progress. These semiannual progress reports were placed in the operating record as required by § 257.105(h)(12) and posted on the facility's publicly available website as required by § 257.107(h)(9).
- Updated the Groundwater Modeling Report to evaluate specific details of various closure options, including timeframes to achieve compliance with GWPS.
- Held a public meeting on 18 October 2021 with interested and affected parties in accordance with § 257.96(e) to discuss the results of the corrective measures assessment, along with the characterization of nature and extent and site-specific characteristics.

1.3.3 Problems Encountered

Monitoring well (CCR-AP-10) was installed on the north side of the East Ash Pond in January 2019 to evaluate the nature and extent of molybdenum in groundwater west of CCR-AP-5. The shale bedrock encountered at this location does not yield sufficient groundwater for sampling.

1.3.4 Actions to Resolve Problems

A review of the boring log and construction information concluded that installing a deeper well to replace CCR-AP-10 would not correlate to the monitoring well network in the uppermost aquifer. Therefore, monitoring well CCR-AP-10 will be properly abandoned in January 2022, weather permitting.

1.3.5 Project Key Activities for Upcoming Year

Key activities to be completed in 2022 include the following:

- Evaluate if further characterization of the hydrogeologic conditions downgradient of the EAP is warranted to support remedy selection.
- Continue semiannual groundwater monitoring in accordance with § 257.95.
- Complete statistical analyses of the semiannual groundwater sampling results as required by § 257.93(h)(2).
- As soon as feasible select a remedy that, at a minimum, meets the standards outlined in § 257.97(b) and considers the evaluation factors in § 257.97(c).
 - As part of the selected remedy SIGECO will develop a schedule for implementing and completing remedial activities as defined in § 257.97(d).
- Prepare semiannual and annual progress reports, as necessary, describing the progress in selecting and designing the remedy as outlined in § 257.97(a).
- Following remedy selection initiate remedial activities and implement the corrective action groundwater monitoring program as outlined in § 257.98.

1.4 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:

1.4.1 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 EAP and associated upgradient, downgradient and nature and extent monitoring wells is presented as Figure 1.

1.4.2 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;

Additional monitoring wells were not installed nor were any monitoring wells decommissioned in 2021. Location and construction details for the existing monitoring well network is provided in Table I.

1.4.3 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), 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, reason for sample collection (detection or assessment), and monitoring data obtained for the groundwater monitoring program for the EAP is presented in Table II of this report.

1.4.4 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

Statistical analysis was completed within 90-days following completion of the semi-annual sampling events as described in § 257.93(h)(2) and the SSLs of molybdenum continue to be observed downgradient of the EAP consistent with previous results. As a result, the monitoring program did not change and the EAP remained in assessment monitoring throughout 2022.

1.4.5 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 including development of groundwater protection standards, recording of groundwater monitoring results in the operating record, and an evaluation of alternate sources was discussed in prior annual reports.

TABLES

TABLE I
GROUNDWATER MONITORING WELL LOCATION AND CONSTRUCTION DETAILS
 F.B. CULLEY GENERATING STATION - EAST ASH POND
 NEWBURGH, INDIANA

Well	CCR Unit	Date Installed	Easting	Northing	Top of Pad Elevation (ft msl)	Top of Riser Elevation (ft msl)	Surface Grout (ft bgs)	Bentonite (ft bgs)	Sand Pack (ft bgs)	Screen Zone (ft bgs)	Screen Length (ft)	Well Radius (in)	Status
CCR-AP-1R	Background	March 2016	2883429.69	969939.69	438.50	441.64	1.0-51.0	51.0-53.0	53.0-65.0	55.00 - 65.00	10	2	Active
CCR-AP-7	Background	March 2016	2883090.34	970774.64	429.50	434.11	1.0-16.0	16.0-18.0	18.0-30.0	20.00 - 30.00	10	2	Active
CCR-AP-9	Background	February 2017	2883998.96	969768.61	445.58	448.69	1.0-56.0	56.0-58.0	58.0-70.0	60.00 - 70.00	10	2	Active
CCR-AP-2	East Ash Pond	December 2015	2884168.67	969117.52	394.40	393.97	1.0-30.5	30.5-32.5	32.5-45.0	36.00 - 46.00	10	2	Active
CCR-AP-3	East Ash Pond	December 2015	2883542.09	969007.98	395.10	394.54	1.0-31.0	31.0-32.8	32.8-45.0	35.00 - 45.00	10	2	Active
CCR-AP-4	East Ash Pond	December 2015	2883281.93	969641.70	395.40	394.91	1.0-19.7	19.7-22.5	23.0-35.5	25.50 - 35.50	10	2	Active
CCR-AP-5	East Ash Pond	December 2015	2884016.66	969379.68	394.80	394.32	1.0-28.6	28.6-30.6	30.6-44.0	34.00 - 44.00	10	2	Active
CCR-AP-5I	East Ash Pond	January 2019	2884022.40	969377.37	--	395.00	1.0-71.2	71.2-73.0	73.0-86.0	75.30 - 85.30	10	2	Active
CCR-AP-6	East Ash Pond	March 2016	2883285.03	969122.16	397.00	396.71	1.0-31.5	31.5-33.0	33.5-45.5	35.50 - 45.50	10	2	Active
CCR-AP-6I	East Ash Pond	November 2018	2883289.32	969119.72	--	397.20	1.0-60.7	60.7-62.7	62.7-64.7	34.70 - 74.70	10	2	Active
CCR-AP-8	East Ash Pond	February 2017	2883846.87	969046.03	394.15	393.83	1.0-31.5	31.5-33.0	33.5-45.5	35.50 - 45.50	10	2	Active
CCR-AP-8I	East Ash Pond	November 2018	2883853.25	969047.00	--	393.90	1.0-53.7	53.7-56.7	56.7-69.0	58.70 - 68.70	10	2	Active
CCR-AP-10	East Ash Pond	January 2019	2883772.84	969536.11	--	402.40	1.0-36.5	36.5-38.0	38.0-50.5	40.20 - 50.20	10	2	Active
CCR-AP-11	East Ash Pond	January 2019	2884485.51	969352.71	--	385.10	1.0-40.0	40.0-41.8	41.8-54.7	44.40 - 54.40	10	2	Active

NOTES:

bgs = below ground surface

--- = was not surveyed

ft = feet

in = inches

msl = mean sea level

Datum of Elevations in NAVD 88

TABLE II
SUMMARY OF ANALYTICAL RESULTS
 F.B. CULLEY GENERATING STATION
 EAST ASH POND
 NEWBURGH, INDIANA

Location Group Location Name Sample Name Sample Date Lab Sample ID	Action Level Maximum Contaminant Level	Background					
		CCR-AP-1R CCR-AP-1R-20210513 05/13/2021 180-121710-1	CCR-AP-1R CCR-AP-1R-20211122 11/22/2021 180-130433-11	CCR-AP-7 CCR-AP-7-20210507 05/07/2021 180-121360-8	CCR-AP-7 CCR-AP-7-20211104 11/04/2021 180-129641-3	CCR-AP-9 CCR-AP-9-20210513 05/13/2021 180-121710-10	CCR-AP-9 CCR-AP-9-20211122 11/22/2021 180-130433-7
Detection Monitoring - EPA Appendix III Constituents (mg/L)							
Boron, Total	NA	0.82	0.86	0.16 U	0.13 J	1	0.43 J+
Calcium, Total	NA	70	83	110	110	160	150
Chloride	NA	17	16 J-	26	32 J	11	10 J-
Fluoride	4	0.48 J+	0.63 J	0.57	0.42 J	0.32 J+	0.38 J
pH (lab) (SU)	NA	7.8 J	7.6 J	7.4 J	7.4 J	7.4 J	7.2 J
Sulfate	NA	210	210	95	75 J	120	110
Total Dissolved Solids (TDS)	NA	890	880	870	530	680	660
Assessment Monitoring - EPA Appendix IV Constituents (mg/L)							
Antimony, Total	0.006	0.0026 J	0.001 J	0.002 U	0.002 U	0.02 U	0.0014 J
Arsenic, Total	0.01	0.023	0.03	0.00077 J	0.0055	0.015	0.0091
Barium, Total	2	0.28	0.26	0.092	0.12	0.38	0.24
Beryllium, Total	0.004	0.0048 J	0.0061	0.001 U	0.001 U	0.01 U	0.001
Cadmium, Total	0.005	0.005 U	0.00037 J	0.001 U	0.001 U	0.01 U	0.001 U
Chromium, Total	0.1	0.07	0.084	0.002 U	0.002 U	0.045	0.015
Cobalt, Total	0.006	0.039	0.068	0.00076	0.00054	0.018	0.014
Fluoride	4	0.48 J+	0.63 J	0.57	0.42 J	0.32 J+	0.38 J
Lead, Total	0.015	0.04	0.071	0.001 U	0.00013 J	0.017	0.013
Lithium, Total	0.04	0.096	0.12	0.0091	0.0096	0.052	0.039
Mercury, Total	0.002	0.002 U	0.0005 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum, Total	0.1	0.0099 J	0.0073	0.0019 J	0.0015 J	0.05 U	0.0018 J
Selenium, Total	0.05	0.025 U	0.005 U	0.005 U	0.005 U	0.05 U	0.005 U
Thallium, Total	0.002	0.0027 J	0.00046 J	0.001 U	0.001 U	0.01 U	0.001 U
Radiological (pCi/L)							
Radium-226	NA	1.04 ± 0.653	2.37 ± 0.696	0.239 ± 0.118	0.354 ± 0.166	1.93 ± 0.72	5.00 ± 1.04
Radium-228	NA	1.74 ± 0.905	5.16 J ± 1.62	0.249 U ± 0.26	0.313 U ± 0.408	2.13 ± 0.96	7.55 J ± 2
Radium-226 & 228	NA	2.77 ± 1.12	7.53 J ± 1.76	0.487 J ± 0.286	0.668 UJ ± 0.44	4.06 ± 1.2	12.6 J ± 2.25
Field Parameters							
Temperature (Deg C)	NA	17.2	13.31	15.41	16.96	18.02	5
Dissolved Oxygen, Field (mg/L)	NA	2.04	3.37	0.17	0.26	5.22	7.57
Conductivity, Field (mS/cm)	NA	1.3532	1.3051	0.88446	0.91409	1.122	1.008
ORP, Field (mv)	NA	-6.8	-62.9	22.6	-120.3	-18.4	26.1
Turbidity, Field (NTU)	NA	1633	866	11.97	0.52	808.36	1261
pH, Field (pH units)	NA	7.56	7.43	6.99	7.19	7.19	6.98

ABBREVIATIONS AND NOTES:

CCR: Coal Combustion Residuals.
 mg/L: milligram per liter.
 pCi/L: picoCurie per liter.
 su: standard units.
 USEPA: United States Environmental Protection Agency
 J: Value is estimated
 J-: Value is estimated, biased low
 J+: Value is estimated, biased high
 R: Rejected during validation
 U: Not detected, value is the laboratory reporting limit

- USEPA. 2016. Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities. July 26. 40 CFR Part 257.
<https://www.epa.gov/coalash/coal-ash-rule>

TABLE II
SUMMARY OF ANALYTICAL RESULTS
 F.B. CULLEY GENERATING STATION
 EAST ASH POND
 NEWBURGH, INDIANA

Location Group Location Name Sample Name Sample Date Lab Sample ID	Action Level Maximum Contaminant Level	Downgradient						
		CCR-AP-2 CCR-AP-2-20210512 05/12/2021 180-121710-2	CCR-AP-2 CCR-AP-2-20211122 11/22/2021 180-130433-9	CCR-AP-3 CCR-AP-3-20210512 05/12/2021 180-121710-3	CCR-AP-3 CCR-AP-3-20211122 11/22/2021 180-130433-8	CCR-AP-4 CCR-AP-4-20210512 05/12/2021 180-121710-4	CCR-AP-4R CCR-AP-4R-20211122 11/22/2021 180-130433-13	CCR-AP-5 CCR-AP-5-20210512 05/12/2021 180-121710-5
Detection Monitoring - EPA Appendix III Constituents (mg/L)								
Boron, Total	NA	9.6	8.5	0.16 J+	0.16 J+	0.096 U	0.18 J+	6.9
Calcium, Total	NA	240	220	190	190	170	200	230
Chloride	NA	250	150 J-	24	23 J-	17	20 J-	75
Fluoride	4	0.34 J+	0.69 J	0.3 J+	0.57 J	0.4 J+	0.52 J+	1.5
pH (lab) (SU)	NA	7 J	6.7 J	7.2 J	7 J	7 J	6.7 J	7.3 J
Sulfate	NA	410	250	1.9	1 U	16	11	500
Total Dissolved Solids (TDS)	NA	1400	1600	1000	990	810	820	1100
Assessment Monitoring - EPA Appendix IV Constituents (mg/L)								
Antimony, Total	0.006	0.00069 J	0.00087 J	0.002 U	0.002 U	0.002 U	0.002	0.002 U
Arsenic, Total	0.01	0.01	0.011	0.095	0.08	0.07	0.33	0.0023
Barium, Total	2	0.097	0.14	0.49	0.41	0.47	1.4	0.069
Beryllium, Total	0.004	0.0077	0.00091 J	0.001 U	0.001 U	0.001 U	0.0017	0.001 U
Cadmium, Total	0.005	0.0066	0.00059 J	0.001 U	0.001 U	0.001 U	0.00071 J	0.00031 J
Chromium, Total	0.1	0.016	0.024	0.002	0.002 U	0.0015 J	0.058	0.002 U
Cobalt, Total	0.006	0.019	0.018	0.0043	0.0044	0.00071	0.021	0.00052
Fluoride	4	0.34 J+	0.69 J	0.3 J+	0.57 J	0.4 J+	0.52 J+	1.5
Lead, Total	0.015	0.012	0.017	0.00065 J	0.00021 J	0.0046	0.047	0.00019 J
Lithium, Total	0.04	0.014	0.018	0.005 U	0.005 U	0.005 U	0.019	0.028
Mercury, Total	0.002	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum, Total	0.1	0.0061	0.0037 J	0.0071	0.0065	0.005 U	0.0096	0.14
Selenium, Total	0.05	0.0075	0.005 U	0.0018 J	0.0017 J	0.005 U	0.0018 J	0.0021 J
Thallium, Total	0.002	0.0076	0.00038 J	0.001 U	0.001 U	0.001 U	0.0004 J	0.00018 J
Radiological (pCi/L)								
Radium-226	NA	0.0542 U ± 0.52	1.75 J ± 0.675	0.208 U ± 0.299	0.692 U ± 0.283	0.293 U ± 0.292	3.01 UJ ± 1.84	0.346 ± 0.229
Radium-228	NA	0.628 U ± 0.804	3.78 UJ ± 1.66	0.730 U ± 0.498	3.26 UJ ± 1.16	0.778 ± 0.41	27.0 J- ± 8.98	0.106 U ± 0.262
Radium-226 & 228	NA	0.682 U ± 0.958	5.53 UJ ± 1.79	0.938 ± 0.581	3.95 UJ ± 1.19	1.07 J ± 0.503	30.0 J- ± 9.17	0.453 J ± 0.348
Field Parameters								
Temperature (Deg C)	NA	18.34	11.6	17.05	9.42	16.82	10.67	16.79
Dissolved Oxygen, Field (mg/L)	NA	5.31	9.5	4.19	7.38	3.07	3.3	0.15
Conductivity, Field (mS/cm)	NA	1.96	0.0092	1.1602	1.643	1.3255	1.52	1.3224
ORP, Field (mv)	NA	2.8	18.5	-28.9	-90.9	-39.8	-84.2	26.6
Turbidity, Field (NTU)	NA	157.19	1.7634	88.33	18.63	252.84	71.66	0.84
pH, Field (pH units)	NA	6.74	6.86	7.21	6.98	6.8	6.65	7.29

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TABLE II
SUMMARY OF ANALYTICAL RESULTS
 F.B. CULLEY GENERATING STATION
 EAST ASH POND
 NEWBURGH, INDIANA

Location Group Location Name Sample Name Sample Date Lab Sample ID	Action Level Maximum Contaminant Level	Downgradient						
		CCR-AP-5 BLIND DUP-20210512 05/12/2021 180-121710-14	CCR-AP-5 CCR-AP-5-20211122 11/22/2021 180-130433-10	CCR-AP-6 CCR-AP-6-20210512 05/12/2021 180-121710-6	CCR-AP-6 CCR-AP-6-20211122 11/22/2021 180-130433-2	CCR-AP-8 CCR-AP-8-20210512 05/12/2021 180-121710-8	CCR-AP-8 CCR-AP-8-20211123 11/23/2021 180-130433-14	CCR-AP-8 DUP-1-20211123 11/23/2021 180-130433-4
Detection Monitoring - EPA Appendix III Constituents (mg/L)								
Boron, Total	NA	6.7	9.1	0.65	0.52 J+	0.088 U	0.07 UJ	8.4 J
Calcium, Total	NA	240	200	210	200	320	250	200
Chloride	NA	72	91 J-	40	34 J-	16	16 J-	89 J-
Fluoride	4	1.6	1.5 J-	0.36 J+	0.64 J	0.2 J+	0.41 J	1.5 J
pH (lab) (SU)	NA	7.4 J	7.2 J	7.4 J	7.3 J	7 J	6.8 J	7.2 J
Sulfate	NA	490	430	5.6	1 U	2.1	0.9 J	450 J
Total Dissolved Solids (TDS)	NA	1000 J	1000	1000	960	1200	1000	1000
Assessment Monitoring - EPA Appendix IV Constituents (mg/L)								
Antimony, Total	0.006	0.00044 J	0.00063 J	0.00042 J	0.002 U	0.00048 J	0.002 U	0.002 U
Arsenic, Total	0.01	0.0024	0.0039	0.11	0.1	0.12	0.1 J	0.004 J
Barium, Total	2	0.068	0.092	0.54	0.53	0.57	0.43 J	0.092 J
Beryllium, Total	0.004	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cadmium, Total	0.005	0.00029 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium, Total	0.1	0.002 U	0.002 U	0.0069	0.002 U	0.0048	0.0029	0.002 U
Cobalt, Total	0.006	0.00051	0.0014	0.0058	0.0039	0.0077	0.012 J	0.0014 J
Fluoride	4	1.6	1.5 J-	0.36 J+	0.64 J	0.2 J+	0.41 J	1.5 J
Lead, Total	0.015	0.00024 J	0.00018 J	0.0044	0.00039 J	0.0027	0.0014 J	0.00021 J
Lithium, Total	0.04	0.03	0.035	0.005 U	0.005 U	0.005 U	0.005 UJ	0.035 J
Mercury, Total	0.002	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum, Total	0.1	0.13	0.15	0.024	0.018	0.023	0.02 J	0.15 J
Selenium, Total	0.05	0.0024 J	0.005 U	0.005 U	0.0019 J	0.0018 J	0.0017 J	0.005 U
Thallium, Total	0.002	0.00029 J	0.00015 J	0.001 U	0.001 U	0.001 U	0.001 U	0.00031 J
Radiological (pCi/L)								
Radium-226	NA	0.405 U ± 0.289	0.571 U ± 0.202	0.679 ± 0.33	0.718 J ± 0.21	0.379 U ± 0.293	0.789 J ± 0.272	0.612 U ± 0.193
Radium-228	NA	0.0701 U ± 0.329	2.24 UJ ± 0.622	0.922 ± 0.427	2.49 UJ ± 0.574	0.0702 U ± 0.397	2.09 UJ ± 0.65	1.21 UJ ± 0.466
Radium-226 & 228	NA	0.475 U ± 0.438	2.81 UJ ± 0.654	1.60 ± 0.54	3.21 UJ ± 0.611	0.449 U ± 0.493	2.88 UJ ± 0.705	1.82 UJ ± 0.504
Field Parameters								
Temperature (Deg C)	NA	16.79	17.52	17.21	10.45	17.35	15.36	17.52
Dissolved Oxygen, Field (mg/L)	NA	0.15	0.11	4.09	5.94	2.48	0.15	0.11
Conductivity, Field (mS/cm)	NA	1.32	1.2941	1.8187	1.6577	2.0564	1.79	1.29
ORP, Field (mv)	NA	26.6	-33.9	-30.2	-92.6	-58.8	-123.1	-33.9
Turbidity, Field (NTU)	NA	0.84	4.83	123.41	160.13	113.5	205.18	4.83
pH, Field (pH units)	NA	7.29	6.92	7.43	7.12	6.98	6.72	6.92

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TABLE II
SUMMARY OF ANALYTICAL RESULTS
 F.B. CULLEY GENERATING STATION
 EAST ASH POND
 NEWBURGH, INDIANA

Location Group Location Name Sample Name Sample Date Lab Sample ID	Action Level Maximum Contaminant Level	Nature & Extent							
		CCR-AP-5I CCR-AP-5I-20210512 05/12/2021 180-121710-13	CCR-AP-5I CCR-AP-5I-20211122 11/22/2021 180-130433-5	CCR-AP-6I CCR-AP-6I-20210513 05/13/2021 180-121710-7	CCR-AP-6I CCR-AP-6I-20211122 11/22/2021 180-130433-1	CCR-AP-8I CCR-AP-8I-20210513 05/13/2021 180-121710-9	CCR-AP-8I CCR-AP-8I-20211122 11/22/2021 180-130433-12	CCR-AP-11 CCR-AP-11-20210512 05/12/2021 180-121710-11	CCR-AP-11 CCR-AP-11-20211122 11/22/2021 180-130433-6
Detection Monitoring - EPA Appendix III Constituents (mg/L)									
Boron, Total	NA	13	5.4	20	19	13	13	0.39 J+	0.28 J+
Calcium, Total	NA	260	77	560	590	430	450	60	130
Chloride	NA	250	120 J-	170	190 J-	430	420 J-	1.2	23 J-
Fluoride	4	0.4 J+	0.71 J	0.14 U	0.18 J	0.27 J+	0.3 J	0.73	0.43 J
pH (lab) (SU)	NA	7.1 J	7.4 J	7.3 J	7.2 J	6.8 J	6.8 J	7 J	6.5 J
Sulfate	NA	650	380	1500	1500	990	1100	110	460
Total Dissolved Solids (TDS)	NA	1500 J	1200	2600	2600	2400	2400	260	890
Assessment Monitoring - EPA Appendix IV Constituents (mg/L)									
Antimony, Total	0.006	0.00047 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.00045 J
Arsenic, Total	0.01	0.0024	0.0024	0.0042	0.0034	0.0023	0.0026	0.0012	0.057
Barium, Total	2	0.088	0.088	0.034	0.029	0.22	0.24	0.026	0.24
Beryllium, Total	0.004	0.00031 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00041 J
Cadmium, Total	0.005	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.00023 J
Chromium, Total	0.1	0.0062	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.0065
Cobalt, Total	0.006	0.0037	0.00077	0.002	0.0018	0.0005 U	0.0005 U	0.00046 J	0.056
Fluoride	4	0.4 J+	0.71 J	0.14 U	0.18 J	0.27 J+	0.3 J	0.73	0.43 J
Lead, Total	0.015	0.0038	0.0017	0.00032 J	0.001 U	0.001 U	0.001 U	0.00068 J	0.0053
Lithium, Total	0.04	0.042	0.027	0.05	0.05	0.42	0.4	0.005 U	0.0074
Mercury, Total	0.002	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Molybdenum, Total	0.1	0.0016 J	0.002 J	0.8	0.75	0.32	0.32	0.002 J	0.00071 J
Selenium, Total	0.05	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.002 J	0.005 U
Thallium, Total	0.002	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Radiological (pCi/L)									
Radium-226	NA	1.04 ± 0.55	0.932 J ± 0.305	0.272 U ± 0.198	0.364 U ± 0.17	1.27 ± 0.357	1.34 ± 0.285	0.0194 U ± 0.207	0.528 U ± 0.291
Radium-228	NA	0.853 U ± 0.685	1.91 UJ ± 0.746	0.499 ± 0.316	2.37 UJ ± 0.593	1.61 ± 0.467	2.41 UJ ± 0.576	-0.0103 U ± 0.334	2.14 UJ ± 0.866
Radium-226 & 228	NA	1.90 J ± 0.878	2.84 UJ ± 0.806	0.771 J ± 0.373	2.74 UJ ± 0.617	2.88 ± 0.588	3.74 UJ ± 0.643	0.0194 U ± 0.393	2.66 UJ ± 0.914
Field Parameters									
Temperature (Deg C)	NA	17.13	13.27	18.16	17.15	17.23	16.34	17.12	13.25
Dissolved Oxygen, Field (mg/L)	NA	0.2	1.67	0.33	0.35	0.18	0.22	0.18	0.66
Conductivity, Field (mS/cm)	NA	2.3607	1.4994	2.8669	2.9262	3.3961	3.4297	1.0972	1.32
ORP, Field (mv)	NA	-63.2	-104.8	-14	-8.1	-123.2	-81.5	-126.8	-72.9
Turbidity, Field (NTU)	NA	243.03	42.63	3.47	0	0	0	239.51	429.13
pH, Field (pH units)	NA	6.88	7.23	7.1	6.92	6.88	6.67	7.56	6.46

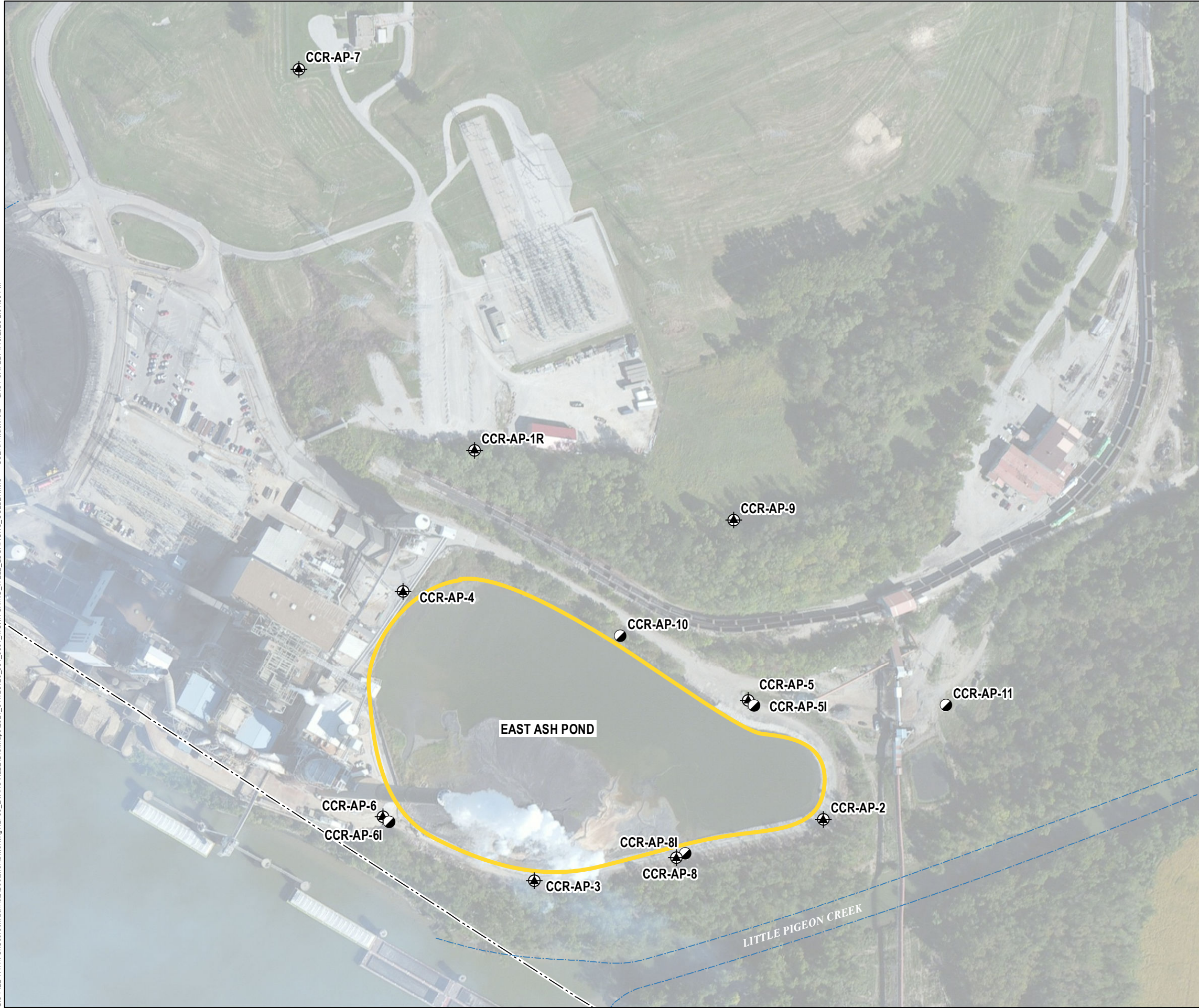
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
- USEPA. 2016. Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities. July 26. 40 CFR Part 257.
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FIGURES

GIS FILE PATH: C:\Users\hwachholz\Documents\working\42796_EVANSVILLE\GIS\Maps\2021_011129420_001_0001_MONITORING_WELL_LOCATIONS_CULLEY.mxd — USER: hwachholz — LAST SAVED: 1/10/2020 2:01:30 PM

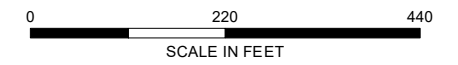


LEGEND

-  MONITORING WELL
-  NATURE AND EXTENT MONITORING WELL
-  APPROXIMATE UNIT BOUNDARY
-  APPROXIMATE PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS ARE APPROXIMATE
2. CCR COAL COMBUSTION RESIDUALS
3. AERIAL IMAGERY SOURCE: ESRI



HALEY ALDRICH SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
F.B. CULLEY GENERATING STATION
NEWBURGH, INDIANA

**GROUNDWATER MONITORING
WELL LOCATIONS**

JANUARY 2022

FIGURE 1