Luminant

Illinois Power Generating Company
1500 Eastport Plaza Dr.
Collinsville, IL 62234

January 28, 2022

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: Coffeen Ash Pond No. 1 (IEPA ID: W1350150004-01) Annual Consolidated Report

Dear Mr. LeCrone:

In accordance with 35 IAC § 845.550, Illinois Power Generating Company (IPGC) is submitting the annual consolidated report for the Coffeen Ash Pond No. 1 (IEPA ID: W1350150004-01), as enclosed.

Sincerely,

Dianna Tickner
Director Decommissioning & Demolition

Enclosures

Annual Consolidated Report
Illinois Power Generating Company
Coffeen Power Plant
Ash Pond No. 1; IEPA **ID: W1350150004-01**

In accordance with 35 IAC § 845.550, Illinois Power Generating Company (IPGC) has prepared the annual consolidated report. The report is provided in three sections as follows:

<u>Section 1</u>
1) Annual CCR fugitive dust control report (Section 845.500(c))

<u>Section 2</u>
2) Annual inspection report (Section 845.540(b)), including:

A) Annual hazard potential classification certification

B) Annual structural stability assessment certification

C) Annual safety factor assessment certification

D) Inflow design flood control system plan certification

It should be noted that the drawings and attachments of the certification report were included in the operating permit application submittal.

<u>Section 3</u>
3) Annual Groundwater Monitoring and Corrective Action Report (Section 845.610(e))

Section 1

Annual CCR Fugitive Dust Control Report

Annual CCR Fugitive Dust Control Report

for

Coffeen Power Station

Illinois Power Generating Company

Coffeen Power Plant
134 CIPS Lane
Coffeen, IL 62017

November 2021

Reporting Year: 4th Quarter 2020 through 3rd Quarter 2021

Approved by: ______________________ Director, Decommissioning and Demolition

Name Title

This Annual CCR Fugitive Dust Control Report has been prepared for the Coffeen Power Station in accordance with 40 CFR 257.80(c) and 35 I.A.C. 845.500. Section 1 provides a description of the actions taken to control CCR fugitive dust at the facility during the reporting year, including a summary of any corrective measures taken. Section 2 provides a record of citizen complaints received concerning CCR fugitive dust at the facility during the reporting year, including a summary of any corrective measures taken.

Section 1 Actions Taken to Control CCR Fugitive Dust

In accordance with the Coffeen Power Station CCR Fugitive Dust Control Plan (Plan), the following measures were used to control CCR fugitive dust from becoming airborne at the facility during the reporting year:

CCR Activity	Actions Taken to Control CCR Fugitive Dust
Management of CCR in the facility's CCR units	CCR to be emplaced in the landfill is conditioned before emplacement.
	Wet management of CCR bottom ash and flue gas desulfurization materials in CCR surface impoundments.
	Water areas of exposed CCR in CCR units, as necessary.
	Naturally occurring grass vegetation in areas of exposed CCR in CCR surface impoundments.
Handling of CCR at the facility	CCR bottom ash removed from CCR surface impoundments and loaded into trucks for transport remains conditioned during handling.
	CCR fly ash to be emplaced in the landfill is conditioned before emplacement.
	Load CCR transport trucks from the CCR fly ash silo using a chute with a sock (skirt).
	Perform housekeeping, as necessary, in the fly ash loading area.

CCR Activity	Actions Taken to Control CCR Fugitive Dust
Handling of CCR at the facility	CCR to be emplaced in the landfill is conditioned before emplacement.
	Cover or enclose trucks used to transport CCR fly ash.
	Limit the speed of vehicles to no more than 15 mph on facility roads.
Transportation of CCR at the facility	Cover or enclose trucks used to transport CCR other than fly ash, as necessary.
	Sweep or rinse off the outside of the trucks transporting CCR, as necessary.
	Remove CCR, as necessary, deposited on facility road surfaces during transport.
	Water CCR haul roads, including landfill roads, as necessary.

Based on a review of the Plan and inspections associated with CCR fugitive dust control performed in the reporting year, the control measures identified in the Plan as implemented at the facility effectively minimized CCR from becoming airborne at the facility. No revisions or additions to control measures identified in the Plan were needed.

No material changes occurred in the reporting year in site conditions potentially resulting in CCR fugitive dust becoming airborne at the facility that warrant an amendment of the Plan.

Section 2 Record of Citizen Complaints

No citizen complaints were received regarding CCR fugitive dust at Coffeen Power Station in the reporting year.

Section 2

Annual Inspection Report (Section 845.540(b)), including:

A) Annual Hazard Potential Classification Certification, if applicable (Section 845.440)

B) Annual Structural Stability Assessment Certification, if applicable (Section 845.450)

C) Annual Safety Factor Assessment Certification, if applicable (Section 845.460)

D) Inflow Design Flood Control System Plan Certification (Section 845.510(c))

ANNUAL INSPECTION BY A QUALIFIED PROFESSIONAL ENGINEER 35 IAC § 845.540
(b)(1) The CCR surface impoundment must be inspected on an annual basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR surface impoundment is consistent with recognized and generally accepted engineering standards. The inspection must, at a minimum, include: A) A review of available information regarding the status and condition of the CCR surface impoundment, including files available in the operating record (e.g., CCR surface impoundment design and construction information required by Sections 845.220(a)(1) and 845.230(d)(2)(A), previous structural stability assessments required under Section 845.450, the results of inspections by a qualified person, and results of previous annual inspections); B) A visual inspection of the CCR surface impoundment to identify signs of distress or malfunction of the CCR surface impoundment and appurtenant structures; C) A visual inspection of any hydraulic structures underlying the base of the CCR surface impoundment or passing through the dike of the CCR surface impoundment for structural integrity and continued safe and reliable operation; D) The annual hazard potential classification certification, if applicable (see Section 845.440); E) The annual structural stability assessment certification, if applicable (see Section 845.450); F) The annual safety factor assessment certification, if applicable (see Section 845.460); and G) The inflow design flood control system plan certification (see Section 845.510(c)).

SITE INFORMATION	
Site Name / Address / Date of Inspection	Coffeen Power Station Montgomery County, Illinois 62017 10/18/2021
Operator Name / Address	Luminant Generation Company LLC 6555 Sierra Drive, Irving, TX 75039
CCR unit	Ash Pond No. 1

INSPECTION REPORT 35 IAC § 845.540 Date of Inspection 10/18/2021	
(b)(1)(D) The annual hazard potential classification certification, if applicable (see Section 845.440).	Based on a review of the CCR unit's annual hazard potential classification, the unit is classified as a Class II CCR surface impoundment.
(b)(2)(A) Any changes in geometry of the structure since the previous annual inspection.	Based on a review of the CCR unit's records and visual observation during the on-site inspection, no changes in geometry of the structure have taken place since the previous annual inspection.
(b)(2)(B) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection	See the attached.
b)(2)(C) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;	See the attached.
b)(2)(D) The storage capacity of the impounding structure at the time of the inspection	Approximately 900 acre-feet – Coffeen Power Station closed in early 2020.
(b)(2)(E) The approximate volume of the impounded water and CCR contained in the unit at the time of the inspection.	Approximately 800 acre-feet – Coffeen Power Station was closed in early 2020.
(b)(2)(F) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit	Based on a review of the CCR unit's records and visual observation during the on-site inspection, there was no appearance of an actual or potential structural weakness of the CCR unit, nor an existing condition that is disrupting or would disrupt the operation and safety of the unit.

INSPECTION REPORT 35 IAC § 845.540 Date of Inspection 10/18/2021	
(b)(2)(G) Any other changes that may have affected the stability or operation of the impounding structure since the previous annual inspection.	Based on a review of the CCR unit's records and visual observation during the on-site inspection, no other changes which may have affected the stability or operation of the CCR unit have taken place since the previous annual inspection.
(b)(1)(G) The inflow design flood control system plan certification (see Section 845.510(c))	Based on a review of the CCR unit's records, the CCR unit is designed, operated, and maintained to adequately manage the flow from the CCR impoundment and control the peak discharge from the inflow design flood.

35 IAC § 845.540 - Annual inspection by a qualified professional engineer.

I, James Knutelski, P.E., certify under penalty of law that the information submitted in this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Illinois. The information submitted, is to the best of my knowledge and belief, true, accurate and complete. Based on the annual inspection, the design, construction, operation, and maintenance of the CCR Unit is consistent with recognized and generally accepted good engineering standards. Based on a review of the records for the CCR unit, the hazard potential classification was conducted in accordance with the requirements of Section 845.440 and the Safety Factor Assessment was conducted in accordance with the requirements of Section 845.460.

James Knutelski, PE
Illinois PE No. 062-054206, Expires: 11/30/2023
Date: 01/05/2022

Site Name:	Coffeen Power Station
CCR Unit:	Ash Pond No. 1

35 IAC § 845.540 (b)(2)(B)		
Instrument ID #	Type	Maximum recorded reading since previous annual inspection (ft)
P000	Piezometer	618.31'
P002	Piezometer	614.29'
P003	Piezometer	625.84'
P004	Piezometer	622.38'
P005	Piezometer	654.50'
P006	Piezometer	611.64'
P007	Piezometer	615.80'
P008	Piezometer	624.77'

35 IAC § 845.540 (b)(2)(C)						
	Approximate Depth / Elevation					
Since previous inspection:	Elevation (ft)			Depth (ft)		
	Minimum	Present	Maximum	Minimum	Present	Maximum
Impounded Water		638			2	
CCR	636		648	42		54

Geosyntec consultants

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October 11, 2021

Illinois Power Generating Company
134 Cips Lane
Coffeen, Illinois 62017

Subject: USEPA CCR Rule and IEPA Part 845 Rule Applicability Cross-Reference
2021 USEPA CCR Rule Periodic Certification Report
Ash Pond No. 1, Coffeen Power Plant, Coffeen, Illinois

At the request of Illinois Power Generating Company (IPGC), Geosyntec Consultants (Geosyntec) has prepared this letter to document how the attached 2021 United States Environmental Protection Agency (USEPA) CCR Rule Periodic Certification Report (Report) was prepared in accordance with both the Federal USEPA CCR Rule[1] and the state-specific Illinois Environmental Protection Agency (IEPA) Part 845 Rule[2]. Specific sections of the report and the applicable sections of the USEPA CCR Rule and Illinois Part 845 Rule are cross-referenced in **Table 1**. A certification from a Qualified Professional Engineer for each of the CCR Rule sections listed in **Table 1** is provided in Section 9 of the attached Report. This certification statement is also applicable to each section of the Part 845 Rule listed in **Table 1.**

Table 1 – USEPA CCR Rule and Illinois Part 845 Rule Cross-Reference

Report Section	USEPA CCR Rule		Illinois Part 845 Rule	
3	§257.73 (a)(2)	Hazard Potential Classification	845.440	Hazard Potential Classification Assessment[3]
4	§257.73 (c)(1)	History of Construction	845.220(a)	Design and Construction Plans (Construction History)
5	§257.73 (d)(1)	Structural Stability Assessment	845.450 (a) and (c)	Structural Stability Assessment
6	§257.73 (e)(1)	Safety Factor Assessment	845.460 (a-b)	Safety Factor Assessment
7	§257.82 (a)(1-3)	Adequacy of Inflow Design Control System Plan	845.510(a), (c)(1), (c)(3)	Hydrologic and Hydraulic Capacity Requirements / Inflow Design Flood Control System Plan
	§257.82 (b)	Discharge from CCR Unit	845.510(b)	Discharge from CCR Surface Impoundment

[1] United Stated Environmental Protection Agency, 2015. *40 CFR Parts 257 and 261, Hazardous and Solid Waste Management System, Disposal of Coal Combustion Residuals from Electric Utilities, Final Rule.*
[2] State of Illinois, Joint Committee on Administrative Rule, Administrative Code (2021). *Title 35: Environmental Protection, Subtitle G: Waste Disposal, Chapter I: Pollution Control Board, Subchapter j: Coal Combustion Waste Surface Impoundment, Part 845 Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments.*
[3] "Significant" and "High" hazard, per the CCR Rule[1], are equivalent to Class II and Class I hazard potential, respectively, per Part 845[2].

CLOSING

This letter has been prepared to demonstrate that the content and Qualified Professional Engineer Certification of the 2021 Periodic USEPA CCR Rule Certification Report fulfills the corresponding requirements of Part 845 of Illinois Administrative Code listed in **Table 1**.

Sincerely,

Lucas P. Carr, P.E.
Senior Engineer

John Seymour, P.E.
Senior Principal

2021 USEPA CCR RULE PERODIC CERTIFICATION REPORT
§257.73(a)(2), (c), (d[1]), (e) and §257.82
ASH POND NO. 1
Coffeen Power Plant
Coffeen, Illinois

Submitted to

Illinois Power Generating Company

134 Cips Lane
Coffeen, Illinois 62017

Submitted by

Geosyntec consultants

engineers | scientists | innovators

1 McBride and Son Center Drive, Suite 202
Chesterfield, Missouri 63005

October 11, 2021

[1] Except for §257.73(d)(1)(vi).

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EXECUTIVE SUMMARY

This Periodic United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) Rule [1] certification report (Periodic Certification Report) for Ash Pond No. 1 (AP1)[2] at the Coffeen Power Plant, also known as the Coffeen Power Station (COF), has been prepared in accordance with Rule 40, Code of Federal Regulations (CFR) §257. herein referred to as the "CCR Rule" [1]. The CCR Rule requires that initial certifications for existing CCR surface impoundment, completed in 2016 and subsequently posted on the Illinois Power Generating Company (IPGC) CCR Website ([2], [3], [4], [5], [6], [7]) be updated on a five-year basis.

The initial certification reports developed in 2016 and 2017 were independently reviewed by Geosyntec ([2], [8], [3], [4], [9], [5], [6], [7]). Additionally, field observations, interviews with plant staff, and evaluations were performed to compare conditions in 2021 at AP1 relative to the 2016 and 2017 initial certifications. These tasks determined that updates are not required for the Initial Hazard Potential Classification and Initial Safety Factor Assessment. However, due to changes at the site and technical review comments, updates were required and were performed for the:

- History of Construction Report,
- Initial Structural Stability Assessment,
- Initial Inflow Design Flood Control System Plan.

Geosyntec's evaluations of the initial certification reports and updated analyses identified that the AP1 meets all requirements for hazard potential classification, history of construction reporting, structural stability, safety factor assessment, and hydrologic and hydraulic control, with the exception of the structural integrity of hydraulic structures (§257.73(d)(1)(vi)), which was certified by others. **Table 1** provides a summary of the initial 2016 certifications and the updated 2021 periodic certifications.

[2] AP1 is also referred to as ID Number W1350150004-01, Ash Pond 1 by the Illinois Environmental Protection Agency (IEPA); CCR unit ID 101 by IPGC; and IL50722 by the National Inventory of Dams (NID) maintained by the Illinois Department of Natural Resources (IDNR). Within this document it is referred to as API.

Table 1 – Periodic Certification Summary

Section	CCR Rule Reference	Requirement Summary	2016 Initial Certification		2021 Periodic Certification	
			Requirement Met?	Comments	Requirement Met?	Comments
Hazard Potential Classification						
3	§257.73(a)(2)	Document hazard potential classification	Yes	Impoundment was determined to have a Significant hazard potential classification [2].	Yes	Updates were not determined to be necessary. Geosyntec recommends retaining the Significant hazard potential classification.
History of Construction						
4	§257.73(c)(1)	Compile a history of construction	Yes	A History of Construction report was prepared for Ash Pond No. 1 and Ash Pond No. 2, in addition to other CCR surface impoundments at COF [4].	Yes	A letter listing updates to the History of Construction Report is provided in **Attachment C**.
Structural Stability Assessment						
5	§257.73(d)(1)(i)	Stable foundations and abutments	Yes	Foundations was found to be stable. Abutments were not present [9].	Yes	No changes were identified that may affect this requirement.
	§257.73(d)(1)(ii)	Adequate slope protection	Yes	Slope protection was adequate [9].	Yes	No changes were identified that may affect this requirement.
	§257.73(d)(1)(iii)	Sufficiency of dike compaction	Yes	Dikes compaction was sufficient for expected ranges in loading conditions [9] .	Yes	No changes were identified that may affect this requirement.
	§257.73(d)(1)(iv)	Presence and condition of slope vegetation	Yes	Vegetation was present on interior and exterior slopes and was maintained [9].	Yes	No changes were identified that may affect this requirement.
	§257.73(d)(1)(v)(A) and (B)	Adequacy of spillway design and management	Yes	Spillways were adequately designed and constructed and were expected to adequately manage flow during 1,000-year flood [9].	Yes	Spillways were found to be adequately designed and constructed and are expected to adequately manger flow during the 1,00-year flood, after performing updated hydrologic and hydraulic analyses.
	§257.73(d)(1)(vi)	Structural integrity of hydraulic structures	No	Requirement could not be certified due to inability to complete a CCTV inspection of the recycle intake pipe due to high sustained pipe flows needed for plant operations. Inspection of this pipe was recommended as soon as feasible [9].	Periodic certification of §257.73(d)(1)(vi) was independently by Luminant in 2020 [10]	
	§257.73(d)(1)(vii)	Stability of downstream slopes inundated by water body.	Not Applicable	Inundation of exterior slopes were not expected. This requirement was not applicable [9] .	Yes	No changes were identified that may affect this requirement.
Safety Factor Assessment						
6	§257.73(e)(1)(i)	Maximum storage pool safety factor must be at least 1.50	Yes	Safety factors were calculated to be 1.50 and higher [9] .	Yes	No changes were identified that may affect this requirement.
	§257.73(e)(1)(ii)	Maximum surcharge pool safety factor must be at least 1.40	Yes	Safety factors were calculated to be 1.49 and higher [9].	Yes	No changes were identified that may affect this requirement.
	§257.73(e)(1)(iii)	Seismic safety factor must be at least 1.00	Yes	Safety factors were calculated to be 1.03 and higher [9].	Yes	No changes were identified that may affect this requirement.
	§257.73(e)(1)(iv)	For dike construction of soils that have susceptible to liquefaction, safety factor must be at least 1.20	Not Applicable	Dike soils were not susceptible to liquefaction. This requirement was not applicable [9].	Yes	No changes were identified that may affect this requirement.
Inflow Design Flood Control System Plan						
7	§257.82(a)(1), (2), (3)	Adequacy of inflow design control system plan.	Yes	Flood control system adequately managed inflow and peak discharge during the 1,000-year, 24-hour, Inflow Design Flood	Yes	The flood control system was found to adequately manage inflow and peak discharge during the 1,000-year, 24-hour Inflow Design Flood, after performing updated hydrologic and hydraulic analyses.
	§257.82(b)	Discharge from CCR Unit	Yes	Discharge from the CCR Unit into Waters of the United States were not expected during normal or 1,000-year, 24-hour Inflow Design Flood conditions [9].	Yes	Discharge from the CCR Unit into Waters of the United States were not expected during normal or 1,000-year, 24-hour Inflow Design Flood conditions, after performing updated hydrologic and hydraulic analyses.

SECTION 1

INTRODUCTION AND BACKGROUND

This Periodic United States Environmental Protection Agency (USEPA) Coal Combustion Residual (CCR) Rule [1] Certification Report was prepared by Geosyntec Consultants (Geosyntec) for Illinois Power Generating Company (IPGC) to document the re-certification of the Ash Pond No. 1 (AP1) at the Coffeen Power Plant (CPP), also known as the Coffeen Power Station (COF), located at 134 Cips Lane in Coffeen, Illinois, 62017. The location of CPP is provided in **Figure 1**, and a site plan showing the location of AP1, among other closed and open CCR units and non-CCR surface impoundments, is provided in **Figure 2**.

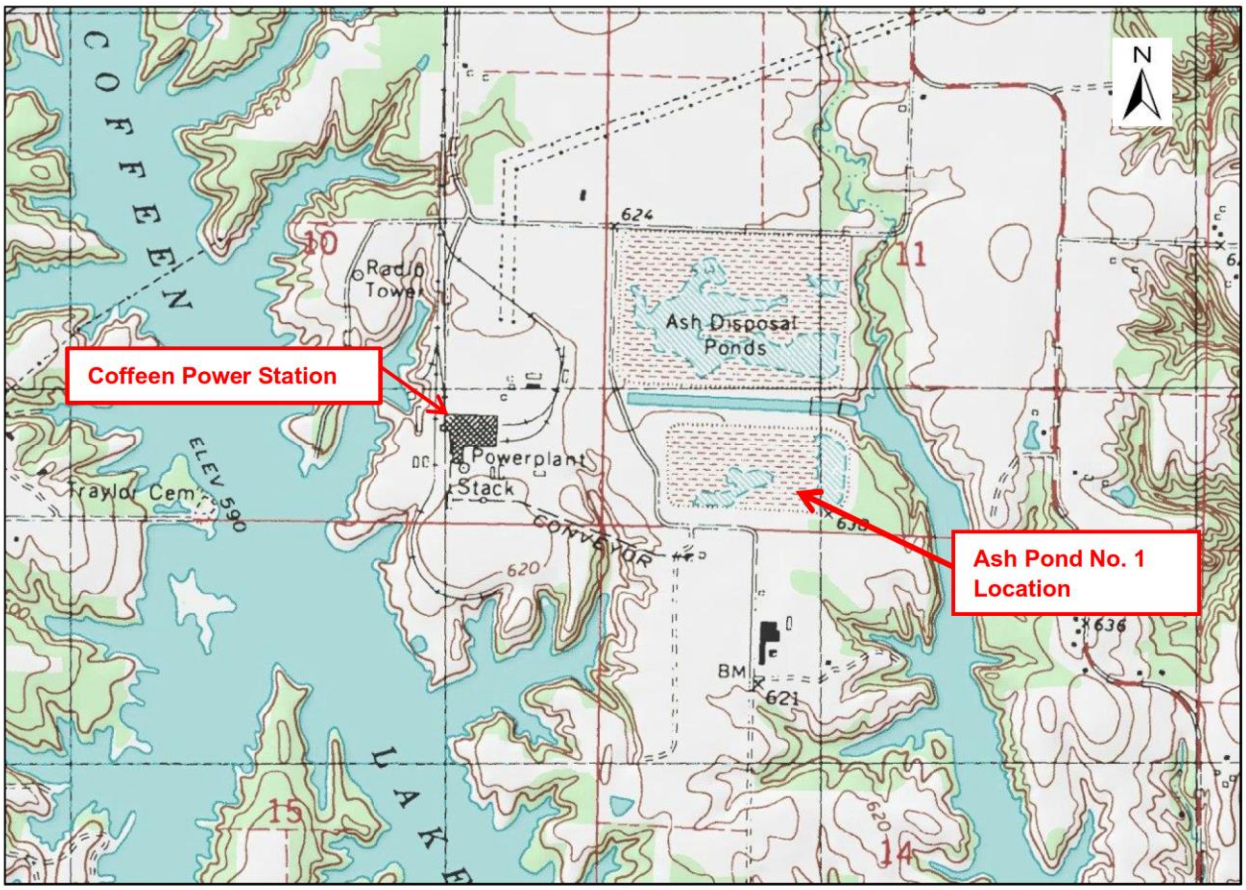


Figure 1 – Site Location Map (from AECOM, 2016)

Figure 2 – Site Plan (modified from AECOM, 2016)

1.1 AP1 Description

CPP was retired in 2019. Prior to retirement, three active CCR surface impoundments: the GMF Pond, the GMF Gypsum Recycle Pond, and AP1 and one CCR landfill were used for managing CCRs generated at CPP. AP1 has a Significant hazard potential, based on the initial hazard potential classification assessment performed by Stantec in 2016 in accordance with §257.73(a)(2) ([2], [9]).

AP1 formerly served as the primary wet impoundment basin for bottom ash produced at CPP. AP1 was utilized as a flow-through structure, where outflow was ultimately discharged to Coffeen

Lake, until approximately 1981, when the pond was modified by abandoning the penetrating discharge pipe in the northeast corner of the impoundment, adding a recycle intake structure in the northwest corner, removing some of the accumulated bottom ash, and regrading the remainder of the bottom ash to form a new impoundment flow.

When CPP was operational, outflow from AP1 flowed into the recycle intake structure (outlet pipe) and was transferred back to CPP for use as process water. An approximately 1,300-ft long interior dike creates an interior channel leading to the recycle intake structure. AP1 was operated as a closed-loop hydraulic system as outflow was transmitted back to CPP during normal operational conditions. Bottom ash was mechanically excavated from the southwest corner of AP1 for offsite beneficial use [9].

Sluiced bottom ash from CPP entered AP1 through three steel sluice pipes, which discharged along the western embankment, on the south side of the interior dike. Additional clear water inflow from CPP entered AP1 through two pipes, which discharged at a concrete structure approximately 120 feet north of the sluice pipes, and a 12-in. diameter iron pipe located at the northwest corner of the embankment. Outflow water was transmitted back to CPP via a concrete riser recycle intake structure and 48-in. diameter steel recycle intake pipe located at the northwest corner of AP1, which function as the primary outflow pipe for AP1. The pool level is controlled by a steel spillway gate, which allowed for pool levels ranging from El. 624.5 ft to 631.0 ft[3] However, a berm was constructed with bottom ash around the inlet to the spillway after plant closure in 2019 to provide freeze protection for the gate while still allowing overflow during higher pool levels. A secondary 24-in. diameter pipe, which starts as a corrugated metal pipe (CMP) and transitions to steel, is connected to the 48-in. diameter steel recycle intake pipe within the embankment, and was used to discharge excess flow into the process water flume during upset conditions and act as an overflow pipe., but the pipe did not transmit outflow during [9].

The surface area of AP1 is approximately 26.2 acres. The embankment portion of AP1 is comprised of a ring dike with a total length of approximately 4,350 ft and has a maximum height above exterior grade of 30 ft. The embankment was constructed as a homogenous earthen structure with well-compacted clayey fill. An approximately 570-ft long, Hoesch 2500k steel sheet pile wall, is located at the toe of the northeast corner of AP1, to separate the embankment from the plant process water flume. The process water flume was used to transmit plant cooling water back to Coffeen Lake over a series of weirs. The water level in the process water flume was surveyed to be approximately El. 600 ft in 2020, after plant closure [11]. The sheet pile wall was installed around 2000 and driven approximately 13 feet into the foundation soils and has a maximum exposed height of 13.8 feet, for a total pile length of approximately 27 ft. Downstream dike slopes, outside of the sheet pile wall area, range from approximately 1.4H:1V (horizontal to vertical) to 3H:1V and generally are covered in vegetation. Interior embankment slopes are partially covered in bottom ash, vegetation, or gravel and exhibit an approximately 2H:1V orientation. The

[3] Assumed to be the NGVD29 datum, based on the date of the design drawings, but all other elevations in this report are in the North American Vertical Datum of 1988 (NAVD88), unless otherwise noted.

embankment crest width varies from approximately 14 to 22 feet. An engineered liner system is not present beneath AP1 [9].

The normal maximum normal operating pool of AP1 was 631.0 ft when the plant was operational, as controlled by the recycle intake structure and emergency outflow pipes. The maximum normal operating pool may be different now due to the bottom ash berm placed around the recycle intake structure. The minimum crest elevation is 635.0 ft [9].

Initial certifications for AP1 for Hazard Potential Classification (§257.73(a)(2)), History of Construction (§257.73(c)), Structural Stability Assessment (§257.73(d)), Safety Factor Assessment (§257.73(e)(1)), and Inflow Design Flood Control System Plan (§257.82) were completed by Stantec and AECOM in 2016 and 2017 and subsequently posted to IPGC's CCR Website ([2], [3], [4], [5], [6], [7]). Additional documentation for the initial certifications included detailed operating record reports containing calculations and other information prepared for the hazard potential classification by Stantec [8] and for the structural stability assessment, safety factor assessment, and inflow design flood control system plan by AECOM [9]. These operating record reports were not posted to IPGC's CCR Website.

1.2 Report Objectives

The following objectives are associated with this report:

- Compare site conditions from 2015/2016 to site conditions in 2020/2021, and evaluate if updates are required to the:
    - §257.73(a)(2) Hazard Potential Classification [2];
    - §257.73(c) History of Construction [4];
    - §257.73(d) Structural Stability Assessment [5];
    - §257.73(e) Safety Factor Assessment [6], and/or
    - §257.82 Inflow Design Flood Control System Plan [7].
- Independently review the Hazard Potential Classification ([2], [8]), Structural Stability Assessment ([5], [9]), Safety Factor Assessment ([6], [9]), and Inflow Design Flood Control System Plan ([7], [9]) to evaluate whether updates are required based on technical considerations.
- The History of Construction report [4] was not independently reviewed for technical consideration, as this report contained historical information primarily developed prior to promulgation of the CCR Rule [1] for the CCR units at CPP, and did not include

calculations or other information used to certify performance and/or integrity of the impoundments under §257.73(a)(2)-(3), §257.73(c)-(e), or §257.82.

- Confirm that AP1 meets all of the requirements associated with §257.73(a)(2)-(3), (c), (d), (e), and §257.82, or, if AP1 does not meet any of the requirements, provide recommendations for compliance with that section of the CCR Rule [1].

SECTION 2

COMPARISION OF INITIAL AND PERIODIC SITE CONDITIONS

2.1 Overview

This section describes the comparison of conditions at AP1 between the start of the initial CCR certification program in 2015 and subsequent collection of periodic certification site data in 2020 and 2021.

2.2 Review of Annual Inspection Reports

Annual onsite inspections of AP1 were performed between 2016 and 2020 ([12], [13], [14], [15], [16]) and were certified by a licensed professional engineer in accordance with §257.83(b). Each inspection report stated the following information, relative to the previous inspection:

- A statement that no changes in geometry of the impounding structure were observed since the previous inspection;
- Information on maximum recorded instrumentation readings and water levels;
- Approximate volumes of impounded water and CCR at the time of inspection;
- A statement that no appearances of actual or potential structural weakness or other disruptive conditions were observed; and
- A statement that no other changes which may have affected the stability or operation of the impounding structure were observed.

In summary, the reports did not indicate any significant changes to AP1 between 2015 and 2020. No signs of instability, structural weakness, or changes which may have affected the operation or stability of the AP1 were noted in the inspection reports. The 2019 report [15] indicated that approximately 5 acre-feet (8,100 cubic yards) of CCR was removed from AP1 in 2019 for beneficial use, and the 2020 report noted that CPP had closed in 2019.

2.3 Review of Instrumentation Data

Eight piezometers, COF-P000, COF-P001, COF-P002, COF-P003, COF-P005, COF-P006, COF-P007, and COF-P008, are present at AP1 have been monitored monthly by CPP staff since August 29, 2015. Geosyntec reviewed the piezometer data collected through April 22, 2021 to evaluate if significant fluctuations, partially increases in phreatic levels, may have occurred between development of the initial structural stability and factor of safety certifications ([9], [5], [6]) and April 22, 2021. Available piezometer readings are plotted in **Attachment A**.

In summary, only minor changes in phreatic conditions were observed in the available piezometric data. Phreatic levels typically varied by one to five feet for most piezometers, with average levels remaining steady and not exhibiting any sustained trends of increase or decrease. These changes do not indicate significantly different phreatic levels than those utilized for the initial structural stability and factor of safety certifications ([9], [5], [6]).

2.4 Comparison of Initial to Periodic Surveys

The initial survey of AP1, conducted by Weaver Consultants (Weaver) in 2015 [17], was compared to the periodic survey of AP1, conducted by IngenAE, LLC (IngenAE) in 2020 [11], using AutoCAD Civil3D 2021 software. This comparison quantified changes in the volume of CCR placed within AP1 and considered volumetric changes above and below the starting water surface elevation (SWSE) used for the initial §257.82 inflow design flood control plan hydraulic analysis [7]. Potential changes to embankment geometry were also evaluated.

This comparison is presented in side-by-side views of each survey in **Drawing 1** and a plan view isopach map denoting changes in ground surface elevation in **Drawing 2**. A summary of the water elevations and changes in CCR volumes is provided in **Table 1**.

Table 2 – 2015 and 2020 Survey Comparison

Initial Surveyed Pool Elevation (ft)	629.9
Periodic Surveyed Pool Elevation (ft)	629.2
Initial §257.82 Starting Water Surface Elevation (SWSE) (ft)	631.0
Total Change in CCR Volume (CY)	+3,550
Change in CCR Volume Above SWSE (CY)	+2,877
Change in CCR Volume Below SWSE (CY)	+673

The comparison indicated that approximately 2,900 CY of CCR was placed in AP1 between 2015 and 2020 above the SWSE, thereby leading to a potential for the peak water surface elevation (PWSE) to increase slightly during the inflow design 1,000-year flood event. No significant changes to embankment geometry appeared to have occurred between the initial and periodic surveys, although changes in CCR disposal grades within the impoundment were noted, reportedly due to excavation of bottom ash for beneficial use.

2.5 Comparison of Initial to Periodic Aerial Photography

Initial aerial photographs of AP1 collected by Weaver in 2015 [17] were compared to periodic aerial photographs collected by IngenAE in 2020 [17] to visually evaluate if potential site changes (i.e., changes to the embankment, outlet structures, limits of CCR, other appurtenances) may have occurred. A comparison of the aerial photographs is provided in **Drawing 3**, and the following change was identified:

- The water level within the cooling water discharge channel leading to Coffeen Lake was observed to be lower (approximately El. 600 ft, as indicated by the 2020 survey [11]), likely due to closure of the CPP power plant and cessation of cooling water discharge.

2.6 Comparison of Initial to Periodic Site Visits

An initial site visit to AP1 was conducted by AECOM in 2015 and documented with a Site Visit Summary and corresponding photographs [18]. A periodic site visit was conducted by Geosyntec on May 28, 2021, with Mr. Lucas P. Carr, P.E. conducting the site visit. The site visit was intended to evaluate potential changes at the site since the initial certifications were prepared (i.e., modification to the embankment, outlet structures or other appurtenances, limits of CCR, maintenance programs, repairs), in addition to performing visual observations of AP1 to evaluate if the structural stability requirements (§257.73(d)) were still met. The site visit included walking the perimeter of AP1, visually observing conditions, recording field notes, and collecting photographs. The site visit is documented in a field observation form and photographic log provided in **Appendix A**. A summary of significant findings from the periodic site visit is provided below:

- Overall site maintenance appeared to have improved since 2015, with the exception of continued tree growth at the top of the sheet pile wall. Geosyntec recommended cutting the trees to IPGC staff as part of routine site maintenance activities.

- A berm of bottom ash was observed to have been installed around the inlet to the Recycle Intake Structure, reportedly to reduce freeze-thaw concerns.

- Seepage was observed at the east and south dikes of AP1. Geosyntec recommended to IPGC staff that the seepage be monitored during routine inspections.

- No signs of structural instability or erosion were observed during the site visit.

2.7 Interview with Power Plant Staff

An interview with Mr. John Romang of CPP was conducted by Mr. Lucas P. Carr, P.E. of Geosyntec on May 28, 2021. Mr. Romang had been employed, at the time of the interview, by CPP for approximately 20 years as the environmental and chemistry manager and supervisor. His responsibilities included general oversight and environmental compliance, including weekly impoundment inspections and identifying items requiring repair. The interview included a discussion of potential changes that may have occurred at AP1 since the development of the initial certifications ([2], [8], [3], [4], [9], [5], [6], [7]).

- Were any construction projects completed for AP1 between 2015 and 2021, and, if so, are design drawings and/or details available?

  - No construction projects were completed.

- Were there any changes to the purpose of AP1 between 2015 and 2017?

  - CPP was closed in October of 2019 and CCR placement stopped at that time.

  - Beneficial use contractors continued mining the AP1 for some time after closure, until CCR viable for beneficial use was no longer encountered.

- Were there any changes to the to the instrumentation program and/or physical instruments for AP1 between 2015 and 2021?

  - No known changes occurred.

- Were there any changes to spillways and/or diversion features for AP1 completed between 2015 and 2021?

  - The inlet to the Recycle Intake Structure was partially blocked with a berm of bottom ash in 2019, after plant closure, to provide freeze protection. Overflow into the Recycle Intake Structure will still occur at higher pool levels.

- Were there any changes to construction specifications, surveillance, maintenance, and repair procedures for AP1 between 2015 and 2021?

  - No known changes occurred.

- Were there any instances of dike and/or structural instability for AP1 between 2015 and 2021?

  - No known instance of dike and/or structural instability occurred.

SECTION 3

HAZARD POTENTIAL CLASSIFICATION - §257.73(A)(2)

3.1 Overview of Initial HPC

The Initial Hazard Potential Classification (Initial HPC) was prepared by Stantec Consulting Services, Inc. (Stantec) in 2016 ([2], [8]), following the requirements of §257.73(a)(2). The Initial HPC included the following information:

- Results of two breach analyses using HEC-HMC software [19], using pool levels estimated within AP1 during the Probable Maximum Precipitation (PMP) rainfall event, for breaches occurring at the northeast and northwest corners of AP1.
- Evaluating potential effects of flooding in multiple areas, including breach flood wave velocities, flood depths, and/or pool increases, for the following locations:
    - Coffeen Lake, including the eastern cove (east of AP1) and the main lake (west of AP1),
    - Coffeen Lake Dam,
    - Coffeen Power Plant, including the building and parking lots,
    - AP1 recycle pump house,
    - Coal yard maintenance buildings near AP1, and
    - Abandoned coal mining structures south of AP1.
- While a breach map is not included within the Initial HPC, it is included within the §257.73(a)(3) Initial Emergency Action Plan (Initial EmAP) [2].

The breach analysis concluded that a breach of AP1 would impact non-occupied CPP structures and lightly used access roads, where the populations at risk were considered transient and there would be no probable loss of life. Probable loss of life differentiates high hazard potential from significant hazard potential classification. The analysis found that a breach could impact several buildings with regular occupancy, but that the depth-velocity relationships of the breach wave did not constitute a probable loss of life. The Initial HPC concluded that neither breach would be likely to result in a probable loss of human life, although the breach could cause CCR to be released into the Coffeen Lake, thereby causing environmental damage. The Initial HPC therefore recommended a "Significant" hazard potential classification for AP1 [2].

3.2 Review of Initial HPC

Geosyntec performed a review of the Initial HPC ([2], [8]), in terms of technical approach, input parameters, and assessment of results. The review included the following tasks:

- Reviewing the rainfall depths utilized in the breach analysis for appropriateness,
- Reviewing the breach assessment inputs for appropriateness,
- Reviewing the selected HPC for appropriateness based on the results of the breach analysis, including flow velocities and depths,
- Reviewing the HPC vs. applicable requirements of the CCR Rule.

No significant technical issues were noted within the technical review; a detailed review (e.g., check) of the calculations was not performed.

3.3 Summary of Site Changes Affecting the Initial HPC

Geosyntec did not identify any changes at the stie that may affect the HPC. No new structures, infrastructure, frequently occupied facilities/areas, or waterways were present in the probable breach area indicated in the Initial EmAP [3]. Additionally, no significant changes to the topography in the probable breach were identified.

3.4 Periodic HPC

Geosyntec recommends retaining the “Significant” hazard potential classification for AP1, per §257.73(a)(2), based on the lack of site changes potentially affecting the Initial HPC occurring since the initial HPC was developed, as described in **Section 3.3**, and the lack of significant review comments, as described in **Section 3.2.** Updates to the Initial HPC reports ([2], [8]) are not recommended at this time.

SECTION 4

HISTORY OF CONSTRUCTION REPORT - §257.73(C)

4.1 Overview of Initial HoC

The Initial History of Construction report (Initial HoC) was prepared by AECOM in 2016 [4], following the requirements of §257.73(c), and included information on all CCR surface impoundments at CPP, including AP1, AP2, the GMF Pond, and the GMF Recycle Pond. The Initial HoC included the following information for each CCR surface impoundment:

- The name and address of the owner/operator,
- Location maps,
- Statements of purpose,
- The names and size of the surrounding watershed,
- A description of the foundation and abutment materials,
- A description of the dike materials,
- Approximate dates and stages of construction,
- Available design and engineering drawings,
- A summary of instrumentation,
- Area-capacity curves for AP1,
- Information on spillway structures,
- Construction specifications,
- Inspection and surveillance plans,
- Information on operational and maintenance procedures, and
- Information on past sloughs in the embankments for AP1.

4.2 Summary of Site Changes Affecting the Initial HoC

Several significant changes at the site were identified since development of the initial HoC and required updates to the HoC report. Each change is described below.

- A state identification number (ID) of W1350150004-01 was assigned to AP1 by the Illinois Environmental Protection Agency (IEPA).
- Electricity generation at the CPP ceased in 2019 and AP1 is no longer being used to actively store CCR generated by CPP as CCR is no longer being generated. Additionally, AP1 no longer receives regular process water inflows or outflows.
- A berm of bottom ash was constructed around the AP1 recycle intake structure.
- Revised area-curves and spillway design calculations for AP1 were prepared as part of the updated Periodic Inflow Design Flood Control System Plan, as described in **Section 6.3**.

A letter documenting changes to the HoC report is provided in **Attachment C**.

SECTION 5

STRUCTURAL STABILITY ASSESSMENT - §257.73(D)

5.1 Overview of Initial SSA

The Initial Structural Stability Assessment (Initial SSA) was prepared by AECOM in 2016 [9], following the requirements of §257.73(d)(1), and included the following evaluations:

- Stability of dike foundations, dike abutments, slope protection, dike compaction, and slope vegetation;
- Spillway stability including capacity, structural stability and integrity, including using closed-circuit television (CCTV) equipment to inspect the interior of the 24-in. diameter secondary overflow pipe;
- An evaluation of the effects of liquefaction in the foundation soils using a slope stability analysis considering post-cyclic softening in the foundation soils; and
- Downstream slope stability under sudden drawdown conditions for a downstream water body.

The Initial SSA concluded that AP1 met all structural stability requirements for §257.73(d)(1)(i)-(v) and (vii), but recommended inspection of the 48-in. diameter recycle intake pipe to verify that AP1 meets the stability and structural integrity criteria for hydraulic outfall structures, per §257.73(d)(1)(vi). An inspection of this spillway pipe was not performed in 2015 or 2016 due to high sustained flows in the pipe being critical for plant operations.

A periodic certification of the structural stability and structural integrity of hydraulic outfall structures (§257.73(d)(1)(vi)) was performed by Luminant in 2020 [10]. This certification independently determined that the criteria was met due to the condition of the spillway pipes and the soil types within the embankment. Therefore, the review and certification of §257.73(d)(1)(vi) was not included within the scope of this report.

The Initial SSA referenced the results of the Initial Structural Factor Assessment (Initial SFA) ([6], [9]), to demonstrate stability of the stability of foundations and abutments (§257.73(d)(1)(i)) and sufficiency of dike compaction (§257.73(d)(1)(iii)) portions of the SSA criteria. This included stating that slope stability analyses for slip surfaces passing through the foundation met or exceeded the criteria listed in §257.73(e)(1), for the stability of foundations and abutments. For the sufficiency of dike compaction, this included stating that slope stability analyses for slip surfaces passing through the dike also met or exceeded the §257.73(e)(1) criteria.

5.2 Review of Initial SSA

Geosyntec performed a review of the Initial SSA ([5], [9]) in terms of technical approach, calculation input parameters and methodology, recommendations, and completeness. The review included the following tasks:

- Reviewing photographs collected in 2015 and used to demonstrate compliance with §257.73(d)(1)(i)-(vii).
- Reviewing geotechnical calculations used to demonstrate the stability of foundations, per §257.73(d)(1)(i) and sufficiency of dike compaction, per §257.73(d)(1)(iii), in terms of supporting geotechnical investigation and testing data, input parameters, analysis methodology, selection of critical cross-sections, and loading conditions.
- Review of the methodology used to demonstrate that a downstream water body that could induce a sudden drawdown condition, per §257.73(d)(1)(vii), is not present.
- Reviewing the contents vs. the applicable CCR Rule requirements [1].

No significant technical issues were noted within the technical review of the Initial SSA. A detailed review (e.g., check) of the calculations was not performed.

5.3 Summary of Site Changes Affecting the Initial SSA

Several changes at the site that occurred after development of the Initial SSA were identified. These changes required updates to the Initial SSA and are described below:

- The Initial SSA utilized the results of the Initial Inflow Design Flood Control System Plan (IDF) to demonstrate compliance with the adequacy of spillway design and management (§257.73(d)(1)(v)(A)-(B)). The Initial IDF was subsequently updated to develop a Periodic IDF, based on site changes, as discussed in **Section 7**.

5.4 Periodic SSA

The Periodic IDF (**Section 7**) indicates that spillways are adequately designed and constructed to adequately manage flow during the 1,000-year flood, as the spillways can adequately manage flow during peak discharge from the 1,000-year storm event without overtopping of the embankments. Therefore, the requirements of §257.73(d)(1)(v)(A)-(B) are met for the Periodic SSA.

Certification of §257.73(d)(1)(vi) was independently performed by Luminant [10].

SECTION 6

SAFETY FACTOR ASSESSMENT - §257.73(E)(1)

6.1 Overview of Initial SFA

The Initial Safety Factor Assessment (Initial SFA) was prepared by AECOM in 2016 ([6], [9]), following the requirements of §257.73(e)(1). The Initial SFA included the following information:

- A geotechnical investigation program with in-situ and laboratory testing;
- An assessment of the potential for liquefaction in the dike and foundation soils;
- The development of five slope stability cross-sections for limit equilibrium stability analysis utilizing GeoStudio SLOPE/W software; and
- The analysis of each cross-section for maximum storage pool, maximum surcharge pool, and seismic loading conditions.
    - Liquefaction loading conditions were not evaluated as liquefaction-susceptible soil layers were not identified in the either the embankments or foundation soils.

The Initial SFA concluded that AP1 met all safety factor requirements, per §257.73(e), as all calculated safety factors were equal to or higher than the minimum required values.

6.2 Review of Initial SFA

Geosyntec performed a review of the Initial SFA ([6], [9]) in terms of technical approach, calculation input parameters and methodology, recommendations, and completeness. The review included the following tasks:

- Reviewing geotechnical calculations used to demonstrate the acceptable safety factors, per §257.73(e)(1), in terms of:
    - Completeness and adequacy of supporting geotechnical investigation and testing data;
    - Completeness and approach of liquefaction triggering assessments; and
    - Input parameters, analysis methodology, selection of critical cross-sections, and loading conditions utilized for slope stability analyses.
    - Phreatic conditions based on piezometric data collected between August 29, 2015 and April 22, 2021 as discussed in **Section 2.3**.

No significant technical issues were noted within the technical review. A detailed review (e.g., check) of the calculations was not performed.

6.3 Summary of Site Changes Affecting the Initial SFA

No changes since development of the Initial SFA were identified that would require updates to the Initial SFA ([6], [9]). For example, starting and peak water surface elevations from the updated Periodic IDF (**Section 7**) were both calculated to be less than level levels used within the slope stability analyses associated with the Initial SFA. Therefore, the water levels within the Initial SFA slope stability analyses are conservative and updates to the analyses were not recommended and were not performed.

SECTION 7

INFLOW DESIGN FLOOD CONROL SYSTEM PLAN - §257.82

7.1 Overview of Initial IDF

The Initial Inflow Design Flood Control System Plan (Initial IDF) was prepared by AECOM in 2016 ([7], [9]) following the requirements of §257.82. The Initial IDF included the following information:

- A hydraulic and hydrologic analysis, performed for the 1,000-year design flood event because of the hazard potential classification of "Significant", which corresponded to 9.13 inches of rainfall over a 24-hour period.
- The Initial IDF utilized a HydroCAD Version 10 model to evaluate spillway flows and pool level increases during the design flood, with a SWSE of 631.0 ft.

The Initial IDF concluded that AP1 met the requirements of §257.82, as the peak water surface estimated by the HydroCAD model was El. 632.0 ft, relative to the minimum AP1 dike crest elevation of 635.0 ft. Therefore, overtopping was not expected. The Initial IDF also evaluated the potential for discharge from the CCR unit and determined that discharge from the unit was note expected, as AP1 does not discharge into waters of the United States and overtopping of the AP1 embankments was not expected during the 1,000-year inflow design flood.

7.2 Review of Initial IDF

Geosyntec performed a review of the Initial IDF ([7], [9]) in terms of technical approach, calculation input parameters and methodology, recommendations, and completeness. The review included the following tasks:

- Reviewing the return interval used vs. the hazard potential classification.
- Reviewing the rainfall depth and distribution for appropriateness.
- Performing a high-level review of the inputs to the hydrological modeling.
- Reviewing the hydrologic model parameters for spillway parameters, starting pool elevation, and storage vs. the reference data.
- Reviewing the overall Initial IDF vs. the applicable requirements of the CCR Rule [1].

Several comments were identified during review of the Initial IDF. The comments are described below:

- The Initial IDF utilized the National Resource Conservation Service (NRCS) Type II rainfall distribution type [20]. Geosyntec utilized the Huff 3rd Quartile distribution for areas less than 10 square miles [21] for the reasons listed below.
  - Huff 3rd Quartile distribution was identified to be a more appropriate representation of a 1,000-year, 24-hour storm event per the Illinois State Water Survey (ISWS) Circular 173 [22] which developed standardized rainfall distributions from compiled rainfall data at sites throughout Illinois.
  - Illinois Department of Natural Resources, Office of Water Resources (IDNR-OWR) [23] recommends use of the Huff Quartile distributions in Circular 173 when using frequency events to determine the spillway design flood inflow hydrograph, "*The suggested method to distribute this rainfall is described in the ISWS publication, Circular 173, "Time Distributions of Heavy Rainstorms in Illinois".*

7.3 Summary of Site Changes Affecting the Initial IDF

Several changes at the site that occurred after development of the Initial IDF were identified. These changes required updates to the Initial IDF and are described below:

- A bottom ash berm was constructed around the recycle outlet structure, thereby the outlet structure configuration utilized in the Initial IDF was no longer consistent with conditions observed in 2020.
- Approximately 2,900 CY of CCR were placed in AP1 above the SWSE utilized for the Initial IDF, thereby altering the stage-storage curve for AP1 relative to the Initial IDF. Process inflows to AP1 have ceased due to the closure of the CPP power plant, thereby the process inflow conditions utilized in the Initial IDF were no longer consistent with conditions observed in 2020.

7.4 Periodic IDF

Geosyntec revised the HydroCAD model associated with the Initial IDF to account for the revised rainfall distribution type, increase in SWSE, and additional CCR placement, as described in **Sections 7.2** and **7.3**. The following approach and input data were used for the revised analyses and are referenced in **Attachment D** as appropriate:

- Updated the time of concentration associated with Ash Pond No. 1 from 5 minutes to 6 minutes in accordance with TR-20 [24].

- Updated stage-storage curve for Ash Pond No. 1 based on the 2020 site survey [11].

    - A revised stage-volume curve for Ash Pond No. 1 was prepared based on measuring the storage volume of Ash Pond No. 1 at every one-foot increment of depth from an elevation just beneath the SWSE (630.0 ft) to the perimeter dike embankment crest elevation (636.0 ft). This analysis identified an overall increase of 539,887 cf (12 ac-ft) of storage volume at Ash Pond No. 1 from 2016 to 2021 relative to the SWSE used in the Initial IDF.

- Starting Water Surface Elevation

    - Based on information provided by site personnel, a bottom ash berm is located 30 inches below the top of the concrete outlet structure. A top of concrete elevation of 632.7 ft for the outlet structure was assumed based on the 2015 site survey [25]; therefore, a top of berm elevation of 630.2 ft was used for the bottom ash berm. For this analysis, the SWSE was updated from 631.0 ft to 630.2 ft to reflect the top elevation of the bottom ash berm as described by site personnel, and the lowest free discharge elevation was set at 632.7 ft based on the surveyed 24-inch riser elevation in 2015 [25]. The 2020 site survey showed a WSE of 629.17 ft; however, the top elevation of the bottom ash berm is higher than the surveyed WSE and was used as the SWSE to provide conservatism in the model.

- The rainfall distribution type was updated to the Huff 3rd Quartile for areas less than 10 square miles storm type provided by HydroCAD [26].

- The precipitation depth for the 1,000-yr, 24-hr design storm event was updated from 9.13 in. to 9.14 in. per NOAA Atlas 14 precipitation frequency estimates **Invalid source specified.**.

- The outlet structure for AP1 was updated as follows:

    - The discharge multiplier for the weir (i.e., top of the riser structure) was updated from 0 to 1.

    - The top of riser structure elevation was updated from 631.0 ft to 632.7 ft (i.e., top of concrete) per the 2015 site survey. The assumption that 100 percent of the flow is routed through the 24-inch circular horizontal orifice was maintained for conservatism in the model.

    - The length of 48-inch steel pipe was updated from 100 linear feet (LF) to 10 LF to account for a tee into the 24-inch cast iron pipe as described by site personnel. The pipe was assumed to be blocked beyond the tee as the CPP is no longer active and the recycle pump house downstream of the tee is no longer pumping water out of AP1. A slope of 0.17 ft/ft was maintained, and the outlet invert was updated from 607.0 ft to 622.3 ft based on the presumed tee elevation.

  - Added 92 LF of 24-inch cast iron pipe and 171 LF of 24-inch corrugated metal pipe based on an overflow assessment conducted in 2011. The inlet invert was set at 622.3 ft based on the approximate tee location, and the outlet invert was set at 600.0 ft per the 2020 site survey.

- All other input data and settings from the Initial IDF HydroCAD model were utilized, including, but not limited to software package and version, runoff method, analysis time span and analysis time step.

The results of the Updated IDF are summarized in **Table 4** and confirm that AP1 meets the requirements of §257.82(a)-(b), as the peak water surface elevation does not exceed the minimum perimeter dike crest elevation, as long as the SWSE is maintained ate El. 630.2 ft or lower. Based on the Periodic IDF analysis, the peak WSE is 631.4 ft, which is below the riser opening elevation of 632.7. Therefore, there is no discharge from AP1 during normal and inflow design flood conditions and discharge into Waters of the United States is not expected during either normal or inflow design flood conditions. Updated area-capacity curves and HydroCAD model output is provided in **Attachment D**.

Table 3 - Water Levels from Periodic IDF

	Ash Pond No. 1		
Analysis	**Starting Water Surface Elevation (ft)**	**Peak Water Surface Elevation (ft)**	**Minimum Dike Crest Elevation (ft)**
Initial IDF	631.0	632.0	636.0
Periodic IDF Update	630.2	631.4	636.0
Initial to Periodic Change[1]	-0.8	-0.6	0.0

Notes:
[1]Positive change indicates increase in the WSE relative to the Initial IDF; negative changes indicate decrease in the WSE, relative to the Initial IDF.

SECTION 8

CONCLUSIONS

AP1 at CPP was evaluated relative to the USPEPA CCR Rule periodic assessment requirements for:

- Hazard potential classification (§257.73(a)(2));
- History of Construction reporting (§257.73(d));
- Structural stability assessment (§257.73(d)), with the exception of §257.73(d)(1)(vi) that was independently certified by Luminant [10];
- Safety factor assessment (§257.73(e)); and
- Inflow design flood control system planning (§257.82).

Based on the evaluations presented herein, the referenced requirements are satisfied.

SECTION 9

CERTIFICATION STATEMENT

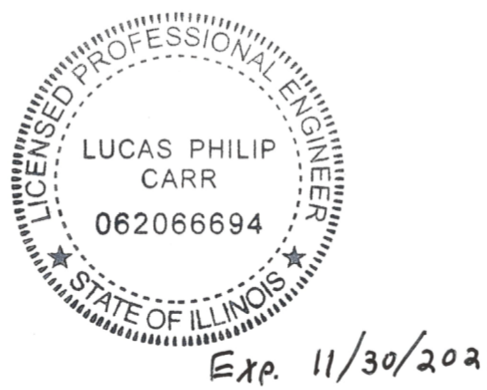
CCR Unit: Illinois Power Generating Company, Coffeen Power Plant, Ash Pond No. 1

I, Lucas P. Carr, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this 2021 USEPA CCR Rule Periodic Certification Report, has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the periodic assessment of the hazard potential classification, history of construction report, structural stability, safety factors, and inflow design flood control system planning, dated October 2021, were conducted in accordance with the requirements of 40 CFR §257.73(a)(2), (c), (d), (e), and §257.82, with the exception of §257.73(d)(1)(vi)) that was independently certified by others.

Lucas P. Carr

10/11/2021

Date



SECTION 10

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Section 3

Annual Groundwater Monitoring and Corrective Action Report (Section 845.610(e))

Prepared for
Illinois Power Generating Company

Date
January 31, 2022

Project No.
194010711-003

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

ASH POND NO. 1
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL Bright ideas. Sustainable change.

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN POWER PLANT ASH POND NO. 1

Project name	**Coffeen Power Plant Ash Pond No. 1**
Project no.	**1940100711-003**
Recipient	**Illinois Power Generating Company**
Document type	**Annual Groundwater Monitoring and Corrective Action Report**
Version	**FINAL**
Date	**January 31, 2022**
Prepared by	**Kristen L. Theesfeld**
Checked by	**Lauren Cook**
Approved by	**Brian Hennings**
Description	**Annual Report in Support of Part 845**

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Managing Hydrogeologist

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ACRONYMS AND ABBREVIATIONS

§	Section
35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
AP1	Ash Pond No. 1
bgs	below ground surface
CCR	coal combustion residuals
CPP	Coffeen Power Plant
DA	deep aquifer
GMP	Groundwater Monitoring Plan
GWPS	groundwater protection standard
HCR	Hydrogeologic Site Characterization Report
ID	identification
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
LCU	lower confining unit
NA	not applicable
NID	National Inventory of Dams
No.	number
Part 845	35 I.A.C. § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments
PMP	potential migration pathway
Ramboll	Ramboll Americas Engineering Solutions, Inc.
SI	surface impoundment
SSI	statistically significant increase
TDS	total dissolved solids
UA	uppermost aquifer
WLO	water level only

EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 35 of the Illinois Administrative Code (35 I.A.C.) Section (§) 845.610(e) (*Annual Groundwater Monitoring and Corrective Action Report*) for Ash Pond Number (No.) 1 (AP1) located at Coffeen Power Plant (CPP) near Coffeen, Illinois.

An operating permit application for AP1 was submitted by Illinois Power Generating Company (IPGC) to the Illinois Environmental Protection Agency (IEPA) by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d), and is pending approval. AP1 is recognized by Vistra identification (ID) No. 101, IEPA ID No. W1350150004-01, and National Inventory of Dams (NID) No. IL50722.

A Groundwater Monitoring Plan (GMP; Ramboll Americas Engineering Solutions, Inc. [Ramboll], 2021a), which included a Statistical Analysis Plan, was developed and submitted as part of the operating permit application to propose a monitoring well network and monitoring program specific to AP1 that will comply with 35 I.A.C. § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments (Part 845; IEPA, 2021). The proposed groundwater protection standards (GWPS), as presented in the GMP, are shown in **Appendix A**.

Groundwater concentrations observed from 2015 to 2021 were presented in the Hydrogeologic Site Characterization Report (HCR; Ramboll, 2021b) and evaluated in the presentation of the History of Potential Exceedances (Ramboll, 2021c) included in the operating permit application, as required by 35 I.A.C. § 845.230(d). Groundwater concentrations from 2015 to 2021 that exceeded the GWPS set forth in 35 I.A.C. § 845.600(a) are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan, which is pending IEPA approval. The determination of potential historical exceedances of 35 I.A.C. § 845.600(a) and a summary of potential historical exceedances of proposed GWPS are shown in **Appendix B**.

Evaluation of background groundwater quality was presented in the GMP (Ramboll, 2021a), and compliance with Part 845 will be determined after the first round of groundwater sampling following IEPA's issuance of an operating permit.

This report summarizes only the information presented in the operating permit application for AP1, submitted to IEPA by October 31, 2021, which is pending IEPA approval.

1. INTRODUCTION

This report has been prepared by Ramboll on behalf of IPGC, to provide the information required by 35 I.A.C. § 845.610(e) for AP1 located at CPP near Coffeen, Illinois. The owner or operator of a coal combustion residuals (CCR) surface impoundment (SI) must prepare and submit to IEPA by January 31st of each year an Annual Groundwater Monitoring and Corrective Action Report for the preceding calendar year as part of the Annual Consolidated Report required by 35 I.A.C. § 845.550. The Annual Groundwater Monitoring and Corrective Action Report shall document the status of the groundwater monitoring and corrective action plan for the CCR SI, summarize key actions completed, including the status of permit applications and Agency approvals, describe any problems encountered and 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 SI and all background (or upgradient) and downgradient monitoring wells, including the well ID Nos., that are part of the groundwater monitoring program for the CCR SI, and a visual delineation of any exceedances of the GWPS.
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. A potentiometric surface map for each groundwater elevation sampling event required by 35 I.A.C. § 845.650(b)(2).
4. In addition to all the monitoring data obtained under 35 I.A.C. §§ 845.600-680, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, and the dates the samples were collected.
5. A narrative discussion of any statistically significant increases (SSIs) over background levels for the constituents listed in 35 I.A.C. § 845.600.
6. Other information required to be included in the annual report as specified in 35 I.A.C. §§ 845.600-680.
7. A section at the beginning of the annual report that provides an overview of the current status of the groundwater monitoring program and corrective action plan for the CCR SI. At a minimum, the summary must:
    i. Specify whether groundwater monitoring data shows a SSI over background concentrations for one or more constituents listed in 35 I.A.C. § 845.600.
    ii. Identify those constituents having a SSI over background concentrations and the names of the monitoring wells associated with the SSI(s).
    iii. Specify whether there have been any exceedances of the GWPS for one or more constituents listed in 35 I.A.C. § 845.600.
    iv. Identify those constituents with exceedances of the GWPS in 35 I.A.C. § 845.600 and the names of the monitoring wells associated with the exceedance.
    v. Provide the date when the assessment of corrective measures was initiated for the CCR SI.

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

vii. Specify whether a remedy was selected under 35 I.A.C. § 845.670 during the current annual reporting period, and if so, the date of remedy selection.

viii. Specify whether remedial activities were initiated or are ongoing under 35 I.A.C. § 845.780 during the current annual reporting period.

An operating permit application for AP1 was submitted by IPGC to IEPA by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d), and is pending approval. Therefore, the Part 845 groundwater monitoring program has not yet been initiated. This report summarizes the data collected for AP1 as it was presented in the operating permit application, and includes the following:

- A map showing the CCR SI and all proposed background (or upgradient) and downgradient monitoring wells, including their identification numbers, that are part of the proposed groundwater monitoring program for the CCR SI presented in the GMP included in the operating permit application (Ramboll, 2021a).
- Identification of monitoring wells that were installed during 2021 to fulfill the requirements of 35 I.A.C. § 845.620(b).
- Representative potentiometric surface maps from the independent sampling events conducted in 2021 to meet the requirements of 35 I.A.C. § 845.650(b)(1)(A), as presented in the HCR included in the operating permit application (Ramboll, 2021b).
- A summary from the independent sampling events completed in 2021, including the number of groundwater samples that were collected for analysis for each proposed background and downgradient well and the dates the samples were collected.
- The proposed GWPS as presented in the GMP.
- A summary of the History of Potential Exceedances included in the operating permit application (Ramboll, 2021c), as required by 35 I.A.C. § 845.230(d), summarizing groundwater concentrations from 2015 to 2021 that exceeded the proposed GWPS.
  - These are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan (Appendix A of the GMP), which is pending IEPA approval.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The Part 845 groundwater monitoring program will commence the quarter following IEPA approval and issuance of the operating permit for AP1.

3. KEY ACTIONS COMPLETED IN 2021

Work was completed in 2021 to meet the requirements of Part 845 and details were provided in the operating permit application submitted to IEPA. The boring logs and well construction forms are included in the HCR provided with the operating permit application (Ramboll, 2021b).

The proposed Part 845 monitoring well network is presented in **Figure 1** and summarized below in **Table A**. The proposed Part 845 monitoring well network also includes wells previously installed for other programs.

Table A. Proposed Part 845 Monitoring Well Network

Well ID	Monitored Unit	Well Screen Interval (feet bgs)	Well Type [1]
G281	UA	15.5 - 20.2	Background
G301	UA	11.3 - 16.0	Compliance
G302	UA	13.2 - 17.9	Compliance
G303	UA	10.0 - 20.0	Compliance
G305	UA	13.4 - 18.3	Compliance
G306	UA	13.1 - 17.7	Background
G307	UA	13.0 - 17.8	Compliance
G307D	LCU	49.0 – 58.8	Compliance
G308	UA	10.1 - 14.9	Compliance
G310	UA	10.2 - 15.0	Compliance
G312	UA	9.8 - 14.6	Compliance
G313	UA	6.3 - 11.1	Compliance
G314	LCU	14.6 - 19.6	Compliance
G314D*	DA	39.3 – 49.1	Compliance
G315	UA	9.7 - 14.5	Compliance
G316	LCU	10.0 - 14.8	Compliance
XSG-01 [2, 3]	CCR	NA	WLO
SG-02 [2, 3]	Surface Water	NA	WLO
SG-03 [2, 3]	Surface Water	NA	WLO

[1] Well type refers to the role of the well in the monitoring network.
[2] Surface water level measuring point.
[3] Location is temporary pending implementation of impoundment closure per an approved construction permit application.
* Well has been identified to monitor the potential migration pathway (PMP).
bgs = below ground surface
CCR = coal combustion residuals
DA = deep aquifer
LCU = lower confining unit
NA = not applicable
UA = uppermost aquifer
WLO = water level only

Proposed Part 845 monitoring wells were sampled for eight rounds of independent groundwater samples from March to July 2021 and the results were analyzed for the parameters listed in 35 I.A.C. § 845.600. Select proposed Part 845 monitoring wells are also monitored as part of the monitoring system for the requirements of Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257. A summary of the samples collected from background and compliance monitoring wells for both monitoring programs is included in **Table B** below. All groundwater elevation data and analytical results obtained in 2021 are presented in the HCR (Ramboll, 2021b). Groundwater elevation contour maps representative of the independent sampling events are presented in **Figures 2 and 3**.

Table B. Summary of Groundwater Samples Collected

Sampling Dates	Parameters Collected	Monitoring Wells Sampled [6]
January 26-29, 2021	Appendix III [1], Appendix IV [2], field parameters [3]	G281, G301, G302, G303, G306, and G307
March 29-31, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G307D, G308, G309, G310, G311, G311D, G312, G313, G314, G314D, G315, G316, and G317
April 21-22, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G307D, G308, G309, G310, G311, G311D, G312, G313, G314, G314D, G315, G316, and G317
May 4-5, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G307D, G308, G309, G310, G311, G311D, G312, G313, G314, G314D, G315, G316, and G317
May 17-19, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G307D, G308, G309, G310, G311, G311D, G312, G313, G314, G314D, G315, G316, and G317
June 14-15, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G307D, G308, G309, G310, G311, G311D, G312, G313, G314, G315, G316, and G317
June 28-29, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G307D, G308, G309, G310, G311, G311D, G312, G313, G314, G314D, G315, G316, and G317
July 12-14, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G308, G309, G310, G311, G312, G313, G314, G315, G316, and G317
July 27-28, 2021	Metals [4], mercury, inorganic parameters [5], radium 226 and 228, field parameters [3]	G281, G306, G307D, G308, G309, G310, G311, G311D, G312, G313, G314, G314D, G315, G316, and G317
August 17, 2021	Appendix III [1], Appendix IV (detected only), field parameters [3]	G281, G301, G302, G303, G306, and G307

[1] Appendix III parameters include boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS).
[2] Appendix IV parameters include antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, radium 226 and 228 combined, selenium, and thallium.
[3] Field parameters include pH, dissolved oxygen, temperature, oxidation/reduction potential, specific conductance, and turbidity.
[4] Metals include antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium.
[5] Inorganic parameters include fluoride, chloride, sulfate, and TDS.
[6] In general, one sample was collected per monitoring well per event.

Evaluation of background groundwater quality is presented in the GMP and the proposed GWPSs are included in **Appendix A.** Compliance with Part 845 will be determined after the first round of groundwater sampling following IEPA's issuance of the operating permit for AP1.

Groundwater concentrations from 2015 to 2021 were presented in the HCR and evaluated in the presentation of the History of Potential Exceedances included in the operating permit application. Groundwater concentrations that exceeded the proposed GWPS are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan, which is pending IEPA approval. Tables summarizing how potential historical exceedances were determined and the potential exceedances themselves are provided in **Appendix B**.

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

The first round of groundwater sampling for compliance with the Part 845 groundwater monitoring program will commence the quarter following IEPA approval and issuance of the operating permit for AP1, and in accordance with the GMP.

5. KEY ACTIVITIES PLANNED FOR 2022

The following key activities are planned for 2022:

- Groundwater sampling and reporting for compliance will be initiated the quarter following issuance of the operating permit at all monitoring wells in the approved monitoring well network as presented in the GMP and required by 35 I.A.C. § 845.610(b)(3), including:
  - Monthly groundwater elevations.
  - Quarterly groundwater sampling.

6. REFERENCES

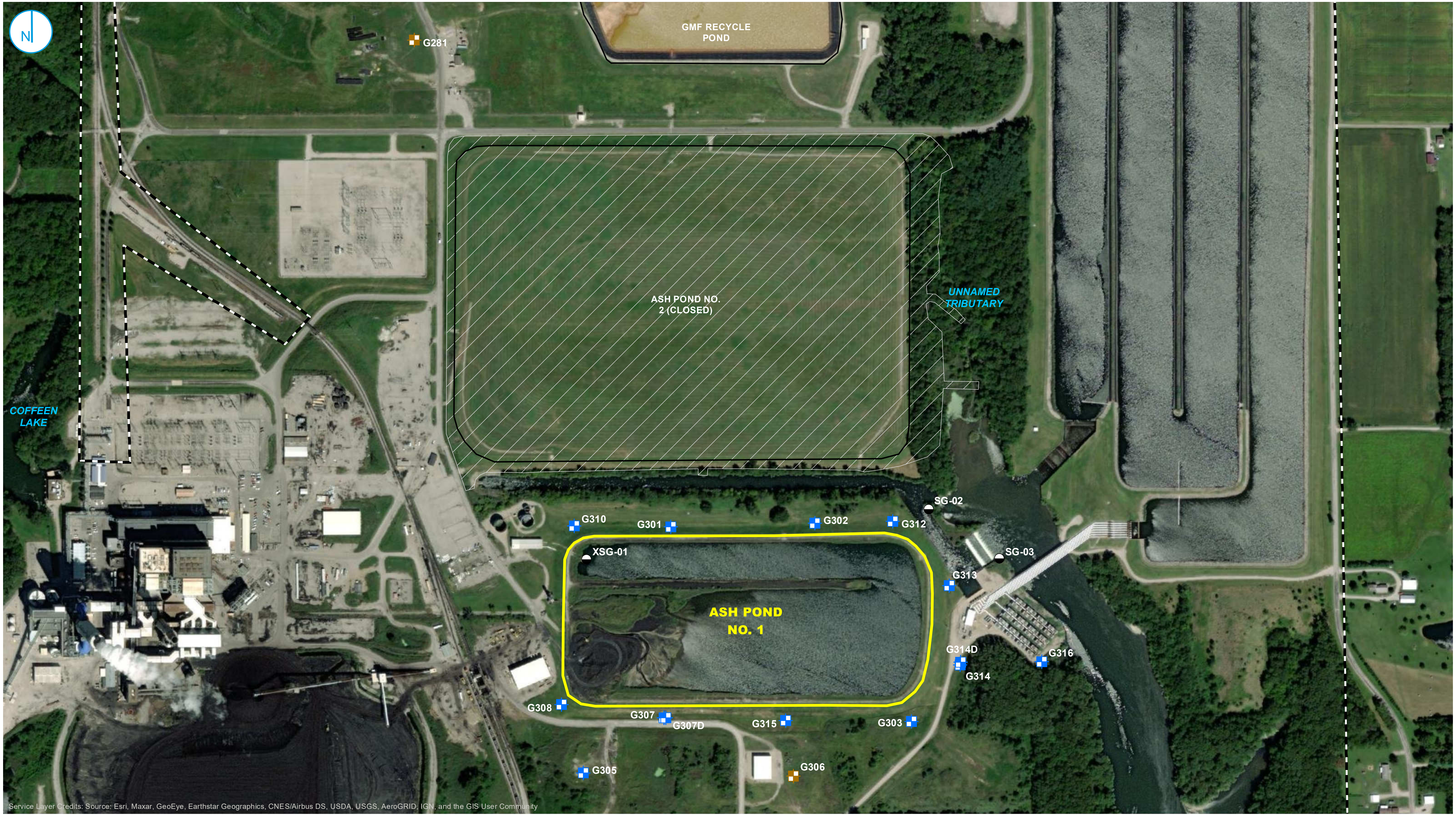
Illinois Environmental Protection Agency (IEPA), 2021. *In the Matter of: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Title 35 Illinois Administration Code 845, Addendum*. April 15, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021a. *Groundwater Monitoring Plan. Coffeen Power Plant, Ash Pond No. 1, Coffeen, Illinois*. Illinois Power Generating Company. October 25, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021b. *Hydrogeologic Site Characterization Report. Coffeen Power Plant, Ash Pond No. 1, Coffeen, Illinois*. Illinois Power Generating Company. October 25, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021c. *History of Potential Exceedances. Coffeen Power Plant, Ash Pond No. 1, Coffeen, Illinois*. Illinois Power Generating Company. October 25, 2021.

FIGURES



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Y:\Mapping\Projects\22\2285\MXD\845_2021_AnnualGWM\Coffeen\AP1_101\Figure 1. Proposed Part 845 Groundwater Monitoring Well Network.mxd

BACKGROUND WELL
COMPLIANCE WELL
STAFF GAGE
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

0 200 400 Feet

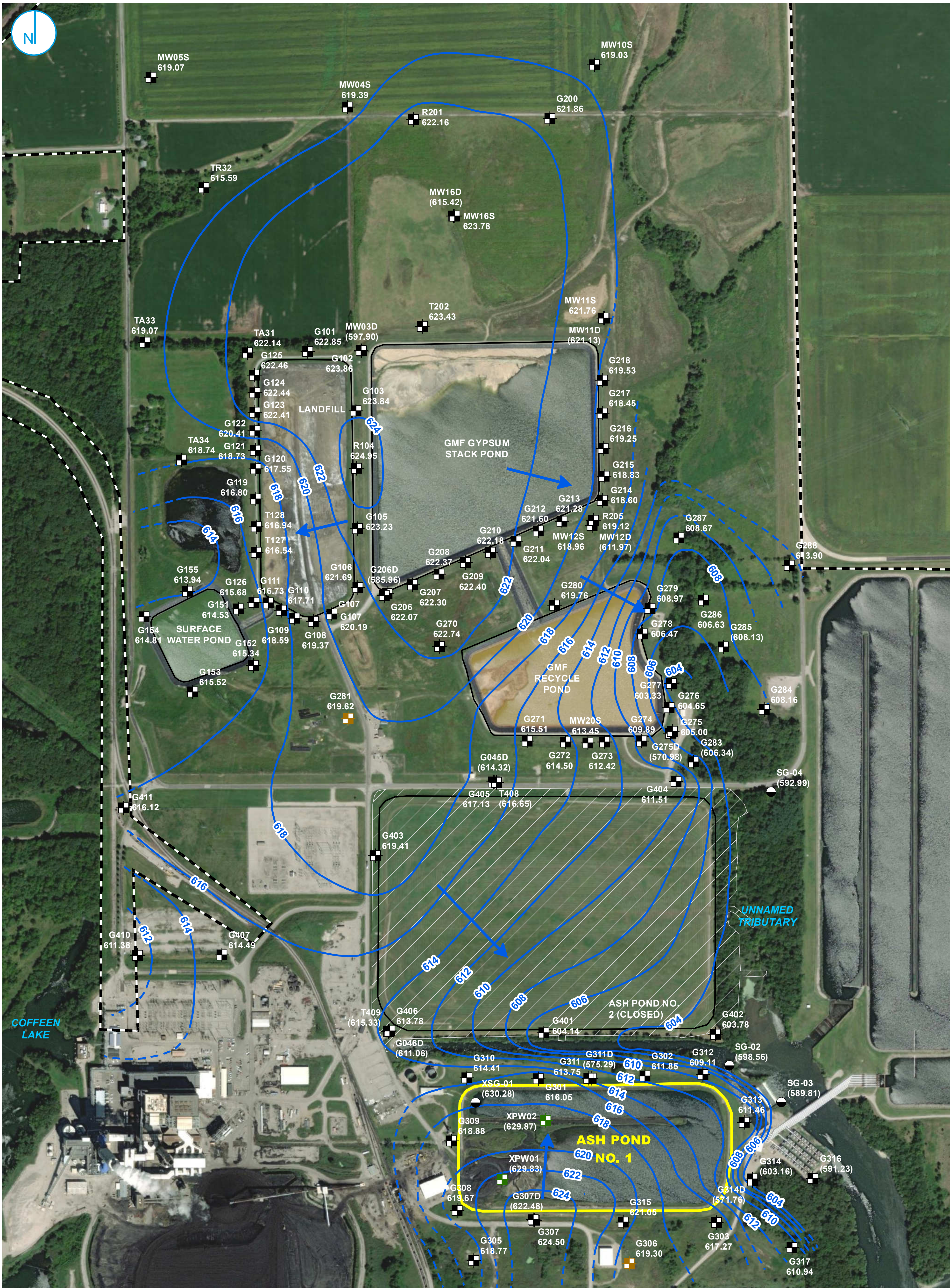
PROPOSED PART 845 GROUNDWATER MONITORING WELL NETWORK

FIGURE 1

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ASH POND NO. 1
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



BACKGROUND WELL
MONITORING WELL
SOURCE SAMPLE LOCATION
STAFF GAGE
GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
INFERRED GROUNDWATER ELEVATION CONTOUR
GROUNDWATER FLOW DIRECTION

0 275 550 Feet

PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

NOTE:
ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
NM = NOT MEASURED

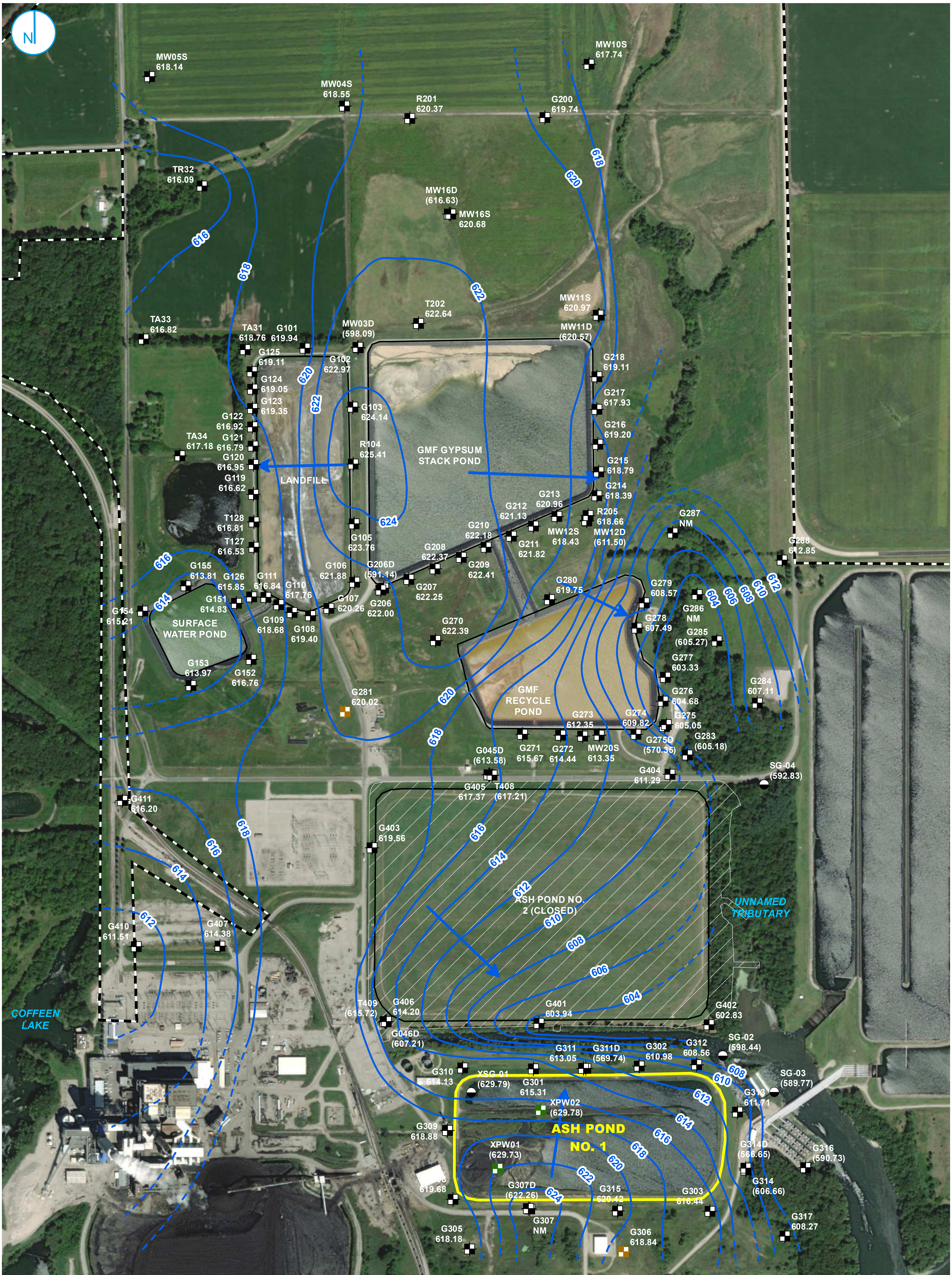
POTENTIOMETRIC SURFACE MAP APRIL 20, 2021

FIGURE 2

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ASH POND NO. 1
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



BACKGROUND WELL
MONITORING WELL
SOURCE SAMPLE LOCATION
STAFF GAGE
GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
INFERRED GROUNDWATER ELEVATION CONTOUR
GROUNDWATER FLOW DIRECTION

0 275 550 Feet

PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

NOTE:
ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
NM = NOT MEASURED

POTENTIOMETRIC SURFACE MAP
JULY 26, 2021

FIGURE 3

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
ASH POND NO. 1
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL

APPENDICES

APPENDIX A
TABLE 3-1. BACKGROUND GROUNDWATER QUALITY AND STANDARDS

TABLE 3-1. BACKGROUND GROUNDWATER QUALITY AND STANDARDS
GROUNDWATER MONITORING PLAN
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Parameter	Background Concentration	845 Limit	Groundwater Protection Standard	Unit
Antimony, total	0.003	0.006	0.006	mg/L
Arsenic, total	0.0043	0.010	0.010	mg/L
Barium, total	0.12	2.0	2.0	mg/L
Beryllium, total	0.001	0.004	0.004	mg/L
Boron, total	3.2	2	3.2	mg/L
Cadmium, total	0.001	0.005	0.005	mg/L
Chloride, total	120	200	200	mg/L
Chromium, total	0.011	0.1	0.1	mg/L
Cobalt, total	0.0056	0.006	0.006	mg/L
Fluoride, total	0.411	4.0	4.0	mg/L
Lead, total	0.0063	0.0075	0.0075	mg/L
Lithium, total	0.013	0.04	0.04	mg/L
Mercury, total	0.0013	0.002	0.002	mg/L
Molybdenum, total	0.0015	0.1	0.1	mg/L
pH (field)	7.3 / 6.6	9.0 / 6.5	9.0 / 6.5	SU
Radium 226 and 228 combined	1.6	5	5	pCi/L
Selenium, total	0.0015	0.05	0.05	mg/L
Sulfate, total	367	400	400	mg/L
Thallium, total	0.001	0.002	0.002	mg/L
Total Dissolved Solids	1010	1200	1200	mg/L

Notes:
For pH, the values presented are the upper / lower limits
Groundwater protection standards for calcium and turbidity do not apply per 35 I.A.C. § 845.600(b)
mg/L = milligrams per liter
SU = standard units
pCi/L = picocuries per liter

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APPENDIX B
HISTORY OF POTENTIAL EXCEEDANCES

HISTORY OF POTENTIAL EXCEEDANCES

This presentation of the History of Potential Exceedances, and any corrective action taken to remediate groundwater, is provided to meet the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.230(d)(2)(M) for the Coffeen Power Plant Ash Pond No. 1, Illinois Environmental Protection Agency (IEPA) ID No. W1350150004-01.

Note

Groundwater concentrations from 2015 to 2021 presented in the Hydrogeologic Site Characterization Report (HCR) Table 4-1, and evaluated and summarized in the following tables, are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan (Appendix A to Groundwater Monitoring Plan [GMP]), which has not been reviewed or approved by the IEPA at the time of submittal of the 35 I.A.C. § 845 Operating Permit application.

Alternate sources for potential exceedances as allowed by 35 I.A.C. § 845.650(e) have not yet been evaluated. These will be evaluated and presented in future submittals to IEPA as appropriate.

Table 1 summarizes how the potential exceedances were determined. Table 2 is a summary of all potential exceedances.

Background Concentrations

Background monitoring wells identified in the GMP include G281 and G306.

For monitoring wells that have been historically monitored in accordance with Title 40, Code of Federal Regulations, Part 257, Subpart D (Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments), background concentrations calculated from sampling events in 2015-2017 were compared to the standards identified in 35 I.A.C. § 845.600(a)(1). For constituents with calculated background concentrations in 2015-2017 greater than the standards in 35 I.A.C. § 845.600(a)(1), those calculated background concentrations were used as Groundwater Protection Standards (GWPSs) for comparing to statistical calculation results for each compliance well to determine potential exceedances. Compliance well statistical calculations consider concentrations from all sampling events in 2015-2021.

For all other monitoring wells, either newly constructed in 2021 or existing wells not monitored under Title 40, Code of Federal Regulations, Part 257, Subpart D, background concentrations calculated from the eight sampling events required by 35 I.A.C. § 845.650(b)(1)(A), to be collected within 180 days from April 21, 2021, were compared to the standards identified in 35 I.A.C. § 845.600(a)(1). For constituents with calculated background concentrations greater than the standards in 35 I.A.C. § 845.600(a)(1), those calculated background concentrations were used as GWPSs. Compliance well statistical calculations from that same time period were compared to the GWPSs to determine potential exceedances.

Corrective Action

No corrective actions have been taken to remediate the groundwater.

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G301	UA	257	Antimony, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G301	UA	257	Arsenic, total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G301	UA	257	Barium, total	mg/L	11/20/2015 - 01/27/2021	CI around mean	0.029	2.0	0.13	2	Standard
G301	UA	257	Beryllium, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G301	UA	257	Boron, total	mg/L	11/20/2015 - 01/27/2021	CB around linear reg	1.7	2.9	2.9	2	Background
G301	UA	257	Cadmium,total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.001	0.005	0.001	0.005	Standard
G301	UA	257	Chloride, total	mg/L	11/20/2015 - 01/27/2021	CB around linear reg	9.3	200	75	200	Standard
G301	UA	257	Chromium, total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.004	0.10	0.012	0.1	Standard
G301	UA	257	Cobalt, total	mg/L	11/20/2015 - 01/27/2021	Future median	0.002	0.0064	0.0064	0.006	Background
G301	UA	257	Fluoride, total	mg/L	11/20/2015 - 01/27/2021	CI around geomean	0.26	4.0	0.47	4	Standard
G301	UA	257	Lead, total	mg/L	11/20/2015 - 01/27/2021	CI around geomean	0.0012	0.0075	0.0063	0.0075	Standard
G301	UA	257	Lithium, total	mg/L	11/20/2015 - 01/27/2021	CB around linear reg	0.014	0.040	0.013	0.04	Standard
G301	UA	257	Mercury, total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
G301	UA	257	Molybdenum, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.001	0.10	0.0019	0.1	Standard
G301	UA	257	pH (field)	SU	11/20/2015 - 01/27/2021	CI around mean	6.7	6.5/9.0	6.5/7.1	6.5/9	Standard/Standard
G301	UA	257	Radium-226 + Radium 228, tot	pCi/L	11/20/2015 - 01/27/2021	CI around mean	0.63	5.0	1.9	5	Standard
G301	UA	257	Selenium, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
G301	UA	257	Sulfate, total	mg/L	11/20/2015 - 01/27/2021	Future median	750	700	700	400	Background
G301	UA	257	Thallium, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G301	UA	257	Total Dissolved Solids	mg/L	11/20/2015 - 01/27/2021	CI around mean	1100	1200	893	1200	Standard
G302	UA	257	Antimony, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G302	UA	257	Arsenic, total	mg/L	11/20/2015 - 01/27/2021	CI around geomean	0.00152	0.010	0.0043	0.01	Standard
G302	UA	257	Barium, total	mg/L	11/20/2015 - 01/27/2021	CI around mean	0.026	2.0	0.13	2	Standard
G302	UA	257	Beryllium, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G302	UA	257	Boron, total	mg/L	11/20/2015 - 01/27/2021	Future median	1.2	2.9	2.9	2	Background
G302	UA	257	Cadmium,total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard

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TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G302	UA	257	Chloride, total	mg/L	11/20/2015 - 01/27/2021	CI around mean	10	200	75	200	Standard
G302	UA	257	Chromium, total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.004	0.10	0.012	0.1	Standard
G302	UA	257	Cobalt, total	mg/L	11/20/2015 - 01/27/2021	Future median	0.002	0.0064	0.0064	0.006	Background
G302	UA	257	Fluoride, total	mg/L	11/20/2015 - 01/27/2021	CI around mean	0.27	4.0	0.47	4	Standard
G302	UA	257	Lead, total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.001	0.0075	0.0063	0.0075	Standard
G302	UA	257	Lithium, total	mg/L	11/20/2015 - 01/27/2021	CI around mean	0.016	0.040	0.013	0.04	Standard
G302	UA	257	Mercury, total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
G302	UA	257	Molybdenum, total	mg/L	11/20/2015 - 01/27/2021	CI around geomean	0.00108	0.10	0.0019	0.1	Standard
G302	UA	257	pH (field)	SU	11/20/2015 - 01/27/2021	CI around mean	6.9	6.5/9.0	6.5/7.1	6.5/9	Standard/Standard
G302	UA	257	Radium-226 + Radium 228, tot	pCi/L	11/20/2015 - 01/27/2021	CI around geomean	0.35	5.0	1.9	5	Standard
G302	UA	257	Selenium, total	mg/L	11/20/2015 - 01/27/2021	CI around median	0.001	0.050	0.0011	0.05	Standard
G302	UA	257	Sulfate, total	mg/L	11/20/2015 - 01/27/2021	Future median	350	700	700	400	Background
G302	UA	257	Thallium, total	mg/L	11/20/2015 - 01/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G302	UA	257	Total Dissolved Solids	mg/L	11/20/2015 - 01/27/2021	CI around mean	909	1200	893	1200	Standard
G303	UA	257	Antimony, total	mg/L	11/20/2015 - 01/26/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G303	UA	257	Arsenic, total	mg/L	11/20/2015 - 01/26/2021	CI around mean	0.00296	0.010	0.0043	0.01	Standard
G303	UA	257	Barium, total	mg/L	11/20/2015 - 01/26/2021	CI around median	0.015	2.0	0.13	2	Standard
G303	UA	257	Beryllium, total	mg/L	11/20/2015 - 01/26/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G303	UA	257	Boron, total	mg/L	11/20/2015 - 01/26/2021	Future median	2.0	2.9	2.9	2	Background
G303	UA	257	Cadmium,total	mg/L	11/20/2015 - 01/26/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G303	UA	257	Chloride, total	mg/L	11/20/2015 - 01/26/2021	CI around mean	28	200	75	200	Standard
G303	UA	257	Chromium, total	mg/L	11/20/2015 - 01/26/2021	CI around median	0.004	0.10	0.012	0.1	Standard
G303	UA	257	Cobalt, total	mg/L	11/20/2015 - 01/26/2021	Future median	0.002	0.0064	0.0064	0.006	Background
G303	UA	257	Fluoride, total	mg/L	11/20/2015 - 01/26/2021	CI around mean	0.27	4.0	0.47	4	Standard
G303	UA	257	Lead, total	mg/L	11/20/2015 - 01/26/2021	CI around median	0.001	0.0075	0.0063	0.0075	Standard
G303	UA	257	Lithium, total	mg/L	11/20/2015 - 01/26/2021	CI around mean	0.037	0.040	0.013	0.04	Standard

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TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G303	UA	257	Mercury, total	mg/L	11/20/2015 - 01/26/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
G303	UA	257	Molybdenum, total	mg/L	11/20/2015 - 01/26/2021	CI around mean	0.00184	0.10	0.0019	0.1	Standard
G303	UA	257	pH (field)	SU	11/20/2015 - 01/26/2021	CI around mean	6.9	6.5/9.0	6.5/7.1	6.5/9	Standard/Standard
G303	UA	257	Radium-226 + Radium 228, tot	pCi/L	11/20/2015 - 01/26/2021	CI around mean	0.49	5.0	1.9	5	Standard
G303	UA	257	Selenium, total	mg/L	11/20/2015 - 01/26/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
G303	UA	257	Sulfate, total	mg/L	11/20/2015 - 01/26/2021	Future median	730	700	700	400	Background
G303	UA	257	Thallium, total	mg/L	11/20/2015 - 01/26/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G303	UA	257	Total Dissolved Solids	mg/L	11/20/2015 - 01/26/2021	CI around mean	1460	1200	893	1200	Standard
G304	UA	257	Antimony, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.003	0.006	0.003	0.006	Standard
G304	UA	257	Arsenic, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.0023	0.010	0.0043	0.01	Standard
G304	UA	257	Barium, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.032	2.0	0.13	2	Standard
G304	UA	257	Beryllium, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.001	0.004	0.001	0.004	Standard
G304	UA	257	Boron, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	2.6	2.9	2.9	2	Background
G304	UA	257	Cadmium,total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.001	0.005	0.001	0.005	Standard
G304	UA	257	Chloride, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	27	200	75	200	Standard
G304	UA	257	Chromium, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.0049	0.10	0.012	0.1	Standard
G304	UA	257	Cobalt, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.0047	0.0064	0.0064	0.006	Background
G304	UA	257	Fluoride, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.48	4.0	0.47	4	Standard
G304	UA	257	Lead, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.0017	0.0075	0.0063	0.0075	Standard
G304	UA	257	Lithium, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.010	0.040	0.013	0.04	Standard
G304	UA	257	Mercury, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.0002	0.002	0.0002	0.002	Standard
G304	UA	257	Molybdenum, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.0017	0.10	0.0019	0.1	Standard
G304	UA	257	pH (field)	SU	11/20/2015 - 05/20/2016	Most recent sample	7.1	6.5/9.0	6.5/7.1	6.5/9	Standard/Standard
G304	UA	257	Radium-226 + Radium 228, tot	pCi/L	11/20/2015 - 05/20/2016	Most recent sample	0.22	5.0	1.9	5	Standard
G304	UA	257	Selenium, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.001	0.050	0.0011	0.05	Standard
G304	UA	257	Sulfate, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	1000	700	700	400	Background

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G304	UA	257	Thallium, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	0.001	0.002	0.001	0.002	Standard
G304	UA	257	Total Dissolved Solids	mg/L	11/20/2015 - 05/20/2016	Most recent sample	1300	1200	893	1200	Standard
G305	UA	257	Antimony, total	mg/L	05/19/2016 - 11/17/2016	All ND - Last	0.003	0.006	0.003	0.006	Standard
G305	UA	257	Arsenic, total	mg/L	05/19/2016 - 11/17/2016	CI around median	0	0.010	0.0043	0.01	Standard
G305	UA	257	Barium, total	mg/L	05/19/2016 - 11/17/2016	CI around geomean	0.023	2.0	0.13	2	Standard
G305	UA	257	Beryllium, total	mg/L	05/19/2016 - 11/17/2016	All ND - Last	0.001	0.004	0.001	0.004	Standard
G305	UA	257	Boron, total	mg/L	05/19/2016 - 11/17/2016	Future median	2.4	2.9	2.9	2	Background
G305	UA	257	Cadmium,total	mg/L	05/19/2016 - 11/17/2016	All ND - Last	0.001	0.005	0.001	0.005	Standard
G305	UA	257	Chloride, total	mg/L	05/19/2016 - 11/17/2016	CI around median	0	200	75	200	Standard
G305	UA	257	Chromium, total	mg/L	05/19/2016 - 11/17/2016	CI around median	0	0.10	0.012	0.1	Standard
G305	UA	257	Cobalt, total	mg/L	05/19/2016 - 11/17/2016	Future median	0.002	0.0064	0.0064	0.006	Background
G305	UA	257	Fluoride, total	mg/L	05/19/2016 - 11/17/2016	CI around mean	0.39	4.0	0.47	4	Standard
G305	UA	257	Lead, total	mg/L	05/19/2016 - 11/17/2016	CI around geomean	0.000447	0.0075	0.0063	0.0075	Standard
G305	UA	257	Lithium, total	mg/L	05/19/2016 - 11/17/2016	CI around mean	0.00673	0.040	0.013	0.04	Standard
G305	UA	257	Mercury, total	mg/L	05/19/2016 - 11/17/2016	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
G305	UA	257	Molybdenum, total	mg/L	05/19/2016 - 11/17/2016	CI around mean	0.00000974	0.10	0.0019	0.1	Standard
G305	UA	257	pH (field)	SU	05/19/2016 - 11/17/2016	CI around mean	6.9	6.5/9.0	6.5/7.1	6.5/9	Standard/Standard
G305	UA	257	Radium-226 + Radium 228, tot	pCi/L	05/19/2016 - 11/17/2016	CI around mean	0.21	5.0	1.9	5	Standard
G305	UA	257	Selenium, total	mg/L	05/19/2016 - 11/17/2016	All ND - Last	0.001	0.050	0.0011	0.05	Standard
G305	UA	257	Sulfate, total	mg/L	05/19/2016 - 11/17/2016	Future median	890	700	700	400	Background
G305	UA	257	Thallium, total	mg/L	05/19/2016 - 11/17/2016	All ND - Last	0.001	0.002	0.001	0.002	Standard
G305	UA	257	Total Dissolved Solids	mg/L	05/19/2016 - 11/17/2016	CI around mean	1280	1200	893	1200	Standard
G307	UA	257	Antimony, total	mg/L	08/16/2016 - 01/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G307	UA	257	Arsenic, total	mg/L	08/16/2016 - 01/27/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G307	UA	257	Barium, total	mg/L	08/16/2016 - 01/27/2021	CI around geomean	0.026	2.0	0.13	2	Standard
G307	UA	257	Beryllium, total	mg/L	08/16/2016 - 01/27/2021	CI around median	0.001	0.004	0.001	0.004	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G307	UA	257	Boron, total	mg/L	08/16/2016 - 01/27/2021	Future median	2.1	2.9	2.9	2	Background
G307	UA	257	Cadmium,total	mg/L	08/16/2016 - 01/27/2021	CI around median	0.001	0.005	0.001	0.005	Standard
G307	UA	257	Chloride, total	mg/L	08/16/2016 - 01/27/2021	CB around linear reg	9.9	200	75	200	Standard
G307	UA	257	Chromium, total	mg/L	08/16/2016 - 01/27/2021	CI around median	0.004	0.10	0.012	0.1	Standard
G307	UA	257	Cobalt, total	mg/L	08/16/2016 - 01/27/2021	Future median	0.0024	0.0064	0.0064	0.006	Background
G307	UA	257	Fluoride, total	mg/L	08/16/2016 - 01/27/2021	CI around geomean	0.25	4.0	0.47	4	Standard
G307	UA	257	Lead, total	mg/L	08/16/2016 - 01/27/2021	CI around median	0.001	0.0075	0.0063	0.0075	Standard
G307	UA	257	Lithium, total	mg/L	08/16/2016 - 01/27/2021	CI around geomean	0.012	0.040	0.013	0.04	Standard
G307	UA	257	Mercury, total	mg/L	08/16/2016 - 01/27/2021	CI around median	0.0002	0.002	0.0002	0.002	Standard
G307	UA	257	Molybdenum, total	mg/L	08/16/2016 - 01/27/2021	CI around geomean	0.00125	0.10	0.0019	0.1	Standard
G307	UA	257	pH (field)	SU	08/16/2016 - 01/27/2021	CB around linear reg	7.1	6.5/9.0	6.5/7.1	6.5/9	Standard/Standard
G307	UA	257	Radium-226 + Radium 228, tot	pCi/L	08/16/2016 - 01/27/2021	CI around mean	0.45	5.0	1.9	5	Standard
G307	UA	257	Selenium, total	mg/L	08/16/2016 - 01/27/2021	CI around median	0.001	0.050	0.0011	0.05	Standard
G307	UA	257	Sulfate, total	mg/L	08/16/2016 - 01/27/2021	Future median	910	700	700	400	Background
G307	UA	257	Thallium, total	mg/L	08/16/2016 - 01/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G307	UA	257	Total Dissolved Solids	mg/L	08/16/2016 - 01/27/2021	CI around mean	1350	1200	893	1200	Standard
G307D	LCU	845	Antimony, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G307D	LCU	845	Arsenic, total	mg/L	03/29/2021 - 07/27/2021	CI around geomean	0.00072	0.010	0.0043	0.01	Standard
G307D	LCU	845	Barium, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	0.030	2.0	0.12	2	Standard
G307D	LCU	845	Beryllium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G307D	LCU	845	Boron, total	mg/L	03/29/2021 - 07/27/2021	Future median	1.4	3.2	3.2	2	Background
G307D	LCU	845	Cadmium,total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G307D	LCU	845	Chloride, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	17	200	120	200	Standard
G307D	LCU	845	Chromium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G307D	LCU	845	Cobalt, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.002	0.006	0.0056	0.006	Standard
G307D	LCU	845	Fluoride, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	0.33	4.0	0.41	4	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G307D	LCU	845	Lead, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G307D	LCU	845	Lithium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G307D	LCU	845	Mercury, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0	0.002	0.0013	0.002	Standard
G307D	LCU	845	Molybdenum, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	0.00823	0.10	0.0015	0.1	Standard
G307D	LCU	845	pH (field)	SU	03/29/2021 - 07/27/2021	CI around mean	7.2	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G307D	LCU	845	Radium-226 + Radium 228, tot	pCi/L	03/29/2021 - 06/28/2021	CI around mean	0.032	5.0	1.6	5	Standard
G307D	LCU	845	Selenium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G307D	LCU	845	Sulfate, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	765	400	367	400	Standard
G307D	LCU	845	Thallium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G307D	LCU	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/27/2021	CI around mean	1210	1200	1010	1200	Standard
G308	UA	845	Antimony, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G308	UA	845	Arsenic, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.010	0.0043	0.01	Standard
G308	UA	845	Barium, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	0.021	2.0	0.12	2	Standard
G308	UA	845	Beryllium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G308	UA	845	Boron, total	mg/L	03/29/2021 - 07/27/2021	Future median	2.6	3.2	3.2	2	Background
G308	UA	845	Cadmium,total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G308	UA	845	Chloride, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	17	200	120	200	Standard
G308	UA	845	Chromium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G308	UA	845	Cobalt, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.002	0.006	0.0056	0.006	Standard
G308	UA	845	Fluoride, total	mg/L	03/29/2021 - 07/27/2021	CI around geomean	0.48	4.0	0.41	4	Standard
G308	UA	845	Lead, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G308	UA	845	Lithium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G308	UA	845	Mercury, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0.0002	0.002	0.0013	0.002	Standard
G308	UA	845	Molybdenum, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0.0005	0.10	0.0015	0.1	Standard
G308	UA	845	pH (field)	SU	03/29/2021 - 07/27/2021	CI around mean	7.2	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G308	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/29/2021 - 07/14/2021	CI around mean	-0.0615	5.0	1.6	5	Standard

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TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G308	UA	845	Selenium, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0.001	0.050	0.0015	0.05	Standard
G308	UA	845	Sulfate, total	mg/L	03/29/2021 - 07/27/2021	CI around median	1100	400	367	400	Standard
G308	UA	845	Thallium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G308	UA	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/27/2021	CI around mean	1820	1200	1010	1200	Standard
G309	UA	845	Antimony, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G309	UA	845	Arsenic, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G309	UA	845	Barium, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0.021	2.0	0.12	2	Standard
G309	UA	845	Beryllium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G309	UA	845	Boron, total	mg/L	03/29/2021 - 07/27/2021	Future median	2.0	3.2	3.2	2	Background
G309	UA	845	Cadmium,total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G309	UA	845	Chloride, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	18	200	120	200	Standard
G309	UA	845	Chromium, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0.004	0.10	0.011	0.1	Standard
G309	UA	845	Cobalt, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.002	0.006	0.0056	0.006	Standard
G309	UA	845	Fluoride, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	0.27	4.0	0.41	4	Standard
G309	UA	845	Lead, total	mg/L	03/29/2021 - 07/27/2021	CI around median	0.001	0.0075	0.0063	0.0075	Standard
G309	UA	845	Lithium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G309	UA	845	Mercury, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G309	UA	845	Molybdenum, total	mg/L	03/29/2021 - 07/27/2021	CB around linear reg	0.000796	0.10	0.0015	0.1	Standard
G309	UA	845	pH (field)	SU	03/29/2021 - 07/27/2021	CB around linear reg	7.3	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G309	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/29/2021 - 07/13/2021	CI around mean	-0.142	5.0	1.6	5	Standard
G309	UA	845	Selenium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G309	UA	845	Sulfate, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	746	400	367	400	Standard
G309	UA	845	Thallium, total	mg/L	03/29/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G309	UA	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/27/2021	CI around median	1300	1200	1010	1200	Standard
G310	UA	845	Antimony, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G310	UA	845	Arsenic, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.001	0.010	0.0043	0.01	Standard

RAMBOLL

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G310	UA	845	Barium, total	mg/L	03/29/2021 - 07/28/2021	CI around mean	0.016	2.0	0.12	2	Standard
G310	UA	845	Beryllium, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G310	UA	845	Boron, total	mg/L	03/29/2021 - 07/28/2021	Future median	1.8	3.2	3.2	2	Background
G310	UA	845	Cadmium,total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G310	UA	845	Chloride, total	mg/L	03/29/2021 - 07/28/2021	CI around mean	20	200	120	200	Standard
G310	UA	845	Chromium, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G310	UA	845	Cobalt, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.002	0.006	0.0056	0.006	Standard
G310	UA	845	Fluoride, total	mg/L	03/29/2021 - 07/28/2021	CI around mean	0.20	4.0	0.41	4	Standard
G310	UA	845	Lead, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G310	UA	845	Lithium, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G310	UA	845	Mercury, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G310	UA	845	Molybdenum, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.001	0.10	0.0015	0.1	Standard
G310	UA	845	pH (field)	SU	03/29/2021 - 07/28/2021	CI around mean	7.1	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G310	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/29/2021 - 07/13/2021	CI around mean	-0.375	5.0	1.6	5	Standard
G310	UA	845	Selenium, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G310	UA	845	Sulfate, total	mg/L	03/29/2021 - 07/28/2021	CI around geomean	550	400	367	400	Standard
G310	UA	845	Thallium, total	mg/L	03/29/2021 - 07/28/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G310	UA	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/28/2021	CI around mean	1450	1200	1010	1200	Standard
G311	UA	845	Antimony, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G311	UA	845	Arsenic, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G311	UA	845	Barium, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.026	2.0	0.12	2	Standard
G311	UA	845	Beryllium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G311	UA	845	Boron, total	mg/L	03/30/2021 - 07/27/2021	Future median	2.5	3.2	3.2	2	Background
G311	UA	845	Cadmium,total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G311	UA	845	Chloride, total	mg/L	03/30/2021 - 07/27/2021	CI around geomean	21	200	120	200	Standard
G311	UA	845	Chromium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G311	UA	845	Cobalt, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.00269	0.006	0.0056	0.006	Standard
G311	UA	845	Fluoride, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.23	4.0	0.41	4	Standard
G311	UA	845	Lead, total	mg/L	03/30/2021 - 07/27/2021	Most recent sample	0.001	0.0075	0.0063	0.0075	Standard
G311	UA	845	Lithium, total	mg/L	03/30/2021 - 07/27/2021	Most recent sample	0.020	0.040	0.013	0.04	Standard
G311	UA	845	Mercury, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G311	UA	845	Molybdenum, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.10	0.0015	0.1	Standard
G311	UA	845	pH (field)	SU	03/30/2021 - 07/27/2021	CI around mean	6.8	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G311	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 07/14/2021	CI around mean	-0.101	5.0	1.6	5	Standard
G311	UA	845	Selenium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G311	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	773	400	367	400	Standard
G311	UA	845	Thallium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G311	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CI around median	1500	1200	1010	1200	Standard
G311D	LCU	845	Antimony, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G311D	LCU	845	Arsenic, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.000746	0.010	0.0043	0.01	Standard
G311D	LCU	845	Barium, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.21	2.0	0.12	2	Standard
G311D	LCU	845	Beryllium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G311D	LCU	845	Boron, total	mg/L	03/30/2021 - 07/28/2021	Future median	0.29	3.2	3.2	2	Background
G311D	LCU	845	Cadmium,total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G311D	LCU	845	Chloride, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.37	200	120	200	Standard
G311D	LCU	845	Chromium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G311D	LCU	845	Cobalt, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.00191	0.006	0.0056	0.006	Standard
G311D	LCU	845	Fluoride, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.35	4.0	0.41	4	Standard
G311D	LCU	845	Lead, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G311D	LCU	845	Lithium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G311D	LCU	845	Mercury, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G311D	LCU	845	Molybdenum, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.00895	0.10	0.0015	0.1	Standard

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TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G311D	LCU	845	pH (field)	SU	03/30/2021 - 07/28/2021	CI around mean	7.0	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G311D	LCU	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 06/29/2021	CI around mean	-0.153	5.0	1.6	5	Standard
G311D	LCU	845	Selenium, total	mg/L	03/30/2021 - 07/28/2021	CI around median	0	0.050	0.0015	0.05	Standard
G311D	LCU	845	Sulfate, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	77	400	367	400	Standard
G311D	LCU	845	Thallium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G311D	LCU	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/28/2021	CI around mean	490	1200	1010	1200	Standard
G312	UA	845	Antimony, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G312	UA	845	Arsenic, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G312	UA	845	Barium, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.023	2.0	0.12	2	Standard
G312	UA	845	Beryllium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G312	UA	845	Boron, total	mg/L	03/30/2021 - 07/27/2021	Future median	2.2	3.2	3.2	2	Background
G312	UA	845	Cadmium,total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G312	UA	845	Chloride, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	21	200	120	200	Standard
G312	UA	845	Chromium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G312	UA	845	Cobalt, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.00215	0.006	0.0056	0.006	Standard
G312	UA	845	Fluoride, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.25	4.0	0.41	4	Standard
G312	UA	845	Lead, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G312	UA	845	Lithium, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.020	0.040	0.013	0.04	Standard
G312	UA	845	Mercury, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G312	UA	845	Molybdenum, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.10	0.0015	0.1	Standard
G312	UA	845	pH (field)	SU	03/30/2021 - 07/27/2021	CI around mean	6.4	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G312	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 07/13/2021	CI around mean	0.062	5.0	1.6	5	Standard
G312	UA	845	Selenium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G312	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	687	400	367	400	Standard
G312	UA	845	Thallium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G312	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CB around linear reg	1620	1200	1010	1200	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G313	UA	845	Antimony, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G313	UA	845	Arsenic, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G313	UA	845	Barium, total	mg/L	03/30/2021 - 07/27/2021	CB around linear reg	0.017	2.0	0.12	2	Standard
G313	UA	845	Beryllium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G313	UA	845	Boron, total	mg/L	03/30/2021 - 07/27/2021	Future median	3.5	3.2	3.2	2	Background
G313	UA	845	Cadmium,total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G313	UA	845	Chloride, total	mg/L	03/30/2021 - 07/27/2021	CI around median	23	200	120	200	Standard
G313	UA	845	Chromium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G313	UA	845	Cobalt, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.002	0.006	0.0056	0.006	Standard
G313	UA	845	Fluoride, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.26	4.0	0.41	4	Standard
G313	UA	845	Lead, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G313	UA	845	Lithium, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.020	0.040	0.013	0.04	Standard
G313	UA	845	Mercury, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G313	UA	845	Molybdenum, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.00113	0.10	0.0015	0.1	Standard
G313	UA	845	pH (field)	SU	03/30/2021 - 07/27/2021	CI around mean	6.9	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G313	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 07/13/2021	CI around mean	0.16	5.0	1.6	5	Standard
G313	UA	845	Selenium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G313	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	686	400	367	400	Standard
G313	UA	845	Thallium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G313	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CI around median	1600	1200	1010	1200	Standard
G314	LCU	845	Antimony, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G314	LCU	845	Arsenic, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G314	LCU	845	Barium, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.019	2.0	0.12	2	Standard
G314	LCU	845	Beryllium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G314	LCU	845	Boron, total	mg/L	03/30/2021 - 07/27/2021	Future median	0.14	3.2	3.2	2	Background
G314	LCU	845	Cadmium,total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G314	LCU	845	Chloride, total	mg/L	03/30/2021 - 07/27/2021	CI around median	30	200	120	200	Standard
G314	LCU	845	Chromium, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.004	0.10	0.011	0.1	Standard
G314	LCU	845	Cobalt, total	mg/L	03/30/2021 - 07/27/2021	CB around linear reg	0.00959	0.006	0.0056	0.006	Standard
G314	LCU	845	Fluoride, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.25	4.0	0.41	4	Standard
G314	LCU	845	Lead, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.0075	0.0063	0.0075	Standard
G314	LCU	845	Lithium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G314	LCU	845	Mercury, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G314	LCU	845	Molybdenum, total	mg/L	03/30/2021 - 07/27/2021	CB around linear reg	0.000545	0.10	0.0015	0.1	Standard
G314	LCU	845	pH (field)	SU	03/30/2021 - 07/27/2021	CI around median	6.6	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G314	LCU	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 07/13/2021	CI around mean	0.29	5.0	1.6	5	Standard
G314	LCU	845	Selenium, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.050	0.0015	0.05	Standard
G314	LCU	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around median	830	400	367	400	Standard
G314	LCU	845	Thallium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G314	LCU	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CI around median	1900	1200	1010	1200	Standard
G314D	DA	845	Antimony, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G314D	DA	845	Arsenic, total	mg/L	03/30/2021 - 07/28/2021	CI around median	0	0.010	0.0043	0.01	Standard
G314D	DA	845	Barium, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.043	2.0	0.12	2	Standard
G314D	DA	845	Beryllium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G314D	DA	845	Boron, total	mg/L	03/30/2021 - 07/28/2021	Future median	0.16	3.2	3.2	2	Background
G314D	DA	845	Cadmium,total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G314D	DA	845	Chloride, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	53	200	120	200	Standard
G314D	DA	845	Chromium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G314D	DA	845	Cobalt, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.002	0.006	0.0056	0.006	Standard
G314D	DA	845	Fluoride, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.48	4.0	0.41	4	Standard
G314D	DA	845	Lead, total	mg/L	03/30/2021 - 07/28/2021	CI around median	0	0.0075	0.0063	0.0075	Standard
G314D	DA	845	Lithium, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.018	0.040	0.013	0.04	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G314D	DA	845	Mercury, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G314D	DA	845	Molybdenum, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.0073	0.10	0.0015	0.1	Standard
G314D	DA	845	pH (field)	SU	03/30/2021 - 07/28/2021	CI around mean	7.2	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G314D	DA	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 06/28/2021	CI around mean	1.1	5.0	1.6	5	Standard
G314D	DA	845	Selenium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G314D	DA	845	Sulfate, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	464	400	367	400	Standard
G314D	DA	845	Thallium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G314D	DA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/28/2021	CI around mean	1110	1200	1010	1200	Standard
G315	UA	845	Antimony, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G315	UA	845	Arsenic, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.010	0.0043	0.01	Standard
G315	UA	845	Barium, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.023	2.0	0.12	2	Standard
G315	UA	845	Beryllium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G315	UA	845	Boron, total	mg/L	03/30/2021 - 07/28/2021	Future median	1.3	3.2	3.2	2	Background
G315	UA	845	Cadmium,total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G315	UA	845	Chloride, total	mg/L	03/30/2021 - 07/28/2021	CI around median	1.9	200	120	200	Standard
G315	UA	845	Chromium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G315	UA	845	Cobalt, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.002	0.006	0.0056	0.006	Standard
G315	UA	845	Fluoride, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	0.25	4.0	0.41	4	Standard
G315	UA	845	Lead, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G315	UA	845	Lithium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G315	UA	845	Mercury, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G315	UA	845	Molybdenum, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.10	0.0015	0.1	Standard
G315	UA	845	pH (field)	SU	03/30/2021 - 07/28/2021	CI around mean	6.8	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G315	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 07/14/2021	CI around mean	0.00773	5.0	1.6	5	Standard
G315	UA	845	Selenium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G315	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/28/2021	CI around median	850	400	367	400	Standard

TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G315	UA	845	Thallium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G315	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/28/2021	CI around mean	1440	1200	1010	1200	Standard
G316	LCU	845	Antimony, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G316	LCU	845	Arsenic, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.00669	0.010	0.0043	0.01	Standard
G316	LCU	845	Barium, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.060	2.0	0.12	2	Standard
G316	LCU	845	Beryllium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
G316	LCU	845	Boron, total	mg/L	03/30/2021 - 07/27/2021	Future median	0.49	3.2	3.2	2	Background
G316	LCU	845	Cadmium,total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G316	LCU	845	Chloride, total	mg/L	03/30/2021 - 07/27/2021	CI around geomean	21	200	120	200	Standard
G316	LCU	845	Chromium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G316	LCU	845	Cobalt, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.00298	0.006	0.0056	0.006	Standard
G316	LCU	845	Fluoride, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	0.24	4.0	0.41	4	Standard
G316	LCU	845	Lead, total	mg/L	03/30/2021 - 07/27/2021	CI around median	0.001	0.0075	0.0063	0.0075	Standard
G316	LCU	845	Lithium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G316	LCU	845	Mercury, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G316	LCU	845	Molybdenum, total	mg/L	03/30/2021 - 07/27/2021	CB around linear reg	0.00407	0.10	0.0015	0.1	Standard
G316	LCU	845	pH (field)	SU	03/30/2021 - 07/27/2021	CI around mean	7.0	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G316	LCU	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 07/13/2021	CI around geomean	0.17	5.0	1.6	5	Standard
G316	LCU	845	Selenium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.050	0.0015	0.05	Standard
G316	LCU	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CB around T-S line	237	400	367	400	Standard
G316	LCU	845	Thallium, total	mg/L	03/30/2021 - 07/27/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G316	LCU	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CI around median	1100	1200	1010	1200	Standard
G317	UA	845	Antimony, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.003	0.006	0.003	0.006	Standard
G317	UA	845	Arsenic, total	mg/L	03/30/2021 - 07/28/2021	CI around median	0.001	0.010	0.0043	0.01	Standard
G317	UA	845	Barium, total	mg/L	03/30/2021 - 07/28/2021	CB around linear reg	0.00867	2.0	0.12	2	Standard
G317	UA	845	Beryllium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard

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TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G317	UA	845	Boron, total	mg/L	03/30/2021 - 07/28/2021	Future median	0.024	3.2	3.2	2	Background
G317	UA	845	Cadmium,total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
G317	UA	845	Chloride, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	8.4	200	120	200	Standard
G317	UA	845	Chromium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.004	0.10	0.011	0.1	Standard
G317	UA	845	Cobalt, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.002	0.006	0.0056	0.006	Standard
G317	UA	845	Fluoride, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.25	4.0	0.41	4	Standard
G317	UA	845	Lead, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.0075	0.0063	0.0075	Standard
G317	UA	845	Lithium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.020	0.040	0.013	0.04	Standard
G317	UA	845	Mercury, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.0002	0.002	0.0013	0.002	Standard
G317	UA	845	Molybdenum, total	mg/L	03/30/2021 - 07/28/2021	CB around linear reg	0.00107	0.10	0.0015	0.1	Standard
G317	UA	845	pH (field)	SU	03/30/2021 - 07/28/2021	CI around mean	6.5	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G317	UA	845	Radium-226 + Radium 228, tot	pCi/L	03/30/2021 - 07/13/2021	CI around geomean	0.79	5.0	1.6	5	Standard
G317	UA	845	Selenium, total	mg/L	03/30/2021 - 07/28/2021	CI around median	0.001	0.050	0.0015	0.05	Standard
G317	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	853	400	367	400	Standard
G317	UA	845	Thallium, total	mg/L	03/30/2021 - 07/28/2021	All ND - Last	0.001	0.002	0.001	0.002	Standard
G317	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/28/2021	CI around mean	1570	1200	1010	1200	Standard

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TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Notes:
Potential exceedance of GWPS
HSU = hydrostratigraphic unit:
DA = deep aquifer
LCU = lower confining unit
UA = uppermost aquifer
Program = regulatory program data were collected under:
257 = 40 C.F.R. Part 257 Subpart D (Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments)
845 = 35 I.A.C. Part 845 (Sampling events completed to assess well locations for inclusion in the Part 845 monitoring well network)
mg/L = milligrams per liter
pCi/L = picocuries per liter
SU = standard units
Statistical Calculation = method used to calculate the statistical result:
All ND - Last = All results were below the reporting limit, and the last determined reporting limit is shown
CB around linear reg = Confidence band around linear regression
CB around T-S line = Confidence band around Thiel-Sen line
CI around geomean = Confidence interval around the geometric mean
CI around mean = Confidence interval around the mean
CI around median = Confidence interval around the median
Future median = Median of the three most recent samples
Most recent sample = Result for the most recently collected sample used due to insufficient data
Statistical Result = calculated in accordance with Statistical Analysis Plan using constituent concentrations observed at monitoring well during all sampling events within the specified date range
For pH, the values presented are the lower / upper limits
GWPS = Groundwater Protection Standard
GWPS Source:
Standard = standard specified in 35 I.A.C. § 845.600(a)(1)
Background = background concentration (see cover page for additional information)

RAMBOLL

TABLE 2. SUMMARY OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G301	UA	257	Sulfate, total	mg/L	11/20/2015 - 01/27/2021	Future median	750	700	700	400	Background
G303	UA	257	Sulfate, total	mg/L	11/20/2015 - 01/26/2021	Future median	730	700	700	400	Background
G303	UA	257	Total Dissolved Solids	mg/L	11/20/2015 - 01/26/2021	CI around mean	1460	1200	893	1200	Standard
G304	UA	257	Sulfate, total	mg/L	11/20/2015 - 05/20/2016	Most recent sample	1000	700	700	400	Background
G304	UA	257	Total Dissolved Solids	mg/L	11/20/2015 - 05/20/2016	Most recent sample	1300	1200	893	1200	Standard
G305	UA	257	Sulfate, total	mg/L	05/19/2016 - 11/17/2016	Future median	890	700	700	400	Background
G305	UA	257	Total Dissolved Solids	mg/L	05/19/2016 - 11/17/2016	CI around mean	1280	1200	893	1200	Standard
G307	UA	257	Sulfate, total	mg/L	08/16/2016 - 01/27/2021	Future median	910	700	700	400	Background
G307	UA	257	Total Dissolved Solids	mg/L	08/16/2016 - 01/27/2021	CI around mean	1350	1200	893	1200	Standard
G307D	LCU	845	Sulfate, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	765	400	367	400	Standard
G307D	LCU	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/27/2021	CI around mean	1210	1200	1010	1200	Standard
G308	UA	845	Sulfate, total	mg/L	03/29/2021 - 07/27/2021	CI around median	1100	400	367	400	Standard
G308	UA	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/27/2021	CI around mean	1820	1200	1010	1200	Standard
G309	UA	845	Sulfate, total	mg/L	03/29/2021 - 07/27/2021	CI around mean	746	400	367	400	Standard
G309	UA	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/27/2021	CI around median	1300	1200	1010	1200	Standard
G310	UA	845	Sulfate, total	mg/L	03/29/2021 - 07/28/2021	CI around geomean	550	400	367	400	Standard
G310	UA	845	Total Dissolved Solids	mg/L	03/29/2021 - 07/28/2021	CI around mean	1450	1200	1010	1200	Standard
G311	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	773	400	367	400	Standard
G311	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CI around median	1500	1200	1010	1200	Standard
G312	UA	845	pH (field)	SU	03/30/2021 - 07/27/2021	CI around mean	6.4	6.5/9.0	6.6/7.3	6.5/9	Standard/Standard
G312	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	687	400	367	400	Standard
G312	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CB around linear reg	1620	1200	1010	1200	Standard
G313	UA	845	Boron, total	mg/L	03/30/2021 - 07/27/2021	Future median	3.5	3.2	3.2	2	Background
G313	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around mean	686	400	367	400	Standard
G313	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CI around median	1600	1200	1010	1200	Standard
G314	LCU	845	Cobalt, total	mg/L	03/30/2021 - 07/27/2021	CB around linear reg	0.00959	0.006	0.0056	0.006	Standard

TABLE 2. SUMMARY OF POTENTIAL EXCEEDANCES
HISTORY OF POTENTIAL EXCEEDANCES
COFFEEN POWER PLANT
ASH POND NO. 1
COFFEEN, ILLINOIS

Sample Location	HSU	Program	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
G314	LCU	845	Sulfate, total	mg/L	03/30/2021 - 07/27/2021	CI around median	830	400	367	400	Standard
G314	LCU	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/27/2021	CI around median	1900	1200	1010	1200	Standard
G314D	DA	845	Sulfate, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	464	400	367	400	Standard
G315	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/28/2021	CI around median	850	400	367	400	Standard
G315	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/28/2021	CI around mean	1440	1200	1010	1200	Standard
G317	UA	845	Sulfate, total	mg/L	03/30/2021 - 07/28/2021	CI around mean	853	400	367	400	Standard
G317	UA	845	Total Dissolved Solids	mg/L	03/30/2021 - 07/28/2021	CI around mean	1570	1200	1010	1200	Standard

Notes:
HSU = hydrostratigraphic unit:
DA = deep aquifer
LCU = lower confining unit
UA = uppermost aquifer
Program = regulatory program data were collected under:
257 = 40 C.F.R. Part 257 Subpart D (Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments)
845 = 35 I.A.C. Part 845 (Sampling events completed to assess well locations for inclusion in the Part 845 monitoring well network)
mg/L = milligrams per liter
pCi/L = picocuries per liter
SU = standard units
Statistical Calculation = method used to calculate the statistical result:
CB around linear reg = Confidence band around linear regression
CI around geomean = Confidence interval around the geometric mean
CI around mean = Confidence interval around the mean
CI around median = Confidence interval around the median
Future median = Median of the three most recent samples
Most recent sample = Result for the most recently collected sample used due to insufficient data
Statistical Result = calculated in accordance with Statistical Analysis Plan using constituent concentrations observed at monitoring well during all sampling events within the specified date range
For pH, the values presented are the lower / upper limits
GWPS = Groundwater Protection Standard
GWPS Source:
Standard = standard specified in 35 I.A.C. § 845.600(a)(1)
Background = background concentration (see cover page for additional information)