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EXHIBIT 30

The Supplemental Declaration of Kenneth W. Liss

SUPPLEMENTAL DECLARATION OF KENNETH W. LISS

I, Kenneth W. Liss, first being duly sworn on oath, depose and state as follows:

1. On May 11, 2021, I executed the Declaration of Kenneth J. Liss, which was attached as Ex. 9 to Southern Illinois Power Company's ("SIPC") Petition for Adjusted Standard, PCB No. AS 2021-006. I understand that SIPC has filed an Amended Petition for Adjusted Standard ("Amended Petition") and this Supplemental Declaration is being submitted as Ex. 30 thereto.

2. In my May 11 declaration, I provided estimates for the costs of compliance with Part 845, assuming Part 845 applied, for two sets of current and former ponds at SIPC's Marion Station: the Former Fly Ash Holding Units and the De Minimis Units, as those units are defined in my May 11 Declaration.

3. Since the date of my original declaration, I have had the opportunity to refine my estimates to incorporate the results of the pond investigation described in the September 1, 2021 Pond Investigation Report of Certain Ponds at SIPC's Marion Station by Haley & Aldridge (Ex. 29 to the Amended Petition). I also have conducted further research and analysis of the likely costs of compliance with certain aspects of Part 845, including the costs of construction and operating permits, public notice requirements and groundwater monitoring and characterization. Accordingly, I have updated my testimony, as set forth below.

4. I revise the cost estimates contained in Paragraph 8 of my May 11 declaration to be:

> I estimate the costs to complete the landfill closure described in the proposed landfill closure plan to be approximately $3.5-4.5 million in immediate capital and other upfront costs, with approximately $42,000 per year in O&M costs for a period of 5 years after the completion of closure activities, and $12,400 per year in annual O&M costs for the following 10 year period, assuming a 15-year post-closure care and monitoring period. This time period is an estimate, based in part on my conversations with IEPA personnel, and assuming the landfill will be released from post-closure care before the 30 year post-closure care period stipulated in the Part 811 regulations.

5. I revise the cost estimates contained in Paragraph 15 of my May 11 Declaration as follows:

> I have prepared a high-level estimate of the potential costs to close the landfill area in place in compliance with Part 845 to be approximately $5.4 million in capital costs and other upfront costs, including the costs of the permits, assessments and certifications required by Part 845. I further estimate the annual O&M costs associated with managing the landfill area as a Part 845 regulated

surface impoundment would be at least $67,536 per year (without an inflation factor) for the first ten years of post-closure care, and $33,752 (without an inflation factor) for the remainder of the 30-year post closure care period required by Part 845. This does not include the costs of expediting work to meet Part 845's stringent deadlines, or alternative Board-ordered compliance deadlines, whichever may apply. This also does not include additional costs that may be incurred due to potential ambiguities in the rules, and does not include any plant personnel time. This also assumes that SIPC is permitted to close the landfill area as a single CCR surface impoundment.

6. I also revise Paragraph 18 of my May 11 Declaration as follows:

I estimate the costs for Part 845 compliance for the De Minimis Units, including closure by removal, to be at least $14.85 million in capital costs and other upfront costs, with at least $98,100 in annual O&M costs (without an inflation factor) for a minimum of three years. This does not include the cost of constructing new storm water basins as needed to replace the De Minimis Units and maintain necessary operating conditions. This also does not include the costs of expediting work to meet Part 845's stringent deadlines, or alternative Board-ordered compliance deadlines, whichever may apply. This also does not include additional costs that may be incurred due to potential ambiguities in the rules, and does not include any plant personnel time. This does not include the cost of constructing new storm water basins to replace the De Minimis Units.

7. I also revise Paragraph 5 of my May 11 Declaration to read:

In December, 2020, I submitted to IEPA on behalf of SIPC a proposed closure plan for the former on-site CCR landfill. That proposed closure plan is attached as Ex. 10 to SIPC's Petition for Adjusted Standard.

8. The cost estimates set forth herein are based upon the information currently available to me and are subject to revision and supplementation based upon new information.

9. All other portions of my May 11 Declaration remain unchanged.

FURTHER, Declarant sayeth not.

Kenneth W. Liss

Electronic Filing: Received, Clerk's Office 10/10/2025

EXHIBIT 31

Amended Petition Redline

BEFORE THE
ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: PETITION OF SOUTHERN ILLINOIS POWER COOPERATIVE FOR AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845 OR, IN THE ALTERNATIVE, A FINDING OF INAPPLICABILITY	AS ~~21-~~2021-006 (Adjusted Standard)

AMENDED PETITION FOR AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845 OR, IN THE ALTERNATIVE, A FINDING OF INAPPLICABILITY

Submitted on behalf of
Southern Illinois Power Cooperative

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I. INTRODUCTION

This Amended Petition for an Adjusted Standard ("Petition") concerns eight existing and former ponds located at Southern Illinois Power Cooperative's ("SIPC") Marion Generating Station ("Marion Station") in Williamson County, Illinois. ~~Those~~ These ponds are as follows: Pond 3 (including Pond 3A), Pond 4, former Pond B-3, South Fly Ash Pond, and Pond 6 (collectively, the "De Minimis Units"), and the ~~Former~~ former Fly Ash Holding Area, the former Replacement Fly Ash Holding Area, and the former Fly Ash Holding Area Extension (collectively, the "Former Fly Ash Holding Units")[1]. This Amended Petition amends the Petition for Adjusted Standard filed by SIPC on May 11, 2021, including to reflect the results of a Pond Investigation Report for Certain Ponds at Southern Illinois Power Company's Marion Station ("Pond Investigation Rep."), attached as Ex. 29[2], as well as the Updated Opinion of Lisa Bradley, which is attached as Updated Ex. 28 ("Updated Bradley Op."), and the Supplemental Declaration of Kenneth W. Liss, which attached as Ex. 30 ("Supp. Liss Dec.").[3] A redline comparison showing changes made since the initial Petition is attached as Ex. 31.

As discussed herein, neither the De Minimis Units nor the Former Fly Ash Holding Units are regulated "CCR surface impoundments" for purposes of Illinois's newly enacted Standards for the Disposal of Coal Combustion Residuals ("Part 845"). Nor are they CCR surface impoundments regulated by the federal CCR regulations upon which Part 845 was based. ~~Further,~~

---

[1] The De Minimis Units and the Former Fly Ash Holding Units are depicted on the Site Map~~.~~ prepared by Andrews Engineering~~, Site Map prepared~~ for SIPC (May 2021) ("Site Map"), ~~attached as~~ Ex. 3.

[2] For Exhibit 29, the Pond Investigation Report, SIPC has attached to the electronically filed version of this Petition only the Report itself and not the appendices, as they are several hundred pages long. Those appendices are being transmitted separately to the Board and to IEPA. *See* Pond Investigation Rep., Ex. 29.

[3] SIPC has attached only new or updated (labeled "Updated Ex. ___") exhibits to this Petition. All other exhibits referred to within are attached to SIPC's original petition.

~~none~~ None of these former or current ponds poses the types of risks to the environment and human health that federal and state CCR regulations aim to address. Indeed, some of the ponds at issue closed decades ago and have not contained water since then, while another had any water and CCR removed years ago. Nevertheless, while discussions continue, the Illinois Environmental Protection Agency ("IEPA") has so far taken the incorrect position that all eight current and former ponds are covered by Part 845.

Compliance with Part 845 is plainly not required for the ponds and former ponds at issue, which do not fall under the definition of "CCR surface impoundment" and therefore are not covered by Part 845. And, to the extent the Board finds that any of the units at issue are ~~covered~~ regulated CCR surface impoundments (they are not), an adjusted standard is warranted because they differ from the surface impoundments the Board targeted for regulation under Part 845 and the exorbitant costs of compliance with Part 845 are not warranted in light of the fact that the units at issue pose minimal—if any—risk to human health and the environment.

Accordingly, for the reasons set forth herein, SIPC respectfully requests that the Board issue a finding of inapplicability with respect to the current and former ponds at issue or, in the alternative, an adjusted standard exempting the units at issue from Part 845 requirements.

II. FACTUAL AND PROCEDURAL BACKGROUND.[~~2~~4]

A. Nature of Petitioner's Activity and General Plant Description

Marion Station is a gas and coal-fired power plant located approximately seven miles south of the City of Marion in Williamson County, Illinois. *See* Site Map, Ex. 3. Marion Station

[~~2~~4] The Declarations of Wendell Watson and Todd Gallenbach, ~~attached as~~ Exs. 1 and 2 ~~to this Petition~~, are provided in support of facts stated herein regarding Marion Station and the current and former ponds at issue. SIPC's investigation into the facts set forth herein is ongoing, and SIPC reserves the right to further supplement or amend its Amended Petition to reflect receipt of new or additional information.

currently consists of one operating coal-fired unit (Unit 123), with a nominal capacity of 1402 mmBtu/hour, and two additional gas-fired combined-cycle units (Units 5 and 6).

Unit 123 was constructed in the early 2000s, repowering the existing steam turbine that had been powered by retired Units 1, 2, and 3. Units 1, 2, and 3 were 33 MW coal-fired cyclone generating units constructed in the 1960s. An additional 173 MW coal-fired unit (Unit 4) came online in 1978. Unit 4 shut down permanently in October 2020. A 109 MW circulating fluidized bed boiler provides steam to generating Unit 123. The two gas-fired simple-cycle units (Units 5 and 6) are nominally rated at 969 mmBtu/hr each (dependent upon ambient air temperature). Marion Station uses Illinois basin bituminous coal for Unit 123. Since 1978, SIPC also has burned more than ~~10~~ ten million tons of mine waste, helping to clean up many abandoned mines.

SIPC owns 4,674 acres around Marion Station and employs seventy-eight people. Nearby Lake of Egypt (the "Lake") was constructed in 1963 to provide cooling water for the station's coal-fired generating units. The Lake provides some local public water supply and is also used for recreational purposes, such as boating and fishing. The local water authority periodically tests the Lake water for public use. *See, e.g.*, Lake Egypt Water District IL 1995200, Annual Drinking Water Quality Report (Jan. 1–Dec. 30, 2019), ~~attached as~~ Ex. 4. SIPC owns several parcels bordering the plant property. Other nearby land uses include agricultural and recreational use, including a golf course and a country club. Shawnee National Forest is located approximately fifteen miles to the south of Marion Station. The closest identified potential groundwater well is at the Lake of Egypt Country Club, located more than 2,000 feet away ~~of~~ from any pond at issue in this proceeding. That well is up gradient from the Station's pond system.

B. CCR Management at Marion Station.

Coal combustion residuals ("CCR") ~~is~~ are a byproduct of the coal-fired power generation process. Currently, only Unit 123 generates CCR (in the form of ash) at the Station. One hundred percent of the CCR generated from Unit 123 is handled dry and used for mine reclamation beneficial use off-site. Unit 123 controls SO2 through its combustion process, and thus, no scrubber is needed.

There is no wet handling of CCR generated from current operations at Marion Station. While in operation, prior Units 1, 2, and 3 generated CCR in the form of fly ash and bottom ash. Former Unit 4 generated CCR in the form of fly ash and bottom ash, as well as scrubber sludge from an SO2 scrubber installed around 1978. This was the first wet SO2 scrubber installed in Illinois—and one of the first in the nation—and reflects SIPC's early environmental commitment, which continues to this day. The historic handling, storage, and disposal of CCR at Marion Station is described below.

1. Fly Ash.

SIPC began collecting fly ash from former Units 1, 2, and 3 after installing electrostatic precipitators ("ESPs")[~~3~~5] at each unit in 1975 in accordance with the Clean Air Act.[~~4~~6] Because Units 1, 2, and 3 were cyclone units, they generated relatively small amounts of fly ash as compared to other types of coal-fired boilers. Cyclone boilers produce less than twenty-five percent of the fly ash pulverized coal units produce.

[~~3~~5] ESPs are control devices that ~~captures~~ capture particulate matter in the exhaust gas, including fly ash.

[~~4~~6] Prior to installation of the ESPs, most of the fly ash from Units 1, 2, and 3 would have been expected to exit the stack with exhaust gases, and only minimal amounts of fly ash may have been collected from the cyclone ~~units~~ Units 1, 2, and 3. On information and belief, any minimal amounts of fly ash collected would likely have been conveyed to Pond 1, Pond 2, or the Initial Fly Ash Holding Area, which had an outlet to Pond 3.

Between 1975 and 1978, on information and belief, fly ash was collected wet using a hydroveyer system and conveyed to an area labeled on historic documents as a "fly ash holding area" (the "Initial Fly Ash Holding Area") located just to the west of Pond 3. *See* Site Map, Ex. 3. In 1977, SIPC received a permit from IEPA to abandon and cover the Initial Fly Ash Holding Area and to construct an additional holding area for fly ash (the "Replacement Fly Ash Holding Area"). *See* IEPA Water Pollution Control Permit, No. 1977-EN-5732 (Nov. 14, 1977) ("1977 Permit"), ~~attached as~~ Ex. 5.

In 1978, Unit 4 was constructed. Around the same time the hydroveyer system was modified to allow for dry collection of fly ash. From 1978 until 2003, most of the fly ash collected from Unit 4 was collected dry using the hydroveyer system~~, which was modified to allow for dry collection of fly ash~~. Most of that fly ash was disposed of at a former on-site, permit-exempt~~,~~ landfill ("Former Landfill"), often mixed with scrubber sludge as discussed further below.

Also around 1978, documents indicate that SIPC constructed the Replacement Fly Ash Holding Area to the North of Pond 2. *See* 1977 Permit, Ex. 5. The Replacement Fly Ash Holding Area likely received spent water from the hydroveyer system, which is believed to have contained only *de minimis* amounts of fly ash. *See* Letter from SIPC to IEPA (July 27, 1982), ~~attached as~~ Ex. 6. On information and belief, the Replacement Fly Ash Holding Area also was designated to receive sluiced fly ash from Unit 4 during intermittent emergencies in which the fly ash was unable to be conveyed to the Former Landfill. *Id.*

In or around 1981, SIPC received a permit from IEPA to build a fly ash holding area extension (the "Fly Ash Holding Area Extension"), to the west of the Replacement Fly Ash Holding Area, and a berm around a portion of the Former Landfill area that received fly ash and scrubber sludge from Unit 4. *See* IEPA Water Pollution Control Permit, No. 1981-EN-2776-1

(Oct. 13, 1981) ("1981 Permit"), Ex. 7. That bermed area collected storm water runoff from the landfill, and that collected water eventually became what is now denominated as Pond 6 (discussed *infra*).

On information and belief, between 1978 and 1985, limited fly ash from Units 1, 2, and 3[5] may have been sluiced to the Replacement Fly Ash Holding Area. In 1985, former Pond A-1 was constructed. After ~~that period~~1985, water from the hydroveyer system and, on information and belief, any fly ash from Units 1, 2, and 3 were conveyed to Pond A-1 or, in limited cases of Pond A-1 outrages between 1985 and 2003 (*see infra* at ~~p. 11–12~~12–13), Pond B-3. *See, e.g.*, Letter from SIPC to IEPA (Sept. 16, 1993) ("1993 Letter"), ~~attached as~~ Ex. 8.

On information and belief, the Replacement Fly Ash Holding Area and the Fly Ash Holding Area Extension stopped receiving wastes after former Pond A-1 was built. Subsequently, those two units were drained of water—other than occasional storm water runoff—and, by the early 1990s, were covered at least in part by the Former Landfill. Currently, the area that previously contained those units is within the landfill cover area that SIPC has proposed to IEPA, as described further below. Declaration of Kenn Liss ("Liss Dec."), ~~attached as~~ Ex. 9; *see also* Andrews Engineering, SIPC's Proposed Closure Plan for IEPA Site No. 199055505 (Dec. 16, 2020) ("Former Landfill Closure Plan"), ~~attached as~~ Ex. 10.

In 2003, SIPC repowered the old boilers 1, 2, and 3 with a Circulating Fluidized Bed ("CFB"), now referred to as Unit 123. The CFB allowed SIPC to convert its fly ash system to one hundred percent dry ash handling and disposal and ended even the minimal wet fly ash discharge that had previously occurred at Marion Station.

[5] Units 1, 2 and 3 were run infrequently after the installation of Unit 4.

2. Scrubber Sludge.

Unit 4 came online in 1978 and produced scrubber sludge, which was predominately calcium sulfite. The scrubber sludge was mixed with fly ash, and moved via a conveyer to the Former Landfill, which ceased accepting waste prior to October 2015 and for which SIPC has submitted a landfill closure plan to IEPA at IEPA's request (*see infra* at ~~p. 14–15~~15–16). Former Landfill Closure Plan, Ex. 10. In 2009, the scrubber was modified to a forced oxidation system~~,~~, which produced calcium sulfate, better known as gypsum. One hundred percent of the gypsum generated at Marion Station was sold as an agricultural modifier or an ingredient for cement. With the closure of Unit 4, Marion Station no longer generates scrubber sludge or gypsum.

3. Bottom Ash.

Historically, bottom ash from now-retired Units 1, 2, 3, and 4 was sluiced to Ponds 1 and 2. On information and belief, SIPC sold one hundred percent of its bottom ash to shingle manufactures, grit blasting companies, and local highway departments for more than forty years. For almost the entire lives of the ponds, the water in Ponds 1 and 2, from which bottom ash was removed, discharged to Pond 4 and, from there, through permitted Wastewater Discharge Outfall 002. Beneficial use Ponds 1 and 2 are no longer in use with the closure of Unit 4 and are undergoing closure. Ash from Unit 123's fluidized bed boiler is handled dry and beneficially used offsite.

4. Other Non-CCR Waste Streams.

Minor other non-CCR waste streams from the Marion Station, including air heater wash water and flue gas desulfurization decant excess water, were historically discharged to the former Emery Pond. Former Emery Pond was built in the late 1980s as a storm water storage structure for drainage from the adjacent plant area, including the more recent Gypsum Loadout Area. *See*

Hanson, Emery Pond Corrective Action and Selected Remedy Plan, Including GMZ Petition (Mar. 29, 2019), attached as Ex. 11. Process waste water discharges to former Emery Pond have ceased and any water or CCR in the former Emery Pond has been removed pursuant to closure and related plans overseen by IEPA. Former Emery Pond's closure has been conducted consistent with Part 257 and Part 845, and although the field work was completed before adoption of Part 845, the closure was generally consistent with Part 845 as well. A new storm basin is located in the area of former Emery Pond.

C. The Ponds Subject to This Petition.

This Petition concerns the De Minimis Units: five current or former ponds at SIPC's Marion Generating Station—the South Fly Ash Pond, Pond 3 (including Pond 3A), Pond 6, Pond 4 and Pond B-3, which have contained only *de minimis*, if any, amounts of CCR. These current and former ponds are described in Section C.1. This Petition also addresses the Former Fly Ash Holding Units: three former fly ash ponds that closed and were dewatered decades ago and are now part of the Former Landfill, which are described below Section C.2.

1. The De Minimis Units.

A map showing the location of the De Minimis Units is attached to SIPC's May 11, 2021 Petition. Site Map, Ex. 3. As discussed below, none of the De Minimis Units receive or received meaningful direct discharges of CCR and, to the extent they contain CCR as a result of limited historic or incidental discharges, such CCR should be *de minimis* in light of historic practices. As In addition, as discussed below*infra* at 30–32, SIPC is conducting Haley & Aldrich, Inc., on behalf of SIPC, has completed an investigation of these current or former ponds the De Minimis Units pursuant to an investigation protocol negotiated with IEPA, and SIPC expects that the results of the pond investigation will confirm that they which confirmed that the De Minimis Units contain

only *de minimis* amounts of CCR ~~that~~ and thus are not the types of units that were intended to be regulated under Part 257 or Part 845, and do not pose an appreciable threat to human health or the environment warranting regulation under Part 845. *See infra* at 30–32; *see also* Pond Investigation Rep., Ex. 29.

South Fly Ash Pond – The South Fly Ash Pond was built around 1989 as a potential replacement for Pond A-1, in case one was needed. *See* IEPA Water Pollution Control Permit, No. 1989-EN-3064 (May 17, 1989), ~~attached as~~ Ex. 12. Ultimately, Pond A-1 did not need replacement and operated until 2003, as described above. The South Fly Ash Pond has historically received decant water from former Emery Pond, which has ceased since former Emery Pond stopped receiving process waste water discharges in the Fall of 2020. No fly ash, bottom ash, or scrubber sludge was ever directly sent to or placed into the South Fly Ash Pond. If the pond received any CCR throughout its life, it was *de minimis*, consisting only of any residual CCR in pond overflow or storm water.

The Pond Investigation Report confirms that the South Fly Ash Pond contains minimal sediments, with a mean sediment thickness of approximately 1.57 feet, representing approximately 11 percent of historic pond volume[8]. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment which is used for the storage, treatment or disposal of CCR. *Id.* at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall

[8] As explained in the Pond Investigation report, the South Fly Ash Pond's water level was lowered for operational reasons during the time the bathymetric survey. *See* Ex. 29 at 7. As a point of comparison, Haley & Aldridge also estimated sediment volume as a percentage of pond volume using the 2007 pond elevation for the South Fly Ash Pond and Pond 4, which was determined to be more representative of historical conditions. *See id.*

impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from 10 percent to 64 percent in the sediment samples that were taken from the South Fly Ash Pond) is estimated to include CCR material. *Id.* at 14.

Pond 3 (including 3A) – Water from the South Fly Ash Pond is permitted to flow to Pond 3, then Ponds 4 6 and 64, before discharging through Outfall 002.[69] *See* IEPA Reissued National Pollutant Discharge Elimination System Permit, No. IL0004316 (Feb. 29February 1, 2012) ("2012 2007) ("2007 NPDES Permit"), attached as Ex. 13. On information and belief, Pond 3 may have received some overflow from the Initial Fly Ash Holding Area and later the Fly Ash Holding Area Extension. *See* IEPA Water Pollution Control Permit, No. 1973-ED-1343-OP (June 1973), attached as Ex. 14. Pond 3 also received storm water runoff, coal pile runoff, and water from the plant's floor drains. Later, by 1982, a berm was built within Pond 3 to separate Pond 3 from the pond now known as Pond 3A, which may have received some overflow from the Former Fly Ash Holding Units.

Pond 3 has been cleaned to remove pond sediment and debris, including vegetation, twice—once in 2006 and again in 2011. Pond 3A was drained of water and cleaned of debris and sediment in 2014. Those cleanings would also have removed any CCR that may have collected in the pond from historic operations. Starting around 2007, SIPC built a berm around Pond 3 to prevent landfill runoff from reaching that pond. Since the ponds pond's last cleanings, any CCR that has entered Pond 3 or Pond 3A is *de minimis*, such as through storm water, potential overflow from South Fly Ash Pond, or air dispositiondeposition; no ash has been placed in the pond for treatment, storage, or disposal.

[69] SIPC timely applied for NPDES permit renewal and is currently working with IEPA to update the application prior to on permit reissuance.

The Pond Investigation Report confirms that Pond 3 (including 3A) contains minimal sediments, with a mean sediment thickness of approximately 1.38 feet in Pond 3 and 1.45 feet in Pond 3A, representing approximately 9 percent and 13.3 percent of pond volume, respectively. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment which is used for the storage, treatment or disposal of CCR. *Id*. at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from 20 percent to 34 percent in the samples that were taken from Pond 3/3A) is estimated to include CCR material. *Id*. at 14.

Pond 6 – Pond 6 was developed to manage storm water associated with the Former Landfill at the facility and grew within a berm built for runoff capture that was addressed in a 1982 construction permit. Originally, Pond 6 discharged through Outfall 001. In or around 1993, in accordance with another IEPA-issued permit, SIPC extended Pond 6 and installed pumps to pump water from Pond 6 to Pond 4, where it then discharged through Outfall 002 to Little Saline Creek. *See* 1993 Letter, Ex. 8. Outfall 001 was subsequently eliminated. Any CCR discharges Pond 6 received throughout its life were *de minimis*, consisting of incidental amounts of CCR inflow from other ponds and storm water runoff. Pond 6 was not designed to accumulate CCR and liquids or to treat, store, or dispose of CCR.

The Pond Investigation Report confirms that Pond 6 contains minimal sediments, with a mean sediment thickness of approximately 0.84 feet, representing approximately 8.2 percent of pond volume. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment which is used for the storage, treatment or disposal of CCR. *Id*. at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments,

the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from 30 percent to 53 percent in the samples that were taken from Pond 6) is estimated to include CCR material. *Id.* at 14.

Moving forward, Pond 6 is expected to receive non-CCR runoff from the Former Landfill, and SIPC plans to manage Pond 6 in conjunction with the closure and post-closure management requirements of Part 811 with IEPA oversight.

Pond 4 – Pond 4 has primarily served two purposes at the facility: to receive decant water from Ponds 1 and 2, when they were in operation before Unit 4's shutdown, and to receive coal pile runoff. Pond 4 currently receives overflow from Pond 6 and discharges through Outfall 002 into the Little Saline Creek.

During an outage in 2012, Pond 4 was cleaned down to the clay, removing plant debris and any ash and coal fines that may collected in the pond. Since its cleaning in 2012, any CCR that has entered Pond 4 is *de minimis*, such as through storm water, overflow from Pond 6, or air deposition.

The Pond Investigation Report confirms that Pond 4 contains minimal sediments, with a mean sediment thickness of approximately 1.67 feet, representing approximately 10.9 percent of pond volume. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment which is used for the storage, treatment or disposal of CCR. *Id.* at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from 25 percent to 68 percent in the samples that were taken from Pond 4) is estimated to include CCR material. *Id.* at 14.

Pond B-3 – Pond B-3 was built by 1985 and was used primarily as a secondary pond to Pond A-1. Pond A-1 received some fly ash (as described above) and coal pile runoff until 2003, at which time all fly ash was handled dry and the runoff was directed to Pond 4. During periodic, intermittent outages of Pond A-1, Pond B-3 may have received some discharges of fly ash from Units 1, 2, and 3 prior to their shut down in 2003. On information and belief, Pond A-1 was taken offline at most ~~3 4~~ three to four times between 1985 and 2003, and each of those outages lasted approximately ~~2~~ two weeks. Most (or all) of those outages would have occurred during boiler shutdowns, when Marion Station was operating at less than full capacity and generating less ash. Accordingly, any fly ash sluiced to Pond B-3 during these intermittent outages would have been minimal.

In 2017, Pond B-3 was cleaned out down to the clay and has not held water since that time. A BTU analysis showed the material removed had a heat content comparable to coal—not CCR—and at least a portion of the material was consumed for energy production. ~~Analysis of the remaining sediment in the Pond B-3 met Class I groundwater standards.~~

Because former Pond B-3 no longer holds any significant amount of water, except in a small area of the former pond where storm water may collect after storms before drainage and evaporation, it was not able to be included as part of the bathymetric survey conducted in conjunction with the pond investigation. However, Haley & Aldridge performed an analysis of two samples taken of a berm associated with former Pond B-3 in conjunction with the pond

investigation report, as well as nine samples taken in 2017, and concluded that those samples contained little, if any, CCR material.[10] *See* Pond Investigation Rep., Ex. 29 at 12.

2. The Former Fly Ash Holding Units.

As discussed below, the Former Fly Ash Holding Units no longer contain water and are covered by the Former Landfill (or, in the case of the Fly Ash Holding Area Extension, a combination of dry CCR disposed in the landfill area, as well as sediments and other materials cleaned out from the pond system). The Former Fly Ash Holding Units were located within the green area on the site map attached ~~site map~~to SIPC's May 11, 2021 original Petition. Site Map, Ex. 3.

The Initial Fly Ash Holding Area – On information and belief, the Initial Fly Ash Holding Area received wet fly ash that was collected from Units 1, 2, and 3 until approximately 1977. In October 1977, IEPA issued a permit to SIPC for the Replacement Fly Ash Holding Area with a condition that required the Initial Fly Ash Holding Area to be abandoned and covered. *See* 1977 Permit, Ex. 5. In the early 1990s, plant personnel observed that while storm water might on ~~occasions~~ occasion collect for short periods after precipitation, the Initial Fly Ash Holding Area contained no pond or other area that continuously held water. Further, as of that time, the area was covered by a combination of the Former Landfill and a soil/vegetation cover. Based upon these area observations and in light of the "abandon and cover" permit condition, SIPC believes that the area was covered before the 1990s pursuant to the permit condition.

[10] Hanson Engineering, which performed the bathymetric survey and collected the data analyzed in the Pond Investigation Report, attempted to take a soil boring from the area of former Pond B-3 but was unable to access the agreed-upon IEPA sampling location. *See* Pond Investigation Rep. Ex. 29 at 6.

The Replacement Fly Ash Holding Area – In October 1977, IEPA issued a permit to SIPC to construct the Replacement Fly Ash Holding Area to the north of Pond 2. *See* 1977 Permit, Ex. 5. On information and belief, the Replacement Fly Ash Holding Area likely received spent water from the hydroveyer system, which likely contained *de minimis* amounts of fly ash. The Replacement Fly Ash Holding Area also may have received discharges of fly ash from Units 1, 2, and 3 prior to the construction of Pond A-1 in 1985. On information and belief, the Replacement Fly Ash Holding Area may have also been designated to receive sluiced fly ash from Unit 4 during intermittent emergencies in which the fly ash was unable to be conveyed to the Former Landfill. It is unknown whether the Replacement Fly Ash Holding Area ever received sluiced fly ash from Unit 4 during emergencies. By the early 1990s, the Replacement Fly Ash Holding Area had been drained of water and was covered by the Former Landfill.

The Fly Ash Holding Area Extension – In or around 1982, SIPC received a permit from IEPA to construct the Fly Ash Holding Area Extension to the west of the Replacement Fly Ash Holding Area and build a berm around a portion of the Former Landfill area that received fly ash and scrubber sludge from Pond 4. *See* 1981 Permit, Ex. 7. The extent to which the Fly Ash Holding Area Extension actually received any fly ash is unknown. By the early 1990s, the Fly Ash Holding Area Extension also did not hold water and was covered in part by the Former Landfill. The remaining area was covered by soil and other material from the plant, including debris cleaned from the pond system.

All three Former Fly Ash Holding Units are in the area of the Former Landfill. *See* Site Map, Ex. 3. These units were included in the landfill area and thus, were of part of the Former Landfill operation for decades before the landfill ceased operating in 2015. At least most of the area that at one time encompassed these units when operating was covered by 1991, and the entire

area was covered before October 2015 by landfill material, which included dry CCR, soil, and sediments. As discussed above, use of the Former Landfill is believed to have started around 1978 for scrubber sludge and fly ash disposal. SIPC estimates that the maximum volume of scrubber sludge and ash deposited in the Former Landfill was approximately 1.5 million cubic yards.

In September of 1992, SIPC submitted to IEPA an Initial Facility Report ("IFR") for the Former Landfill. *See* IEPA Initial Facility Report – for On-Site Facilities (Sept. 18, 1992), ~~attached as~~ Ex. 15. In 1993, SIPC installed groundwater monitoring wells around the Former Landfill in accordance with Illinois landfill regulations. After that time, SIPC submitted annual groundwater monitoring reports to IEPA pursuant to the landfill regulations. Because the Former Landfill did not receive CCR after the effective date of 40 C.F.R. Part 257, the landfill is not subject to the requirements of Part 257. *See* 40 C.F.R. § 257.50(d).

As discussed below, in March 2020, IEPA issued a Violation Notice ("VN") for the Former Landfill, alleging violations of Section 21 of the Illinois Environmental Protection Act ("the Act"), the Illinois landfill regulations, and groundwater quality standards, and listing several remedial actions SIPC could take to resolve the alleged violations. *See* IEPA Violation Notice L-2020-00035 (Mar. 20, 2020) ("2020 Landfill VN"), ~~attached as~~ Ex. 16. In December 2020, and in response to IEPA's request, SIPC submitted a landfill closure plan to IEPA consistent with the Illinois landfill regulations for closure cited by IEPA in the landfill VN (2020 Landfill VN, Ex. 16), and since that time, SIPC has negotiated some elements of that plan with IEPA. SIPC is ready to proceed with that landfill closure plan as soon as it receives IEPA's approval.

As set forth in the proposed landfill closure plan, SIPC intends to close the Former Landfill in accordance with the requirements of 35 Ill. Admin. Code § 811.314. At a minimum, the final proposed cover system for the Former Landfill will consist of a conventional soil cap with a

minimum thickness of 6 feet (3-foot low-permeability layer overlain by a 3-foot final protective layer) or an alternate geosynthetic cap with a minimum thickness of 4 feet consisting from the bottom up of the following: 1-foot thick low-permeability layer, 40-mil linear low-density polyethylene (LLDPE) geomembrane, a double-sided geocomposite drainage layer and a 3-foot final protective layer. The proposed Former Landfill cover includes the area that once contained the Former Fly Ash Holding Units. *See* Former Landfill Closure Plan, Ex. 10, Figure B-05.

Despite issuing a VN to SIPC for alleged violations of landfill regulations, IEPA now appears to argue—apparently based on its proximity to the Former Fly Ash Holding Units—that the Former Landfill ~~is subject to Part 845~~ (~~even though Part 845~~ which has been treated by SIPC and regulators as a landfill for more than thirty years) meets the definition of a CCR surface impoundment, "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR," under a rule that became effective as of April 21, 2021 (and which explicitly exempts CCR landfills from coverage). As discussed *infra* at Part III.B, IEPA's position is incorrect. In addition, this development has delayed finalization and execution of SIPC's proposed landfill closure plan.

D. The Federal CCR Rule and the WIIN Act.

CCR disposal is regulated at the federal level pursuant to Part 257, which was promulgated on April 17, 2015. *See* Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21,302 (April 17, 2015) ("Final Rule"), attached in relevant part as Updated Ex. 17. Part 257 was promulgated pursuant to the federal Resource Conservation and Recovery Act, Subtitle D and includes comprehensive technical requirements for regulated CCR landfills and CCR surface impoundments. Part 257 defines a

"CCR surface impoundment" as "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." 40 C.F.R. § 257.53.

In December 2016, the President signed the Water Infrastructure Improvements for the Nation Act (the "WIIN Act"), Pub. L. No 114-322 (2016). The WIIN Act authorized states to adopt permit programs that, upon approval by the U.S. Environmental Protection Agency (U.S. EPA), may operate in lieu of Part 257. 42 U.S.C. § 6945(d)(1)(B). State programs must be as protective as Part 257. *Id.* § 6945(d)(1)(B)(ii). The WIIN Act further allows U.S. EPA to enforce violations of the Part 257 and requires U.S. EPA to develop a federal permitting program for CCR surface impoundments that would apply in states that elect not to seek approval of a state CCR permitting program. 42 U.S.C. § 6945(d)(2)(B).

E. The Illinois CCR Act and Part 845.

On July 30, 2019, the Illinois Legislature adopted the Illinois Coal Ash Pollution Prevention Act ("Illinois CCR Act"). 415 Ill. Comp. Stat. 5/22.59. In the findings section of that Illinois CCR Act, the Legislature stated that "CCR generated by the electric generating industry has caused groundwater contamination and other forms of pollution at active and inactive plants throughout this State," and "environmental laws should be supplemented to ensure consistent, responsible regulation of all existing CCR surface impoundments[.]"[7][11] 415 Ill. Comp. Stat 5/22.59(a)(3), (4).

[7][11] Prior to passage of the Illinois CCR Act, most CCR surface impoundments in Illinois were regulated as waste water treatment units. *See* R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA's Statement of Reasons (Mar. 30, 2020) ("IEPA Statement of Reasons"), ~~attached as~~ Ex. 18 at 4.

The Illinois CCR Act copied Part 257's definition of a CCR surface impoundment: "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." 415 Ill. Comp. Stat. 5/3.143. A pond that does not satisfy this definition is not subject to Part 257 or the Illinois CCR Act.

The Illinois CCR Act prohibits any person from allowing the discharge of contaminants from a CCR surface impoundment to the environment so as to cause a violation of the Illinois CCR Act; requires owner and operators of CCR surface impoundments to obtain construction permits from IEPA; requires IEPA approval prior to closing any CCR surface impoundment; and requires post-closure financial assurance for closed CCR surface impoundments.[8][12] 415 Ill. Comp. Stat. 5/22.59(b), (d), (f).

The Illinois CCR Act also set forth a fee regime, pursuant to which covered CCR surface impoundment owners and operators must pay initial and annual fees to IEPA for certain closed CCR surface impoundments, as well as those that have not completed closure. 415 Ill. Comp. Stat. 5/22.59(j). The Illinois CCR Act also required the Board to adopt rules governing CCR surface impoundments that must be at least as protective and comprehensive as Part 257. *See* 415 Ill. Comp. Stat. 5/22.59(g).

F. The Part 845 Rulemaking.

On March 30, 2020, IEPA proposed regulations titled "Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments" to be included as Part 845 of Illinois

[8][12] The Illinois CCR Act's financial assurance requirements do not apply to SIPC because it is a not-for-profit electric cooperative. 415 Ill. Comp. Stat. 5/22.59(f).

Administrative Code's Title 35. According to the Statement of Reasons issued with the proposed regulations,

> The foremost purpose and effect of this regulatory proposal is to fulfill Illinois EPA's statutory obligation to propose CCR rules consistent with the requirements in Section 22.59(g). The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois. . . . Groundwater has an essential and pervasive role in the social and economic well-being of Illinois, and is important to the vitality, health, safety, and welfare of its citizens. This rule has been developed based on the goals above and the principle that groundwater resources should be utilized for beneficial and legitimate purposes. *See* 415 ILCS 55/1 *et seq*. ***Its purpose is to prevent waste and degradation of Illinois' groundwater***. The proposed rule establishes a framework to manage the underground water resource to allow for maximum benefit of the State.

IEPA Statement of Reasons, Ex. 18 at 10 (emphasis added)[913]. IEPA's Statement of Reasons attached a list of "power generating facilities with CCR surface impoundments [that] may be affected by Illinois EPA's proposed rule." *Id*. at 36–37. IEPA indicated, incorrectly, on that list that Marion Station includes nine CCR surface impoundments. *Id*. at 37.

The Board held two sets of hearings and received 138 written public comments on the proposed rules. SIPC submitted public comments to the Board on September 25, 2020. In those comments, SIPC stated that only one of the units at Marion Station of the nine ponds then identified by IEPA—former Emery Pond (which is not at issue in this Petition)—is actually a CCR surface impoundment as defined in the then-proposed regulations, the Illinois CCR Act, and Part 257. *See* R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, SIPC Comments to Illinois Pollution Control Board (Sept. 25, 2020), ~~attached as~~ Ex. 19.

[913] For all citations to R 2020-019 rulemaking materials—except Board orders and the final Part 845—we ~~have~~ provided excerpted documents including only the relevant and cited page numbers, which were attached to SIPC's May 11, 2021 Petition. The page number cited here, and for all R 2020-019 materials, is the page number of the document, not the page number of the exhibit.

G. The Board's Opinion and the Final Rule.

The Board issued its Second Notice Opinion and Order ("Second Notice Opinion") on February 4, 2021. The Second Notice Opinion largely adopted IEPA's proposed rules, including its definition of "CCR surface impoundment" as a "natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR." R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845,* Illinois Pollution Control Board's Second Notice Opinion and Order, at 11 (Feb. 4, 2021) ("Second Notice Opinion and Order"); *see also* 35 Ill. Admin. Code § 845.120. Thus the Board, like the legislature in the Illinois CCR Act, adopted Part 257's definition of "CCR surface impoundment."

The final Part 845 also adopted the following definitions that are relevant to the instant petition:

> "Existing CCR surface impoundment" means a CCR surface impoundment in which CCR is placed both before and after October 19, 2015, or for which construction started before commenced prior to October 19, 2015 and in which CCR is placed on or after October 19, 2015. A CCR surface impoundment has started commenced construction if the owner or operator has obtained the federal, State, and local approvals or permits necessary to begin physical construction and a continuous on-site, physical construction program had begun before prior to October 19, 2015.
>
> . . .
>
> "Inactive CCR surface impoundment" means a CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains CCR on or after October 19, 2015. Inactive CCR surface impoundments may be located at an active facility or inactive facility.

35 Ill. Admin. Code § 845.120. The Board declined industry's request to adopt a new definition of *de minimis* units in Part 845, at least in part because it did not want to "create" new

language that was not in Part 257, which could create inconsistency. Second Notice Opinion and Order at 14–15. In so doing, the Board appeared to recognize that such units may not be subject to Part 845, just as such units are not subject to Part 257, because they are not "CCR surface impoundments." The Second Notice Opinion suggested that there is authority to determine such units are not covered CCR surface impoundments subject to Part 845, and that operators of *de minimis* units could—if necessary—petition for a variance or an adjusted standard from Part 845 if it disagrees with how the IEPA characterized a unit:

> Regulatory relief mechanisms are available to owners and operators when they disagree with an IEPA determination concerning whether a unit is a CCR surface impoundment. In those instances, an owner or operator may seek an adjusted standard or a variance from the Board

Id. at 14.

Following approval by the Joint Committee on Administrative Rules ("JCAR"), the Board adopted Part 845 as final on April 15, 2021, with an effective date of April 21, 2021. *See* R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, Illinois Pollution Control Board's Final Order Adopted Rule (Apr. 15, 2021) ("Final Order").

H. The Violation Notices

SIPC has received, over the course of the past three years, three VNs from IEPA that are relevant to this Petition.[10]14

[10]14 By a letter dated July 3, 2018, IEPA also issued a VN to SIPC pursuant to Section 31(a)(1) of the Act (Violation Notice No. W-2018-00041), alleging violations of groundwater quality standards for various constituents based on groundwater sampling at monitoring wells surrounding or near former Emery Pond. As discussed *supra*, SIPC closed former Emery Pond by removal pursuant to an IEPA-approved closure compliant with Part 257 and Part 845, and it is not included in this Petition.

1. The Pond VNs.

On July 28, 2020, IEPA issued VN No. W-2020-00046 (the "Initial Fee VN") to SIPC alleging that SIPC failed to pay initial fees for current and former ponds at Marion Station that IEPA alleged were CCR surface impoundments that had not completed closure by the effective date of the Illinois CCR Act. *See* IEPA Violation Notice W-2020-00046 (July 28, 2020), attached as Ex. 20. Specifically, the VN alleged that SIPC had not paid initial fees for Ponds 1, 2, 3, 4, 6, A-1, B-3, and South Fly Ash Pond. Relevant to this Petition, SIPC explained in response to IEPA's VN that Ponds 3, 4, 6, B-3, and South Fly Ash Pond do not meet the definition of a "CCR surface impoundment" under the Illinois CCR Act, including because they are *de minimis* ponds. SIPC proposed, but IEPA rejected, terms for a compliance commitment agreement to resolve the alleged violations. For the three ponds, all no longer in operation and at issue in the VN but not this Petition—Ponds 1, 2, and A-1, SIPC denies they are regulated CCR surface impoundments[11][15] but is still discussing them with IEPA.

On December 16, 2020, IEPA issued another VN, No. W-2020-00087 (the "Annual Fee VN"), this time alleging that SIPC failed to pay annual fees as required by the Act for the same current and former ponds at issue in VN No. W-2020-00046. *See* IEPA Violation Notice W-2020-00087 (Dec. 16, 2020), attached as Ex. 21. Again, SIPC responded, denying the allegations but proposing terms for a compliance commitment agreement to resolve the alleged violations. IEPA again rejected SIPC's proposal. SIPC remains in active negotiations with IEPA regarding the allegations in the Annual Fee VN.

[11][15] SIPC has explained to IEPA in response to the VN why the other three ponds are not regulated CCR surface impoundments: former Ponds 1 and 2 temporarily contained, when in operation, beneficially used CCR, as discussed above, and water, and CCR was removed from Pond A-1 before October 2015.

As discussed *infra* at Part III.A, SIPC believes the history of the De Minimis Units, alone, makes clear that they are not CCR surface impoundments and should not be subject to the requirements of Part 845. In addition, IEPA requested, and SIPC agreed, that SIPC complete a pond investigation pursuant to an agreed protocol designed to yield information related to whether the five De Minimis Units at issue in this Petition qualify as excluded *de minimis* units. The investigation ~~is~~ was intended to gather information related to the extent and composition of the sediments in the De Minimis Units. ~~That pond investigation is ongoing, and SIPC plans to supplement its Petition to include the results of that investigation once it is complete and the related report has been generated and provided to IEPA in connection with the VN proceedings. As discussed *infra* at Part III.A, SIPC believes the history of the De Minimis Units, alone, makes clear that they are not CCR surface impoundments and should not be subject to the requirements of Part 845. SIPC anticipates that the results of the ongoing pond investigation will support that conclusion.~~

The pond investigation involved (1) completion of a bathymetric survey to determine the amount of sediments below water in the De Minimis Units (with the exception of former Pond B-3, which no long holds water); and (2) analysis of pond sediments to determine whether and to what extent they contain CCR. At the request of IEPA, soil borings were also taken from the berms associated with Ponds 3 (including 3A), B-3, and 4.[16] Field work and data collection was completed by Hanson Engineering, Inc. Haley & Aldridge analyzed the results and authored the report. SIPC provided an initial version of that report to IEPA on August 6, 2021. H&A

[16] IEPA also requested that borings be taken from former Pond A-1 (which is not part of this Petition) and former Pond B-3. As discussed *supra* at 13, SIPC was unable to collect either of those borings because bedrock was encountered at the surface of former Pond A-1 (confirming no CCR present) and the designated boring area of Pond B-3 was inaccessible. *See* Pond Investigation Rep., Ex. 29 at 6.

subsequently updated the report following a call with IEPA, including to address questions raised by IEPA, and that updated version is the version attached as Ex. 29.

As discussed *supra* at Part C.1., the results of the pond investigation confirm that the De Minimis Units are not CCR surface impoundments under Part 845 (or under Part 257). As discussed *infra*, the results of that investigation also confirm that the De Minimis Units do not have a material adverse effect on groundwater at Marion Station. In short, the Pond Investigation Report confirms that (1) only a fraction of the relatively thin sediment layer present in the De Minimis Units is CCR material; (2) the De Minimis Units are the type of "de minimis units" the U.S. EPA explicitly excluded from regulation under Part 257 (*see infra* at Part A.I.); and (3) regulating the De Minimis Units under Part 845 is not necessary for the protection of human health or the environment.

2. The Landfill VN.

As discussed *supra* at Part II.C.2, by letter dated March 20, 2020, IEPA issued a VN to SIPC pursuant to Section 31(a)(1) of the Act, No. L-2020-00035 (the "Landfill VN"), alleging SIPC's failure to comply with various requirements of Illinois landfill regulations in its operation and management of the Former Landfill. *See* 2020 Landfill VN, Ex. 16. Specifically, IEPA alleged violations of Part 811's intermediate and final cover requirements, Parts 815 and 812's requirements for filing an IFR, Part 811's requirements related to final slope and stabilization, and Part 811 groundwater monitoring requirements. Nowhere in that VN did IEPA allege violations of—or even reference—Part 257, the Illinois CCR Act, or Part 845.

SIPC denied the allegations in the VN but provided certain requested information to IEPA and, in December 2020, submitted a proposed plan to close the Former Landfill in compliance with Parts 811 and 815. In March 2021, nearly three months after receiving SIPC's proposed

landfill closure plan, an IEPA representative for the first time informed SIPC of a new position that the Former Landfill was regulated by and required to close pursuant to Part 845, rather than pursuant to the Illinois landfill regulations under which the Former Landfill had been operating for decades (and under which IEPA had issued the VN). Subsequently, IEPA withdrew the Landfill VN via a letter dated May 6, 2021. As set forth herein, SIPC disagrees with IEPA's new position ~~and remains in negotiations with IEPA regarding a timely and protective landfill closure~~.

I. Requested Relief

Through this petition, SIPC requests a finding of inapplicability from the Part 845 requirements for the De Minimis Units and the Former Fly Ash Holding Units or, in the alternative, an adjusted standard exempting the De Minimis Units and the Former Fly Ash Holding Units from the requirements of Part 845.

III. REQUEST FOR FINDING OF INAPPLICABILITY.

The Board has recognized that a Petition for an adjusted standard can, in the alternative, seek a finding of inapplicability from the regulation at issue. *See* AS 2009-003, *In the Matter of Petition of Westwood Lands, Inc. for an Adjusted Standard from Portions of 35 Ill. Adm. Code 807.14 and 35 Ill. Adm. Code 807.104 and 35 Ill. Adm. Code 810.103 or, in the Alternative, a Finding of Inapplicability*, Opinion and Order of the Board (Oct. 7, 2010) (granting request for a finding of inapplicability from solid waste regulations); AS 2004-002, *In the Matter of Petition of Jo'Lyn Corporation and Falcon Waste and Recycling Inc. for an Adjusted Standard from 35 Ill. Adm. Code 807.103 and 35 Ill. Adm. Code 810.103, or in the Alterative, a Finding of Inapplicability*, Opinion and Order of the Board (Apr. 7, 2004) (granting a request for a finding of inapplicability from solid waste regulations). Such relief is appropriate here on the basis that none of the units at issue are CCR surface impoundments subject to Part 845, as set forth further below.

A. The De Minimis Units Are Not Subject to Part 845.

Part 845 is clear that it only regulates "CCR surface impoundments." The regulation's "Scope and Purpose" section specifies that Part 845 applies to "owners and operators of new and existing CCR surface impoundments," 35 Ill. Admin. Code § 845.100(a), and "inactive CCR surface impoundments at active and inactive electric utilities or independent power producers." *Id.* § 845.100(b). As discussed below, none of the units at issue are CCR surface impoundments, new or existing CCR surface impoundments, or inactive CCR surface impoundments, and therefore, none of the current and former ponds at issue are covered by Part 845.

1. The De Minimis Units Are Not "CCR Surface Impoundments."

As discussed below, the De Minimis Units are not "CCR surface impoundments" as defined in Part 257 or Part 845. Both Part 257 and Part 845 define a CCR surface impoundment as "a natural topographic depression, man-made excavation, or diked area, which ***is*** designed to hold an accumulation of CCR and liquids, ***and*** the unit[12][17] treat***s***, store***s***, or dispose***s*** of CCR." 40 C.F.R. § 257.53 (emphasis added); *see also* 35 Ill. Admin. Code § 845.120 ~~(emphasis added)~~. None of the De Minimis Ponds meet this two-part definition, which focuses on the **present** function of an impoundment as of the effective date of Part 257.[13][18]

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[12][17] Part 845 substitutes "surface impoundment" for "unit," but this works no substantive change. 35 Ill. Admin. Code § 845.120

[13][18] Part 257, upon promulgation, did not impose any requirements on any CCR surface impoundments that no longer existed or had closed before the rule's effective date—i.e., those that no longer contained water and could no longer impound liquid. Final Rule, Ex. 17 at 21,343. Whether a unit met the definition of CCR surface impoundment depended on what waste was managed in the unit ***as of October 19, 2015***. The court's decision in *Util. Solid Waste Activities Grp. v. Envtl. Prot. Agency*, 901 F.3d 414 (D.C. Cir. 2018) ("*USWAG*") reversed and remanded the federal rules to the U.S. EPA to regulate any ash pond that was a "legacy pond," which is an inactive CCR surface impoundment at a closed or no longer operating facility. The *USWAG* decision described the risks posed by legacy ponds as risks associated with open, wet ponds that were not closed. See *USWAG*, 901 F.2d at 432–33. The *USWAG* decision's remand did **not** speak to ponds at active facilities that contained *de minimis* CCR or could no longer contain water and impound

As discussed above, the De Minimis Units are not presently designed to—and do not—hold a necessary accumulation of CCR and liquids. To the extent they ever did, they have not done so since long before October 19, 2015. Accordingly, the De Minimis Units do not fall within the first part of the definition of CCR surface impoundment. And none of the De Minimis Units currently treat, store, or dispose of CCR, and (to the extent they ever did) have not done so since October 19, 2015, as required by the second part of the definition of CCR surface impoundment. The De Minimis Units therefore fall outside the plain language of the definition of "CCR surface impoundment" and, consequently, Part 845.

The fact that certain of the De Minimis Units *may* have received historic, largely indirect, discharges of CCR does not bring them within the definition of a "CCR surface impoundment." To the contrary, both the history and the current condition of the De Minimis Units ~~makes~~ make clear that they are ~~the~~ precisely the type of *de minimis* units that the U.S. EPA intended to exclude from the definition of CCR surface impoundment in Part 257 and which, accordingly, should also be excluded from Part 845 under the same definition.

In its preamble to the Final Rule, U.S. EPA stated that

> The Agency received many comments on the proposed definition of CCR surface impoundment. The majority of commenters argued that the definition was overly broad and would inappropriately capture surface impoundments that are not designed to hold an accumulation of CCR. Commenters were concerned that the proposed definition could be interpreted to include downstream secondary and tertiary surface impoundments, such as polishing, cooling, wastewater and holding ponds that receive only *de minimis* amounts of CCR.

Final Rule, Updated Ex. 17 at 21,357.

liquid as of the effective date of the rule. Accordingly, the *USWAG* decision did not order U.S. EPA to regulate units like the De Minimis Units or the Former Fly Ash Holding Units.

In response to those concerns, U.S. EPA reviewed the risk assessment on which Part 257 was based "to determine the characteristics of the surface impoundments that are the source of the risks the rule seeks to address." *Id*.

> Specifically, these are units that contain a large amount of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants. . . . EPA agrees with commenters that ***units containing only truly ''de minimis'' levels of CCR are unlikely to present the significant risks this rule is intended to address***.

Id. (emphasis added).

Accordingly, U.S. EPA amended the definition of CCR surface impoundment in the Final Rule "to clarify the types of units that are covered by the rule": "a natural topographic depression, man-made excavation, or diked area, which ***is*** designed to hold an accumulation of CCR and liquids, ***and the unit treats, stores, or disposes of CCR***." *Id.* (emphasis added). The intent of the amendment was to implement U.S. EPA's determination, as described in Part 257's preamble, that *de minimis* units would be **excluded** from Part 257 requirements. U.S. EPA's amended definition is, as noted above, the same definition used in Part 845. *See* 35 Ill. Admin. Code § 845.120.

In making the change, U.S. EPA noted that it "agrees with commenters that relying solely on the criterion from the proposed rule that the unit be designed to accumulate CCR could inadvertently capture units that present significantly lower risks, such as process water or cooling water ponds, because, although they will accumulate any trace amounts of CCR that are present, they will not contain the significant quantities that give rise to the risks modeled in EPA's assessment. By contrast, units that are designed to hold an accumulation of CCR and in which treatment, storage, or disposal occurs will contain substantial amounts of CCR and consequently are a potentially significant source of contaminants." Final Rule, Updated Ex. 17 at 21,357.

The Illinois CCR Act and Part 845 both incorporate Part 257's definition of "CCR surface impoundment," with the amended language that implemented EPA's determination that *de minimis* units would not be considered regulated surface impoundments. Thus, Part 845 and the Illinois CCR Act do not apply to *de minimis* units.

The Board declined to "create" a new definition of "*de minimis,*" as it is not expressly defined in Part 257, but that decision did not mean that *de minimis* units would be covered under Part 845. Second Notice Opinion and Order at 14–15. Indeed, that decision was based at least in part on concerns about assuring conformity with U.S. EPA's rule. *Id.* at 15. And Part 257 does not apply to *de minimis* units as such units are described by U.S. EPA, including in the Preamble to its final CCR rule. *See* Final Rule, Updated Ex. 17 at 21,357. Consistently, the Board also implicitly recognized in its discussion of defining *de minimis* units that IEPA might make decisions about whether a unit qualifies as an excluded *de minimis* unit, and, if a company disagreed, it could chose to seek relief from the Board, including, for example, an adjusted standard. Second Notice Opinion and Order at 14. IEPA, and the Board, may determine that a unit is *de minimis* and thus not regulated because the regulations do not apply to such units under the identical "CCR surface impoundment" definitions in Part 257 and Part 845. Here, for the reasons set forth below, SIPC asks the Board in the first instance[14][19] to determine that the De Minimis Units are not regulated CCR surface impoundments.

~~The~~ Both the Pond Investigation Report and the history of the De Minimis Units outlined above shows that they do not "contain a large amount of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." Final Rule, Updated Ex. 17 at

[14][19] As set forth below, if the Board denies this request, SIPC asks the Board for an adjusted standard with respect to the De Minimis Units.

21,357; Pond Investigation Rep., Ex. 29. To the extent any of the De Minimis Units ever received discharges of CCR, the discharges were mostly indirect, either from pond overflow or process waste water. The only De Minimis Unit that is known to have received direct wastewater discharges of CCR—Pond B-3[15][20]—likely only did so for short periods of time, has not received any CCR for decades, and is no longer able to contain water. *See supra* at Part II.C.1. Accordingly, none of the ponds at issue ever contained "significant quantities" or "substantial amounts" of CCR. Further, all of the De Minimis Units have been cleaned of debris since Marion Station switched to fully dry handling of fly ash, and those cleanings would have removed any CCR that would have accumulated in them as a result of historic operations. As a result, the De Minimis Units simply do not present the "significant risks" Part 257, and Part 845, are intended to address.

This conclusion is bolstered by the results and analysis set forth in the Pond Investigation Report. As summarized in that report, Haley & Aldridge reviewed extensive information relating to the De Minimis Units, including bathymetric survey results, results of analyses of pond sediments, and results of a polarized light microscopy ("PLM") analyses, which characterize the fraction of CCR in sediment samples. Based on that information, Haley & Aldridge determined that the De Minimis Units contain on average less than 2 feet of total sediments. Of that less than two feet, Haley & Aldridge determined that the average fraction of CCR materials in the De Minimis Units was approximately 40 percent. Pond Investigation Rep., Ex. 29 at 13. In other words, the De Minimis Units contain only a small amount of sediment, and only a fraction of those sediments appear to contain CCR materials. Haley and Aldridge accordingly concluded that "these results are consistent with what we understand to be the function of [the De Minimis Units], which

[15][20] While the South Fly Ash Pond was *designed* to receive direct discharges of CCR, it never did receive direct discharges of CCR. *See supra* at p8–9.9.

generally did not receive direct discharges of CCR materials, were not designed to hold an accumulation of CCR and water, and have not been used for the treatment, storage and disposal of CCR." Pond Investigation Rep., Ex. 29 at 7.

Haley & Aldridge also contrasted the volume and type of pond sediments in the De Minimis Units with the characteristics of a "typical" CCR surface impoundment that is used to treat, store, or dispose of CCR. As discussed in the Pond Investigation Report, the volume of sediments in such CCR surface impoundments generally is greater than 50 percent of pond volume. In contrast, the volume of sediments in the De Minimis Units ranged from 8.2 percent (Pond 6) to 13.3 percent (Pond 3A). Similarly, the total volume of sediments in the De Minimis Units is far smaller than one would expect to see in a CCR surface impoundment used for the treatment storage or disposal of CCR. *See* Pond Investigation Rep., Ex. 29 at 7. These results further bolster the conclusion that the De Minimis Units are not CCR surface impoundments as defined in Part 257 (or Part 845).

Further, and as discussed *infra* at 44, Haley & Aldridge reviewed multiple years of groundwater monitoring data collected by SIPC and determined that any CCR that is in the De Minimis Units has not had any appreciable impact on groundwater at SIPC. *See* Pond Investigation Rep., Ex. 29 at 26; *see also* Updated Bradley Op., Updated Ex. 28 at 21. Dr. Bradley concurs with this conclusion and determines that the De Minimis Units do not pose appreciable risk—and are therefore not the type of units intended by regulated by Part 257 or Part 845—based on her review of the Pond Investigation Report and her own review of Site groundwater monitoring data and pond histories. Updated Bradley Op., Updated Ex. 28 at 21–22. As discussed by Dr. Bradley in her updated report, the De Minimis Units are precisely the types of *de minimis* units that EPA sought to exclude from regulation under Part 257 because they do not "***present the significant***

risks [Part 257] is intended to address." Final Rule, Updated Ex. 17 at 21,357. They should likewise be excluded under Part 845, as discussed below.

Given that the De Minimis Units are not CCR surface impoundments under Part 257, the Board should find that they also are not covered by Part 845. As noted above, the definition of "CCR surface impoundment" is identical in both Part 257 and Part 845, and plainly excludes the De Minimis Units. As a practical matter, it would be anomalous to say the least that the same words mean something different in Part 845 and that a unit is subject to Part 845 but excluded by Part 257 under the same rule language. Part 257 clearly excludes units such as the De Minimis Units. Further, the administrative record is clear that the legislature, IEPA, and the Board in adopting the same definition of "CCR surface impoundments" as Part 257, all intended for Part 845 to regulate the same universe of "CCR surface impoundments" as Part 257. *See, e.g.*, R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA Responses to Pre-Filed Questions (Aug. 3, 2020) ("IEPA Responses"), attached ~~as~~ in relevant part as Updated Ex. 22 at 7–8 ("It is the Agency's position that the same universe of CCR surface impoundments [that is regulated by Part 257] is intended to be regulated by Part 845."); *id.* at 17 ("CCR surface impoundments not subject to Part 257, are not subject to the requirements of Part 845. (Agency Response)"); R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, Hearing Transcript (Aug. 11, 2020), ~~attached as~~ Ex. 23 at 43–44 (Q: "[M]y question was is Part 845 intended to apply to the same ponds that are subject to requirements under Part 257 given that they both define CCR surface impoundments in an identical fashion?" A: "In the Agency's opinion, they will be the same ones."); Final Order~~,~~

at 8 (noting that "many of the technical elements required of owners and operators of CCR surface impoundments are already required under federal law.").

Indeed, to the extent IEPA *had* desired to deviate from Part 257 for the scope of units of covered by Part 845, it admitted that it did not conduct its own risk assessment or otherwise gather evidence that would support doing so. *See, e.g.*, IEPA Responses, ~~as~~ Updated Ex. 22 at 55 (Q: "Are you familiar with the Risk Assessment performed by U.S. EPA when it finalized the 2015 Federal CCR Rule?" A: "No."); R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, First Supplement to IEPA Pre-Filed Responses (Aug. 5, 2020), ~~attached as~~ Ex. 24 at 37–38 (admitting that IEPA did not perform its own risk assessment and IEPA relied upon U.S. EPA's risk assessment "to the extent that USEPA's risk assessment was used by USEPA to develop the requirements of Part 257"). There is no question, then, that the De Minimis Units are excluded from regulation under both Part 257 **and** Part 845.

2. The De Minimis Units Are Not Existing or Inactive CCR Surface Impoundments.

The De Minimis Units also do not fall within the definition of "existing CCR surface impoundment" or "inactive CCR surface impoundment" under either Part 845 or Part 257. As an initial matter, under either regulatory scheme, a unit cannot be an "existing CCR surface impoundment" or an "inactive CCR surface impoundment" unless it is first a "CCR surface impoundment" which, as discussed above, the De Minimis Units are not. *See, e.g.*, Second Notice Opinion and Order~~,~~ at 15 ("The Board notes that for an impoundment to be an inactive surface impoundment, first it must be a *CCR surface impoundment*, which is defined in Section 845.120 as being designed to 'hold CCR and liquid.'" (emphasis in original)). Furthermore, it is undisputed

that none of the De Minimis Units "received" CCR or had CCR "placed" in them—other than any small amounts that may have been incidentally deposited through indirect discharges, runoff, or air—on or after October 2015. The De Minimis Units thus are clearly not "existing CCR surface impoundments" under Part 257 or Part 845.

The De Minimis Units are likewise not "inactive CCR surface impoundments." Part 257 defines an "inactive surface impoundment" as a "CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015" 40 C.F.R. § 257.53. Part 845 similarly defines "inactive CCR surface impoundment" as a "CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains CCR on or after October 19, 2015." 35 Ill. Admin. Code § 845.120. There is no dispute that CCR was never "placed" in the South Fly Ash Pond or Pond 6, either before or after October 19, 2015. Those ponds plainly are not inactive CCR surface impoundments. To the extent any CCR was ever "placed" in the Ponds 3, 4, or B-3 decades ago, the historical record is clear that any historic receipt of CCR by those ponds was temporary and intermittent in nature and of *de minimis* amounts of CCR not intended to be covered under Part 257 or Part 845. Accordingly, the De Minimis Units do not *presently* contain more than *de minimis* amounts of CCR, which is not sufficient to meet the requirements for regulation as an inactive CCR surface impoundment under either Part 257 or Part 845. Accordingly, the De Minimis Units should not be regulated as inactive CCR surface impoundments under Part 257 or Part 845.

B. The Former Fly Ash Holding Units Are Not Subject to Part 845.

1. The Former Fly Ash Holding Units Are Not CCR Surface Impoundments, Existing CCR Surface Impoundments, or Inactive CCR Surface Impoundments.

The Former Fly Ash Holding Units are likewise not "CCR surface impoundments" subject to Part 257 or Part 845. The Former Fly Ash Holding Units are—and have been since at least the early 1990s—dry and operated in conjunction with the on-site, Former Landfill, which, in turn, has been operated and regulated as an on-site, permit-exempt, landfill pursuant to 35 Ill. Admin. Code Part 815 for decades. The Former Fly Ash Holding Units are not currently, and were not as of October 19, 2015, "designed to hold an accumulation of CCR and liquids" and accordingly, fall outside of the plain definition of "CCR surface impoundment." *See supra* at Part III.A.1; *see also* U.S. EPA, Comment Summary and Response Document: Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities; Proposed Rule, Vol. 3 (Dec. 2014), attached as Ex. 25 at 73 ("CCR surface impoundments that have been dewatered and are no longer able to hold free liquids" prior to October 19, 2015 "are not subject to [Part 257].").

Because the Former Fly Ash Holding Units are not CCR surface impoundments, they do not fall within the definition of "existing" or "inactive CCR surface impoundments." *See supra* at Part III.A.2 (relating to the De Minimis Units and emphasizing that in order to be regulated as an existing or inactive CCR surface impoundment, the unit at issue must first be a "CCR surface impoundment" within the meaning of Parts 845 and 257). The Former Fly Ash Holding Units also do not satisfy other key elements of the "existing" and "inactive" CCR surface impoundment definitions.

The Former Fly Ash Holding Units cannot be "existing CCR surface impoundments" because they did not receive CCR after October 19, 2015. The Former Fly Ash Holding Units cannot be "inactive CCR surface impoundments" because, to the extent the units contained CCR after October 19, 2015, the units did not contain water after October 19, 2015. The Former Fly Ash Holding Units are thus plainly excluded from the Part 257 definition of "inactive CCR surface impoundment," which requires that an inactive unit contain CCR ***and water*** after October 19, 2015. *See* 40 C.F.R. § 257.53. In promulgating its definition of an inactive CCR surface impoundment, U.S. EPA noted that Part 257 "was designed to address units that pose the highest level of risk: "units that contain a large amount of CCR ***managed with water***, under a hydraulic head that promotes the rapid leaching of contaminants." Final Rule, Updated Ex. 17 at 21,357 (emphasis added). As a result, U.S. EPA decided not to "impose any requirements on any CCR surface impoundments that have in fact 'closed' before the rule's effective date [October 19, 2015]—i.e., those [like the Former Fly Ash Holding Area Units] that no longer contain water and can no longer impound liquid." *Id.* at 21,343. As discussed above, the record is clear that the legislature, IEPA, and the Board all intended for Part 845 to encompass the same universe of CCR surface impoundments as Part 257. *See supra* at Part III.A.1. Accordingly, because the Former Fly Ash Holding Units are not regulated as inactive CCR surface impoundments under Part 257, they also should not be regulated as inactive CCR surface impoundments under Part 845.

2. The Former Fly Ash Holding Units Have Been Managed for Decades as a Landfill, which Is Excluded from Regulation under Part 845.

The Former Fly Ash Holding Units are not subject to Part 845 for the separate reason that they function (and have functioned for decades) as part of the Former Landfill, and both Part 257 and Part 845 make clear that CCR landfills are not surface impoundments. Part 257 specifically

defines a CCR landfill as **not** being a CCR surface impoundment: "CCR landfill or landfill means an area of land or an excavation that receives CCR ***and which is not a surface impoundment***, an underground injection well, a salt dome formation, a salt bed formation, an underground or surface coal mine, or a cave." 40 C.F.R. § 257.53 (emphasis added). Part 257 likewise contains separate and distinct requirements for CCR landfills and CCR surface impoundments. *Compare, e.g.*, 40 C.F.R. § 257.70 *with* 40 C.F.R. § 257.71 and 40 C.F.R. § 257.84 *with* 40 C.F.R § 257.83. There is simply no question that the U.S. EPA intended to regulate CCR landfills separately from CCR surface impoundments in Part 257.[16][21]

Part 845 is likewise clear that it does not regulate CCR landfills; the "Scope and Purpose" section states "this Part ***does not apply*** to landfills that receive CCR." 35 Ill. Admin. Code § 845.100(h) (emphasis added); *see also* IEPA Responses, Updated Ex. 22 at 6 ("A man-made excavation where CCR is disposed could be a CCR surface impoundment or a landfill***, but a landfill that receives CCR is not a CCR surface impoundment***.") (emphasis added). The Board explicitly declined to extend Part 845's reach to landfills and other unconsolidated piles of CCR during the rulemaking, stating "that regulation of these unconsolidated coal ash fills and piles is beyond the scope of [the Illinois CCR Act]." Second Notice Opinion and Order, at 12. Instead, the Board opted to open a separate sub-docket to explore regulating CCR in landfills and unconsolidated coal ash fills and piles. *Id*. IEPA agreed with the Board, taking the position that "limiting Part 845 to CCR surface impoundments is necessary and appropriate." R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA Post-Hearing Comments (Oct. 30, 2020), attached as Ex. 26 at

[16][21] As noted *supra*, the Former Landfill at Marion Station is not regulated pursuant to Part 257 because it stopped receiving waste prior to October 2015. 40 C.F.R. § 257.53.

10. There is no question that the Former Landfill—including the Former Fly Ash Holding Area Units—at Marion Station operated as a landfill and has been regulated as a landfill for decades. *See supra* at Part II.C.2. Indeed, as recently as March 2020, IEPA issued a VN to SIPC for alleged violations of the Illinois landfill regulations at the Former Landfill. As part of the Former Landfill, the Former Fly Ash Holding Units cannot be subject to Part 845. Illinois landfill regulations, consistent with Part 257 and Part 845, clearly state that a landfill is not a surface impoundment.[17][22]

3. The Board Should Reject IEPA's Apparent Position that the Historic Presence of a CCR Surface Impoundment Converts a Landfill into a CCR Surface Impoundment.

Finally, the Board should reject IEPA's apparent new and convoluted argument that, notwithstanding ~~it~~ its regulation of the Former Landfill as a landfill for decades—including its recent issuance of a VN asserting alleged violations of Illinois landfill regulations, the landfill regulations do not apply, and the entire Former Landfill area, including the Former Fly Ash Holding Units, is actually a CCR surface impoundment subject to Part 845.

IEPA's argument appears to be this: the Former Fly Ash Holding Units were once, decades ago, used to store CCR and water. They no longer contain water and no longer receive CCR, but the fact that they once did and appear on a map in the vicinity of the Former Landfill somehow converts the (now closed) Former Landfill, which both SIPC and IEPA have recognized for decades ~~is~~ as landfill, into a CCR surface impoundment. This is an illogical and absurd result, and one that runs directly contrary to the definition of "CCR surface impoundment" in Part 257, Part 845, and Illinois landfill regulations.

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[17][22] 35 Ill. Admin. Code § 810.103 ("'Landfill' means a unit or part of a facility in or on which waste is placed and accumulated over time for disposal, and that is not a land application unit, a surface impoundment or an underground injection well."); *see also* 35 Ill. Admin. Code § 810.104 ("For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, a surface impoundment is not a landfill.").

As discussed *supra*, both Part 845 and the Illinois CCR Act incorporated Part 257's present tense language in ~~the definition~~ their definitions of CCR surface impoundment. *See supra* at Part III.A.1. Those definitions must be construed to exclude units that have for decades operated as part of a landfill. In its preamble to Part 257, U.S. EPA made clear its intention to avoid exactly this type of result:

> EPA did not propose to require "closed" surface impoundments to "reclose." ***Nor did EPA intend, as the same commenters claim, that "literally hundreds of previously closed . . . surface impoundments—many of which were properly closed decades ago under state solid waste programs, have changed owners, and now have structures built on top of them—would be considered active CCR units***." Accordingly, the final rule does not impose any requirements on any CCR surface impoundments that have in fact "closed" before the rule's effective date—***i.e., those that no longer contain water and can no longer impound liquid***.

Final Rule, Updated Ex. 17 at 21,343 (emphasis added).

Treating the Former Fly Ash Holding Units, and indeed the entire Former Landfill, as CCR surface impoundments after years of regulating the area as a landfill thus flies in the face of U.S. EPA's stated intent not to regulate units that "now have structures built on top of them" and that "no longer contain water and can no longer impound liquid." *Id.* It also contravenes the stated intent of the legislature, IEPA, and the Board for Part 845 to apply to the same universe of "CCR surface impoundments" as Part 257. As a practical matter, it also upends years of settled expectations about the requirements for operation and closure, raising significant retroactivity and fairness concerns for this not-for-profit cooperative and its owners. The Board should reject IEPA's last-minute overreach and find that Part 845 does not apply to the Former Landfill, including the Former Fly Ash Holding Units.[~~18~~23]

[~~18~~23] The Indiana Office of Environmental Adjudication recently rejected similar attempts by environmental groups to argue that a portion of a former Duke Energy ash pond—which had been closed for decades—was subject to Part 257, stating that "an impoundment's regulatory status over three decades ago is not

IV. PETITION FOR AN ADJUSTED STANDARD.

If the Board declines to issue a finding of inapplicability and determines that the current and former ponds at issue in this Petition are "CCR surface impoundments," SIPC requests in the alternative that the Board grant an adjusted standard from 35 Illinois Administrative Code Part 845 for the De Minimis Units and the Former Fly Ash Holding Units. When petitioned, the Board may grant an adjusted standard from a rule of general applicability for persons who can justify such an adjustment under the applicable statutory factors. 415 Ill. Comp. Stat. 5/28.1(a). As set forth below, the requested adjusted standard is warranted here based on the factors set forth in Section 28.1, including consistency with Section 27(a). Accordingly, SIPC's request for an adjusted standard for the De Minimis Units and the Former Fly Ash Holding Units should be granted.

A. Regulatory Standard.

Section 28.1 of the Act describes the factors the Board must consider in granting an adjusted standard:

> (c) If a regulation of general applicability does not specify a level of justification required of a petitioner to qualify for an adjusted standard[24]~~19~~, the Board may grant individual adjusted standards whenever the Board determines, upon adequate proof by petitioner, that:
>
> (1) factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;
>
> (2) the existence of those factors justifies an adjusted standard;
>
> (3) the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and

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relevant to determining whether it is currently subject to the Federal CCR Rule." *In the Matter of Objection to the Issuance of Partial Approval of Closure/Post Closure Plan Duke Gallagher Generating Station Ash Pond System*, No. 20-S-J-5096 (OEA May 4, 2021), ~~attached as~~ Ex. 27 at 14.

[24] Part 845 does not specify a level of justification required to qualify for an adjusted standard.

~~19 Part 845 does not specify a level of justification required to qualify for an adjusted standard.~~

(4) the adjusted standard is consistent with any applicable federal law.

415 Ill. Comp. Stat. 5/28.1(c)(1)–(4).

Any adjusted standard must also be "consistent" with subsection (a) of section 27 of the Act, which provides that "the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be[~~20~~25], and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution." 415 Ill. Comp. Stat. 5/27(a).~~21~~26

As discussed below, granting the requested adjusted standard for the De Minimis Units and the Former Fly Ash Holding Units is justified by the factors set forth in Section 28.1 and consistent with the factors set forth in Section 27.

B. The De Minimis Units.

1. SIPC Requests an Adjusted Standard Exempting the De Minimis Units from all Provisions of Part 845.

To the extent the Board determines that the De Minimis Units are "CCR Surface Impoundments" under Part 845, the Board should grant an adjusted standard from section 845.100 exempting the De Minimis Units from the requirements of Part 845. SIPC's proposed language is set forth *infra* in Part IV.D.

~~20~~25 The physical conditions at Marion Station and character of the area involved, including the character of surrounding land uses, zoning classifications, and the nature of the receiving body of water are discussed *supra* at Part II.A.

~~21~~26 The Illinois Court of Appeals has held that the Board's review is limited to the factors set forth in Sections 27(a) and 28.1: "The Act sets forth the factors the Board is to consider when determining whether to grant an adjusted standard. The Board lacks the authority to add to or rewrite the statutory factors." *Emerald Performance Materials, LLC v. Ill. Pollution Control Bd.*, 2016 IL App (3d) 150526, ¶ 27.

2. The Factors Relating to the De Minimis Ponds Are Substantially and Significantly Different from the Factors and Circumstances on which the Board Relied in Adopting Part 845.

In determining whether to grant an adjusted standard, the Board first considers whether the factors relating to the Petitioner are significantly different from the factors considered in adopting the regulation at issue (Part 845). *See* 415 Ill. Comp. Stat. 5/28.1(c)(1). As discussed below, here they are.

Like the Part 257 rules relating to surface impoundments, Part 845 was intended to address the risks posed by CCR surface impoundments that have resulted or are likely to result in groundwater contamination:

> The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois. The proposed rule contains a program for groundwater monitoring and the remediation of contaminated groundwater resulting from leaking CCR surface impoundments. Groundwater has an essential and pervasive role in the social and economic well-being of Illinois, and is important to the vitality, health, safety, and welfare of its citizens. This rule has been developed based on the goals above and the principle that groundwater resources should be utilized for beneficial and legitimate purposes . . . Its purpose is to prevent waste and degradation of Illinois' groundwater. The proposed rule establishes a framework to manage the underground water resource to allow for maximum benefit of the State.

IEPA Statement of Reasons, Ex. 18 at 10; *see also id*. at 3–4 ("The presence of [certain contaminants that can be found in CCR] threatens groundwater as these contaminants are soluble and mobile. When the CCR surface impoundments are not lined with impermeable material, these contaminants may leach into the ***groundwater***, affecting the potential use of the ***groundwater***." (emphasis added)).

In its Second Notice Opinion, the Board likewise emphasized that "[a]mong the program's primary goals is protecting groundwater from contamination by CCR pollutants leaking from

surface impoundments." Second Notice Opinion and Order, at 1; *see also id*. at 3 ("In Illinois, CCR has caused groundwater contamination and other forms of pollution that are harmful to human health and the environment."); *id*. at 41 ("[T]he installation and operation of a leachate collection system in a new CCR surface impoundments serves the same purpose as in a landfill to reduce the head on the liner to reduce the threat of groundwater contamination."); *id*. at 48 ("The Board finds that the proposed leachate collection system provides additional groundwater protection against the potential threats of contamination from new CCR surface impoundments, while allowing the operation of the impoundments in compliance with Part 845.").[22]

In determining which types of CCR surface impoundments pose the risks that Part 845 seeks to address, Part 257 is instructive; both because of its identical definition of "CCR surface impoundment" and the fact that IEPA did not perform any risk assessment of its own to support its Part 845 proposal and, instead, modeled its proposal on Part 257, which was based upon U.S. EPA's risk assessment. In other words, because the IEPA-proposed and Board-adopted Part 845 rules were based upon Part 257, and IEPA never conducted a risk assessment, Part 845 too must be based upon U.S. EPA's risk assessment. U.S. EPA was clear that it was targeting for regulation those "units that contain a large amount of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." Final Rule, Updated Ex. 17 at 21,357.

The factors relating to the De Minimis Units are substantially and significantly different than those that motivated U.S. EPA in Part 257, and also the state legislature, IEPA, and the Board in regulating CCR surface impoundments in Illinois with the aim of protecting Illinois

[22] The Illinois legislature also made clear that the Illinois CCR Act is intended to address and prevent groundwater contamination caused by CCR surface impoundments. *See* 415 Ill. Comp. Stat. 5/22.59(a)(3) ("The General Assembly finds that . . . CCR generated by the electric generating industry has caused ***groundwater*** contamination . . . ." (emphasis added)).

groundwater. As discussed above, the De Minimis Units do not contain large amounts of CCR under a hydraulic head that promotes rapid leaching of contaminants to groundwater. With the exception of Pond B-3 (which no longer contains water or any CCR but, as discussed above, at one time received very limited CCR during a handful of short periods), the De Minimis Units are not known to have ever received direct wastewater discharges of CCR. To the extent the De Minimis Units received historic, indirect discharges of CCR, the amounts of CCR were *de minimis* in nature. Further, with the closure of Unit 4 and the former Emery Pond, all CCR generated at the Station will be handled dry and none of the De Minimis Units will receive any future direct discharges of CCR.

As ~~Toxicologist Lisa~~ Dr. Bradley explains in her updated report~~, attached as Ex. 28~~, the U.S. EPA determined *de minimis* units—like those at issue in this Petition—do not pose the risk to groundwater, human health, or the environment that Part 257 (or Part 845) seeks to prevent. *See* ~~Opinion of Lisa JN Bradley, Ph.D. ("~~Updated Bradley Op.~~"),~~ , Updated Ex. 28 at 21.

These forgoing facts, alone, are sufficient to establish that the De Minimis Units do not pose a similar threat to groundwater as the CCR surface impoundments that motivated Part 257 and Part 845. This conclusion is bolstered by the Pond Investigation Report. As described in the report, Haley & Aldridge reviewed the results of shake tests taken of pond sediment samples, as well as the results of Site groundwater monitoring wells, and determined that any potential presence of CCR in the De Minimis Unit sediments should not be expected to cause and has not had a material adverse impact on groundwater at the Site. *See* Pond Investigation Rep., Ex. 29 at 26; *see also* Updated Bradley Op., Updated Ex. 28 at 21–22. Thus, the requested adjusted standard may be granted based upon this ~~Petition. However, SIPC expects that the results of the ongoing pond investigation it is undertaking in conjunction with its VN response, and~~

~~pursuant to an agreed protocol with IEPA, will support its conclusions that the De Minimis Units (1) presently only contain *de minimis* amounts of CCR (if any); and (2) the De Minims Units do not pose a substantial threat to groundwater, human health, or the environment. SIPC will supplement its Petition to include the results of its pond investigation once the investigation is complete and the results have been submitted to IEPA~~Amended Petition.

Another important difference between the De Minimis Units and the CCR surface impoundments that drove Part 845 is the burden of compliance. During the rulemaking, IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to Part 257, and therefore, owners had years to develop and implement compliance plans. *See* Final Order at 8–9. However, as discussed above, the De Minimis Units are not subject to Part 257, and thus, there has been no need to undertake compliance actions under Part 257, such as groundwater and location restriction assessments. Accordingly, the feasibility and cost of Part 845 compliance for these De Minimis Units differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject to Part 257 and that already had years of Part 257 compliance activity that could be used to comply with Part 845.

3. The Factors Relating to the De Minimis Units—which Differ from those Relied upon by the Board in Passing Part 845—Justify an Adjusted Standard.

The factors unique to the De Minimis Units—namely that they are not subject to Part 257 and do not contain a large quantity of CCR managed under a hydraulic head—justify the requested adjusted standard. As discussed above, the De Minimis Units simply do not present the risks that Part 845 was intended to address. And, as discussed below, regulation under Part 845 will be

extremely costly and burdensome—for no meaningful environmental benefit. Accordingly, SIPC's adjusted standard is justified.

4. The Requested Adjusted Standard Will Not Result in Adverse Environmental or Health Effects.

As discussed above, the history of receipt of minimal, if any, direct CCR discharges makes clear that the De Minimis Units have minimal amounts of CCR and, therefore, do not present the types of risk to human health and the environment that Part 845 (and Part 257) seek to address. Moreover, one of the De Minimis Units—Pond B-3—does not contain water, has not contained water since 2017, and has previously been cleaned up, removing any CCR that remained in it. As a result, none of the De Minimis Units have the characteristics of the CCR surface impoundments that drove the risks identified by EPA's risk assessment that warranted pond regulation under Part 257—a substantial amount of CCR managed under a hydraulic head. The Pond Investigation Report confirms this conclusion. *See* Pond Investigation Rep., Ex. 29. Accordingly, as discussed above, Dr. Bradley has determined that the De Minimis Units are not expected to a have a substantial or significant adverse threat to human health or the environment warranting regulation under Part 845. Updated Bradley Op., Updated Ex. 28, at ~~p. 11~~21–22. As a result, Petitioner's requested adjusted standard "will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting" Part 845. 415 Ill. Comp. Stat. 5/28.1(c)(3).

Finally, granting the adjusted standard will not leave the De Minimis Units unregulated. To the contrary, the De Minimis Units that still contain water and are now acting as storm water ponds (Ponds 3 (including 3A), 4, 6, and the South Fly Ash Pond) have been and will continue to be covered by Marion Station's NPDES permit as part of the flow to permitted Outfall 002. *See*

2012 NPDES Permit, Ex. 13. Any groundwater impact from those storm water ponds, as well as former Pond B-3, also remains subject to Part 620 groundwater standards. Furthermore, as discussed below, Pond 6 will be monitored and regulated as part of the Former Landfill area after the landfill undergoes closure pursuant to Part 811.

5. The Requested Adjusted Standard Is Consistent with Federal Law.

As discussed above, the De Minimis Units are not regulated as existing CCR surface impoundments or inactive CCR surface impoundments under Part 257. Accordingly, exempting them from regulation under Part 845 is consistent with federal law. *See* 35 Ill. Adm. Code 104.406(i).

6. The Efforts Necessary for the De Minimis Units to Comply with Part 845 Are Not Economically Reasonable.

In evaluating a petition for an adjusted standard, the Board must take into account the technical feasibility and economic reasonableness of reducing a particular type of pollution. 415 Ill. Comp. Stat. 5/27(a). Extremely high costs of controlling a particular pollutant have been determined to be economically unreasonable.[23][28] A treatment or control technology is not economically reasonable if it would not significantly improve environmental conditions or increase the aesthetic or recreational value of the receiving water body, especially given high

[23][28] *EPA v. Pollution Control Bd.*, 308 Ill. App. 3d 741, 752 (2d Dist. 1999) (upholding Board's finding that compliance would be economically unreasonable where "[a]ccording to the uncontested figures Swenson presented, the cost of installing a powder coating system would be more than 15 times the average control cost the Board historically has used to measure reasonableness"); *see also Granite City Div. of Nat. Steel Co. v. Ill. Pollution Control Bd.*, 155 Ill. 2d 149, 183 (1993) ("The Act specifically provides for variance and adjusted standard procedures by which the Board may relieve a discharger from compliance with its environmental control standards upon a showing of unreasonable economic or individual hardship.").

associated implementation costs.[24][29] As discussed below, compliance with Part 845 is not reasonable for the De Minimis Units, which pose little to no risk to the environment and which will continue to be monitored and regulated pursuant to Marion Station's NPDES Permit and Part 620 groundwater regulations.

Requiring SIPC to comply with Part 845 for the De Minimis Units, including for operation and closure, would require SIPC to incur substantial costs to mitigate risks that do not exist,[25][30] including costs to do the following:

- Perform location restriction demonstrations including certification for each De Minimis Unit (35 Ill. Admin. Code §§ 845.300–340);
- Perform a hydrogeological site investigation for each De Minimis Unit (35 Ill. Admin. Code § 845.620);
- Install a groundwater monitoring system for each De Minimis Unit and collect groundwater monitoring data on at least a quarterly basis for at least 5 years with the potential to reduce the frequency to semiannually thereafter (35 Ill. Admin. Code § 845.650);
- Prepare a hazard potential classification assessment and certification (35 Ill. Admin. Code § 845.400(a)(2));
- Prepare a structural stability assessment and certification (35 Ill. Admin. Code § 845.450(c));
- Prepare a safety factor assessment and certification with the operating permit application and subsequent annual inspections (35 Ill. Admin. Code § 845.460(b));
- Prepare a fugitive dust control plan and certification with the operating permit application and subsequent annual inspections (35 Ill. Admin. Code § 845.500(b)(7));
- Close the units in place or by removal (35 Ill. Admin. Code § 845.710); and

[24][29] *See, e.g.*, R 1981-024, *In the Matter of Proposed Water Quality Standard for Wood River (Olin, East Alton)*, Proposed Rule First Notice Order and Opinion of the Board, at 6 (Nov. 12, 1982); PCB 2009-038, *Ameren Energy Generating Co. v. IEPA*, Order and Opinion of the Board, at 42 (Mar. 18, 2010).

[25][30] As mentioned above, because the De Minimis Units are not subject to Part 257, none of these actions have been undertaken to date and all compliance costs would be attributed to Part 845.

- Perform numerous other assessments and analyses (*see, e.g.*, 35 Ill. Admin. Code §§ 845.510(c)(3), .530, .540).[26][31]

Many of these requirements make no practical sense as applied to the De Minimis Units, one of which (Pond B-3) was cleaned and closed years ago, another of which (Pond 6) will be addressed as part of the landfill closure under the Part 811 landfill requirements, and all of which received and contain little, if any, CCR. Such units simply do not cause a hazard, risk of structural instability, or contain material that could contribute fugitive dust, for example.

Compliance with Part 845 would also require that SIPC either retrofit or close the De Minimis Units. *See* 35 Ill. Admin Code. §§ 845.700–.770. However, SIPC plans to continue using Ponds 3, 6, 4, and the South Fly Ash Pond into the foreseeable future for storm water management at Marion Station. Accordingly, SIPC must either close those ponds by removal ***and then rebuild them*** as storm water basins, or retrofit them by cleaning them and installing a liner. Due to the additional exorbitant costs of dredging and installing liners in Ponds 3, 4, 6, and the Fly Ash Pond, closure by removal is the least costly, technically feasible alternative. As discussed below, that "least costly" alternative would still cost SIPC ~~at least~~ nearly $~~8 million to $10.5~~ 15 million in capital costs (with little to no environmental benefit). *See* Supp. Liss Dec., Ex. ~~9 at ¶18~~30 at ¶ 6. This does not include the cost of constructing new storm water basins as needed to replace the De Minimis Units. *Id*. ~~at ¶19.~~

The costs inherent in Part 845 compliance are exacerbated by the fact that the De Minimis Units are not and have not been subject to Part 257. Accordingly, compliance with Part 845

[26][31] Due to the prescriptive nature of Part 845, technically feasible compliance alternatives to meet the requirements of Part 845 are very limited.

deadlines would, in some cases, be infeasible and, in many cases, more costly on the aggressive timeline adopted in Part 845, which assumed prior Part 257 compliance activity.

Andrews Engineering has performed a preliminary analysis of the costs of compliance associated with major components of Part 845 and conservatively estimates that closing the De Minimis Units pursuant to Part 845 would cost SIPC at least $14.85 million in capital and other upfront costs and nearly $100,000 per year in annual O&M costs (not including inflation) for a minimum of three years.[32] Liss Dec., Ex. 9 at ¶ 18. In contrast, SIPC calculated the operating and maintenance costs of compliance with Marion Station NPDES permit requirements and Part 620 for the De Minimis units to be approximately $286,750 per year for three years.[33] This annual cost covers electrical and mechanical maintenance, power to operate the on-site pump system, pond maintenance, and sampling both the outfalls and groundwater monitoring wells.

This significant cost differential is not reasonable on its face, considering the minimal (if any) benefit conferred by compliance with Part 845. Moreover, should SIPC be required to comply with Part 845 for the De Minimis Units, significant adverse consequences could occur for those who already live in low-income rural Illinois communities. SIPC is a not-for-profit electric

[32] This does not include the cost of constructing new storm water basins as needed to replace the De Minimis Units. This also does not include the costs of expediting work to meet Part 845's stringent deadlines, or alternative Board-ordered deadline, whichever may apply. The De Minimis Units are not subject to Part 257 and, thus, no Part 257 compliance activities have been performed although Part 257 coverage and related compliance activities were assumed by the Board in setting the Part 845 compliance deadlines for covered units. This also does not include additional costs that may be incurred due to potential ambiguities in the rules, and does not include all plant personnel time.

[33] SIPC will have to continue paying these operational costs even if the De Minimis Units are closed under Part 845 and then replaced with storm water basins. Accordingly, the Part 845-related O&M costs that would apply if SIPC were required to close the units under Part 845 would be on top of SIPC's routine operational O&M costs for storm water management.

cooperative owned directly by its members-, serving customers and businesses in more than twenty southernmost counties of Illinois. SIPC is defined as a "Small Business" by the U.S. Small Business Administration, but it is the largest taxpayer in Williamson County.

SIPC is currently ineligible to borrow subsidized funds to pay the costs required to comply with Part 845. When the costs of running its business suddenly increase, for example, to comply with Part 845, SIPC's already stretched working capital (short-term commercial paper at National Rural Utility Cooperative Financing Corporation) must be stretched even further to cover the costs. If the new costs are greater than the available working capital, SIPC will be forced to borrow on a short-term line-of-credit and possibly from an unsecured borrowing source at higher rates until such time as it can retire the borrowings from future member rates. SIPC will be forced to pass along all costs of meeting these new requirements to its member-owners. SIPC's member-owners have "full requirement" wholesale power requirements contracts, which means they must buy 100% of their energy needs from SIPC. They cannot go to an alternative supplier for lower cost energy. To leave SIPC, member-owners would have to pay prohibitively significant exit costs. For decades, SIPC's reliable, affordable electricity has been one of the key drivers of economic growth and prosperity in these communities. Increased costs of electric energy, particularly in rural areas served by cooperatives, will have negative impacts on rural economic development and jobs. In cases where small businesses like SIPC are affected, Section 27(a) requires the Board to consider and apply economically reasonable ways to minimize pollution and also mitigate impacts to facilities that can least afford them. 415 Ill. Comp. Stat. 5/27(a).

Not only are the capital and operating costs associated with Part 845 compliance significant, compliance with Part 845 would not provide any meaningful benefit to human health or the environment because, as discussed above, the *de minimis* units do not present the magnitude

of risk that warranted regulation under Part 257 and Part 845. This is especially true given that the units would remain subject to applicable NPDES permit and Part 620 standard requirements. Accordingly, any minimal benefit from layering on another set of onerous requirements under Part 845 would be dwarfed by the extreme costs of compliance for SIPC and its members.

Finally, there is nothing in the Part 845 rulemaking record to combat the conclusion that Part 845 is not economically reasonable as applied to current and former ponds at issue in this petition. IEPA did not perform its own economic reasonableness analysis of the Part 845 rulemaking but instead relied on U.S. EPA's technical feasibility and economic reasonableness determination in Part 257. IEPA simply concluded ~~"since~~ because "owners and operators of CCR surface impoundments are already subject to 40 CFR 257, many of the technical and economic requirements applicable to owners and operators in the proposed Part 845 are already required under federal law." IEPA Statement of Reasons, Ex. 18 at 33–34. Part 257, however, only applies to CCR surface impoundments that contained a significant (not *de minimis*) amount of CCR and liquids as of October 19, 2015. U.S. EPA did not consider units such as the De Minimis Units in promulgating Part 257, and therefore, neither did IEPA's proposal or the Board in promulgating Part 845.[~~28~~34] Moreover, because they are not subject to Part 257, the De Minimis Units are **not** already subject to "many of the technical and economic requirements applicable to owners and operators in the proposed Part 845." IEPA Statement of Reasons, Ex. 18 at 33–34. In other words, neither IEPA nor the Board determined that Part 845 was economically reasonable as applied to the De Minimis Units (or, as discussed below, the Former Fly Ash Holding Units).

[~~28~~34] The Board requested an analysis from the Department of Commerce and Economic Opportunity, but none was performed. Second Notice Opinion and Order~~,~~ at 8.

In short, the costs of Part 845 compliance are significant, and any additional benefits to human health and the environment are minimal, if any. Compliance with the requested relief, alternatively, would allow SIPC to continue to manage plant discharges and storm water in the De Minimis Units without causing adverse impacts to human health or the environment and without incurring additional O&M or capital cost that will have to be passed along to SIPC's members. Compliance with Part 845 is economically unreasonable, and SIPC's request for an adjusted standard should be granted.

C. The Former Fly Ash Holding Units and Pond 6

1. SIPC Requests an Adjusted Standard Exempting the Former Fly Ash Holding Units and Pond 6 from all Provisions of Part 845.

To the extent the Board determines that the Former Fly Ash Holding Units and Pond 6 are "CCR Surface Impoundments" under Part 845, the Board should grant an adjusted standard from section Section 845.100 exempting the Former Fly Ash Holding Units and Pond 6[29][35] from the requirements of Part 845. The Initial Fly Ash Holding Area, the Replacement Fly Ash Holding Area, and the Fly Ash Holding Area Extension are within the footprint of the Former Landfill at Marion Station and thus, are required to be covered pursuant to the Part 811 closure plan SIPC has already submitted to IEPA for the Former Landfill. As discussed above, that landfill closure plan was submitted to IEPA at IEPA's request in connection with IEPA's claims that the Former Landfill failed to have the permanent cover required by Part 811. Pond 6 was built as, and under the closure plan will continue to operate as, a storm water pond to manage landfill runoff and will be operated and maintained as part of SIPC's Part 811 landfill closure and post-closure obligations.

[29][35] An adjusted standard exempting Pond 6 from coverage under Part 845 is warranted both on the grounds that it is a *de minimis* unit and because it can and should be managed as part of the landfill closure pursuant to Part 811.

The Initial Fly Ash Holding Area, the Replacement Fly Ash Holding, the Fly Ash Holding Area Extension, and Pond 6 will continue also to be subject to all other applicable environmental laws and regulations, including the groundwater quality regulations set forth in 35 Ill. Admin. Code Part 620.

2. The Factors Relating to the Former Fly Ash Holding Units and Pond 6 Are Substantially and Significantly Different from the Factors and Circumstances the Board Relied on in Adopting Part 845.

The factors relating to the Former Fly Ash Holding Units and Pond 6 differ significantly from the factors that were considered and motivated the Board in adopting Part 845. As noted *supra* at Part IV.B.2, the legislature, IEPA, and the Board were all motivated to address the same risk that U.S. EPA sought to address in Part 257 for surface impoundments[30]—the risk posed by CCR surface impoundments that contain large amounts of CCR managed with water under a hydraulic head. The Former Fly Ash Holding Units and the Former Landfill's storm water pond, Pond 6, are different, in several important respects.

First, the Former Fly Ash Holding Units do not contain water and have not contained water for at least thirty years. Accordingly, any CCR remaining in the Fly Ash Holding Units is not under a hydraulic head and presents far less risk to groundwater than the units the Board sought to regulate in Part 845 (which the Board acknowledged when it declined to extend the Part 845 rulemaking to CCR landfills). *See* Updated Bradley RepOp., Updated Ex. 28, at 11 at 21–22. As discussed above, Pond 6 contains *de minimis* amounts of CCR, and thus likewise does not present the risk targeted by Part 845.

[30] As mentioned above, the Former Landfill ceased receiving CCR prior to October 2015, and thus, it is not subject to Part 257's landfill requirements. Consistent with that assertion, in its Landfill VN, IEPA asserted that Illinois's landfill regulations, Part 811 *et seq.*, were applicable, not Part 257.

Second, the Former Fly Ash Holding Units are now covered by the Former Landfill, which operated and was regulated as a permit-exempt, on-site landfill for decades under Part 815, and which SIPC intends to close consistent with the Part 811 landfill regulations. As discussed below, current Illinois landfill regulations require that SIPC install a cover that is ~~identical to and therefore~~ equally as protective as the cover that would be required by Part 845. ~~They~~ *See* Updated Bradley Op., Updated Ex. 28 at 21; *see also* 35 Ill. Adm. Code §§ 314(a), (b), (c). The regulations also require post-closure care, maintenance, and monitoring for the entire landfill area which, ~~including Pond 6~~ in this case, includes Pond 6. *See* 35 Ill. Adm. Code § 811.302 (post-closure care), § 811.319 (groundwater monitoring), § 811.322 (final slope and stabilization). However, the Board clearly did not intend to regulate CCR landfills under the adopted Part 845 surface impoundment rules, and in fact, it opened a subdocket to address possible, future CCR landfill regulations ~~for CCR landfills~~. Second Notice Opinion and Order~~,~~ at 12; IPCB Dkt. No. R2020-19(A). One would expect there to be many different requirements and considerations for landfills, which were never even addressed in the Part 845 rulemaking. *See, e.g.*, 40 C.F.R. §§ 257.70, .81, .84.

Third, there are significant legal, compliance, and fairness concerns inherent in suddenly and unexpectedly characterizing and regulating the Former Fly Ash Holding Units and Pond 6, and indeed the entire landfill area, as a CCR surface impoundment, when today and at the time Part 257 and Part 845 were adopted, the area was a landfill and had been managed and treated as a regulated landfill for decades. Indeed, as discussed above, under the same, key present tense definition language in both Part 257 and Part 845, the decision about whether a unit is a landfill or surface impoundment must be made at the time Part 257, or Part 845, respectively, was adopted. U.S. EPA had to address in Part 257 how to determine whether a unit should be considered a

landfill or surface impoundment because Part 257 contains different requirements for landfills and surface impoundments. It did so based upon the status of the unit ***at the time Part 257 was adopted***. *See* ~~discussion~~ *supra* at Part III.A.1. This made sense for multiple reasons, including for clarity of applicability and because the correct regulatory requirements should apply based upon the characteristics of the unit, and the related risks presented, at the time the rule went into effect. It makes no sense to apply landfill requirements wholesale to ponds to address landfill risks, or to apply pond requirements to landfills to address pond risks. But that is exactly what IEPA seems to be claiming here.

Worse, IEPA seems to be claiming that Part 845 surface impoundment requirements apply to the whole Former Landfill after having treated the landfill as a landfill for years, including by issuing the Landfill VN to SIPC in 2020. 2020 Landfill VN. Ex. 16. SIPC operated the Former Landfill as a landfill, submitted landfill reports to IEPA, and ceased using the Former Landfill at a time that made Part 257 landfill requirements inapplicable. Having expected Part 257 to be inapplicable given the plain applicability language, reinforced by IEPA's prior view that the Former Landfill was subject to Illinois landfill requirements under Part 811, SIPC has not planned for Part 257 applicability, and it has not taken any Part 257 compliance actions. Indeed, if anyone had thought at the time it was adopted that Part 257 applied at all, it would have been anomalous, to say the least, for SIPC to have taken compliance action for its Former Landfill consistent with Part 257 surface impoundment requirements, but IEPA appears now to claim that Part 845's requirements, which are based on Part 257's surface impoundment requirements, apply to the Former Landfill.

This quixotic result, of course, was never contemplated by the Board in the Part 845 rulemaking. In fact, in adopting Part 845, the Board included some very aggressive deadlines

because, in its view, companies were already complying with Part 257 and they could use those actions to comply with Part 845. *See supra* Section IV.B.2. That is simply not true for the Former Landfill, including the Former Fly Ash Holding Units within the landfill footprint and related storm water runoff Pond 6. No one could reasonably have expected that Part 257's (and later Part 845's) surface impoundment requirements would apply to the Former Landfill, especially when IEPA asserted as late as 2020 that the Former Landfill was a landfill and regulated under Illinois landfill regulations. The Board did not consider or assess in its Part 845 rulemaking the application of Part 845's surface impoundment requirements to landfills, including the costs, feasibility, and necessity of compliance or the risks to be addressed. Applying Part 845 surface impoundment requirements to the Former Landfill also would cause unfair surprise and retroactive change of regulatory status concerns.

3. The Factors Relating to the Former Fly Ash Holding Units—which Differ from those Relied upon by the Board in Passing Part 845—Justify an Adjusted Standard.

The factors discussed above all justify granting the adjusted standard here, particularly where, as discussed below, the Former Fly Ash Holding Units will continue to be regulated and monitored as part of the Former Landfill closure and post-closure activities under Illinois landfill regulations and any exceedances of groundwater standards can be addressed pursuant to the landfill regulations and Part 620.

4. The Requested Adjusted Standard Will Not Result in Adverse Environmental or Health Effects.

As an initial matter, the Former Fly Ash Holding Units do not contain water and therefore do not pose the same risks to the environment as CCR surface impoundments that contain large quantities of CCR under a hydraulic head. *See* Updated Bradley Op., Updated Ex. 28 at 21–22.

Instead, they function as a landfill, which U.S. EPA, IEPA, and the Board have all recognized pose less of a threat to the environment than the units that the Board sought to regulate under Part 845. Updated Bradley Op., Updated Ex. 28 at 20; Final Rule, Updated Ex. 17 at 21342 ("As noted, EPA's risk assessment shows that the highest risks are associated with CCR surface impoundments due to the hydraulic head imposed by impounded water."). Further, Pond 6 is a landfill runoff, *de minimis* pond, and as discussed above, it too does not present a risk that warrants regulation under Part 845.

Moreover, SIPC intends the close and cover the Former Landfill consistent with the requirements of Part 811. SIPC's currently proposed landfill closure plan is consistent with Part 845 requirements for closure in place with a cover system. SIPC's plan, which has been submitted to IEPA, includes the following:

- Installation of a final cover system consisting of a 3.0 foot low permeability layer overlain by a 3.0 foot final protective layer or an alternate geosynthetic cap with a minimum thickness of 4.0 feet consisting from the bottom up: 1.0 foot thick low permeability layer, 40-mil linear low-density polyethylene (LLDPE) geomembrane, a double-sided geocomposite drainage layer and a 3.0 foot final protective layer.[37] (*Compare* 35 Ill. Admin. Code § 811.314 *with id.* § 845.750.)

- Slopes that will be constructed to minimize wind and water erosion.

- Establishment of vegetation upon completion of the final cover placement and storm water and drainage features.

- Installation of additional monitoring wells, if needed, to meet the requirements of Part 811,[31][38] which requires, in part that "a network of monitoring points shall be established "at sufficient locations" downgradient with respect to groundwater flow and not excluding the downward direction, to detect any discharge of contaminants

[37] Part 811 allows for such an "alternate" cover system design where "the performance of the low permeability layer is equal to or superior to the performance" to the default requirements set forth in Part 811.314 (b)(3)(A)(i) and (b)(3)(A)(ii). *See* 35 Ill. Adm. Code § 811.314 (b)(3)(A)(iii).

[31][38] SIPC has previously installed groundwater monitoring wells around the landfill and performed groundwater sampling and reported the results to IEPA.

room from any part of a potential source of discharge. 35 Ill. Admin. Code § 811.318(b)(1).

- Post-closure monitoring and care consistent with SIPC's obligations under Part 811.

See Former Landfill Closure Plan, Ex. 10 at 3–8.

Compliance with these provisions will ensure that the Former Landfill (including the Former Fly Ash Holding Units) remains insulated from any water that could lead CCR to leach into nearby groundwater or runoff to Pond 6. In addition, ongoing groundwater monitoring under the landfill closure plan will ensure that any exceedances of groundwater standards attributable to the Former Landfill (of which the Former Fly Ash Holding Units are a part) or Pond 6 will be identified and corrected as necessary. As a result, there is no risk that the proposed adjusted standard will result in any harm to the environment~~-~~, and Petitioner's requested adjusted standard "will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting" Part 845. 415 Ill. Comp. Stat. 5/28.1(c)(3); *see also* Updated Bradley Op., Updated Ex. 28 at 21–22.

5. The Requested Adjusted Standard is Consistent with Federal Law.

As discussed *supra*, the Former Fly Ash Holding Units and Pond 6 are not existing or inactive CCR surface impoundments under Part 257. Accordingly, excluding them from Part 845 is not inconsistent with federal law. *See* 35 Ill. Admin. Code 104.406(i).

6. The Efforts Necessary to Require the Former Fly Ash Holding Units to Comply with Part 845 ~~are~~ Are Not Economically Reasonable.

As is the case with the De Minimis Units, the costs of compliance with Part 845 are not reasonable when considered in conjunction with the minimal (if any) benefits to the environment.

Andrews Engineering conservatively[39] estimates that the costs of closing and managing the Former Landfill, including the Former Fly Ash Holding Units, pursuant to Part 845 is ~~at least~~ nearly $~~3.9 to $5.6~~ 5.5 million in capital and other upfront costs, which includes the costs of permitting and documentation to support the necessary Part 845 permit applications. Supp. Liss Dec., Ex. 30 at ⁋ 5. The O&M costs associated with managing the Former Landfill area, including the Former Fly Ash Holding Units, as a Part 845 surface impoundment would be at least $~~325,000 to~~ 67,536 per year (without an inflation factor) for the first ten years of post-closure care, and $~~350,000 in annual costs for a~~ 33,752 (without an inflation factor) for the remainder of the 30-year post closure care period required by Part 845.[40] [32]~~Liss Dec., Ex~~*Id.* ~~9, at ¶15~~at ¶ 4. In contrast, the costs of closing and managing the Former Landfill pursuant to the Illinois landfill regulations ~~(as set forth in the proposed landfill closure plan)~~ is approximately $3.5 to $5.2 million in immediate capital costs with approximately $~~212,000 in annual~~ 42,000 per year in O&M costs for a period of 5 years after the completion of closure activities, and $~~124,400~~ 12,400 per year in annual O&M costs for the following 10-year period ~~for a total of $2.304 million~~, assuming a 15-year post-closure care and ~~groundwater~~ monitoring period. *Id.* at ~~¶8~~¶ 4. The Part 845 costs include costs to comply with

[39] Mr. Liss's estimate is conservative, in part, because it assumes that IEPA will allow the landfill area to close as one impoundment, rather than requiring separate closure of each of the three Former Fly Ash Holding Units. It also assumes that IEPA will approve closure in place using a final cover system, rather than require SIPC to excavate the landfill and the Former Fly Ash Holding Units and dispose of the material offsite and in accordance with the comprehensive Part 845 transportation requirements. Supp. Liss Dec., Ex. 30 at ⁋ 5.

[40] This does not include the costs of expediting work to meet Part 845's stringent deadline, or alternate Board-approved compliance deadlines. This also does not include additional costs that may be incurred due to potential ambiguities in the rules, and does not include all plant personnel time.

[32] ~~This does not include the costs of expediting work to meet Part 845's stringent deadlines, which may not even be possible at this juncture given that the former landfill is not regulated by Part 257. This also does not include additional costs that may be incurred due to potential ambiguities in the rules, and does not include all plant personnel time~~

requirements that were never intended to apply to landfills and were not enacted to address any risks actually presented by landfills.

As noted above, the Former Fly Ash Holding Units are not covered by Part 257. Therefore, neither U.S. EPA in promulgating Part 257 nor IEPA nor the Board in promulgating Part 845 found that it is economically reasonable to require former ponds like the Former Fly Ash Holding Units to comply with the requirements of Part 845. *See supra* Section IV.B.6. Further, as a not-for-profit cooperative, SIPC and its customers are uniquely sensitive to sudden, unexpected increases in capital and operating costs (and this cost is particularly unexpected given that, until ~~several weeks ago~~earlier this year, SIPC and IEPA had been treating the Former Landfill as a landfill that was about to undergo closure under Part 811). Given that there will be no environmental benefit to managing the Former Fly Ash Holding Units pursuant to Part 845 rather than Part 811, the additional cost is not reasonable and the Petition should be granted.

D. Proposed Language of Adjusted Standard.

SIPC proposes the following adjusted standard language (35 Ill. Admin. Code 104.406(a)):

1. Pursuant to Section 28.1 of the Environmental Protection Act, the Board grants Southern Illinois Power Cooperative ("SIPC") an adjusted standard from 35 Ill. Admin. Code § 845.100 for Ponds 3, including 3A, 4, 6, South Fly Ash Pond, Pond B-3, the Initial Fly Ash Holding Area, the Replacement Fly Ash Holding area, and the Fly Ash Holding Area Extension. 415 Ill. Comp. Stat. 5/28.1.

2. The adjusted standard applies to SIPC's Marion Station.

3. The Part 845 regulations do not apply to Ponds 3, including 3A, 4, 6, South Fly Ash Pond, Pond B-3, the Initial Fly Ash Holding Area, the Replacement Fly Ash Holding area, or the Fly Ash Holding Area Extension.

4. The adjusted standard is effective as of the date of this order.

E. Part 845 Was Promulgated to Implement Section 22.59 of the Act and the Automatic Stay Applies.

Because SIPC filed ~~this~~ its original petition for an individual adjusted standard within 20 days after the effective date of Part 845 (April 21, 2021), the operation and application of Part 845 is automatically stayed as to the De Minimis Units and Former Fly Ash Holding Units pending the disposition of this petition. 415 Ill. Comp. Stat. 5/28.1(e).

The only exception to this automatic stay is for regulations "adopted by the Board to implement, in whole or in part, the requirements of the federal Clean Air Act, Safe Drinking Water Act or Comprehensive Environmental Response, Compensation and Liability Act, or the State RCRA, UIC or NPDES programs." 415 Ill. Comp. Stat. 5/28.1(e). Part 845 was promulgated to implement Section 22.59 of the Act and the federal Resources Conservation and Recovery Act, Section 4005. It was not promulgated to implement, in whole or in part, the requirements of the federal Clean Air Act, Safe Drinking Water Act or Comprehensive Environmental Response, Compensation and Liability Act, or the State RCRA, UIC or NPDES programs. *See* 35 Ill. Adm. Code 104.406(b).

F. Hearing Request.

SIPC requests a hearing for this adjusted standard pursuant to 35 Ill. Admin. Code 104.406(j).

G. Supporting Documentation.

Documents and legal authorities supporting the Petition are cited herein (and, where applicable, on the attached Index of Exhibits) when they are used as a basis for the Petitioner's proof. Relevant portions of ~~the~~ updated or new documents and legal authorities, other than Board's

final ~~order,~~ Order State regulations, statutes, and reported cases, are attached to this amended petition. *See* 35 Ill. Admin. Code § 104.406(k).

V. CONCLUSION.

SIPC respectfully requests that the Board grant its request for inapplicability or, in the alternative, an adjusted standard as set forth herein.

Respectfully Submitted,

Southern Illinois Power Cooperative

By: */s/ Katherine S. Walton*
~~By:~~
One of its attorneys

Dated: ~~May 11~~September 2, 2021

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Exhibit 1	Affidavit of Wendell Watson on Behalf of SIPC (May 10, 2021) ("Watson Aff.")
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Exhibit 3	Andrews Engineering, Site Map prepared for SIPC (May 2021) ("Site Map")
Exhibit 4	Lake Egypt Water District IL 1995200, Annual Drinking Water Quality Report (Jan. 1–Dec. 30, 2019)
Exhibit 5	IEPA Water Pollution Control Permit, No. 1977-EN-5732 (Nov. 14, 1977) ("1977 Permit")
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Exhibit 8	Letter from SIPC to IEPA (Sept. 16, 1993) ("1993 Letter")
Exhibit 9	Declaration of Kenneth W. Liss ("Liss Dec.")
Exhibit 10	Andrews Engineering, SIPC's Proposed Closure Plan for IEPA Site No. 199055505 (Dec. 16, 2020) ("Former Landfill Closure Plan")
Exhibit 11	Hanson, Emery Pond Corrective Action and Selected Remedy Plan, Including GMZ Petition (Mar. 29, 2019)
Exhibit 12	IEPA Water Pollution Control Permit, No. 1989-EN-3064 (May 17, 1989)
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Exhibit 15	IEPA Initial Facility Report — for On-Site Facilities (Sept. 18, 1992) ("1992 Landfill IFR")

~~**Exhibit 16**~~	~~IEPA Violation Notice L-2020-00035 (Mar. 20, 2020) ("2020 Landfill VN")~~
Updated Exhibit 17	Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21,302 (April 17, 2015) (excerpted) ("Final Rule")
~~**Exhibit 18**~~	~~R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA's Statement of Reasons (Mar. 30, 2020) (excerpted) ("IEPA Statement of Reasons")~~
~~**Exhibit 19**~~	~~R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, SIPC Comments to Illinois Pollution Control Board (Sept. 25, 2020)~~
~~**Exhibit 20**~~	~~IEPA Violation Notice W-2020-00046 (July 28, 2020)~~
~~**Exhibit 21**~~	~~IEPA Violation Notice W-2020-00087 (Dec. 16, 2020)~~
Updated Exhibit 22	R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA Responses to Pre-Filed Questions (Aug. 3, 2020) (excerpted) ("IEPA Responses")
~~**Exhibit 23**~~	~~R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, Hearing Transcript (Aug. 11, 2020) (excerpted)~~
~~**Exhibit 24**~~	~~R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, First Supplement to IEPA Pre-Filed Responses (Aug. 5, 2020) (excerpted)~~
~~**Exhibit 25**~~	~~U.S. EPA, Comment Summary and Response Document: Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities; Proposed Rule, Vol. 3 (Dec. 2014) (excerpted)~~

~~**Exhibit 26**~~	~~R 2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA Post Hearing Comments (Oct. 30, 2020) (excerpted)~~
~~**Exhibit 27**~~	~~*In the Matter of Objection to the Issuance of Partial Approval of Closure/Post Closure Plan Duke Gallagher Generating Station Ash Pond System*, No. 20-S-J-5096 (OEA May 4, 2021)~~
Updated Exhibit 28	Updated Opinion of Lisa JN Bradley, Ph.D. (Sept. 1, 2021) ("Updated Bradley Op.")
Exhibit 29	Haley & Aldridge, Inc., Pond Investigation Report of Certain Ponds at Southern Illinois Power Company's Marion Station (Sept. 1, 2021) ("Pond Investigation Rep.")
Exhibit 30	Supplemental Declaration of Kenneth W. Liss ("Supp. Liss Dec.")
Exhibit 31	Redline Comparison Document, showing changes made since SIPC's Initial Petition filed with the Board on May 11, 2021

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EXHIBIT 32

The Declaration of Jason McLaurin

Declaration of Jason McLaurin On Behalf of Southern Illinois Cooperative

I, Jason McLaurin, affirm and declare as follows:

1. I am currently employed as Environmental Coordinator at Southern Illinois Power Cooperative, which operates an electric power generating facility, located south of Marion, Illinois, in Williamson County ("Marion Station"). My responsibilities include overseeing environmental compliance and related activities at the Marion Station. I have been employed at SIPC since July 9, 2007. I have a degree in Plant & Soil Science from Southern Illinois University Carbondale.

2. The unit referred to as Pond 4 at Marion Station historically received decant water from Ponds 1 and 2, until they stopped operating in 2020. Pond 4 has also historically received and currently receives storm water runoff water from the coal pile at the Marion Station, which is located directly south of Pond 4. Pond 4 has also received decanted overflow water from Pond 6 for approximately 30 years.

3. During an outage that took place around September – October, 2010, Pond 4 was dewatered and cleaned to the clay as part of regular maintenance activities at the Marion Station.

4. Pond 4 was dewatered down to the mud. Upon completion of this dewatering, the unit consisted of two categories of materials. Dark and dry materials consisting predominantly of coal fines that had accumulated in the pond and muddy materials high in organic matter (such as leaves and algae) that often accumulate at the bottom of a ponded area.

5. The dark and dry materials, which consisted of at least approximately, 60-70% of the materials located in the pond upon dewatering, were loaded into trucks and transported to the coal yard at Marion Station. There, they were further dried and then burned as fuel in Unit 123.

6. The muddy materials were taken for disposal to the west side of the on-site landfill.

Date: 12/16/2024

Jason McLaurin

REVISED EXHIBIT 33

Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Legacy CCR Surface Impoundments, 89 Fed. Reg. 38,950 (May 8, 2024) **(excerpted)**

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 9 and 257

[EPA–HQ–OLEM–2020–0107; FRL–7814–04–OLEM]

RIN 2050–AH14

Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: On April 17, 2015, the Environmental Protection Agency (EPA or the Agency) promulgated national minimum criteria for existing and new coal combustion residuals (CCR) landfills and existing and new CCR surface impoundments. On August 21, 2018, the United States Court of Appeals for the District of Columbia Circuit vacated the exemption for inactive surface impoundments at inactive facilities (legacy CCR surface impoundments) and remanded the issue back to EPA to take further action consistent with its opinion in *Utility Solid Waste Activities Group, et al.* v. *EPA.* This action responds to that order and establishes regulatory requirements for legacy CCR surface impoundments. EPA is also establishing requirements for CCR management units at active CCR facilities and at inactive CCR facilities with a legacy CCR surface impoundment. Finally, EPA is making several technical corrections to the existing regulations, such as correcting certain citations and harmonizing definitions.

DATES: This final rule is effective on November 4, 2024.

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–HQ–OLEM–2020–0107. All documents in the docket are listed on the *http://www.regulations.gov* website. Although listed in the index, some information is not publicly available, *e.g.,* CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through *http://www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT: For questions concerning this proposal, contact Michelle Lloyd, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566–0560; email address: *Lloyd.Michelle@epa.gov,* or Taylor Holt, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566–1439; email address: *Holt.Taylor@epa.gov.* For more information on this rulemaking, please visit *https://www.epa.gov/coalash*.

SUPPLEMENTARY INFORMATION:

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Regulatory Text

List of Acronyms

ACM Assessment of Corrective Measures
ANPRM Advance Notice of Proposed Rulemaking
ARAR applicable or relevant and appropriate requirements
ASD alternative source demonstration
CAA Clean Air Act
CBI Confidential Business Information
CBR closure by removal
CCR coal combustion residuals
CCRMU coal combustion residuals management unit
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
CIP closure in place
CFR Code of Federal Regulations
COALQUAL U.S. Geological Survey coal quality database
CWA Clean Water Act
DOE Department of Energy
EAP Emergency Action Plan
EIA Energy Information Administration
EIP Environmental Integrity Project
EJ environmental justice
ELG Effluent Limitation Guidelines
EPA Environmental Protection Agency
EPACMTP EPA Composite Model for Leachate Migration with Transformation Products
EPRI Electric Power Research Institute
FER Facility Evaluation Report
FERC Federal Energy Regulatory Commission
FGD flue gas desulfurization
FR Federal Register
GWMCA groundwater monitoring and corrective action
GWPS groundwater protection standard
HQ hazard quotient
HSWA Hazardous and Solid Waste Amendments
ICR Information Collection Request
IRIS Integrated Risk Information System
LEAF Leaching Environmental Assessment Framework
MCL maximum contaminant level
MDE Maryland Department of the Environment
MNA monitored natural attenuation
MODFLOW–USG Modular Three-Dimension Finite-Difference Ground-Water Flow Model
MSW Municipal Solid Waste
MW Megawatts
NAICS North American Industry Classification System
NERC North American Electric Reliability Corporation
NODA notice of data availability
NPDES National Pollution Discharge Elimination System
NPL National Priorities List
NTTAA National Technology Transfer and Advancement Act
OAFU Other Active Facilities
OLEM Office of Land and Emergency Management
OMB Office of Management and Budget
OSHA Occupational Safety and Health Administration

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P.E. Professional Engineer
PM particulate matter
PRA Paperwork Reduction Act
PRG preliminary remediation goal
PUC Public Utility Commission
QA/QC quality assurance/quality control
RCRA Resource Conservation and Recovery Act
RIA Regulatory Impact Analysis
RME reasonable maximum exposure
RTO Regional Transmission Organizations
SMCL secondary maximum contaminant level
SSI statistically significant increase
SSL statistically significant level
TDS total dissolved solids
TSCA Toxic Substances Control Act
TSDF Transportation Storage and Disposal Facility
TVA Tennessee Valley Authority
UMRA Unfunded Mandates Reform Act
USGS U.S. Geological Survey
USWAG Utility Solid Waste Activities Group
WIIN Water Infrastructure Improvements for the Nation
WQC water quality criteria

I. General Information

A. Does this action apply to me?

This rule applies to and may affect all CCR generated by electric utilities and independent power producers that fall within the North American Industry Classification System (NAICS) code 221112. The reference to NAICS code 221112 is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This discussion lists the types of entities that EPA is now aware could potentially be regulated by this action. Other types of entities not described here could also be regulated. To determine whether your entity is regulated by this action, you should carefully examine the applicability criteria found in 40 CFR 257.50 of title 40 of the Code of Federal Regulations. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

B. What action is the Agency taking?

EPA is amending the regulations governing the disposal of CCR in landfills and surface impoundments, codified in subpart D of part 257 of Title 40 of the Code of Federal Regulations (CFR) (CCR regulations). Specifically, the Agency is establishing regulatory requirements for inactive CCR surface impoundments at inactive utilities (''legacy CCR surface impoundment'' or ''legacy impoundment''). This action is being taken in response to the August 21, 2018, opinion by the U.S. Court of Appeals for the District of Columbia Circuit in *Utility Solid Waste Activities Group* v. *EPA,* 901 F.3d 414 (D.C. 2018) (''*USWAG* decision'' or ''*USWAG*'') that vacated and remanded the provision exempting legacy impoundments from the CCR regulations. This action includes adding a definition for legacy CCR surface impoundments and other terms relevant to this rulemaking. It also requires that legacy CCR surface impoundments comply with certain existing CCR regulations with tailored compliance deadlines.

While this action is responsive to the D.C. Circuit's order, it is also driven by the record, which clearly demonstrates that regulating legacy CCR surface impoundments will have significant quantified and unquantified public health and environmental benefits. As EPA concluded in 2015, the risks posed by unlined CCR surface impoundments are substantial, and the risks from legacy impoundments are at least as significant. EPA's 2014 Risk Assessment concluded that the cancer risks from unlined surface impoundments ranged from 3×10^{-4} for trivalent arsenic to 4×10^{-5} for pentavalent arsenic. Non-cancer risks from these same units also significantly exceeded EPA's level of concern, with estimated Hazard Quotients (HQ) of two for thallium, three for lithium, four for molybdenum and eight for trivalent arsenic. In addition, as described in Unit III.A.1 of this preamble, information obtained since 2015 indicates that the risks for legacy CCR surface impoundments are likely to be greater than EPA originally estimated. Finally, based on the demographic composition and environmental conditions of communities within one and three miles of legacy CCR surface impoundments, this final rule will reduce existing disproportionate and adverse effects on economically vulnerable communities, as well as those that currently face environmental burdens. For example, in Illinois the population living within one mile of legacy CCR surface impoundment sites is over three times as likely compared to the State average to have less than a high school education (35.66% compared to 10.10%, see Regulatory Impact Analysis (RIA) exhibit ES.14), and that population already experiences higher than average exposures to particulate matter, ozone, diesel emissions, lifetime air toxics cancer risks, and proximity to traffic, Superfund sites, Risk Management Plan sites, and hazardous waste facilities (see RIA exhibit ES.15). Consistent with the directive in section 4004(a) to ensure that the statutory standard is met at all regulated sites, including the most vulnerable, this final rule will help EPA further ensure that the communities and ecosystems closest to coal facilities are sufficiently protected from harm from groundwater contamination, surface water contamination, fugitive dust, floods and impoundment overflows, and threats to wildlife.

EPA is also establishing requirements to address the risks from currently exempt solid waste management that involves the direct placement of CCR on the land. EPA is extending a subset of the existing requirements in 40 CFR part 257, subpart D to CCR surface impoundments and landfills that closed prior to the effective date of the 2015 CCR Rule, inactive CCR landfills, and other areas where CCR is managed directly on the land. In this action, EPA refers to these as CCR management units, or CCRMU. The final rule expands the CCRMU requirements to a set of active facilities that were not regulated by the 2015 CCR rule because they had ceased disposing of CCR in their on-site disposal units, and they did not have an inactive surface impoundment. Accordingly, this rule applies to all CCRMU at active CCR facilities and inactive facilities with a legacy CCR surface impoundment.

EPA is also finalizing alternative closure provisions to allow a facility to complete the closure by removal in two stages: first, by completing all removal and decontamination procedures; and second, by completing all groundwater remediation in a separate post closure care period.

Finally, EPA is making a number of technical corrections to the existing regulations, such as correcting certain citations and harmonizing definitions.

EPA intends the provisions of the rule to be severable. In the event that any individual provision or part of the rule is invalidated, EPA intends that this would not render the entire rule invalid, and that any individual provisions that can continue to operate will be left in place. For example, EPA intends that the provisions governing each class of facilities—legacy CCR inactive surface impoundments, CCR management units, other active facility units, and regulated CCR landfills containing waste in contact with groundwater—to be independently severable from one another as each set of requirements operates independently from the other.

Likewise, the provisions regulating existing units at active facilities, including those units at non-fossil-fuel-fired facilities generating energy, are severable from the other substantive requirements—each provision may continue operating even if one of the others is invalidated. EPA also intends

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Facts demonstrating the consequences from particular activities therefore remain relevant, particularly (although not solely) where the management practices continue to occur. In other words, what matters in this regard are facts that provide information on the reasons that unit leaked, the particular contaminants that were present, the levels of those contaminants, and the nature of any impacts caused by that contamination. None of these facts are affected by whether the damage is ultimately mitigated or remedied. This is entirely consistent with RCRA section 8002(n), which requires EPA to evaluate the ''potential danger, if any, to human health and the environment from the disposal and reuse of such materials'' in addition to ''documented'' damage cases. 42 U.S.C. 6982(n)(3)–(4). Accordingly, the fact that any contamination has subsequently been remediated is not a basis for disregarding a damage case. See 80 FR 21455.

In summary, EPA continues to believe the damage cases provide extremely valuable evidence that is directly relevant to the question of whether and how to regulate CCR. For example, the damage cases provide ''real world'' evidence against which to compare EPA's risk modeling estimates, such as evidence regarding the frequency with which particular constituents leach into groundwater. 80 FR 21326. They also provide direct evidence regarding specific waste management practices at electric utilities, along with the potential consequences of those practices. Accordingly, EPA has sufficient confidence in the veracity of the collected information to rely on it in making decisions in this rule. EPA expects that additional damage cases will be discovered in response to the installation of the groundwater monitoring systems required by the final rule.

a. Examples of CCRMU With Identified SSLs

Under the existing CCR regulations, when a facility determines there is an SSL for one or more Appendix IV constituents and completes a successful ASD showing that a source other than the regulated unit is the cause of the SSL(s), the facility is not required to initiate corrective action for that particular constituent. Through reviewing the ASD posted on facility websites, EPA identified several areas at active facilities where CCR is managed outside of a regulated unit and is identified as a source of one or more Appendix IV SSL(s). The following facilities are examples of situations in which such areas have been identified as the source of an SSL and therefore support EPA's determination that such areas warrant regulation under RCRA section 4004(a).

James H Campbell Power Plant, West Olive, Michigan

The JH Campbell Power Plant, owned and operated by Consumers Energy Company, is located within a mile of Lake Michigan. The facility has five regulated CCR units, including three CCR surface impoundments (Pond A, Bottom Ash Ponds 1–2, and Bottom Ash Pond 3) and two CCR landfills. The ''wet ash ponds area'' is approximately 267 acres and is bounded by perimeter dikes with a system of internal dikes separating the individual ash ponds. In addition to the five regulated CCR units, there are at least seven other unregulated, unlined ''closed'' impoundments [65] that ceased placement of waste prior to October 19, 2015, do not have an engineered cap nor vegetative cap, and have a closure plan that was approved by the State. Based on the groundwater monitoring report reviews, there were SSIs over background at many wells at all units and some had an SSL for arsenic and selenium. At Pond A, which closed with waste in place in 2019, there are SSIs for boron and sulfate, and SSLs were identified for arsenic (13 µg/L [MCL of 10 µg/L]) and selenium [66] (143 µg/L [MCL of 50 µg/L]) for which an assessment of corrective measures was completed, and the selected remedy is source removal and final cover as the primary corrective action. In the 2021 Annual Groundwater Monitoring and Corrective Action Report posted in January 2022, Consumers Energy concluded there was an ASD for Pond A and said, ''Increases in Appendix III constituents (*e.g.* boron) and direct exceedances of the selenium GWPS in JHC–MW–15011, JHC–MW–15010, JHC–MW–15009, and JHC–MW–15008R that have not yet resulted in a statistically significant exceedance suggest a detectable influence from the immediately adjacent, upgradient, closed, pre-existing CCR units on-site. The closed, preexisting units are not regulated under the RCRA CCR Rule, but remedial action is being taken under Consent Agreement WMRPD No. 115–01–2018. A [remedial action plan] for these units was submitted to [Michigan's Department of Environment, Great Lakes, and Energy] on September 30, 2021.'' During the 2021 groundwater monitoring period for Bottom Ash Ponds 1–2, which closed by removal in 2018, SSIs were identified for boron, calcium, chloride, pH, sulfate, and total dissolved solids (TDS); also, one SSL was identified for arsenic (38 µg/L [MCL of 10 µg/L]).[67] An assessment of corrective measures has been completed for the CCR unit and the primary selected remedy is source removal and final cover. Consumers Energy also said in the 2022 semiannual progress report that the facility is reevaluating the groundwater ''monitoring system for [Bottom Ash] Ponds 1–2 to more accurately account for the influence from the closed, pre-existing units.''

New Castle Generating Station, Pennsylvania

GenOn Power Midwest LP (GenOn) operates the New Castle Generating Station located in West Pittsburg, Pennsylvania. The New Castle Generating Station has two CCR units subject to the regulations—an impoundment (North Bottom Ash Pond) and a landfill (New Castle Plant Ash Landfill). Each of these CCR units has relevance to this proposal due to other unregulated disposal units located adjacent to the regulated CCR units.

The North Bottom Ash Pond was used for the management of bottom ash until 2016 when the facility transitioned from coal to natural gas. After the transition to natural gas, GenOn initiated closure of the North Bottom Ash Pond by removing all waste from the impoundment. Closure of the impoundment was certified in 2019.[68] Groundwater monitoring associated with the impoundment while the unit was operating detected arsenic at SSL above the GWPS in all downgradient monitoring wells.[69] In accordance with the procedures in the regulations for CCR units in 40 CFR 257.94(e)(2), GenOn determined that an alternative source was responsible for these SSLs of arsenic. Specifically, the ASD found that a 120-acre unlined CCR surface impoundment located immediately adjacent to the North Bottom Ash Pond

[65] These ''closed'' impoundments (Pond B, Pond C, Pond D, Pond F, Pond G (G1 and G2), Pond H, and Pond K) are listed in a figure on page 12 of the 2021 Annual Groundwater Monitoring and Corrective Action Report, JH Campbell Power Plant Pond A, January 2022, Prepared for Consumer's Energy.

[66] JH Campbell Semiannual Progress Report—Selection of Remedy, Ponds 1–2 North and 1–2 South, and Pond A, July 30, 2022. Pages 3–4.

[67] Annual Groundwater Monitoring and Corrective Action Report, JH Campbell Power Plant Ponds 1–2 North and 1–2 South, January 2022, Prepared for Consumers Energy. Page 23.

[68] CCR Compliance, Closure Certification Report, Closure by Removal, New Castle North Bottom Ash Pond. June 2019.

[69] *Id.* At 5.

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was responsible for the arsenic concentrations in the downgradient monitoring wells.[70] According to the 2019 Annual Report prepared by GenOn, there were SSLs for arsenic (0.087 mg/L [MCL of 10 µg/L]) in the downgradient monitoring wells.[71] Consequently, because the SSLs of arsenic were attributed to another source (*i.e.,* a former unlined CCR surface impoundment), GenOn concluded it was not required to remediate the arsenic contamination under the Federal CCR regulations.

GenOn also determined that there were SSIs above background levels for multiple analytes at the New Castle Plant Ash Landfill (Ash Landfill), which is the other regulated CCR unit at the New Castle Generating Station. In its most recent annual groundwater monitoring report in 2022, GenOn reported SSIs for boron, calcium, fluoride, sulfate, and total dissolved solids.[72] GenOn determined that an alternative source was responsible for these analyte increases, specifically pointing to an ''underlying historic ash impoundment and other closed stages of the landfill.'' [73] Prior to development of the 60-acre Ash Landfill, CCR was disposed in an impoundment from approximately 1939 to 1978.[74] After the impoundment was dewatered in 1978, dry CCR was disposed in this area in several stages of CCR placement up until the time Ash Landfill began operation. Since 2018, GenOn has attributed SSIs for boron, calcium, fluoride, sulfate, and TDS to this historic disposal of CCR.

Huntington Power Plant, Utah

The Huntington Power Plant in Huntington, Utah is owned and operated by PacifiCorp and has one regulated unit, the Huntington CCR Landfill. While conducting the required groundwater monitoring for the Huntington CCR Landfill, there were SSLs for chromium, cobalt, lithium, molybdenum, selenium, fluoride, and arsenic, so the owner or operator conducted assessment of corrective measures. There is also a former combustion waste landfill called the Old Landfill, which is located northwest of the regulated Huntington CCR Landfill. The ACM report [75] assumes the SSLs are the result of groundwater interactions with both the Huntington CCR Landfill and the Old Landfill. Both landfills have stormwater run-on from the area surrounding the landfill. This run-on is routed around the landfills via diversion ditches and run-off from the landfills itself is collected and retained in a sediment basin north of the Huntington CCR Landfill. The facility is implementing a remedy to address releases only from the regulated CCR Huntington Landfill, but the remedy selection report [76] does not appear to address releases from the Old Landfill.

J.B. Sims, Grand Haven, Michigan

The J.B. Sims Generating Station, owned and operated by Grand Haven Board of Light and Power, is located on Harbor Island, north of Grand Haven, Michigan. Harbor Island is bound to the north, east, and west by the Grand River and to the south by the South Channel, tributaries of Lake Michigan. The facility has two Federally regulated CCR units (Unit 1 & 2 and Unit 3), both of which are inactive, unlined surface impoundments. Unit 1 & 2 is approximately 1.2 acres and includes areas where, prior to October 19, 2015, CCR was placed in unlined impoundments and used as fill in low-lying areas of adjacent wetlands. Unit 3 is approximately 0.5 acres and was built on top of historically placed CCR. The boundary of Unit 1 & 2 was updated in an agreement with EPA and the State in January 2021,[77] to include an area that received CCR prior to 1978. Therefore, the groundwater monitoring network and closure plan are currently being updated to reflect the new boundary and better address contamination from historical CCR across the units.[78] Additionally, in March 2022, the State issued an enforcement notice [79] to J.B. Sims citing inadequate groundwater monitoring and failure to address all areas where CCR were managed (*e.g.,* stored, placed) prior to disposal during the unit's operation. As such, the facility is considering expanding Unit 3's groundwater monitoring network. The units are often partially flooded, and groundwater elevations and flow direction are influenced by precipitation and water levels in the Grand River and the South Channel.

Based on groundwater monitoring report reviews, both units have had SSIs and SSLs since groundwater monitoring was initiated in 2017. During 2021, both Unit 1 & 2 and Unit 3 had SSIs for all Appendix III constituents and SSLs for arsenic (98 µg/L [MCL is 10 µg/L]), chromium (270 µg/L [MCL is 100 µg/L]), cobalt (22 µg/L [GWPS is 6 µg/L], fluoride (13 mg/L [MCL is 4 mg/L]), and lithium (2800 µg/L [site-specific GWPS is 59 µg/L]).[80] In December 2020, J.B. Sims submitted an ASD for Unit 3's 2019 SSLs for chromium, cobalt, fluoride, lead, and lithium, pointing to the historic fill across the island as the source of the SSLs. [81] [82] Furthermore, the Fourth Quarterly 2021 Monitoring Report suggested the continued SSIs and SSLs at Unit 3 were due to historical CCR fill beneath the unit, historical fill outside of Unit 1 & 2, and waste historically placed across the site.[83] However, until the groundwater monitoring networks are finalized, the extent of groundwater contamination and the source of all contamination cannot be determined. The assessment of corrective measures for both units began in February 2019 and is ongoing, pending finalization of the groundwater monitoring networks. Based on groundwater monitoring reports, EPA has found that due to the fluctuations in groundwater elevations in response to precipitation and nearby surface water levels, portions of the facility, including Unit 1 & 2, can be inundated or partially in contact with groundwater.

[70] *Id.*

[71] CCR Compliance, Groundwater Monitoring and Corrective Action Annual Report, New Castle North Ash Pond and Ash Landfill. January 2020.

[72] CCR Compliance, Groundwater Monitoring and Corrective Action Annual Report, New Castle Ash Landfill. December 2022.

[73] *Id.* At 3.

[74] New Castle Plant Ash Landfill—Annual CCR Unit Inspection Report. January 16, 2018.

[75] Corrective Measures Assessment CCR Landfill—Huntington Power Plant Huntington, Utah. May 2019.

[76] Remedy Selection Report CCR Landfill—Huntington Power Plant, Huntington, Utah. August 2020.

[77] The meeting between Grand Haven Board of Light and Power, the State, and EPA during which the new boundaries for Unit 1 & 2 were agreed to is discussed on page 3 (PDF page 10) of the 2021 Annual Groundwater Monitoring & Corrective Action Report by Golder Associates. January 28, 2022.

[78] Letter to Grand Haven Board of Light and Power-Update To The October 14, 2019 J.B. Sims Generating Station Inactive Units ½ Impoundment And Unit 3 Closure Plan—Interim Conditions For Closure. October 22, 2021.

[79] The State of Michigan, Department of Environment, Great Lakes, and Energy (EGLE) issued an enforcement notice via email March 22, 2022, to Grand Haven Board of Light and Power, J.B. Sims.

[80] SSL concentrations can be found in Appendix B (PDF page 512) of the 2021 Groundwater Monitoring & Corrective Action Report prepared by Golder Associates on behalf of Grand Haven.

[81] 2020 Alternate Source Demonstration J.B. Sims Generating Station—Unit 3 Impoundments Submitted to: Grand Haven Board of Light and Power Submitted by Golder Associates Inc. December 28, 2020.

[82] Technical Memorandum to Michigan Department of Environment, Great Lakes, and Energy-Unit 3 Impoundments Alternate Source Demonstration Response Grand Haven Board Of Light And Power—JB Sims Power Generating Station. February 12, 2020.

[83] Memorandum to Michigan Department of Environment, Great Lakes, and Energy- Fourth Quarter 2021 Monitoring Report, Former JB Sims Generating Station, Unit 3 A&B Impoundments—Response to Comments. March 8, 2022.

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the proposed regulations would not provide regulated entities fair notice of what the regulations require.

Finally, EPA acknowledges that the reference in the proposal to evaporation ponds, or secondary or tertiary finishing ponds that have not been properly cleaned up as examples of potential CCRMU was a mistake. EPA agrees that these units would generally be expected to contain no more than a *de minimis* amount of CCR.

iv. Exemption for Beneficial Use of CCR

Several commenters stated that the CCRMU definition is too broad and does not account for the beneficial use of CCR. According to these commenters, the proposal to regulate CCRMU effectively revoked or amended the current exemption for beneficial use in § 257.50, and the broad CCRMU definition now requires previously approved beneficial uses to be reexamined for potential regulation. Several of these commenters criticized the agency for failing to address the issue in the proposal, and argued that the Agency lacked the authority to include such beneficial uses, either because neither RCRA section 1008(a)(3) nor section 4004(a) authorize EPA to regulate use or because such regulation would be inconsistent with the 2015 Regulatory Determination. These commenters recommended that the CCRMU definition be revised to exclude any beneficial use of CCR as defined by § 257.53 or as previously approved by State agencies.

By contrast, several commenters request EPA to prohibit the use of coal ash as fill unless full protective measures such as liners, monitoring, and caps are required everywhere it is placed. Commenters claimed that immediate attention to this recommendation will protect the health and environment of millions of U.S. residents by preventing the spread of toxic coal ash pollution.

EPA disagrees that the proposal to regulate CCRMU effectively revoked or amended the current exemption for beneficial use in § 257.50. The proposal merely accurately reflects the existing regulations, which these commenters have misunderstood.

Under the existing regulations, the direct placement of CCR on the land on site of a utility, with nothing to control releases is, by definition, a CCR pile and therefore not beneficial use. The examples of historical CCRMU discussed in the proposal, structural fill and CCR placed below currently regulated CCR units on-site of a utility also clearly fit that definition.

These are the same provisions that have been in place since 2015. The existing definition of a CCR pile is

> Any non-containerized accumulation of solid, non-flowing CCR that is placed on the land. CCR that is beneficially used *off-site* is not a CCR pile.

§ 257.53 (emphasis added). The second sentence expressly limits the beneficial use of CCR to ''off site,'' and thus any non-containerized CCR placed directly on the land on-site of a utility is not beneficial use.

EPA previously explained this in its August 14, 2019, proposal ''Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Enhancing Public Access to Information; Reconsideration of Beneficial Use Criteria and Piles'' to revise the definition of a CCR pile with respect to temporary piles. 84 FR 40353. Specifically, EPA proposed to establish a new set of requirements that would apply equally to temporary or ''storage piles'' located on-site and off-site of a utility. As part of the background to that proposal, EPA described the requirements under the existing regulation so that the public could fully understand what it was–and was not [139]—proposing to revise. The proposal reiterated the existing definition of a CCR pile in § 257.53, and explained that this definition closely mirrors the RCRA definition of disposal, which is defined in part as the ''placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.'' See 42 U.S.C. 6903(3). EPA further explained:

> Under this regulation, CCR piles constitute disposal and are consequently subject to all regulatory criteria applicable to CCR landfills. In contrast, activities that meet the definition of a beneficial use are not considered disposal, even if they involve the direct placement on the land of ''non-containerized'' CCR. See §§ 257.50(g) and 257.53 (definitions of CCR landfill and CCR pile); 80 FR 21327–30.
> The current regulation distinguishes piles of CCR on-site (at an electric utility or independent power producer site) from temporary piles of CCR off-site (at a beneficial use site), based on whether CCR from the pile could fairly be considered to be in the process of being beneficially used. See § 257.53 (definition of CCR pile); 80 FR 21356 (April 17, 2015). While the CCR from the pile on-site may someday be beneficially used, it is not currently in the process of being beneficially used . . . If CCR is not containerized, the pile is a CCR pile and subject to the same requirements as a CCR landfill. See Id.
> In contrast, the regulations treat CCR stored off-site at a beneficial use site in a temporary pile to be in the process of being beneficially used (even though a pile is not itself a beneficial use). If the CCR is temporarily placed at a beneficial use site and meets the regulatory definition of a beneficial use, the pile is not a CCR pile and is not subject to disposal requirements.
> . . . .
> In the current definition [of a CCR pile], EPA distinguishes between piles on-site (which were almost always regulated as landfills) and piles off-site, (which, if temporary, were generally considered to be beneficial use, subject only to the four criteria in the definition). The current regulation also distinguishes between on-site piles that are not containerized and those that are containerized. See 80 FR 21356 (April 17, 2017); § 257.53.

84 FR 40365.

Thus, under the 2015 CCR Rule the activities covered under the definition of a CCRMU (*i.e.,* permanent placement of CCR on the land, on-site of a utility, without controlling releases) were defined as disposal rather than beneficial use. In 2019, EPA did not propose to revise or reconsider that. Instead, EPA proposed to extend that existing requirement to permanent piles located off-site of a utility. EPA therefore declines to reconsider the issue here.

In the May 2023 proposed rule EPA expressly stated that it did not intend to reopen or reconsider any issue other than those on which the agency expressly solicited comment.

> In this proposal, EPA is not reconsidering, proposing to reopen, or otherwise soliciting comment on any other provisions of the existing CCR regulations beyond those specifically identified in this proposal. For the reader's convenience, EPA has provided a background description of existing requirements in several places throughout this preamble. In the absence of a specific request for comment and proposed change to the identified provisions, these descriptions do not reopen any of the described provisions.

88 FR 31984. EPA further advised the public that it would ''not respond to comments submitted on any issues other than those specifically identified in this proposal, and such comments will not be considered part of the rulemaking record.'' Id.

Nowhere in the May 2023 proposed rule did EPA solicit comment on or suggest that it was in any way reconsidering the existing definition of

[139] EPA expressly advised the public that it was ''not reconsidering, proposing to reopen, or otherwise soliciting comment on any other provisions of the final CCR rule beyond those specifically identified in this proposal.'' 84 FR 40355.

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EXHIBIT 34

U.S. EPA, Frequent Questions about Definitions and Implementing the Final Rule Regulating the Disposal of Coal Combustion Residuals

Frequent Questions on the Implementation of the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule

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Scope and Purpose

1. **What is EPA's legal authority to regulate inactive surface impoundments under subtitle D of the Resource Conservation and Recovery Act (RCRA)?**

   RESPONSE: The final rule discusses in depth the specific legal authority on which the EPA is relying to support the regulation of inactive CCR surface impoundments under subtitle D of RCRA. See volume 80 of the *Federal Register (FR)* 21342-21347.

2. **Is CCR from a closed fossil fuel power plant that is sent for off-site waste management covered by the rule?**

   RESPONSE**:** Any disposal unit that receives CCR from an off-site electric utility or independent power producer, including from a closed fossil fuel power plant, is covered by the rule unless it is a municipal solid waste landfill. See title 40 of the Code of Federal Regulations (CFR) section 257.50(b).

3. **Is CCR generated at an active facility (i.e., part of the NAICS code 221112) but then sent for management at a facility no longer producing power regulated under the CCR rule?**

   RESPONSE: CCR generated at an active facility but then sent off-site for management at a facility no longer producing power is regulated under the rule. The rule at 40 CFR section 257.50(b) specifies that "this subpart applies to owners and operators of new

and existing landfills and surface impoundments, including lateral expansions of such units, that dispose or otherwise engage in solid waste management of CCR generated from the combustion of coal at electric utilities and independent power producers." Even though the facility that owns the disposal unit may no longer be producing power, it owns and/or is operating an off-site CCR disposal unit. 40 CFR section 257.50(b) expressly clarifies that the requirements also apply to CCR disposal units located off-site of the electric utility or independent power producer.

4. **If an inactive utility begins to generate electricity by starting up a natural gas peaker plant that is located on-site, will the on-site CCR surface impoundments containing fly ash from previous coal-burning activities become subject to the rule?**

   RESPONSE: Yes. If the utility restarts the boilers to generate electricity, regardless of the fossil fuel used, any CCR surface impoundments at the facility can become subject to the rule.

5. **Is CCR from a facility that is no longer part of the NAICS code 221112 (Fossil Fuel Electric Power Generation) because the fossil fuel power plant has closed regulated under the rule if the CCR is sent for off-site management?**

   RESPONSE**:** Yes. The rule applies to the solid waste management and/or disposal of CCR generated by electric utilities and independent power producers. 40 CFR section 257.50(b). This includes disposal that occurs at (1) all electric utilities and independent power producers that produce electricity after the effective date of the rule, irrespective of the fuel used to produce the electricity; and (2) disposal that occurs off-site of the electric utility, except for disposal at a municipal solid waste landfill. 40 CFR section 257.50(e) applies to the electric utilities and independent power producers that have entirely ceased generating electricity (i.e., have closed) prior to the effective date of the rule, not to the CCR generated by such facilities.

6. **What requirements apply when CCR from an existing impoundment at an active power plant is dredged (i.e., pursuant to state legislation or other legal requirement) and the CCR is moved to a different unlined impoundment at the same site?**

   RESPONSE: In the situation described, both units would be defined as existing CCR surface impoundments subject to all the applicable provisions of the rule. The rule does not prohibit placement of the dredged material (CCR) in another existing unlined surface impoundment, provided the other unlined unit has not triggered closure by one of three specific provisions: (1) groundwater monitoring shows an exceedance of a groundwater protection standard; (2) the facility fails to demonstrate compliance with the minimum factors of safety to ensure structural stability of the unit; (3) the facility fails to demonstrate compliance with the location criteria. See 40 CFR section 257.101.

7. Does the final rule address the status of non-slurried non-impounded coal ash that was formally and remains landfilled?

RESPONSE: CCR landfills that are "active" (i.e., receive CCR on or after the effective date) are subject to the requirements of the final CCR rule, and must comply with the requirements for "existing" CCR landfills. However, CCR landfills that do not receive any CCR on or after the effective date are considered to be "inactive" CCR landfills, and are not subject to the requirements of the final CCR rule.

8. If a state-permitted Subtitle D solid waste landfill wants to permit an ash monofill cell to receive CCR waste as part of their state-permitted area, would the site also need to meet the CCR rules for that cell from a design, groundwater monitoring, and data publishing standpoint? Even if the ash cell would fall within the scope of the state permit and state regulations for a municipal solid waste landfill?

RESPONSE: If the landfill is a permitted municipal solid waste landfill, it is not subject to the requirements of the CCR rule. All other landfills that accept or manage CCR (e.g., an industrial solid waste landfill) are subject to all of the landfill requirements of the CCR rule, whether or not it has a state solid waste landfill permit.

9. Do the regulations cover CCR landfills only onsite of an existing power plant, or does it regulate all CCR landfills, regardless if they are onsite of a power plant?

RESPONSE: With one exception, all operating or active CCR landfills are subject to the requirements of the rule whether they are on-site or off-site of the utility. See 40 CFR section 257.50(b). The sole exception is municipal solid waste landfills, which the regulation specifies are not subject to the rule. See 40 CFR section 257.50(i).

10. Are small ponds containing CCR from uniquely associated wastes such as boiler washes, air preheater washes, or precipitator washes covered by the rule? If they are uniquely associated wastes, does that mean they cannot be CCR?

RESPONSE: Uniquely associated wastes, as defined in the revised 40 CFR section 261.4 (see pages 21500 and 21501 of the April 17, 2015 Federal Register Notice) are not CCR but are solid wastes covered by the Bevill exemption for fossil fuel combustion wastes at 40 CFR section 261.4(b)(4). Small ponds or impoundments that meet the definition of a CCR surface impoundment would be subject to the rule even if the CCR is co-disposed with other solid wastes, such as the uniquely associated wastes.

Frequent Questions on the Implementation of the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule

Beneficial Use

1. **How does the CCR rule impact CCR that are beneficially used?**

   RESPONSE: The CCR final rule provides criteria that support and encourage the appropriate beneficial use of CCR. The final rule retains the Bevill Determination without revision and does not regulate CCR that are beneficially used. This rule provides a definition of beneficial use to distinguish between beneficial use and disposal. The rule clarifies that a use of a CCR that does not meet the definition of a beneficial use is disposal.

2. **How will EPA work with state beneficial use programs and/or end users or generators of byproducts regarding interpreting the beneficial use criteria? Secondly, will EPA review evaluations of the criteria or offer opinions?**

   RESPONSE: EPA can provide assistance to state beneficial use programs and end users about how to interpret the beneficial use criteria. The Agency is working to provide tools to assist states and beneficial users with their beneficial use evaluations. EPA does not review or approve evaluations of the criteria conducted by others.

3. **Where can the "Engineering and Environmental Guidance on the Beneficial Use of Coal Combustion Products in Engineered Structural Fill Projects" be obtained?**

   RESPONSE: The Utility Solid Waste Activities Group (USWAG) document, "Engineering and Environmental Guidance on the Beneficial Use of Coal Combustion Products in Engineered Structural Fill Projects," referenced in the preamble can be found in the docket to the rule at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-RCRA-2009-0640-11969.

4. **The preamble to the rule mentions that the EPA is developing a framework for assessing the risks associated with the beneficial use of unencapsulated CCR. When does the Agency anticipate completion of this framework?**

   RESPONSE: During the development of the framework to address the risks associated with the beneficial use of unencapsulated materials including CCR, the Agency determined that the principles outlined in the 2013 Methodology for Evaluating Encapsulated Beneficial Uses of Coal Combustion Residuals are also applicable and relevant to unencapsulated uses. Therefore, EPA combined the discussion of encapsulated and unencapsulated uses into a single document and renamed it the Methodology for Evaluating the Beneficial Use of Industrial Non-Hazardous Secondary Materials (BU Methodology) to reflect the broader scope.

5. Would a facility that stores piles of FGD on the ground for ultimate beneficial use as wallboard greater than the 12,400 ton CCR rule threshold have to meet the unencapsulated use requirements?

RESPONSE: As EPA noted on pages 21347-21348 of the final rule, in order to be subject to RCRA, the material must be a solid waste. The statute defines a solid waste as "any garbage, refuse….and other discarded material…" 42 U.S.C. 6903 (27). As EPA noted in the proposed and final rule:

> *"For some beneficial uses, CCR is a raw material used as an ingredient in a manufacturing process that have never been ''discarded,'' and thus, would not be considered solid wastes under the existing RCRA regulations. For example, synthetic gypsum is a product of the FGD process at coal-fired power plants. In this case, the utility designs and operates its air pollution control devices to produce an optimal product, including the oxidation of the FGD to produce synthetic gypsum. In this example, after its production, the utility treats FGD as a valuable input into a production process, i.e., as a product, rather than as something that is intended to be discarded. Wallboard plants are sited in close proximity to power plants for access to raw material, with a considerable investment involved. Thus, FGD gypsum used for wallboard manufacture is a product rather than a waste or discarded material. This use and similar uses of CCR that meet product specifications would not be regulated under the final rule."*

Note that whether the FGD gypsum is being managed as a "waste" or a "product" is a fact-specific determination. Indications that the FGD gypsum is being managed as a waste or a product by the utility include the rate at which the material is being used versus being added, and whether it is being managed as a valuable product (i.e., stored or protected in the same way virgin products are managed). For example, if more FGD gypsum is being added to a pile than can actually be used, and if the material is not being managed as a valuable product, then that would be an indication that it is it not being treated as a product; and would therefore be a "waste."

For those materials that are "wastes," a power-generating facility that stores piles of FGD on the ground on-site at the facility for ultimate beneficial use as wallboard greater than the 12,400 ton threshold would not have to meet the unencapsulated use requirements; however, the FGD piles must be "containerized" in order to not be considered a CCR Pile (and by definition, a CCR landfill). The use of the phrase "containerized" is not intended to require that all activities occur within tanks or containment structures, but merely that specific measures have been adopted to control exposures to human health and the environment. This could include placement of the CCR on an impervious base such as asphalt, concrete, or a geomembrane; leachate and run-off collection; and walls or wind barriers (see p. 21356 of the final rule).

6. What if the facility storing the flue gas desulfurization (FGD) gypsum on the ground is not an electric utility?

RESPONSE: In this case, if the facility treats the FGD gypsum as a valuable input into a production process, i.e., as a product, rather than as something that is intended to be discarded, the use would not be regulated under the final rule (see above response). For those materials that are "wastes," FGD gypsum that is currently being used in compliance with the definition of beneficial use, including FGD gypsum stored in a temporary pile prior to being beneficially used, would not be subject to the CCR disposal regulations. As noted at 80 FR 21356 in the final rule preamble,

> *"CCR that is currently being used beneficially—for example, fly ash that has been transferred to a cement manufacturer and that is stored off-site in a "temporary pile," and that complies with all of the criteria in the definition to be considered a beneficial use including the fourth criterion relating to the placement of large quantities of unconsolidated CCR on the land— would not be subject to the regulations applicable to CCR disposal."*

Although ultimately intended for encapsulated use in wallboard, a pile of FGD gypsum that is a "waste" is still considered an unencapsulated CCR until it is actually incorporated into the wallboard; therefore, if the amount of FGD gypsum in a pile awaiting beneficial use exceeds 12,400 tons, the facility also must comply with the fourth criterion pertaining to unencapsulated non-roadway uses. One way to ensure the fourth criterion is met is to containerize the pile; that is, adopt specific measures to control exposures to human health and the environment, such as placement of FGD gypsum on an impervious base, such as asphalt, concrete, or a geomembrane; leachate and run-off collection; and/or use of walls or wind barriers.

Effective Date

1. What is the effective date of the rule? Some requirements state October 14, 2015 and others state October 19, 2015.

RESPONSE: The effective date of the rule is October 19, 2015. A technical correction was published in the Federal Register on July 2, 2015 (80 FR 37988) correcting the effective date and other associated dates.

2. Will all CCR disposal sites be subject to the rule equally, or will there be a transition policy for some sites?

RESPONSE: There is no transition policy or any kind of "grandfathering" for particular sites or units. All CCR disposal units that are subject to the rule will be subject to the requirements on the effective date of the rule.

Applicability of Other Regulations (including tribal issues)

1. **A state has a CCR disposal facility that is located within a valley that was strip mined. The facility is regulated under a state wastewater collection, storage or treatment system permit and an NPDES Permit. The state will continue to regulate the facility. Will the CCR regulations apply to this site?**

   RESPONSE: If the facility is managing CCR in an active or inactive coal mine, it is not covered by the CCR rule. Placement in active or inactive underground or surface coal mines will be addressed under regulations being developed by the Office of Surface Mining of the Department of the Interior. However, placement of CCR or other management activities in any other mine would be considered to be disposal subject to the CCR requirements of part 257 unless the placement meets the criteria for defining beneficial use of CCR.

2. **How will the rule be implemented on tribal lands (i.e., at CCR disposal facilities located on tribal lands) or are there any differences in implementation?**

   RESPONSE: The requirements of part 257 apply directly to the facilities regardless of whether the facility is on state or tribal lands, so there will be few differences. Tribes, like states, can sue to enforce the rules by filing a citizen suit under RCRA 7002. In cases where notification is required, facility owners/operators should notify the tribal authorities. EPA's authority to oversee implementation of subtitle D regulations on tribal lands is limited; for example, EPA cannot approve a tribal Solid Waste Management Plan in the same manner as a state Solid Waste Management Plan, and therefore, compliance schedule adjustments under 4005(a) will not be available to facilities on tribal lands.

   EPA recognizes that there may be arrangements among tribal and state authorities and utility managers regarding oversight of utilities. Utility managers should work within these arrangements on CCR rule implementation.

3. **How do these "self-implementing" regulations fit within existing state permitting programs for these materials?**

   RESPONSE: The CCR rule applies directly to the facilities, and the facilities must be in compliance with those standards on the effective date, irrespective of state requirements. States may choose to adopt the federal requirements into their existing program or to impose more stringent standards, but the federal rule does not itself affect states' permitting programs. As part of their own programs under state law, states may choose to require permits for CCR disposal units, and may choose to adopt the federal requirements into their permits as permit conditions. However, a facility

must still comply with the CCR rule requirements, even if the state has issued a permit that contains less stringent conditions or requirements than those in the CCR rule.

Definitions

1. **Does the rule apply to CCRs that are land applied outside a landfill or impoundment? If so, how does it apply?**

   RESPONSE: If the land application does not meet the criteria for beneficial use defined in 40 CFR section 257.53, the land application constitutes disposal and would be considered a landfill, subject to all of the requirements for CCR landfills. (See definition of CCR landfill in 40 CFR section 257.53).

2. **If a state has issued a construction permit for a CCR landfill prior to the effective date of the federal rule and this landfill has cells that are permitted for construction, but remain unconstructed after 180 days from the publication of the federal rule, are the unconstructed cells still considered to fall within the definition of "Existing CCR Landfill"?**

   RESPONSE: No. CCR landfill cells constructed after the effective date of the rule are considered to be new CCR landfills subject to the requirements for new CCR landfills.

3. **Do the new CCR landfill requirements apply to yet-to-be constructed cells of an existing multi-cell CCR landfill that have already been approved by a State regulatory agency but have yet to be constructed? Will the new CCR landfill requirements apply to the next new cell to be constructed, even if those future cells were approved as part of an overall plan of operation with defined design criteria?**

   RESPONSE: Yes. If continuous on-site, physical construction begins on a unit after the effective date of the rule, these are considered new CCR units (in this case, landfills) and will be subject to the requirements for new CCR units (here, those for new CCR landfills).

4. **The preamble of the CCR rule identifies certain impoundments as not being CCR surface impoundments – i.e., cooling water ponds, wastewater treatment ponds, storm water holding ponds, and aeration ponds. Are other types of ponds not specifically identified in the preamble but that similarly are not used to impound "significant quantities" of CCR considered not to be CCR surface impoundments?**

   RESPONSE: The final rule defines CCR surface impoundments as units that are designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR. Units that are not designed to hold an accumulation of CCR, and that do

not treat, store, or dispose of CCR are not CCR surface impoundments. EPA provided examples in the preamble to the final rule of units that, in EPA's experience, typically would be expected to fall outside of that definition. These examples were not intended to be exclusive or definitive. There may well be additional units that do not meet the definition of a CCR surface impoundment. Similarly, there may be instances in which a particular "wastewater treatment pond" is in fact functioning as a CCR unit (e.g., a facility uses an existing CCR disposal unit for wastewater treatment without dredging the CCR out of the impoundment). Ultimately, the critical determinant of whether a unit is subject to the rule is whether it meets the criteria in the regulatory definition, rather than whether it was included as an example in the final rule preamble.

5. **Are coal ash leachate ponds subject to this rule?**

   RESPONSE: No. The rule regulates CCR landfills and CCR surface impoundments. CCR surface impoundments are defined as impoundments that are designed to hold an accumulation of CCR and liquids, and that treat, store, or dispose of CCR. A CCR leachate pond, or impoundment; i.e., an impoundment that only holds leachate from CCR landfills and not CCR, does not meet this definition.

6. **Are landfill stormwater run-off ponds outside the rule? We do not consider these to be CCR impoundments since they are not designed to hold an accumulation of CCR.**

   RESPONSE: The rule only regulates CCR landfills and CCR surface impoundments. CCR surface impoundments are defined as impoundments which are designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR. "Stormwater run-off ponds" would not generally be expected to meet the definition of CCR surface impoundment because CCR landfills, if designed in accordance with the requirements of 40 CFR section 257.81, should not contribute CCR material in stormwater run-off to CCR landfill stormwater ponds. CCR landfills must be designed to prevent the erosion and excessive volume of run-off to CCR stormwater ponds. If designed in accordance with the requirements of the final rule and if the only inflow to the unit is in fact stormwater run-off or direct precipitation, stormwater run-off from CCR landfills retained or detained by a CCR landfill stormwater pond should not include any CCR material.

7. **Are the following units subject to the CCR surface impoundment requirements?**
   - **Ponds that receive leachate and surface runoff and leachate from dry fly ash landfills,**
   - **Coal pile runoff ponds,**
   - **Impoundments that receive small amounts of CCR but whose primary function is not storage or disposal of CCR,**
   - **Evaporation ponds, or**
   - **Stormwater impoundments impacted by some CCR as runoff.**

RESPONSE: To be covered by the CCR rule, an impoundment must meet both of the following criteria: (1) was designed to hold an accumulation of CCR and liquid, and (2) treats, stores, or disposes of CCR. Surface runoff, coal pile runoff, CCR landfill leachate, stormwater and evaporation ponds would not generally be expected to meet the definition of a CCR surface impoundment, because based on their typical design and function, such units are not usually designed primarily to hold an accumulation of CCR and liquid and would not be expected to treat, store, or dispose of CCR. However, it is the responsibility of the owner/operator to evaluate the impoundments at his facility to determine whether or not they meet the definition of a CCR surface impoundment.

Location Restrictions

1. **When EPA proposed the application of location restrictions to existing surface impoundments, you acknowledged that these location restrictions would force a majority of the current impoundments to close. Do you have an estimate of how many will close?**

   RESPONSE: The final CCR rule contains five location restrictions that apply to new CCR units and selectively to existing CCR units. These restrictions include: (1) disposal within five feet of the uppermost aquifer; (2) disposal in wetlands; (3) disposal in unstable areas, including karst areas; (4) disposal near active fault zones; and (5) disposal in seismic impact zones. In addition, the current subtitle D regulation (40 CFR section 257.3-1) that applied to these units before the final rule was issued already restricts facilities that dispose of wastes in floodplains. For fault areas, seismic impact zones, and unstable areas (using karst areas as a proxy) the EPA's Regulatory Impact Analysis (RIA) projected that 51 of the 1045 waste management units would be subject to the location restrictions resulting in an estimated 26 waste management units closing and safely relocating off-site. The remaining waste management units are expected to make certifications either that they are not subject to these three location restrictions or that their continued operation in these areas is protective.

   EPA did not have sufficient data to evaluate the number of waste management units subject to the restrictions against disposal units located within five feet of the uppermost aquifer or in wetlands. However, in contrast to the proposed rule, the final rule allows owners or operators to certify that a waste management unit meets an alternate performance standard, even if it cannot meet the requirement in the proposed rule to demonstrate that it is five feet above the water table. Similarly, EPA notes that under the wetlands criterion, owners or operators have the option of purchasing offsets instead of closing existing units. Both the depth to groundwater and wetland location standards offer protective workable alternatives that facilities will have the option to consider. For these reasons, EPA does not believe that many (if any) facilities will close their waste management units in response to the location restrictions.

2. **What sort of reliability issues could be imposed on the electric grid as a result of the CCR final rule?**

   RESPONSE: Electricity market impacts presented in Appendix X of EPA's Regulatory Impact Analysis(RIA) were conducted using the Integrated Planning Model (IPM) and include the location restriction costs of the rule as discussed above. The results of this analysis show that there will be a negligible impact to the electric market.

Design Criteria

1. **If plans for a vertical expansion over an existing CCR landfill are approved after the 180 day deadline for defining new CCR landfills, would the vertical expansion be subject to the requirements for new CCR landfills?**

   RESPONSE: No. Vertical expansions of existing CCR landfills are not subject to the requirements for new CCR landfills.

Groundwater Monitoring and Corrective Action

1. **The final rule requires that if a constituent of concern is detected above a statistically significant level, that the groundwater protection standard must be set at either the Maximum Contaminant Level (MCL) or at the background concentration. Whereas, the proposed rule, like the municipal solid waste program, would have allowed the owner or operator to establish an alternative groundwater protection standard based on site-specific conditions. Has EPA considered whether this will impact future and on-going corrective action at coal ash disposal units in states that utilize risk-based decision making?**

   RESPONSE: If the Safe Drinking Water Act MCL or background-based cleanup levels are lower than a risk-based level the state has used, the federal regulations would require that the corrective action include treating the groundwater in the uppermost aquifer to a level lower than the risk-based level. If, however, the MCL or background-based cleanup levels in the federal rules are higher than a risk-based level the state has used, the state regulations would require that the corrective action achieve a level lower than the federal levels. In some cases, it is possible that the corrective action provisions in the final rule would require a more rigorous treatment than required under state law, and in other cases, less rigorous treatment than required under state law. The potential number of these scenarios occurring at corrective actions related to coal ash disposal units is unknown.

2. **If a state decides that there is no human receptor for the groundwater and that a cleanup standard above the MCL or background is appropriate, would that meet the minimum requirements of the rule?**

   RESPONSE: The rule requires that the groundwater protection standard (either the MCL or the background level, whichever is higher) must be met by the chosen corrective action remedy, in order to preserve the groundwater as a natural resource and for its potential future use as a source of drinking water.

Closure and Post-Closure

1. **A facility employs a wastewater treatment system design using multiple CCR surface impoundments configured in a series. Water and wastewater that enters the system moves by gravity and/or pumping from one impoundment to the next in the treatment system before being discharged from a National Pollutant Discharge Elimination System (NPDES) permitted outfall. The facility identified the surface impoundments separately under the CCR regulations because each has its own dam, but operated them collectively as a single wastewater treatment system. The facility intends to close all of the units within that system through closure by removal ("clean closure"), within the applicable time frames mandated in the CCR regulations.**

   After initiating closure and after initial dewatering has been completed, the impoundments will continue to be used to manage stormwater on site throughout the closure process, until closure is completed. Rainwater and non-contact stormwater from precipitation events, which will come into contact with the CCR that still remains in the units, will be pumped through the system (e.g., Impoundment 1 to Impoundment 2 to Impoundment 3, etc.). The material will be pumped from last impoundment in the series and treated in a wastewater treatment plant (WWTP) located near the outfall of the last impoundment in the series. The WWTP will discharge into the river in accordance with the terms and conditions of a NPDES permit. Do the CCR regulations allow the facility to continue to operate in this fashion throughout the closure process?

   RESPONSE: This question pertains to a situation where closure of multiple surface impoundments will be accomplished by removal of CCR from the surface impoundments, so EPA's response is limited to this situation. In addition, the response only addresses the situation in which the facility chooses to close all units within the system; the analysis would differ if the facility chose to close only some of the units within the system.

   The Title 40 Code of Federal Regulations (CFR) Part 257, Subpart D regulations do not contemplate a circumstance in which a unit would continue to receive wastes after

closure has been initiated. See 40 CFR section 257.102(e)(1)(i); (e)(3). Moreover, a CCR unit that must close for cause, pursuant to 40 CFR section 257.101, is expressly prohibited from placing additional waste in the unit after a specified time. For example, an unlined CCR surface impoundment whose groundwater monitoring shows a statistically significant exceedance of a groundwater protection standard must "cease placing CCR and non-CCR wastestreams into such CCR surface impoundment and either retrofit or close the CCR unit" within six (6) months of making this determination. 40 CFR section 257.101(a)(1).

Normally EPA would consider that when a facility pumped wastewaters (i.e., the rainwater and non-contact stormwater from precipitation events, along with any CCR remaining in the unit) into subsequent impoundments, the facility would be "placing wastes" into the downstream units. However, in the situation described in the question, EPA would consider multiple impoundments that operate in a series to be a single "multi-unit system," and would consider the entire multi-unit system to be one CCR unit for purposes of closure. As a consequence, the pumping of the wastewaters from the first impoundment into subsequent impoundments that are configured in a series would be better characterized as the movement of waste within a disposal unit, which is generally not regulated under RCRA, rather than the movement between disposal units, which is typically regulated. Although the facility originally identified each surface impoundment in the series separately under the CCR regulations, they operated them collectively as a single wastewater treatment system, and most critically for purposes of this question, is in the process of closing them as a single unit (e.g., under the same time frames).

EPA's regulations already expressly provide for the situation in which a series of CCR units is considered to be a multi-unit system. See, e.g., 40 CFR section 257.53 (defining CCR unit to include a combination of more than one CCR unit); 40 CFR section 257.91(d)(multi-unit system for purposes of groundwater monitoring). While the closure regulations do not include specific requirements for such situations, they do not prohibit a facility from closing their multi-unit system as a single CCR unit, provided all applicable requirements and deadlines for closure are followed for the designated single CCR unit—i.e., all CCR units comprising the multi-unit wastewater treatment system. Thus, should the owner or operator elect to use this approach, for example, they would need to prepare a written closure plan that describes the steps necessary to close all of the impoundments that comprise the multi-unit system. After the CCR units comprising the multi-unit system are designated as a single CCR unit, the requirements specifying when closure activities must commence must be met for the entire multi-unit system. Similarly, closure of the entire system would need to be completed within the regulatory deadline for a single unit (40 CFR section 257.102(f)) (i.e., five years for a CCR surface impoundment); to qualify for any extensions of the closure time frames, the owner or operator would also need to make the necessary demonstration(s) for the entire unit, and the total amount of time available would be based on the aggregate size of the impoundments comprising the multi-unit system (e.g., if the aggregate size was

greater than 40 acres, the time frames in 40 CFR section 257.102(f)(2)(ii)(B) would apply).

The regulations also specify that, in this situation, if the facility has installed a multi-unit groundwater monitoring system, all of the unlined impoundments in the system must close or retrofit under section 257.101(a). 40 CFR section 257.90(d)(2). Similarly, if the facility has decided to close its units as a multi-unit system as discussed above, in the event that closure for cause has been triggered under 40 CFR section 257.101(a) for one or more impoundments in the mulit-unit system, all CCR units within the multi-unit system (i.e., the designated single CCR unit) would be subject to the 6-month prohibition on receiving CCR and non-CCR wastestreams. This is because, as noted above, the entire multi-unit system would be considered one CCR unit for purposes of closure. Note that the regulations do not compel a facility to treat "connected" units as a single multi-unit system; rather this falls within the facility's discretion.

As a designated single CCR unit, however, the movement of CCR and other wastes between the individual units that make up that system would be permissible throughout the closure period during closure activities under 40 CFR section 257.101(a)(1); as noted previously, the movement of waste within a unit is generally not considered to be the "placement" of waste into a unit. For example, movement of CCR between impoundments within the multi-unit system to facilitate CCR dewatering and removal activities, even after the 6-month period would be permissible under this closure approach. Similarly, the continued pumping of the wastewaters through the multi-CCR unit system toward the NPDES-permitted outfall during closure (e.g., generated by precipitation or the release of interstitial water during CCR excavation) would also not be inconsistent with the placement prohibition under 40 CFR section 257.101(a)(1). However, the addition of CCR or other wastes from locations external to the multi-unit system would not be permissible, as this would constitute the placement of waste within the multi-unit system.

Implementation and Solid Waste Management Plans

1. **How long does EPA anticipate it will take to approve a state solid waste management plan (SWMP)?**

   RESPONSE: The requirements at 40 CFR Part 256 state that the EPA has six months from the time of the submittal of the revised plan to either approve or disapprove the SWMP.

2. **Please describe in detail the process that will be followed for approving the state plans.**

RESPONSE: EPA has been working to develop materials and an efficient process (consistent with the requirements of the 40 CFR Part 256 regulations) for the review/approval of state plans. The Agency has developed a checklist of relevant sections of 40 CFR Part 256 (Guidelines for the Development & Implementation of State Solid Waste Management Plans) that states will be able to consult.

EPA will review the state's plan to determine how it intends to regulate CCR facilities in the state. EPA has also developed a checklist of the technical requirements included in the CCR final rule that will be available for the states to consult in developing their revised plans. In order to approve a revised state SWMP, EPA must, among other things, determine that the state plan provides enforceable regulatory requirements for the closing or upgrading of CCR disposal facilities that constitute open dumps. If the state SWMP incorporates the federal requirements verbatim, it will be straightforward to approve. If the state requirements for CCR facilities are different from the federal regulations, EPA will compare them and determine if the alternative requirements are at least as protective of public health and the environment as the federal minimum requirements.

3. **Does EPA intend to delegate the authority to approve the revisions to the state plans to the Regional offices?**

   RESPONSE: EPA regional administrators have the authority to approve the revisions to SWMPs. Regions will consult with EPA headquarters to help ensure national consistency.

4. **Many states will need statutory or regulatory changes in order to open the SWMP to incorporate the final rule. How does EPA anticipate that states will be able to incorporate the requirements in time to meet the six month effective date of the final rule?**

   RESPONSE: EPA does not necessarily expect the revised plans to be submitted by states before the effective date of the rule which is October 19, 2015. The technical requirements of the rule that facilities must meet have varying timelines; and many of the most complex requirements are not immediately effective. For example, the groundwater monitoring requirements must be met within two years of the effective date. In addition, the EPA's current regulations do not preclude a state from submitting a SWMP for conditional approval based on anticipated regulatory or statutory revisions, or a partial SWMP to gain authority to extend compliance deadlines. However, note that where a partial SWMP is submitted, the regulations require EPA to establish a timetable for completion of the final plan in order to grant partial approval. 40 CFR section 256.04(f).

5. **The preamble to the final rule states that once "EPA has approved a SWMP that incorporates or goes beyond the minimum federal requirements, EPA expects**

that facilities will operate in compliance with that plan and the underlying state regulations." However, isn't it true that the federal requirements remain independently enforceable through federal citizen suits?

RESPONSE: Once a SWMP that incorporates or goes beyond the minimum federal requirements is approved, EPA believes that compliance with the state program would be considered as compliance with the federal CCR rule criteria. In addition, EPA anticipates that a facility that operates in accordance with an approved SWMP will be able to beneficially use that fact in a citizen suit brought to enforce the federal criteria. EPA believes a court will accord substantial weight to the fact that a facility is operating in accordance with an EPA-approved SWMP. Finally, we note that RCRA section 7002 requires a citizen group to provide 60 days notification to the EPA and the state prior to filing a suit to enforce the requirements of the CCR rule. States can take a number of actions in response to this notification, including: (a) intervening in the suit; or (b) filing their own action to enforce compliance with the rule, which would preempt the citizen's action.

6. **How will the experience of states implementing the final rule inform EPA's future analysis? The final rule also identified the possibility that concentrations of hazardous contaminants in coal ash may rise in the near future.**

RESPONSE: EPA recognizes the critical role that our state partners play in the implementation and ensuring compliance with the regulations, and the Agency expects that states will be active partners in overseeing the regulation of CC R landfills and CCR surface impoundments. Any future analysis will account for the states' implementation of the final rule, including any revisions to state programs adopted in response to the final rule. In this regard, EPA is strongly encouraging states to adopt these federal minimum criteria into their regulations and revise their SWMPs to incorporate these federal requirements. For those states that choose to submit revised SWMPs, EPA will review and approve those revised SWMPs, provided they demonstrate that the minimum federal requirements have been met. EPA expects that the information developed as part of this process will help the Agency better understand the full extent of a state's regulatory authority over the disposal of CCR and the manner in which states will implement this oversight.

7. **What is the relationship between the EPA and the states in regard to implementation of the CCR rule?**

RESPONSE: The final rule establishes self-implementing requirements -- primarily performance standards -- that owners or operators of regulated units can implement without any interaction with regulatory officials. These requirements apply directly to the facilities, and facilities must be in compliance with the rule on its effective date, irrespective of state requirements. States may choose to adopt the federal requirements into their existing program or to impose more stringent standards, but they are not

required to adopt or implement these regulations, develop a permit program, or submit a program covering these units to EPA for approval and there is no mechanism for EPA to officially approve or authorize a State program to operate "in lieu of" the federal regulations.

In order to ease implementation the regulatory requirements for CCR landfills and CCR surface impoundments, EPA strongly encourages the States to adopt at least the federal minimum criteria into their regulations.

The federal requirements are independent of state requirements and do not preempt them. EPA recognizes that some states have already adopted requirements that go beyond the minimum federal requirements; for example, some states currently impose financial assurance requirements for CCR units, and require a permit for some or all of these units. This rule will not affect these state requirements. The federal criteria are minimum requirements and do not preclude states' from adopting more stringent requirements where they deem to be appropriate.

8. **Is there any incentive for states to adopt the rule?**

   RESPONSE: If a state adopts the rule and EPA approves the state's solid waste management plan, the state may extend compliance times for "open dumps" that meet the criteria in RCRA 4005; e.g., times to complete structural stability measures.

9. **What are the consequences if a state does not adopt the rule?**

   RESPONSE: None. Owners and operators of CCR disposal units are required to comply with the EPA's CCR rule irrespective of state action or requirements.

Miscellaneous

1. **EPA is required, under the Bevill Amendment, to consider specific factors in determining whether to regulate coal ash under subtitle C of RCRA: (1) the source and volumes of material generated per year; (2) present disposal and utilization practices; (3) potential danger, if any, to human health and the environment from the disposal and reuse of such materials; (4) documented cases in which danger to human health or the environment from surface run-off or leachate has been proved; (5) alternatives to current disposal methods; (6) the costs of such alternatives; (7) the impact of those alternatives on the use of coal and other natural resources; and (8) the current and potential utilization of such materials (42 U.S.C. § 6982(n)). EPA revisited these eight study factors in the coal ash final rule. What process did EPA use to gather this information and what did EPA find?**

RESPONSE: In the proposed rule, EPA re-examined the eight Bevill study factors in section 8002(n) of RCRA, and solicited comment on its analysis. As discussed in both the proposed and final rules, the key elements (i.e., factors) of the analysis were EPA's risk assessment, the assessment of state programs and EPA's compilation of CCR damage cases. In response to the proposed rule, the Agency received significant comments on the various elements of the analysis and consequently published several Notices of Data Availability (NODAs) presenting new data and possible revisions to the analysis.

However, as discussed at length in the preamble to the final rule, critical information necessary to a final Regulatory Determination is still lacking on a number of key technical and policy questions. This includes information needed to quantify the risks of CCR disposal, and the potential impacts of recent Agency regulations on the chemical composition of CCR. The Agency also needs further information on the adequacy of the state programs.

In the absence of this information, EPA is unable to reach a conclusion on the issue that is central to a Bevill Determination: whether the risks presented by the management of CCR waste streams can only be adequately mitigated through regulation under RCRA subtitle C. Therefore, EPA deferred a final Regulatory Determination for these wastes. It is worth noting however that CCRs, both those disposed and beneficially used, remain Bevill exempt from RCRA subtitle C regulation and will remain so until EPA changes this determination. EPA will provide the public with an additional opportunity to comment on any proposed Regulatory Determination prior to issuing a final Regulatory Determination. (See 80 FR at 21327, April 17, 2015.)

2. What factors weighed most heavily on EPA's decision? The final rule identified technical uncertainties that cannot be resolved, including the extent to which risks are managed sufficiently under the final rule.

RESPONSE: Of the eight statutory Bevill study factors assessed, three weighed the most heavily in the Agency's decision to defer a final Regulatory Determination: (1) the extent of the risks posed by mismanagement of CCR; (2) the adequacy of state programs to ensure proper management of CCR; and (3) the extent and nature of damage cases.

3. What information will EPA gather over the next several years to resolve these technical uncertainties?

RESPONSE: Over the next several years, electric utilities will be moving forward in the implementation of this rule as well as the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category (the ELG rule) and the Carbon Pollution Emission Guidelines for Existing Stationary Sources; Electric Utility Generating Units Clean Power Plant rules.

Until these regulatory requirements are implemented, it is premature to define a path forward for resolving the technical uncertainties identified in the final rule. A reasonable course, however, would be to follow the groundwater monitoring data and other information being posted to companies' websites to see what facilities, CCR landfills, and CCR surface impoundments continue operating, whether liners are leaking, and what concentration of contaminants we are observing. Any information that the EPA gathers in the future will be announced to the public and offered for public comment.

4. The final rule identified the possibility that concentrations of hazardous contaminants in coal ash may rise in the near future. Why might that happen? What actions might be necessary if that happens?

RESPONSE: In the final rule, EPA specifically noted that there were uncertainties regarding the evolving characterization and composition of CCR due to electric utility upgrades and retrofits of multi-pollutant control technologies and raised concern that these advances in human health and environmental protection could present new or otherwise unforeseen changes in CCR. Therefore, if the Agency determines at some future time that significant changes have occurred in the characterization or composition of CCR as a result of these increased air pollution control efforts, EPA will then make a determination on how state programs are addressing those risks and whether additional risk analyses are warranted. This determination may be strongly influenced by the monitoring of facility groundwater data to determine if the controls the Agency has put in place as a result of this rule are providing the necessary environmental protections. Any action that the Agency may consider in the future will be announced to the public and offered for public comment.

Electronic Filing: Received, Clerk's Office 10/10/2025

EXHIBIT 35

Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments, 88 Fed. Reg. 31,982, 32,018 (May 18, 2023) **(excerpted)**

Electronic Filing: Received, Clerk's Office 12/20/2024

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 257

[EPA–HQ–OLEM–2020–0107; FRL–7814–02–OLEM]

RIN 2050–AH14

Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: On April 17, 2015, the Environmental Protection Agency (EPA or the Agency) promulgated national minimum criteria for existing and new coal combustion residuals (CCR) landfills and existing and new CCR surface impoundments. On August 21, 2018, the United States Court of Appeals for the District of Columbia Circuit vacated the exemption for inactive surface impoundments at inactive facilities and remanded the issue back to EPA to take further action consistent with the opinion in *Utility Solid Waste Activities Group, et al.* v. *EPA.* The Agency is proposing to establish regulatory requirements for inactive surface impoundments at inactive facilities (legacy CCR surface impoundments). EPA is also proposing to establish groundwater monitoring, corrective action, closure, and post-closure care requirements for all CCR management units (regardless of how or when that CCR was placed) at regulated CCR facilities. EPA is also proposing several technical corrections to the existing regulations, such as correcting certain citations and harmonizing definitions.

DATES:

Comments due: Comments must be received on or before July 17, 2023.

Public Hearing: EPA will hold an in-person public hearing on June 28, 2023 and a virtual public hearing on July 12, 2023. Please refer to the **SUPPLEMENTARY INFORMATION** section for additional information on the public hearing.

ADDRESSES: You may send comments, identified by Docket ID No. EPA–HQ–OLEM–2020–0107, by any of the following methods:

- *Federal eRulemaking Portal: https://www.regulations.gov/* (our preferred method). Follow the online instructions for submitting comments.
- *Mail:* U.S. Environmental Protection Agency, EPA Docket Center, Office of Land and Emergency Management (OLEM) Docket, Mail Code 28221T, 1200 Pennsylvania Ave. NW, Washington, DC 20460.
- *Hand Delivery or Courier (by scheduled appointment only):* EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m.–4:30 p.m., Monday–Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov/,* including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the ''Public Participation'' heading of the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: For questions concerning this proposal, contact Michelle Lloyd, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566–0560; email address: *Lloyd.Michelle@epa.gov.* For more information on this rulemaking please visit *https://www.epa.gov/coalash.*

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List of Acronyms

ACM Assessment of Corrective Measures
ANPRM Advance Notice of Proposed Rulemaking
ASD alternative source demonstration
CAA Clean Air Act
CBI Confidential Business Information
CCR coal combustion residuals
CCRMU coal combustion residuals management unit
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
CFR Code of Federal Regulations
CWA Clean Water Act
EAP Emergency Action Plan
EJ environmental justice
ELG Effluent Limitation Guidelines
EPA Environmental Protection Agency
EPRI Electric Power Research Institute
FR Federal Register
GWMCA groundwater monitoring and corrective action
GWPS groundwater protection standard
HQ hazard quotient
HSWA Hazardous and Solid Waste Amendments
ICR Information Collection Request
LEAF Leaching Environmental Assessment Framework
MCL maximum contaminant level
NAICS North American Industry Classification System
NPDES National Pollution Discharge Elimination System
NPL National Priorities List
NTTAA National Technology Transfer and Advancement Act
OMB Office of Management and Budget
OSHA Occupational Safety and Health Administration
PM particulate matter
PRA Paperwork Reduction Act
PUC Public Utility Commission
QA/QC quality assurance/quality control
RCRA Resource Conservation and Recovery Act
RIA Regulatory Impact Analysis
SSI statistically significant increase
SSL statistically significant level
TDS total dissolved solids
TSCA Toxic Substances Control Act
TSDF Transportation Storage and Disposal Facility
USGS U.S. Geological Survey
USWAG Utility Solid Waste Activities Group
WIIN Water Infrastructure Improvements for the Nation

I. Public Participation

A. Written Comments

Submit your comments, identified by Docket ID No. EPA–HQ–OLEM–2020–0107, at *https://www.regulations.gov* (our preferred method), or the other methods identified in the **ADDRESSES** section. Once submitted, comments cannot be edited or removed from the docket. EPA may publish any comment received to its public docket. Do not submit to EPA's docket at *https://www.regulations.gov* any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment.

Electronic Filing: Received, Clerk's Office 10/20/2025

TABLE 2—PROPOSED COMPLIANCE TIMEFRAMES FOR CCRMU IN MONTHS AFTER EFFECTIVE DATE OF THE FINAL RULE—Continued

Proposed compliance timeframes for CCRMU			
40 CFR Part 257, Subpart D requirement	Description of requirement to be completed	Proposed deadline (months after effective date of the final rule)	Notes
GWMCA (§ 257.91)	Install the groundwater monitoring system.	6	Prerequisite requirements: Facility Evaluation Report. Subsequent requirements: Groundwater sampling and analysis program; Initiate detection and assessment monitoring; Annual GWMCA report.
GWMCA (§ 257.93)	Develop the groundwater sampling and analysis program.	6	Prerequisite requirements: Install groundwater monitoring system. Subsequent requirements: Initiate detection monitoring and assessment monitoring; Annual GWMCA report.
GWMCA (§ 257.90(e))	Annual GWMCA report	January 31 of the year following GWM system install.	Prerequisite requirements: Install groundwater monitoring system; Groundwater sampling and analysis plan.
Closure (§ 257.102)	Prepare written closure plan.	12	Subsequent requirements: Initiate closure.
Post-Closure Care (§ 257.104).	Prepare written post-closure care plan.	12	Prerequisite requirements: Written closure plan.
Closure and Post-Closure Care (§ 257.101).	Initiate closure	12	Prerequisite requirements: Written closure plan.
GWMCA (§§ 257.90–257.95)	Initiate the detection monitoring and assessment monitoring. Begin evaluating the groundwater monitoring data for SSI over background levels and SSL over GWPS.	24	Prerequisite requirements: Install groundwater monitoring system; Groundwater sampling and analysis plan.

4. Applicability and Definitions Related to CCR Management Units

EPA is proposing to amend § 257.50 by adding a new paragraph (j) to specify that subpart D applies to CCRMU. EPA is also proposing to add a new definition and revise 11 existing definitions in § 257.53 to implement the proposed criteria for CCRMU.

a. Definition of CCR Management Unit

EPA is proposing to define a *CCR management unit* to capture the solid waste management practices that have been demonstrated in the risk assessment and the damage cases to have the potential to contaminate groundwater. EPA is proposing to define a CCRMU as any area of land on which any non-containerized accumulations of CCR are received, placed, or otherwise managed, that is not a CCR unit. This definition is based on the current definitions of a CCR pile—which is currently regulated as a CCR landfill—and of a CCR surface impoundment, which both rely on the concept of ''accumulations of CCR.'' See, 40 CFR 257.53.

EPA is proposing that CCRMU would include historical solid waste management units such as CCR landfills and surface impoundments that closed under then-existing law prior to the effective date of the 2015 CCR Rule, as well as inactive CCR landfills (including abandoned piles). It would also include any other areas where the solid waste management of CCR on the ground has occurred, such as structural fill sites, CCR placed below currently regulated CCR units, evaporation ponds, or secondary or tertiary finishing ponds that have not been properly cleaned up, and haul roads made of CCR if the use does not meet the definition of beneficial use. All of these examples involve the direct placement of CCR on the land, in sufficient quantities to raise concern about releases of hazardous constituents, and—in most, if not all cases—with no measures in place to effectively limit the contact between the CCR and liquids, and subsequent generation and release of any leachate.

EPA recognizes that this is a broad definition, but the Agency does not intend that the placement of any amount of CCR would necessarily constitute a CCRMU. Accordingly, EPA is proposing that the following would not be considered CCRMU: consistent with the current regulations, closed or inactive process water ponds, cooling water ponds, wastewater treatment ponds, and storm water holding ponds or aeration ponds. These units are not designed to hold an accumulation of CCR, and in fact, do not generally contain a significant amount of CCR. See, 80 FR 21357. In addition, consistent with the existing regulations, neither an area or unit at which exclusively non-CCR waste is managed, nor any containerized CCR, such as a silo, would be considered CCRMU. See, Id. at 21356. Neither of these units present conditions that give rise to the risks modeled in EPA's assessment or identified in the damage cases.

For similar reasons, the Agency is proposing that any CCR used in roadbed and associated embankments would not be considered CCRMU. As EPA explained in the 2015 rule the methods of application are sufficiently different from CCR landfills that EPA cannot extrapolate from the available risk information to determine whether these activities present similar risks. Roadways are subject to engineering specifications that generally specify CCR to be placed in a thin layer (*e.g.,* six to 12 inches) under a road. The placement under the surface of the road limits the degree to which rainwater can influence the leaching of the CCR. There are also significant differences between the manner in which roadways and landfills can potentially impact groundwater. These include the nature of mixing in the media, the leaching patterns, and how input infiltration rates are generated. First, CCR landfills are typically a homogenously mixed system, and as a result, there are no spatial variations of the chemical and physical properties of the media (for

EXHIBIT 36

Ari Lewis, M.S. Support for the Petition of an Adjusted Standard for Pond 4, Ponds 3 and 3A, Pond S-6, Former Pond B-3, and South Fly Ash Pond (Dec. 20, 2024)

Support for the Petition of an Adjusted Standard for Pond 4, Ponds 3 and 3A, Pond S-6, Former Pond B-3, and South Fly Ash Pond at the Marion Generating Station

Prepared by

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December 20, 2024
Corrected on January 29, 2025

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Abbreviations

CCR	Coal Combustion Residuals
CM	Conceptual Model
COI	Constituent of Interest
ESV	Ecological Screening Value
FGD	Flue Gas Desulfurization
GHG	Greenhouse Gas
GWPS	Groundwater Protection Standard
HTC	Human Threshold Criteria
IEPA	Illinois Environmental Protection Agency
MGS	Marion Power Generating Station
PLM	Polarized Light Microscopy
PWS	Public Water Supply
SIPC	Southern Illinois Power Cooperative
SWQS	Surface Water Quality Standard
US EPA	United States Environmental Protection Agency

Executive Summary

Southern Illinois Power Cooperative (SIPC) owns and operates the Marion Power Generating Station (MGS), a gas and coal-fired power generating facility located in Marion, Illinois. The station began operations in 1963 and features several waste and water storage areas (including storage ponds[1]) that were utilized to support the station's operations. Some of these areas were specifically designed to store coal combustion residuals (CCR) produced from burning coal; these include Pond A-1, Former Fly Ash Holding Units, and Former Fly Ash Holding Areas. Other storage areas, including some storage ponds, were utilized for different operational purposes, such as wastewater storage or overflow and run-off management. The storage ponds in the latter category include:

- Pond 4
- Pond 3 and Pond 3A
- Pond S-6
- Former Pond B-3
- South Fly Ash Pond

These storage ponds (hereafter referred to as "storage ponds of interest") received negligible amounts of CCR over their operational history and, consequently, do not carry the same human health risk and environmental risk as posed by the CCR storage units that are subject to federal regulations regarding the disposal of CCR in surface impoundments (*i.e.*, the 2015 CCR Rule by the United States Environmental Protection Agency [US EPA]) or Illinois State CCR Regulations (*i.e.*, Illinois Administrative Code Part 845 [Part 845] by Illinois Environmental Protection Agency [IEPA]), which is fundamentally based on the 2015 US EPA CCR Rule.

The US EPA established national regulations for CCR management in 2015 (US EPA, 2015), which included requirements for both existing surface impoundments and landfills. The clear differences between the storage ponds of interest at MGS compared to surface impoundments that are subject to federal and state CCR regulations can be established based on the definitions for surface impoundment offered in the 2015 CCR Rule, the human health and ecological risk assessment (2014 CCR Risk Assessment) that supports the 2015 CCR Rule; the history of use and investigations conducted at the storage ponds of interest; and a site-specific risk assessment based on the groundwater and surface water data collected at MGS. Based on this information, I can conclude the following:

- The storage ponds of interest at MGS are not considered primary storage units for CCR; the small amounts of CCR present in these storage ponds are *de minimis*, placing the storage ponds of interest outside the regulatory requirements of state and federal regulations.
- Due to the minimal quantity of CCR in the MGS storage ponds of interest, the risk assessment conducted by US EPA in support of the CCR Rule is not applicable to the MGS storage units of interest.

[1] When referring to waste disposal, the terms "pond" and "surface impoundment" are often used interchangeably.

- A site-specific risk assessment has confirmed that the 2014 US EPA risk assessment does not adequately characterize the conditions at MGS and has demonstrated that the storage ponds of interest at MGS do not pose a risk to human health or the environment.

For these reasons, the storage ponds of interest at MGS do not qualify as surface impoundments as intended by the federal and state CCR Rules and are eligible for a petition for an adjusted standard under Part 845.

1 Introduction

In 2015, the United States Environmental Protection Agency (US EPA) promulgated national standards for the regulation of coal combustion residuals (CCR) disposal units (US EPA, 2015). The 2015 CCR Rule (formally known as "Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities") set forth a nationally consistent standard for the current and future management of CCR disposal units (surface impoundments and landfills) (US EPA, 2015). The Rule put forth a number of key provisions related to location, liner design, structural integrity, operating criteria related to controlling run-off and fugitive dust, and recordkeeping for CCR disposal units. Some of the most consequential requirements, however, relate to the establishment of a groundwater monitoring system at the waste containment boundary to detect exceedances of groundwater protection standards (GWPSs) of CCR-related constituents. If monitoring indicates that any of the identified constituents in CCR exceed the GWPSs, potential closure and corrective action must be initiated.

In the preamble to the Rule, US EPA justifies its regulatory determination based on three key reasons (US EPA, 2015):

- "EPA had completed a quantitative risk assessment that estimated significant risks to human health and the environment."
- "…consideration related to how effectively state regulatory programs address the risks associated with the improper management of these wastes…" and "lack of substantial details regarding the full extent of state regulatory authority over the disposal of these materials, and the manner in which states have, in practice, implemented this oversight."
- "…information documenting continued instances involving the contamination of ground or surface water from the management of these wastes."[2]

Following the promulgation of the CCR Rule, several states initiated or enhanced existing CCR management programs, including Illinois. In 2021, Illinois established 35 Illinois Administrative Code Part 845 (Part 845), which put forth "rules for the design, construction, operation, corrective action, closure and post-closure care of surface impoundments containing CCR at power plants" (IEPA, 2021). Part 845 shares many features of the 2015 CCR Rule but is solely focused on the regulation of surface impoundments, including the need to initiate corrective action in response to a GWPS exceedance. Importantly, Part 845 has retained US EPA's definition of a surface impoundment as "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR" (IEPA, 2021).

Based on the information that was provided to me, it is my understanding that the Illinois Environmental Protection Agency (IEPA) has taken the position that the CCR storage ponds of interest at MGS are "surface impoundments" and within the scope of the 2015 CCR Rule and Part 845. Several of the storage ponds, however, are inconsistent with the definition of a surface impoundment. In particular, the CCR storage ponds of interest at MGS were never designed to routinely receive sluiced CCR or other significant CCR from plant operations. Consequently, the storage ponds contain negligible amounts of CCR that would qualify them as "de minimis" ponds. As noted by US EPA, "de minimis" levels of CCR in a pond are

[2] This justification specifically relates to cases proven as potential "damage cases," which is a regulatory designation given by US EPA indicating proven or potential damage to human health or the environment.

unlikely to present a significant risk to human health or the environment and are out of the scope of the CCR Rule (US EPA, 2015).

In the following sections, I present several lines of evidence demonstrating that the storage ponds of interest at MGS do not meet the definition of a surface impoundment as specified in Part 845. These storage ponds of interest are fundamentally different from the CCR storage units that US EPA associated with risks in its risk assessment supporting the 2015 CCR Rule and, which was used to support the promulgation of Part 845 and, thus, should not be the target of Part 845 regulation.

Additionally, I will summarize the findings of a recent site-specific risk assessment evaluating potential human health and environmental risks from the storage ponds of interest at MGS. The results confirm that the storage ponds in question are significantly different from those evaluated by US EPA in its risk assessment in support of 2015 CCR Rule and relied upon to promulgate Part 845. Moreover, the findings demonstrate that these storage ponds do not pose a substantial or significant adverse threat to human health or the environment that warrant regulation under Part 845.

2 Qualifications

I am a Principal at Gradient, an environmental consulting firm located in Boston, Massachusetts, with a Master's degree in environmental toxicology. I have over 20 years of professional experience in toxicology and risk assessment. In this capacity, I lead a variety of projects, including product safety evaluations, regulatory comments, green chemistry assessments, and technical support for the utility and mining industries. Recently, I have served on two US EPA Science Advisory Panels in support of developing technical, risk-based tools to support environmental justice assessments. I have particular expertise in evaluating the potential human health and environmental risks of CCR. Example projects and activities have included providing congressional testimony on the risk assessments of CCR; providing regulatory comment on risk assessment-related aspects of national CCR rules; participating as a member of the National Ash Management Advisory Board; and providing ongoing support for utilities with CCR storage units subject to the state and federal CCR rules. I have given dozens of presentations related to CCR risk at national conferences and was the lead author of the book chapter, "Storage of Coal Combustion Products in the United States: Perspectives on Potential Human Health and Environmental Risk" in the book *Coal Combustion Products (CCPs): Characteristics, Utilization, and Beneficiation.* My full *Curriculum Vitae* is in Attachment B.

3 The MGS storage ponds of interest qualify as *de minimis* and are outside the regulatory requirements of the CCR Rule

Part 845 requirements are applicable to CCR units that qualify as surface impoundments. The sections below provide support that the storage ponds of interest at MGS (the South Fly Ash Pond, Ponds 3 and3A,[3] Pond S-6, Pond 4, and Former Pond B-3) do not meet the intended definition of a CCR surface impoundment as specified under Part 845 (*i.e*., an impoundment "designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR"; IEPA, 2021). In summary, none of these ponds were designed to treat, store, or dispose of CCR; principally, these ponds only indirectly received small amounts of CCR *via* overflow from other areas or process wastewater discharge. While some CCR are present in these ponds as a result of these activities, the amount of CCR in these ponds is negligible, and a small fraction of what would be expected in an impoundment intended to directly receive CCR from coal-burning operations. The evidence presented collectively indicates that the ponds of interest at MGS are not subject to regulation under Part 845. Further detailed information supporting this conclusion is provided below.

3.1 The regulatory definition of "de minimis" is presented by US EPA in the 2015 CCR Rule and has been adopted by IEPA under Part 845

As noted in Section 1, in 2015, the US EPA promulgated comprehensive regulations for the management of CCR disposal units, including surface impoundments and landfills. As part of these regulations, US EPA needed to clearly define what qualifies as a CCR storage unit. In its initial draft, US EPA defined a surface impoundment as "natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials) which is designed to hold an accumulation of CCR containing free liquids, and which is not an injection well" (US EPA, 2015). Public commenters on the Rule reasoned that this definition was overly broad because it would include "downstream" impoundments (*e.g*., wastewater and holding ponds) that contained *de minimis* (*i.e*., inconsequential) amounts of CCR (US EPA, 2015).

In response to the comments, US EPA acknowledged that a change in definition was needed and introduced a new definition of a surface impoundment in the final Rule:

> [A] CCR surface impoundment as defined in this rule must meet three criteria: (1) The unit is a natural topographic depression, manmade excavation or diked area; (2) the unit is designed to hold an accumulation of CCR and liquid; and (3) the unit treats, stores or disposes of CCR (US EPA, 2015).

This definition is functionally identical to the definition adopted in Part 845:

[3] Pond 3 was initially built in 1979, but in 1982 a berm was built to divide the pond into ponds 3 and 3A (SIPC, 2021; Kleinfelder Inc., 2013).

> "CCR surface impoundment" or "impoundment" means a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR (IEPA, 2021).

While Part 845 does not provide any specific language or more specific criteria that qualifies a surface impoundment for regulation, the CCR Rule, on which Part 845 is based, provides further clarification on the type of units covered. US EPA states:

> [A] constructed primary settling pond that receives sluiced CCR directly from the electric utility would meet the definition of a CCR surface impoundment because it meets all three criteria of the definition: It is a man-made excavation and it is designed to hold an accumulation of CCR (*i.e.,* directly sluiced CCR). It also engages in the treatment of CCR through its settling operation (US EPA, 2015; emphasis added).
>
> Similarly, secondary or tertiary impoundments that receive wet CCR or liquid with significant amounts of CCR from a preceding impoundment (*i.e.,* from a primary impoundment in the case of a secondary impoundment, or from a secondary impoundment in the case of a tertiary impoundment), even if they are ultimately dredged for land disposal elsewhere are also considered CCR surface impoundments and are covered by the rule (US EPA, 2015; emphasis added).

This definition emphasizes that a surface impoundment was meant to represent a unit that received and stored significant amounts of CCR, most typically in the form of sluiced CCR.

On the other hand, US EPA notes that:

> [U]nits containing only truly "de minimis" levels of CCR are unlikely to present the significant risks this rule is intended to address (US EPA, 2015).

While a quantitative definition of "de minimis levels of CCR" was not provided in the rule, US EPA clarifies the following characteristics for units that are not covered by the 2015 CCR Rule:

> CCR surface impoundments do not include units generally referred to as cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds, or aeration ponds. These units are not designed to hold an accumulation of CCR, and in fact, do not generally contain significant amounts of CCR. Treatment, storage, or disposal of accumulated CCR also does not occur in these units (US EPA, 2015; emphasis added).
>
> [U]nits that present significantly lower risks, such as process water or cooling water ponds, [are not meant to be covered by the rule] because, although they will accumulate any trace amounts of CCR that are present, they will not contain the significant quantities that give rise to the risks modeled in EPA's assessment (US EPA, 2015).

US EPA's acknowledgement that *de minimis* units will not "give rise to the risks modeled in EPA's risk assessment" is particularly key, because as further detailed in Sections 4 and 5, the surface impoundments modeled in US EPA's risk assessment are not characteristic of the storage ponds of interest at MGS.

In addition to these points, the sections below provide detailed support for why the storage ponds of interest at the MGS have characteristics similar to those of units excluded from the 2015 CCR Rule. Consequently, the storage ponds of interest should be exempt from complying with federal and state regulations.

3.2 The history of use of the MGS storage ponds of interest places them outside the definition of a CCR surface impoundment

The MGS property features a series of ponds that have been utilized for the management and treatment of site-related waste (see Figure 3.1). Some of these ponds (*e.g.*, Pond A-1), were specifically designed to "treat, store, and dispose" CCR, while others serve different operational purposes, including the storage and treatment of wastewater. Below, I provide descriptions of the ponds that did not directly receive CCR, which are the focus of this petition. See also Table 3.1.

- South Fly Ash Pond: The South Fly Ash Pond, which covers an area of approximately 12.2 acres, was constructed in 1989 and was originally intended to be a replacement for Pond A-1, which was designed to directly accept and store CCR (Figure 3.1; SIPC, 2021). Ultimately, Pond A-1 did not need to be replaced. Thus, the South Fly Ash Pond was only used to receive decant water from the Former Emery Pond[4] while it was operational. No CCR was ever directly sent to or disposed of in the South Fly Ash Pond (SIPC, 2021).
- Ponds 3/3A: Ponds 3 and 3A, with approximate areas of 1.9 and 1.7 acres, respectively, were secondary ponds that received overflow from the Fly Ash Holding Areas[5] (Figure 3.1; SIPC, 2021). They also received stormwater runoff, coal pile runoff, and water from the facility floor drains. In approximately 1982, Pond 3A was separated from Pond 3 by construction of an internal berm, and Pond 3A received some overflow from the Former Fly Ash Holding Units.[6] All sediment and debris were removed from Pond 3 in 2006 and 2011. All sediment and debris were removed from Pond 3A in 2014. Subsequently, no CCR was ever directly sent to or disposed in Ponds 3 or 3A. Currently, water from the South Fly Ash Pond flows into Pond 3 (SIPC, 2021).
- Pond S-6: Pond S-6 was originally built to manage stormwater associated with the Former Landfill[7] (Figure 3.1; SIPC, 2021). Initially, water in Pond S-6 discharged to the Little Saline Creek through Outfall 001; however, in approximately 1993, water from Pond S-6 was pumped to Pond 4. Pond S-6 is expected to receive non-CCR runoff from the Former Landfill in the future. No CCR was ever directly sent to or disposed in Pond S-6 (SIPC, 2021).
- Pond 4: Pond 4, which was built in 1979 and covers an area of approximately 3.7 acres, historically received decant water from Ponds 1 and 2[8] for secondary treatment and runoff from the coal pile (Figure 3.1; Kleinfelder Inc., 2013; SIPC, 2021). No CCR was ever directly sent to or disposed in the Pond 4. All sediment and debris were removed from Pond 4 in 2012 (SIPC, 2021). Currently, Pond 4 receives overflow from Pond S-6; water in Pond 4 discharges into the Little Saline Creek *via* Outfall 002 (Kleinfelder Inc., 2013; SIPC, 2021).
- Former Pond B-3: Pond B-3, which was built in 1985 and approximately covers 6.4 acres, was primarily used as a secondary pond that received water from Pond A-1 (Figure 3.1; SIPC, 2021). During shutdowns of Pond A-1, Pond B-3 may have received short-term discharges of fly ash.

[4] The Former Emery Pond was constructed in the late 1980s. It received process wastewater (including flue gas desulfurization [FGD] decant excess water and air heater wash water) and stormwater from areas of the MGS. The Former Emery Pond stopped receiving process wastewater discharges in 2020, and its closure is ongoing (SIPC, 2021).
[5] The Former Fly Ash Holding Areas and Extension (Figure 3.1) were used to store fly ash before the construction of Pond A-1 in 1985 (SIPC, 2021).
[6] The Former Fly Ash Holding Units are three former fly ash ponds that were closed and dewatered "decades ago" (SIPC, 2021).
[7] The Former Landfill is a permit-exempt landfill that received scrubber sludge mixed with fly ash. It was built in the early 1990s on top of the Former Fly Ash Holding Units and also partially covered the Former Fly Ash Holding Areas and Extension after they were drained (Figure 3.1). The Former Landfill stopped accepting wastes in 2015, and a closure plan was submitted to IEPA (SIPC, 2021).
[8] Ponds 1 and 2 received sluiced bottom ash, which was later removed for beneficial use. These ponds are not currently in use and are being closed (SIPC, 2021).

These shut-downs were very infrequent and for very short periods of time. Specifically, Pond A-1 was taken off-line approximately 3 to 4 times between 1985 and 2003, each lasting about 2 weeks. In 2017, Pond B-3 was dewatered and all sediment and CCR were excavated (SIPC, 2021).

Table 3.1 History of Use for the Storage Ponds of Interest

Ponds	Year Built	Duration of Operation	Uses
South Fly Ash Pond	1989	Approximately 30 years	- Built as potential replacement for Pond A-1 but was not needed. - Received decant water from Former Emery Pond.
Pond 3	1979	10-12 years	Received wastewater from multiple sources: - overflow from the Fly Ash Holding Areas; - stormwater runoff; - coal pile runoff; and - water from floor drains. Currently receives water from the South Fly Ash Pond.
Pond 3A	1982	8-10 years	Received wastewater from multiple sources: - overflow from the Former Fly Ash Holding Units; - stormwater; and - potential overflow from the South Fly Ash Pond.
Pond S-6	1988	Approximately 30 years	- Developed to manage stormwater from the Former Landfill. - Expected to receive non-CCR runoff from the Former Landfill in the future.
Pond 4	1979	Approximately 30 years	Received wastewater from multiple sources: - decant water from Ponds 1 and 2 until 2020; - water from the South Fly Ash Pond; and - coal pile runoff starting in 2003. Currently receives overflow from Pond S-6 and discharges into the Little Saline Creek.
Former Pond B-3	1985	18 years	- Used as a secondary pond to Pond A-1 (which received fly ash and coal pile runoff until 2003) - Received short-term discharges of fly ash during periodic outages of Pond A-1 (outages occurred 3-4 times between 1985 and 2003, two weeks at a time).

Notes:
CCR = Coal Combustion Residuals.
Source: SIPC (2021); Kleinfelder Inc. (2013).

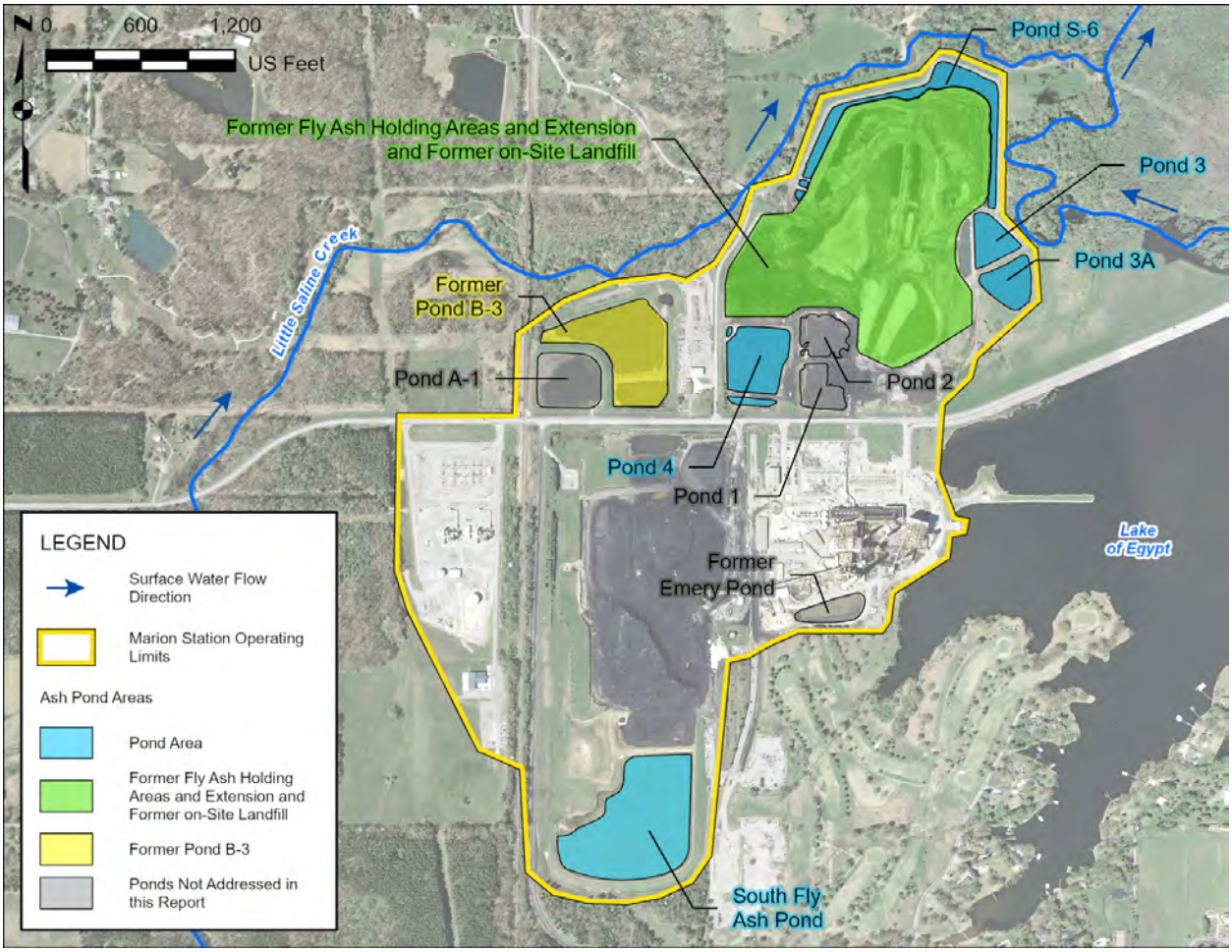


Figure 3.1 Marion Power Generating Station Layout. Sources: Golder Associates Inc. (2021); USGS (2022, 2011); Andrews Engineering (2021); SIPC (2021).

3.3 Investigations at MGS show that the storage ponds of interest contain minimal amounts of CCR

As discussed above, the South Fly Ash Pond, Ponds 3 and 3A, Pond S-6, and Pond 4 were never used to store or dispose CCR (*i.e.*, they did not receive sluiced CCR directly). While Former Pond B-3 did receive 3-4 short-term discharges of fly ash over 18 years (Table 3.1), the amount of fly ash that it received would be very small in comparison to CCR surface impoundments that routinely received sluiced CCR. As a result, the amount of CCR in these impoundments is a small fraction of what would be expected in an impoundment intended to directly receive CCR from coal burning operations. The *de minimis* amounts of CCR present in the storage ponds of interest would put them outside the intent of the state and federal CCR regulations.

To further support the position that the storage ponds of interest contain *de minimis* amounts of CCR, Haley & Aldrich, Inc., characterized the CCR present (if any) in the storage ponds of interest[9] in 2021 (Haley & Aldrich, Inc., 2021). This investigation included the following:

[9] Former Pond B-3 was dewatered in 2017, and sediments were removed from it (SIPC, 2021). Thus, Haley & Aldrich, Inc. (2021) did not investigate the Former Pond B-3.

- A bathymetric survey to determine the sediment thickness in each pond;
- A polarized light microscopy (PLM) analysis[10] to estimate the CCR content in each sediment sample; and
- A carbon content analysis (Haley & Aldrich, Inc., 2021).

The results from Haley & Aldrich, Inc. (2021) are presented in Tables 3.2 and 3.3. One of the key parameters evaluated was the sediment thickness in each pond. For the storage ponds of interest, the sediment is expected to contain CCR that may have settled out of the wastewater, as well as other mineral and organic matter typically found in surface water bodies (*e.g.*, soil, decomposed leaves, branches). The analysis found that the total sediment thickness in each surface impoundment was minimal, ranging from 0.84 feet to 1.67 feet (*i.e.*, 10-20 inches). While this level of sediment, in and of itself, is not typical for a surface impoundment designated to directly receive CCR, the analysis further assessed the fraction of the sediment that could be conclusively attributed to CCR. As shown in Table 3.2, the percentage of CCR in the sediment samples collected from the storage ponds of interest ranged between 10% and 68%, with the average for each pond ranging between 27% and 54%. This translates to a CCR thickness of 0.35 to 0.90 feet (*i.e.*, 4.2 to 10.8 inches) if the CCR are assumed to be present as a layer within the sediment (instead of being vertically interspersed in the sediment). For perspective, in the nationwide survey that US EPA conducted, surveyed surface impoundments contained between 0.5 and 190 feet of wet CCR (see Section 4.3 for more details; US EPA, 2014).

Table 3.2 Measured Total Sediment Thickness and Estimated CCR in Sediment

Pond	Mean Sediment Thickness (feet)	Slag + Fly Ash + Bottom Ash (*i.e.*, CCR)	Coal[a]	Other[b]	Maximum Estimated CCR Thickness (feet)[c]
South Fly Ash Pond	1.57	10-64% (40%)	1-6% (3.5%)	34-84% (56.5%)	0.63
Pond 3	1.38	23-34% (28.5%)	4-7% (5.5%)	62-70% (66%)	0.39
Pond 3A	1.45	20-34% (27%)	13-48% (30.5%)	18-67% (42.5%)	0.39
Pond S-6	0.84	30-53% (41.5%)	0-2% (1%)	47-68% (57.5%)	0.35
Pond 4	1.67	25-68% (54%)	0-23% (6%)	32-52% (40%)	0.90

Notes:
CCR = Coal Combustion Residuals; FGD = Flue Gas Desulfurization; PLM = Polarized Light Microscopy.
The average amount of CCR, coal, and other materials is indicated in parentheses.
(a) The results of the PLM analysis of pond sediment samples were compared with the results of some control samples, including a coal sample. Thus, some fraction of the sediments were identified as coal in this analysis.
(b) Haley & Aldrich, Inc., noted that other materials in the sediment samples could include scrubber sludge or FGD material, but the amount of such materials in the pond sediments was likely to be small because scrubber sludge was not sent to the ponds for disposal.
(c) Calculated using the mean sediment thickness and the average amount of CCR in each pond.
Sources: Haley & Aldrich, Inc. (2021); SIPC (2021).

[10] Haley & Aldrich, Inc., noted that "PLM is an optical microscopy method … [that] can be used to distinguish particles of coal ash from other dust particles, and … [is] able to estimate the abundance of CCR materials in a sample" (Haley & Aldrich, Inc., 2021).

Haley & Aldrich, Inc., also measured the sediment volume and the total volume for each pond. As shown in Table 3.3, when using the total sediment depth as a worst-case scenario, Haley & Aldrich, Inc.'s results showed that the sediment volume as a fraction of the pond volume ranged between 8.2% and 21.8% for the storage ponds of interest[11] (Haley & Aldrich, Inc., 2021). A more refined analysis that considers only the CCR fraction of the sediment demonstrates that the amount of CCR in these ponds is only 2.6% to 7.6% of the total volume.

Table 3.3 Estimated CCR Volume as a Fraction of the Total Pond Volume

Pond	Sediment Volume (cubic feet)	Pond Volume (cubic feet)	Area (acres)	Estimated Pond Depth[a] (feet)	Sediment Volume as Fraction of Pond Volume	Estimated CCR Volume as Fraction of Pond Volume
South Fly Ash Pond	563,055	2,944,553	12.2	5.5	19.1%[b]	7.6%
Pond 3	83,988	936,162	1.9	11.3	9%	2.6%
Pond 3A	95,666	717,739	1.7	9.7	13.3%	3.6%
Pond S-6	103,453	1,264,398	3.4	8.5	8.2%	3.4%
Pond 4	91,077	1,370,059	3.7	8.5	6.6%[c]	3.6%

Notes:
CCR = Coal Combustion Residuals.
(a) Mean pond depth was estimated as the ratio of the pond volume to its area.
(b) Based on the sediment and pond volumes reported by Haley & Aldrich, Inc. (2021), the sediment volume in the South Fly Ash Pond is 19.1% of its total volume. But Haley & Aldrich, Inc. (2021) reported a value of 21.8%.
(c) Based on the sediment and pond volumes reported by Haley & Aldrich, Inc. (2021), the sediment volume in Pond 4 is 6.6% of its total volume. But Haley & Aldrich, Inc. (2021) reported a value of 10.9% instead.
Sources: Haley & Aldrich, Inc. (2021); SIPC (2021).

The amounts of CCR that have settled in the storage ponds of interest throughout MGS's operational life are inconsistent with what would be expected from a surface impoundment designed to store, treat, and dispose of CCR. On the contrary, the low amounts of CCR in these ponds are consistent with receiving discharges of decant water or other wastewaters rather than significant CCR deposits. While Pond B-3 did receive some direct CCR, this activity occurred infrequently – only three times for about 2 weeks over several years. Moreover, this pond was dewatered and sediments were excavated in 2017. The presence of such minimal amounts of CCR in the storage ponds of interest and the fact that they were not designed to treat, store, or dispose of CCR puts these ponds squarely in US EPA's category of units that contain *de minimis* amounts of CCR. And units with "de minimis" CCR are out of the scope of CCR regulatory requirements.

[11] For the South Fly Ash Pond and Pond 4, the values of the sediment volume as a fraction of the pond volume reported by Haley & Aldrich, Inc. (2021) did not equal the ratio of the sediment volume to the pond volume (Table 3.2).

4 The risk assessment conducted by US EPA in support of the CCR Rule is not applicable to the MGS storage units of interest

A human health or environmental risk assessment is often needed to support regulatory determinations made by US EPA and other state environmental agencies. After initial drafts in 2007 and 2010, in 2014 US EPA published its final risk assessment titled, "Human Health and Ecological Risk Assessment of Coal Combustion Residuals" (US EPA, 2014). As previously mentioned, the findings of this risk assessment were one of the key underpinnings for the 2015 CCR Rule (US EPA, 2015). This is evident in the preamble to the CCR Rule, which states, "[t]he available information demonstrates that the risks posed to human health and the environment by certain CCR management units warrant regulatory controls" (US EPA, 2015). The US EPA 2014 CCR Risk assessment was a large undertaking involving the collection and analysis of data from 734 surface impoundments and 309 landfills across the US.

4.1 Risks from the 2014 CCR Risk Assessment were limited to surface impoundments at the 90th percentile (high-end CCR management scenarios); surface impoundments with more typical features and all landfills posed no risk

CCR stored in units can potentially reach human and ecological receptors in various ways. The CCR Risk Assessment was designed to characterize the full range of possible risks to human health posed by CCR disposal units across the US. Key human health exposure pathways that were addressed included the following (pathways indicated in bold were evaluated in an initial screening assessment and carried forward into a more refined risk assessment):

- **The ingestion of drinking water from groundwater impacted by CCR**
- Direct contact during showering and bathing with groundwater impacted by CCR
- **Ingestion of fish from surface water affected by groundwater impacted by CCR**
- Direct contact from surface water affected by groundwater impacted by CCR
- Inhalation of windblown CCR dust
- The incidental ingestion of soil impacted by CCR windblown dust and runoff
- The ingestion of produce, dairy products, and beef from soil impacted by CCR

Key ecological pathways that were addressed included:

- Aquatic receptors exposed to wastewater
- Aquatic receptors exposed from soil impacted by CCR runoff
- Terrestrial receptors exposed from soil impacted by CCR runoff

- **Aquatic receptors exposed to sediment affected by groundwater impacted by CCR**
- **Aquatic receptors exposed to surface water affected by groundwater impacted by CCR**

The pathways were evaluated during an initial screening phase that used high-end, worst-case exposure assumptions. In this phase, pathways that did not pose a risk were eliminated from further consideration. The exposures that did present a risk were carried forward and assessed using more refined exposure assumptions and risk assessment approach. In the list above, the pathways in bold were retained for further evaluation, while the others were determined to be low risk, even under extreme high-end exposure assumptions, and were not evaluated further. In general, the pathways that were retained focused on exposures related to the groundwater pathway. More specifically, from a human health perspective, the risk concern related to the potential for CCR constituents to leach from the landfill or surface impoundment into groundwater and migrate to drinking water wells off-site or into surface water bodies that could affect fish that humans could consume

US EPA employed a probabilistic risk assessment methodology for the more refined assessment focused on the groundwater pathway. This means that US EPA identified a full range of CCR management scenarios and unit characteristics to calculate a distribution of potential risks. Using this approach, US EPA presented a typical CCR management risk (50^{th} percentile) and a high-end CCR management risk (90^{th} percentile). The approach was designed to characterize the potential risks associated with CCR storage nationwide and did not reflect the risks at any specific individual facility.

A large number of factors were considered in the risk assessment to build the CCR risk model, which accounts for the full range of potential risks associated with CCR storage units. Some factors pertained to the characteristics of the storage units, such as the size of the storage unit, the concentrations of CCR constituents in the leachate, the type of waste, and the presence of a liner. Other factors related to how the CCR constituents leached out of the unit and traveled through the environment. Additionally, factors concerning the nature of the exposed population, the proximity to drinking water wells, and the proximity to surface water bodies were also taken into account.

The risk assessment concluded several key findings:

- For the ingestion of drinking water from groundwater impacted by CCR
  - At the 50^{th} percentile, no human health risks for landfills or impoundments
  - At the 90^{th} percentile, no human health risks for landfills, except when restricted to unlined units only
  - At the 90^{th} percentile, some human health risk exceedances associated with arsenic (III and V), lithium, and molybdenum *via* drinking water ingestion for impoundments. When restricted to an assessment of unlined units only, there were also risk exceedances for thallium.
- For the ingestion of fish from surface water affected by groundwater impacted by CCR
  - No risk at the 50^{th} or 90^{th} percentile for surface impoundments or landfills
- No risk to aquatic organisms for landfills or impoundments

The specific quantitative risk findings for the human health assessment for surface impoundments, which are most relevant to the storage ponds of interest at MGS, are shown in the table below. In this table, cancer risk above 1×10^{-5} and noncancer risk above 1 are considered unacceptable risks by US EPA.

Table 4.1 50th and 90th Percentile Risks for Surface Impoundments (All Units) from the 2014 CCR Risk Assessment

CCR Constituent	Groundwater Ingestion		Fish Ingestion	
	50th Percentile	90th Percentile	50th Percentile	90th Percentile
Cancer Risk				
Arsenic III	No risk	$2x10^{-4}$	No Risk	No Risk
Arsenic V		$1x10^{-5}$		
Chromium VI		No Risk		
Noncancer Risk				
Arsenic III	No Risk	5	No Risk	No Risk
Arsenic V		No Risk		
Boron		No Risk		
Cadmium		No Risk		
Cobalt		No Risk		
Fluoride		No Risk		
Lead		No Risk		
Lithium		2		
Mercury		No Risk		
Molybdenum		2		
Selenium IV		No Risk		
Selenium VI		No Risk		
Thallium		No Risk		

Notes:
CCR = Coal Combustion Residuals.
No Risk = No risk exceedance or not evaluated.

The finding that only surface impoundments present a risk, and only at the 90th percentile, is particularly significant concerning the storage ponds of interest at MGS. If only surface impoundments with high-end exposure characteristics pose a risk to human health or the environment, this implies that the vast majority of CCR storage units, particularly those with lower risk characteristics such as containing *de minimis* amounts of CCR, do not present an unreasonable risk to human health and the environment.

4.2 The surface impoundments modeled in the 2014 CCR Risk Assessment were conceptually different than the storage ponds of interest at MGS

An initial step in a risk assessment is developing a conceptual model (CM). To assess the potential risk to groundwater from surface impoundments, US EPA needed to develop a conceptual model that could represent potential releases from surface impoundments and examine the downstream fate and transport, and ultimately risk, of CCR constituents. US EPA (2014) described the surface impoundment model as follows:

> Surface impoundments are conceptualized as square units that are constructed anywhere from entirely above grade to entirely below ground surface. During operation, a surface impoundment receives waste sluiced from the facility. Over time, impoundment water may be lost to some combination of infiltration, evaporation, and controlled discharges to other impoundments and nearby water bodies, while the CCR solids either accumulate until the surface impoundment's capacity is reached or are periodically dredged for final disposition elsewhere. To reflect that the majority of impoundments are periodically dredged, the conceptual model assumes that dredging losses are balanced out by continued loading from

> the facility, resulting in a constant ponding depth over the operational life (US EPA, 2014; emphasis added).

As described in detail in Section 3, the storage ponds of interest differ significantly from the surface impoundments that were the focus of the 2014 CCR Risk Assessment. Most notably, the storage ponds did not receive sluiced CCR from the facility. Sluiced CCR refers to the practice of mixing CCR generated at the coal-burning facility with water for the purpose of transport to the surface impoundment. The assumption that surface impoundments used to model risk were receiving large volumes of CCR mixed with water is essential. As noted in the 2015 CCR Rule, "units that contain a large amount of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants," which, in turn, will drive risk.

Additionally, the conceptual model presented by US EPA suggests that the CCR solids accumulate "until the surface impoundment capacity was reached, at which point they are periodically dredged for final disposition elsewhere." While some of the storage ponds of interest were dredged, this process was not conducted regularly or because the CCR was "at capacity." As indicated in Table 4.2, some of the storage ponds of interest never had CCR removed (except in a 2003 cleaning event when the MGS switched to full dry-handling of fly ash), while others had CCR (mainly sediment and other debris) removed only once or twice throughout their operational lifespan, or only had sediment removed when the pond was closed (SIPC, 2021).

Table 4.2 Dredging and Cleaning Activities at the Storage Ponds of Interest

Ponds	Dredging or Cleaning Activities[a]
South Fly Ash Pond	Debris/sediment removed in 2003.
Pond 3	Debris/sediment removed in 2003, 2006, and 2011.
Pond 3A	Debris/sediment removed in 2003. Water drained and sediment cleaned in 2014.
Pond S-6	Debris/sediment removed in 2003.
Pond 4	Debris/sediment removed in 2003 and 2012.
Former Pond B-3	Debris/sediment removed in 2003. Dewatered and cleaned down to the clay in 2017.

Notes:
CCR = Coal Combustion Residuals.
(a) When MGS switched to full dry-handling of fly ash in 2003, all of the storage ponds of interest had debris (and any CCR) cleaned (SIPC, 2021).
Source: SIPC, 2021.

4.3 The depth of CCR in the ponds of interest at MGS were significantly smaller than the surface impoundments modeled in the 2014 CCR Risk Assessment

Due to the probabilistic design of the 2014 CCR Risk Assessment, it is challenging to determine where the storage ponds of interest at MGS fit within the nationwide distribution of CCR storage conditions that form the basis of the risk assessment. However, an important factor influencing risk is the amount of CCR stored in the surface impoundments. The depth and volume of the sediment/CCR mixture (including an estimate of CCR only) for each storage pond of interest at MGS is presented in Section 3.3. These values are also replicated below in Table 4.4. The 2014 CCR Risk Assessment does not explicitly provide the CCR volume in each impoundment. Instead, it presents the total depth of the surface impoundments based on a nationwide survey (US EPA, 2014). The total surface impoundment depth data, which ranged from 0.5 to 190 feet (Table 4.3), serve as a proxy for the depth (*i.e.*, thickness) of the CCR-water mixture (*i.e.*, sluiced CCR) in each impoundment.

Table 4.3 Depth of Surface Impoundments (in Feet) Presented in the 2014 CCR Risk Assessment

Minimum	50th Percentile	90th Percentile	Maximum
0.5	13.6	36.6	190.1

Source: US EPA (2014).

Table 4.4 provides a comparison of the depth of CCR at the storage ponds of interest at MGS compared to the surface impoundments evaluated in the 2014 CCR Risk Assessment (US EPA, 2014). Because the information available for the MGS storage ponds of interest varies slightly from the data used by US EPA, several comparisons are presented.

- Using the estimated thickness of CCR: The MGS storage ponds of interest have a CCR thickness less than all surface impoundments across the US, with the exception of the South Fly Ash Pond and Pond 4, which both have a CCR thickness less than 99% of all of the nationwide surface impoundments that were modeled as part of this risk assessment.
- Using the estimated thickness of sediment: When using a more conservative approach that considered the total measured thickness of the sediment/CCR mixture, the MGS storage ponds of interest still have a CCR thickness that is less than 98%-99% of surface impoundments across the US.

Table 4.4 Comparison of Thicknesses with SI Depth Distribution

Storage Pond	CCR Thickness (ft)	Sediment Thickness (ft)	CCR Thickness as Percentile of Depth Distribution of SI in 2014 CCR Risk Assessment	Sediment Thickness as Percentile of Depth Distribution of SI in 2014 CCR Risk Assessment
South Fly Ash Pond	0.63	1.57	1%	2%
Pond 3	0.39	1.38	< Minimum SI Depth	1%
Pond 3A	0.39	1.45	< Minimum SI Depth	2%
Pond S-6	0.35	0.84	< Minimum SI Depth	1%
Pond 4	0.90	1.67	1%	2%

Notes:
CCR = Coal Combustion Residuals; SI = Surface Impoundment.
Source: Haley & Aldrich, Inc. (2021); US EPA (2014).

4.4 The US EPA risk assessment was broadly applied even though most impoundments would not be expected to pose a risk

Although risk to human health was observed for 90th percentile for surface impoundments only, the CCR Rule was applied to all existing CCR disposal units. US EPA's rationale around this point was that it did not have direct authority to enforce the CCR Rule when it was established. Consequently, the requirements developed would need to be protected against the highest-risk CCR disposal scenarios. This intention is clearly expressed in the Rule:

> …the regulatory structure under which this rule is issued effectively limits the Agency's ability to develop the type of requirements that can be individually tailored to accommodate particular site conditions. Under sections 1008(a) and 4004(a), EPA must establish national criteria that will operate effectively in the absence of any guaranteed regulatory oversight (i.e., a permitting program), to achieve the statutory standard of 'no reasonable probability of adverse effects on health or the environment' at all sites subject to the standards. EPA

> was unable to develop a performance standard that would allow for alternatives to closure, but would also be sufficiently objective and precise to minimize the potential for abuse (US EPA, 2015).

Further to this point, as noted in the Introduction, one of the main reasons US EPA determined that CCR regulations were necessary is that state CCR management programs were inconsistent or, in some cases, nonexistent. This inconsistency meant that US EPA could not be assured that states had adequate programs to ensure that CCR units did not pose a risk to human health and the environment. However, Illinois has established a robust CCR regulatory program that allows for differentiation between surface impoundments with "a reasonable probability of adverse effects on health or the environment" and those ponds containing "de minimis" amounts of CCR that are materially different from the surface impoundments evaluated in the 2014 CCR Risk Assessment, and do not pose a risk. Indeed, as summarized in Section 5 and detailed in Attachment A, a risk assessment conducted at MGS has demonstrated that the storage ponds of interest do not pose a risk to human health or the ecological receptors in the environment.

5 A site-specific risk assessment has confirmed that the US EPA risk assessment does not adequately characterize the conditions at MGS and has demonstrated that the CCR storage ponds of interest at MGS do not pose a risk to human health or the environment

The primary directive of Part 845 is to ensure that existing or inactive surface impoundments "do not pose a reasonable probability of adverse effects on health or the environment" (IEPA, 2021). To evaluate this important criterion, Gradient conducted a risk assessment to evaluate the potential human health and environmental risks associated with the storage ponds of interest at the MGS site (Gradient, 2024a). This assessment was performed using widely accepted scientific methods, models, and approaches that align with the guidance provided by IEPA and US EPA, while also considering the federal CCR Rule.

Gradient relied on groundwater data collected between 2018 and 2023, surface water data from the Lake of Egypt (from June 2020, and 2018-2023), and modeled surface water and sediment data for the Little Saline Creek. The assessment focused on how CCR constituents measured in the groundwater at and near the site could impact human receptors in the vicinity, based on site-specific groundwater characteristics.

The evaluation focused on the storage ponds of interest, specifically those that contain minimal amounts of CCR. Because different storage ponds are located in various areas of the property and are influenced by different groundwater flow patterns, the South Fly Ash Pond was assessed separately from Pond 4, Pond S-6, Pond 3/3A, and Former Pond B-3. It is important to consider the risk assessment as a screening assessment. Some of the exposure assumptions used, such as using the maximum groundwater constituent concentration instead of a central tendency or a value that better reflects specific receptor locations, may result in an overestimation of risk.

The full risk assessment can be found in Attachment A, but a summary of our approach, as well as key observations and conclusions from the risk evaluation, are highlighted below.

Conceptual Site Model

- The uppermost water-bearing zone (*i.e.*, the Unlithified Unit) at the MGS is a shallow, hydraulically perched layer consisting of fill and residuum (silts and clays), with a saturated thickness of up to 10 feet approximately (Hanson Professional Services Inc., 2021). Groundwater (and CCR-related constituents originating from the MGS) may migrate vertically downward through the Unlithified Unit and migrate away from the impoundments.
- Groundwater at the MGS generally flows northeast toward the Little Saline Creek. However, south of the Lake of Egypt Road, groundwater has an eastern flow component toward the Lake of Egypt (SIPC, 2007).

Data Used to Characterize Risk to Human Health and the Environment

- Monitoring data (2018-2023) from two different sets of wells were collected to characterize the groundwater in the vicinity of the impoundments of interest. Samples were analyzed for metals specified in Part 845.600 (IEPA, 2021), as well as for general water quality parameters, including pH, chloride, fluoride, sulfate, and total dissolved solids.
  - Wells C-1, C-2, C-3, and well EBG were used to characterize groundwater quality near the South Fly Ash Pond.
  - Wells S-1, S-2, S-3, S-4, S-5, and S-6 were used to characterize groundwater quality near Pond 4, Ponds 3 and 3A, Pond S-6, and Former Pond B-3.
- Surface water samples were collected from five locations in the Lake of Egypt in June 2020. Analyses were performed on a variety of metals as outlined in Part 845.600 (IEPA, 2021), along with several general water quality parameters. The risk assessment also used surface water data obtained from the public water supply (PWS) intake on the Lake of Egypt for 2018-2023.
- No surface water or sediment data were available for Little Saline Creek; therefore, Gradient estimated (*i.e.*, modeled) concentrations of both media in the Little Saline Creek using the data from the groundwater monitoring wells located in the north portion of the site (*i.e.*, S-wells) and assuming that all the impacted groundwater flows to the Little Saline Creek. Gradient ignored any adsorption by subsurface soil and conservatively assumed that the groundwater concentrations were uniformly equal to the maximum detected concentration of each individual constituent.

Human Health Risk Evaluation

- The human health risk evaluation considered risks for all receptors potentially exposed to CCR constituents *via* impacted groundwater related to the storage ponds of interest including nearby residents using groundwater and surface water for drinking water; recreators using the Lake of Egypt for boating, swimming, and fishing; and recreators using the Little Saline Creek for fishing.
- To evaluate human health risks, maximum concentrations of CCR-related constituents in the groundwater were compared to Part 845 GWPSs to identify human health constituents of interest (COIs).
- Using this approach, the COIs for the South Fly Ash Pond based on data from the C-wells and EBG well included boron, cadmium, cobalt, and thallium. The COIs associated with the remaining storage ponds of interest (Pond 3, Pond S-6, Ponds 3/3A, and Former Pond B-3) based on data from the S-wells included arsenic, beryllium, boron, cadmium, cobalt, lead, and thallium.
- Based on the screening approach and principles and procedures consistent with IEPA (*e.g.*, IEPA, 2013, 2019) and the US EPA guidance (US EPA, 1989), Gradient concluded that none of the COIs evaluated pose a risk concern to residents or recreators impacted by CCR constituents. More details on the risk evaluation for each receptor group are discussed below.
  - Groundwater Used for Drinking Water: A survey of potential drinking water wells identified four private water wells within 1,000 meters of the facility, although the use of these wells for drinking water has not been confirmed. These wells were not considered part of a complete exposure pathway. One private well is located upgradient of the facility, while the other three wells are situated side-gradient. As a result, it is unlikely that these wells will be affected by any CCR constituents in groundwater originating from the storage ponds of interest. Additionally, the private wells are significantly deeper than the monitoring wells used to assess

groundwater quality around the impoundments, with depths ranging from 95 to 260 feet compared to depths ranging from 12 to 28 feet for the monitoring wells.

- Surface Water Used for Drinking Water: The Lake of Egypt serves as a public water supply (IEPA, 2024). There have been no exceedances of the Illinois GWPSs. Consequently, using surface water from the Lake of Egypt for residential drinking water does not present an unacceptable risk to residents.
- Lake of Egypt Recreators: Measured concentrations of COIs in surface water were compared to the calculated Illinois human threshold criteria (HTC) values (IEPA, 2019). These values are designed to protect against recreational exposure through water and/or fish ingestion. All surface water concentrations were below the benchmarks, indicating that recreational exposure to COIs is not expected to pose an unacceptable risk.
- Little Saline Lake Recreators: Modeled concentrations of COIs in surface water were compared to the calculated Illinois HTC values. All surface water concentrations were below the benchmarks, indicating that recreational exposure to COIs is not expected to pose an unacceptable risk.

Environmental Risk Evaluation

- The environmental risk evaluation considered risks to aquatic ecological receptors (*i.e.,* ecological risk) in Little Saline Creek. Both direct toxicity as well as secondary toxicity *via* bioaccumulation were evaluated.
- Although ecological receptors are not exposed to groundwater, groundwater can migrate into the adjacent surface water and impact ecological receptors. To identify ecological receptor COIs, maximum concentrations of CCR-related constituents in the groundwater (as measured in the S-wells) were compared to ecological surface water benchmarks protective of aquatic life (*i.e.*, IEPA [2019] surface water quality standards [SWQSs], US EPA Region IV [2018] surface water Ecological Screening Values [ESVs]).
- Using this approach, the ecological COIs were cadmium, cobalt, lead, and thallium.
- Based on the screening approach and principles and procedures consistent with IEPA (*e.g.*, IEPA, 2013, 2019) and the US EPA guidance (US EPA, 1989), Gradient concluded that none of the COIs evaluated to pose a risk concern to ecological receptors impacted by CCR constituents. More specifically with regard to specific media:
  - The maximum modeled COI concentrations in surface water were compared to the benchmarks protective of aquatic life. The modeled surface water concentrations for the COIs were below their respective benchmarks. Thus, none of the COIs evaluated are expected to pose an unacceptable risk to aquatic life in the Little Saline Creek from surface water exposure.
  - The maximum modeled COI sediment concentrations were below their respective sediment screening benchmarks. Thallium did not have a sediment screening level, but the modeled thallium sediment concentration was below the soil ESV value protective for ecological receptors. Thus, none of the COIs evaluated are expected to pose an unacceptable risk to aquatic life in the Little Saline Creek from sediment exposure.
  - None of the COIs – cadmium, cobalt, lead, and thallium – are considered bioaccumulative.

Based on the available data, the results of the site-specific risk assessment at MGS confirm that there is no unacceptable risk to human health or the environment from CCR constituents that may have migrated to

groundwater. These findings indicate that the storage ponds of interest do not present the same level of risk as the surface impoundments evaluated in the US EPA CCR risk assessment, particularly the high-end (90th percentile) risks that served as basis for the 2015 CCR Rule. Notably, there were no human health risks from arsenic, lithium, or boron, as observed in the US EPA's risk assessment. The site-specific environmental risks at MGS were consistent with the 2014 US EPA CCR risk assessment, which also showed no risk, even at the 90th percentile. Taken together, the MGS risk assessment findings satisfy the overarching principle of Part 845, which states that "CCR surface impoundments [should] not pose a reasonable probability of adverse effects on health or the environment."

The lack of current risk at MGS suggests that granting a petition for an adjusted standard exempting the storage ponds of interest from the requirements of Part 845 will not change risks to human health or the environment; that is, subjecting the storage ponds of interest to Part 845 requirements will not result in a meaningful reduction in risk. In contrast, it is possible that some remediation activities, including those involving closure-by-removal, may lead to short-term impacts on air quality, increased greenhouse gas (GHG) emissions, and heightened energy consumption. Additionally, these activities could lead to a rise in worker injuries, increased accidents, and greater traffic and noise disturbances for nearby communities. The absence of a clear risk-benefit was specifically demonstrated in the impact assessment for Pond 4 (Gradient, 2024b) and may also be absent for the other storage ponds of interest at MGS.

6 Conclusions

Based on my understanding of the 2015 CCR Rule, the 2014 CCR Risk Assessment by US EPA in support of the Rule, as well as the history of operations of the ponds of interest at MGS, I conclude that the MGS ponds qualify as ponds containing minimal amounts of CCR and should not be regulated as surface impoundments under Part 845. This conclusion is supported by the following key evidence:

- US EPA's definition of a surface impoundment, which as adopted by Part 845, excludes surface impoundments with *de minimis* CCR, noting that "[U]nits containing only truly 'de minimis' levels of CCR are unlikely to present the significant risks this rule is intended to address" (US EPA, 2015).
- The MGS ponds in question were never used to store or dispose of wet CCR; they did not receive sluiced CCR directly. Any amount of CCR that entered these ponds was minimal compared to CCR surface impoundments that received sluiced CCR over an extended period. Consequently, the amount of CCR present in these ponds is only a small fraction of what would be expected in an impoundment designed to receive CCR from coal-burning operations directly. Instead, the use of these storage ponds – such as for wastewater management and run-off control – is consistent with practices that would result in *de minimis* CCR levels.
- The minimal amount of CCR in the storage ponds of interest has been quantified, confirming that the amount of CCR is *de minimis*; the estimated amount of CCR in almost all the MGS storage ponds of interest is lower than all of the CCR surface impoundments evaluated in US EPA's 2014 CCR Risk Assessment in support of the 2015 CCR Rule.
- The surface impoundments evaluated in US EPA's 2014 CCR Risk Assessment were fundamentally different from the storage ponds at MGS. Specifically, US EPA's risk assessment assumed that the surface impoundments received high volumes of sluiced CCR, which required periodic dredging. In contrast, the ponds at MGS did not regularly receive wet CCR, except for one pond on three to four isolated occasions. As a result, periodic CCR removal was not necessary. Any CCR removal that did occur was minimal and limited to those isolated instances.
- A risk assessment conducted at MGS has demonstrated that the storage ponds of interest do not pose a risk to human health or the environment. This finding confirms that the storage ponds of interest are unlike the 90th percentile surface impoundments that formed the risk-basis of the 2015 CCR Rule. The MGS risk assessment supports the Part 845 directive that requires that "CCR surface impoundments do not pose a reasonable probability of adverse effects on health or the environment."

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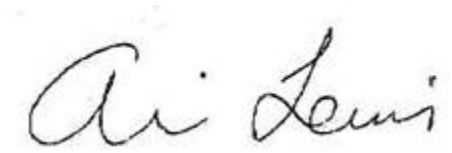
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Attachment A

Human Health and Ecological Risk Assessment, Marion Power Station, Southern Illinois Power Cooperative, Marion, Illinois

Human Health and Ecological Risk Assessment
Marion Power Station
Southern Illinois Power Cooperative
Marion, Illinois

Prepared by



Ari S. Lewis, M.S.
Principal

December 20, 2024
Corrected on January 29, 2025

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Abbreviations

ADI	Acceptable Daily Intake
BCF	Bioconcentration Factor
CCR	Coal Combustion Residuals
CEM	Conceptual Exposure Model
COI	Constituent of Interest
COPC	Constituent of Potential Concern
CSM	Conceptual Site Model
GWPS	Groundwater Protection Standard
GWQS	Groundwater Quality Standard
HTC	Human Threshold Criteria
ID	Identification
IEPA	Illinois Environmental Protection Agency
ISGS	Illinois State Geological Survey
K_d	Equilibrium Partitioning Coefficient
MCL	Maximum Contaminant Level
MGS	Marion Power Generating Station
NRWQC	National Recommended Water Quality Criteria
ORNL RAIS	Oak Ridge National Laboratory's Risk Assessment Information System
pCi/L	Picocuries per Liter
PRG	Preliminary Remediation Goal
RfD	Reference Dose
RME	Reasonable Maximum Exposure
RSL	Regional Screening Level
SIPC	Southern Illinois Power Cooperative
SWQS	Surface Water Quality Standard
US EPA	United States Environmental Protection Agency

1 Introduction

Southern Illinois Power Cooperative (SIPC) owns and operates the Marion Power Generating Station (MGS), a gas and coal-fired electric power generating facility in Marion, Illinois. The MGS is located in Williamson County, approximately eight miles south of Marion, Illinois, on the northwestern bank of the Lake of Egypt (Figure 1.1). The MGS began operation in 1963. The area surrounding the facility is a rural agricultural community (Kleinfelder, 2013). The MGS has several surface impoundments that have been used for storage of coal combustion residuals (CCR) and several impoundments that were used to support other operational purposes (*e.g.*, wastewater storage, surface water run-off collection). This report addresses potential impacts from the surface impoundments (*i.e.*, storage ponds) that did not routinely receive CCRs and consequently contain a *de minimis* amount of CCRs. These storage ponds include:

- Pond 4
- Pond 3 and Pond 3A
- Pond S-6
- Pond B-3
- South Fly Ash Pond

This report presents the results of an evaluation that characterizes potential risk to human and ecological receptors that may be exposed to CCR constituents in environmental media originating from the storage ponds listed above. This risk evaluation was performed to support a petition for relief from the closure schedule required under the Illinois coal ash rule (IEPA, 2021). Human health and ecological risks were evaluated for Site-specific constituents of interest (COIs). The conceptual site model (CSM) assumed that Site-related COIs in groundwater may migrate to the Lake of Egypt or to Little Saline Creek and affect surface water in the vicinity of the Site.

Consistent with United States Environmental Protection Agency (US EPA) guidance (US EPA, 1989), this report used a tiered approach to evaluate potential risks, which included the following steps:

1. Identify complete exposure pathways and develop a conceptual exposure model (CEM).
2. Identify Site-related COIs: Constituents detected in groundwater were considered COIs if their maximum detected concentration over the period from 2018 to 2023 exceeded a groundwater protection standard (GWPS) identified in Part 845.600 (IEPA, 2021), or a relevant surface water quality standard (SWQS) (IEPA, 2019).
3. Perform screening-level risk analysis: Compare maximum measured or modeled COI concentrations in surface water and sediment to conservative, health-protective benchmarks in order to determine constituents of potential concern (COPCs).
4. Perform refined risk analysis: If COPCs are identified, perform a refined analysis to evaluate potential risks associated with the COPCs.
5. Formulate risk conclusions and discuss any associated uncertainties.

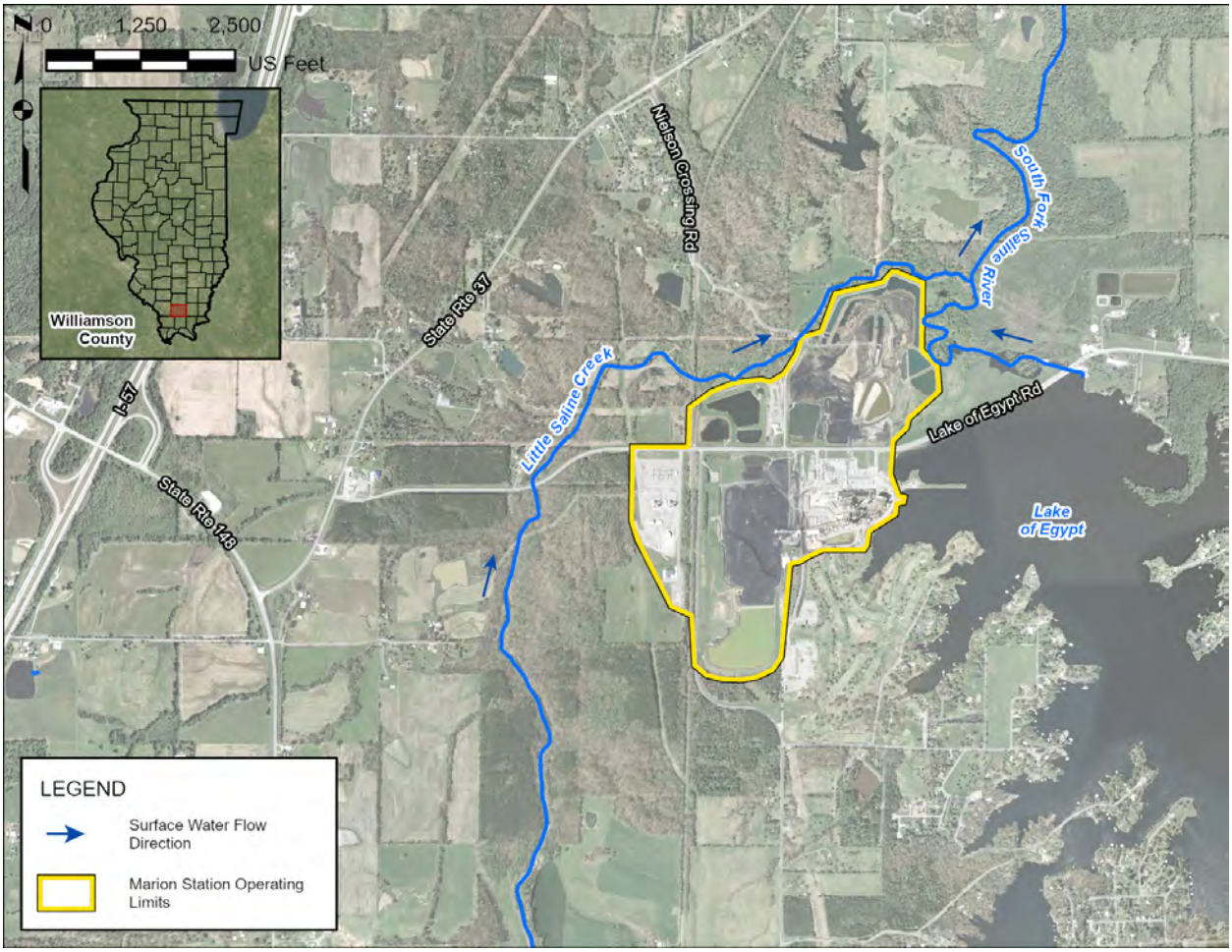


Figure 1.1 Site Location Map. Sources: Golder Associates Inc., 2021; USGS, 2022; US Census Bureau, 2016; USGS, 2011.

This assessment relies on a conservative (*i.e.*, health-protective) approach and is consistent with the risk approaches outlined in US EPA guidance (US EPA, 1989; US EPA, 2004; US EPA [Region IV], 2018). Specifically, we considered evaluation criteria detailed in Illinois Environment Protection Agency (IEPA) guidance documents (*e.g.*, IEPA, 2013, 2019), incorporating principles and assumptions consistent with the Federal CCR Rule (US EPA, 2015a) and US EPA's "Human and Ecological Risk Assessment of Coal Combustion Residuals" (US EPA, 2014).

US EPA has established acceptable risk metrics. Risks above these US EPA-defined metrics are termed potentially "unacceptable risks." Based on the evaluation presented in this report, no unacceptable risks to human or ecological receptors resulting from CCR exposures associated with the ponds listed above were identified. This means that the risks from the Site are likely indistinguishable from normal background risks. Specific risk assessment results include the following:

- No completed exposure pathways were identified for any groundwater receptors; consequently, no risks were identified relating to the use of groundwater for drinking water and other household purposes.
- No unacceptable risks were identified for the use of Lake of Egypt surface water as drinking water.
- No unacceptable risks were identified for recreators boating in Lake of Egypt.

- No unacceptable risks were identified for anglers consuming locally-caught fish.
- No unacceptable risks were identified for ecological receptors exposed to surface water or sediment.
- No bioaccumulative ecological risks were identified.

It should be noted that this evaluation incorporates a number of conservative assumptions that tend to overestimate exposure and risk (discussed in Section 3.5).

2 Site Overview

2.1 Site Description

The MGS is located in Williamson County, approximately eight miles south of Marion, Illinois, on the northwestern bank of the Lake of Egypt. The MGS facility is bordered to the east by Lake of Egypt, to the southeast by a golf course (Lake of Egypt Country Club), and to the south, west, and north by farmland (Figure 2.1). Little Saline Creek is located just north of the MGS facility boundary; it flows northeast and joins the South Fork Saline River about 600 feet east of the facility boundary (Figure 2.1).

Only "relatively small amounts of fly ash" were produced at the Site (SIPC, 2021a). Fly ash that was generated was transported and stored in the Initial Fly Ash Holding Area, Replacement Fly Ash Holding Area, Pond A-1, or the Former On-Site Landfill (SIPC, 2021a). The former Fly Ash Holding Areas are within the cover area for the Former On-Site Landfill (SIPC, 2021a). Other ponds located on Site (Figure 2.1) and a description of their historic and current operation are described below.

- Ponds 1 and 2 received sluiced bottom ash from power generation units 1, 2, 3, and 4 (Figure 1.1; SIPC, 2021a). During the entire pond operational life, bottom ash was removed from Ponds 1 and 2, and sold for beneficial reuse to shingle manufacturers, grit blasting companies, and local highway departments. Decanted water from Ponds 1 and 2 flowed into Pond 4.
- The Former Emery Pond was constructed in the late 1980s to hold stormwater drainage from the generating station (Figure 1.1; SIPC, 2021a). All CCRs in Emery Pond have been removed and the pond has been closed (SIPC, 2021a). Groundwater corrective action is currently on-going (Hanson Professional Services Inc., 2021).
- South Fly Ash Pond was constructed in 1989 and was originally intended to be a replacement for Pond A-1 (Figure 1.1; SIPC, 2021a). Ultimately, Pond A-1 did not need to be replaced. Thus, the South Fly Ash Pond was only used to receive decant water from the Former Emery Pond while it was operational. No CCRs were ever directly sent to or disposed of in the South Fly Ash Pond (SIPC, 2021a).
- Ponds 3 and 3-A were secondary ponds that received overflow from the fly ash holding areas (Figure 1.1; SIPC, 2021a). They also received storm water runoff, coal pile runoff, and water from the facility floor drains. In approximately 1982, Pond 3-A was separated from Pond 3 by construction of an internal berm. All sediment and debris were removed from Pond 3 in 2006 and 2011. All sediment and debris were removed from Pond 3-A in 2014. Subsequently, no CCRs were ever directly sent to or disposed in Ponds 3 or 3-A. Currently, water from the South Fly Ash Pond flows into Pond 3 (SIPC, 2021a).
- Pond S-6 was originally built to manage stormwater associated with the Former Landfill (Figure 1.1; SIPC, 2021b). Initially, water in Pond S-6 discharged to Little Saline Creek through Outfall 001; however, in approximately 1993, water from Pond S-6 was pumped to Pond 4. No CCRs were ever directly sent to or disposed in the Pond S-6 (SIPC, 2021a).
- Pond B-3 was built in 1985 and was primarily used as a secondary pond that received water from Pond A-1 (Figure 1.1; SIPC, 2021a). During periodic shutdowns of Pond A-1, Pond B-3 may have received some short-term discharges of fly ash from Unit 1, 2, and 3 prior to their shutdown (SIPC, 2021a). In 2017, Pond B-3 was dewatered and all sediment and CCR were excavated.

- Pond 4 was built in 1979 and historically received decant water from Ponds 1 and 2 for secondary treatment and received runoff from the coal pile (Figure 1.1; Kleinfelder, 2013; SIPC, 2021 a,b). No CCRs were ever directly sent to or disposed in the Pond 4. All sediment and debris were removed from Pond 4 in 2012. Currently, Pond 4 receives overflow from Pond S-6; water in Pond 4 discharges into the Little Saline Creek *via* Outfall 002 (Kleinfelder, 2013; SIPC, 2021a).

The ponds are shown in Figure 2.1. This Risk Assessment focuses on the storage ponds that supported operations but never directly received CCRs on a routine basis. These storage ponds include: Pond 4, Pond 3 and 3A, Pond S-6, Pond B-3, and the South Fly Ash Pond.

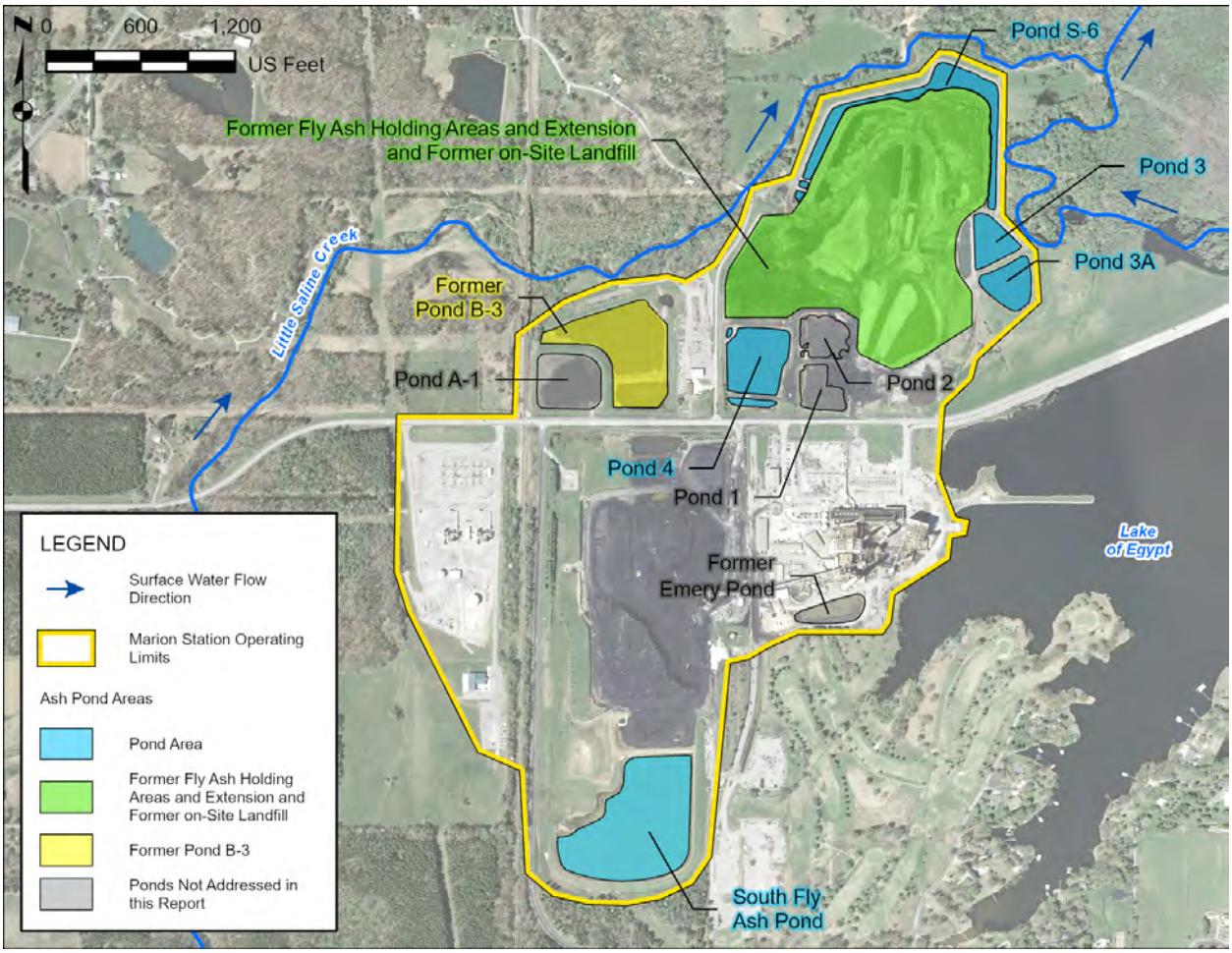


Figure 2.1 Site Layout. Sources: Golder Associates Inc., 2021; USGS, 2022; Andrews Engineering, 2021; SIPC, 2021a; USGS, 2011.

2.2 Geology/Hydrogeology

The Site is located at the southern edge of the Illinois Basin in the Shawnee Hills Section of the Interior Low Plateaus physiographic province (Golder Associates Inc., 2021). The Illinois Basin is a depositional and structural basin composed of sedimentary rocks ranging in age from Cambrian to Permian. The southern portion of the basin is characterized by extensive faulting, and some of these faults host commercially significant fluorite vein deposits (Golder Associates Inc., 2021). The regional stratigraphic sequence includes the following, from the surface downward (Golder Associates Inc., 2021):

- The Caseyville/Tradewater Formation: consists of lenticular, vertically and horizontally interbedded layers of sandstone, siltstone, and shale beneath a relatively thin layer of unconsolidated materials. It ranges from 190 to 500 feet in thickness.
- The Kinkaid Formation: consists of limestone, shale, claystone, and sandstone. It is separated from the overlying Pennsylvanian rocks of the Caseyville Formation by a laterally extensive unconformity. It ranges from 120 to 160 feet in thickness.
- The Degonia Formation: consists of thin, very-fine grained sandstone, siltstone, shale, and irregular chert beds. It ranges from 20 to 64 feet in thickness.
- The Clore Formation: consists of sandstone, shale and limestone, which sporadically outcrops at the surface. It ranges from 110 to 155 feet in thickness.

On Site, soils overlying the Caseyville/Tradewater Formation consist of glacial and alluvial deposits including layers of silty clay, clayey silt, silty sand and clayey sand (Kleinfelder, 2013). Table 2.1 provides a detailed summary of the Site lithology for the upper 50 feet (Golder Associates Inc., 2021).

Table 2.1 Site Geology

Lithology	Description
Peoria/Roxana Silt	Light yellow-tan to gray, fine sandy silt
Glasford Formation	Silty/sandy diamictons with thin lenticular bodies of silt, sand, and gravel
Caseyville Formation/Bedrock	Sedimentary rocks including sandstone, limestone, and shales

Source: Golder Associates, Inc., 2021; Kleinfelder, 2013.

The Site is located within the South Fork Saline River/Lake Egypt watershed. Groundwater in the southern/eastern portion of the Site flows toward and discharges into the Lake of Egypt; groundwater throughout the rest of property flows in a northeasterly direction toward Little Saline Creek (Figure 3.3; SIPC, 2007). The uppermost water-bearing zone (*i.e.*, the Unlithified Unit) is a shallow, hydraulically perched layer consisting of fill and residuum (silts and clays), with a saturated thickness of approximately up to 10 feet (Hanson Professional Services Inc., 2021). The average horizontal hydraulic conductivity is estimated to be approximately 1.5×10^{-4} cm/s in the Unlithified Unit (Golder Associates Inc., 2021). The hydraulic gradient was estimated to be 0.019 based on measured groundwater elevations at monitoring wells S-3 and S-6 (SIPC, 2007).

2.3 Conceptual Site Model

A CSM describes sources of contamination, the hydrogeological units, and the physical processes that control the transport of water and solutes. In this case, the CSM describes how groundwater underlying the MGS migrates and potentially interacts with surface water and sediment in the Lake of Egypt and Little

Saline Creek. The CSM was developed using site-specific hydrogeologic data, including information on groundwater flow and surface water characteristics.

Groundwater (and CCR-related constituents originating from the MGS) may migrate vertically downward through the Unlithified Unit. As noted in Section 2.2, the dominant groundwater flow direction at the Site is to the northeast toward Little Saline Creek. However, south of Lake of Egypt Road, groundwater has an eastern flow component toward the Lake of Egypt (SIPC, 2007). Dissolved constituents in groundwater that flows into these two water bodies may partition between sediment and surface water.

2.4 Groundwater Monitoring

Data from the following monitoring wells were included in this risk assessment, as they are used to monitor groundwater quality downgradient and upgradient of the MGS (Figure 2.3):

- Wells C-1, C-2, C-3 and Well EBG; these wells were used to characterize groundwater quality near the South Fly Ash Pond.
- Wells S-1, S-2, S-3, S-4, S-5, S-6; these wells were used to characterize groundwater quality near the Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3.

The monitoring well construction details are presented in Table 2.2. The analyses presented in this report rely on the available data from these wells collected between 2018 and 2023. Groundwater samples were analyzed for a suite of total metals, specified in Illinois CCR Rule Part 845.600 (IEPA, 2021),[1] as well as general water quality parameters (pH, chloride, fluoride, sulfate, and total dissolved solids). A summary of the groundwater data used in this risk evaluation is presented in Tables 2.3a and 2.3b. The use of groundwater data in this risk evaluation does not imply that detected constituents are associated with operations at MGS or that they have been identified as potential groundwater exceedances.

[1] Samples were analyzed for a longer list of inorganic constituents and general water quality parameters (chloride, fluoride, sulfate, and total dissolved solids), but these constituents were not evaluated in the risk evaluation.

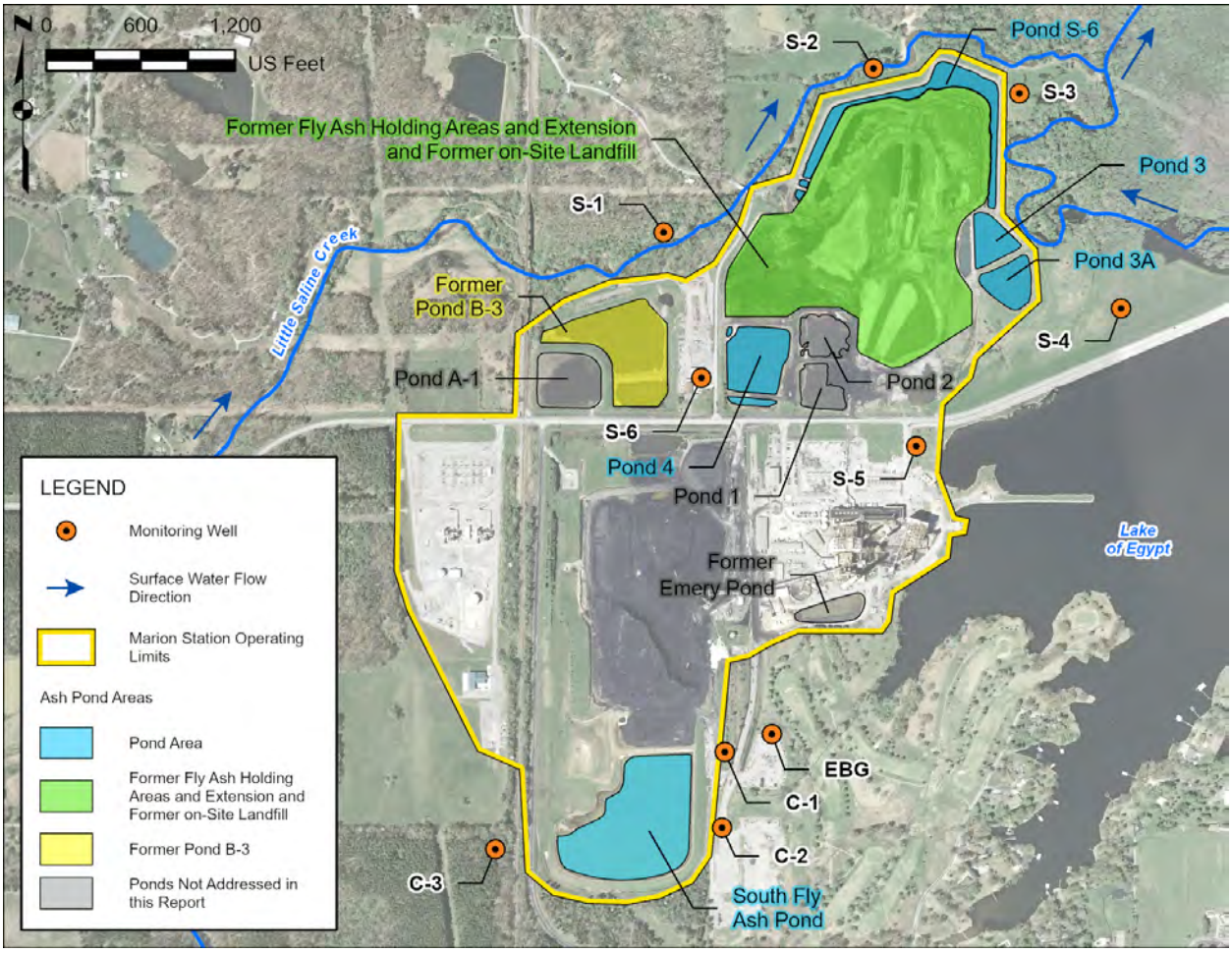


Figure 2.2 Monitoring Well Locations. Sources: Golder Associates Inc., 2021; USGS, 2022; SIPC, 2007; Andrews Engineering, 2021; SIPC, 2021a; USGS, 2011.

Table 2.2 Groundwater Monitoring Wells

Well	Date Constructed	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Well Depth (ft bgs)	Hydrostratigraphic Unit (Screened Interval)
C-1	2/16/2010	5	15	15	Unlithified Unit/Bedrock
C-2	2/16/2010	2	12	12	Unlithified Unit/Bedrock
C-3	(no info)	(no info)			Unlithified Unit/Bedrock
EBG	2/8/2017	18	28	28	Unlithified Unit/Bedrock
S-1	9/20/1993	15	25	25	Unlithified Unit/Bedrock
S-2	2/18/2010	16	26	27.5	Unlithified Unit/Bedrock
S-3	9/20/1993	15	25	25	Unlithified Unit/Bedrock
S-4	9/21/1993	8	18	18	Unlithified Unit/Bedrock
S-5	9/20/1993	12	22	22	Unlithified Unit/Bedrock
S-6	9/20/1993	12	22	22	Unlithified Unit/Bedrock

Notes:
bgs = Below Ground Surface; ft = Feet; EBG = Emery Pond Background Well.

Table 2.3a Groundwater Data Summary (2018-2023) for C-Wells + EBG

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	20	ND	ND	0.030
Arsenic	7	20	0.00040	0.0075	0.10
Barium	19	20	0.012	0.20	0.0050
Beryllium	3	21	0.00038	0.00060	0.020
Boron	36	81	0.011 J	12 J	0.50
Cadmium	5	77	0.00066	0.013	0.020
Chromium	8	21	0.00070	0.0042	0.030
Cobalt	13	21	0.00020 J	0.29 J	0.020
Lead	3	21	0.0011	0.0031	0.050
Lithium	8	13	0.014	0.024	0.060
Mercury	1	19	0.000070	0.000070	0.00020
Molybdenum	8	14	0.0012 J	0.015	0.040
Selenium	11	21	0.00060	0.033	0.025
Thallium	2	21	0.0012	0.031	0.040
Dissolved Metals (mg/L)					
Boron	12	24	0.040	0.92	0.50
Cadmium	0	24	ND	ND	0.0010
Radionuclides (pCi/L)					
Radium 226 + 228	9	11	0.12	2.7	0.33
Other (mg/L or SU)					
Chloride	61	63	2.4	570	20
Fluoride	19	24	0.10	0.68	0.50
pH	47	47	5.8	7.0	0
Sulfate	81	81	49	670	123
Total Dissolved Solids	51	51	100	4000	16

Notes:
EBG = Emery Pond Background Well; J = Estimated Value; mg/L = Milligrams per Liter; ND = Not Detected; pCi/L = Picocuries per Liter; SU = Standard Unit.
Blank cells indicate constituent not detected.

Table 2.3b Groundwater Data Summary (2018-2023) for S-Wells

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	12	ND	ND	0.0050
Arsenic	3	12	0.0089	0.12	0.050
Barium	12	12	0.020	1.5	NA
Beryllium	1	12	0.0081	0.0081	0.0050
Boron	35	126	0.0041	2.8	0.50
Cadmium	12	126	0.00068	0.055	0.002
Chromium	9	12	0.0014	0.069	0.0050
Cobalt	5	12	0.0012	0.054	0.010
Lead	7	12	0.0027	0.080	0.0050
Mercury	0	12	ND	ND	0.00020

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Selenium	3	12	0.0021	0.017	0.025
Thallium	1	12	0.046	0.046	0.025
Dissolved Metals (mg/L)					
Boron	14	48	0.0051	3.1	0.50
Cadmium	0	48	ND	ND	0.001
Other (mg/L or SU)					
Chloride	88	90	6.1	480	20
Fluoride	6	12	0.062	0.18	0.50
pH	66	66	5.7	6.9	NA
Sulfate	122	126	2.6	310	20
Total Dissolved Solids	66	66	78	4500	NA

Notes:
mg/L = Milligrams per Liter; NA = Not Available; ND = Not Detected; SU = Standard Unit.
Blank cells indicate constituent not detected.

2.5 Surface Water Monitoring

Surface water samples were collected by MGS from five locations in Lake of Egypt in June 2020. The sample locations are listed in Table 2.4, are shown in Figure 2.2, and the sampling results are summarized in Table 2.5. Surface water data are also available from the Lake of Egypt public water district as part of routine monitoring. The data used in this report were collected 2018-2023, and the sampling results are summarized in Table 2.6.

Table 2.4 Lake of Egypt Sample Locations

Sample ID	Description
LE-u	Upstream sample
LE-d	Spillway sample
LE-in	Public water supply intake
LE-b1	Bay sample #1
LE-b2	Bay sample #2



Figure 2.3 Surface Water Sample Locations. Source: Hanson (2021)

Table 2.5 Surface Water Data Summary for Lake of Egypt Samples

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Arsenic	0	5	ND	ND	0.025
Barium	5	5	0.00227	0.00265	NA
Boron	0	5	ND	ND	0.02
Cadmium	0	5	ND	ND	0.001
Chromium	0	5	ND	ND	0.005
Cobalt	0	5	ND	ND	0.005
Lead	0	5	ND	ND	0.001
Mercury	0	5	ND	ND	0.2
Selenium	0	5	ND	ND	0.001
Thallium	0	5	ND	ND	0.002
Other (mg/L)					
Chloride	1	5	4	4	4
Fluoride	0	5	ND	ND	0.1
pH	5	5	6.57	7.25	NA
Sulfate	5	5	16	17	NA
Total Dissolved Solids	5	5	44	60	NA

Notes:
mg/L = Milligrams per Liter; NA = Not Available; ND = Not Detected; SU = Standard Unit.
Blank cells indicate constituent was not detected.
Data collected on 6/1/2020.

Table 2.6 Surface Water Data Summary for Lake of Egypt Public Water District Data

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	6	ND	ND	0.003
Arsenic	0	6	ND	ND	0.001
Barium	6	6	0.021	0.0263	NA
Beryllium	0	6	ND	ND	0.001
Cadmium	0	6	ND	ND	0.003
Chromium	0	6	ND	ND	0.005
Mercury	0	6	ND	ND	0.0002
Selenium	1	6	0.0024	0.0024	0.002
Thallium	0	6	ND	ND	0.002
Radionuclides (pCi/L)					
Radium 226 + 228	1	1	1.03	1.03	NA
Other (mg/L)					
Chloride	6	6	10.4	23	NA
Fluoride	6	6	0.553	0.73	NA
Sulfate	6	6	34.6	51.7	NA
Total Dissolved Solids	6	6	87	158	NA

Notes:
mg/L = Milligrams per Liter; NA = Not Available; ND = Not Detected; pCi/L = Picocuries per Liter.
Data collected 2018-2023.

3 Risk Evaluation

3.1 Risk Evaluation Process

A risk evaluation was conducted to determine whether constituents present in groundwater underlying and downgradient of the MGS have the potential to pose adverse health effects to human and ecological receptors. The risk evaluation is consistent with the principles of risk assessment established by US EPA and has considered evaluation criteria detailed in Illinois guidance documents (*e.g.*, IEPA, 2013, 2019).

The general risk evaluation approach is summarized in Figure 3.1 and discussed below.

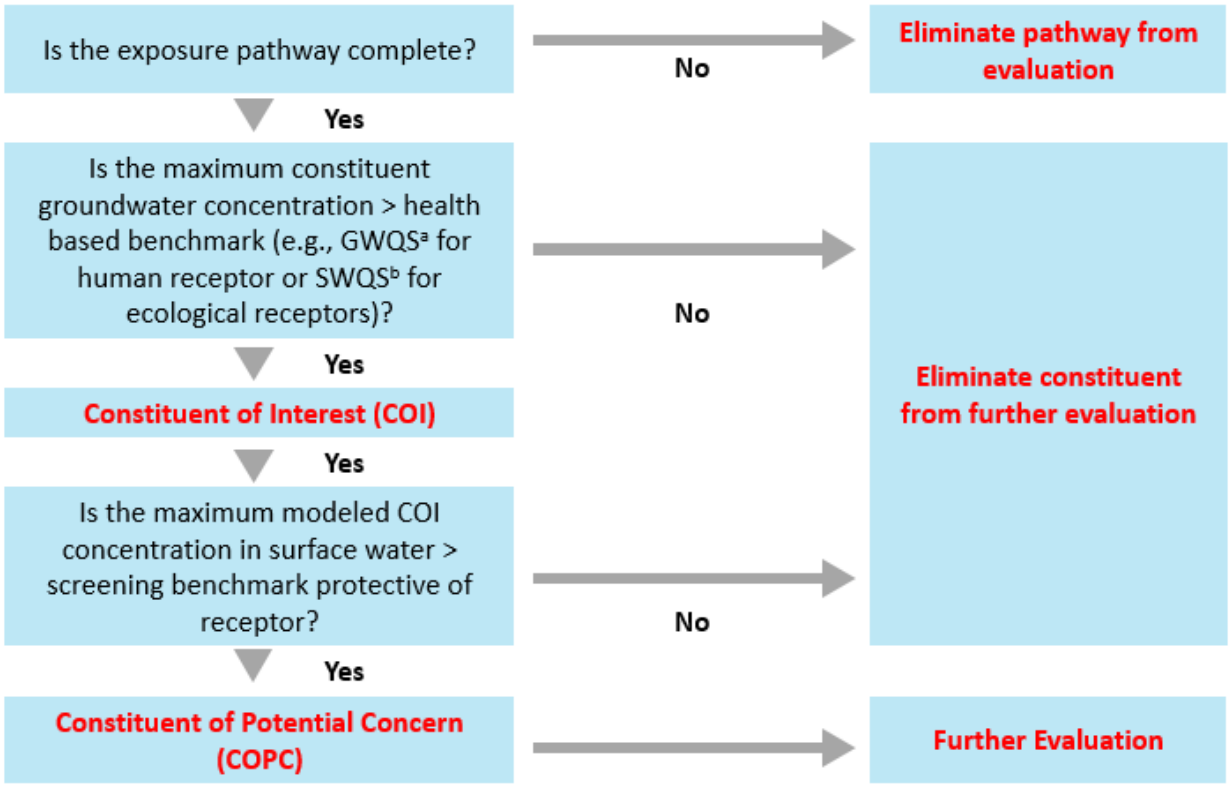


Figure 3.1 Overview of Risk Evaluation Methodology. IEPA = Illinois Environmental Protection Agency; GWQS = IEPA Groundwater Quality Standards; SWQS = IEPA Surface Water Quality Standards. (a) The IEPA Part 845 Groundwater Protection Standards (GWPS) were used to identify COIs. (b) IEPA SWQS protective of chronic exposures to aquatic organisms were used to identify ecological COIs. In the absence of an SWQS, US EPA Region IV Ecological Screening Values (ESVs) were used.

The first step in the risk evaluation was to develop the CEM and identify complete exposure pathways. All potential receptors and exposure pathways based on groundwater use and surface water use in the vicinity of the Site were considered. Exposure pathways that are incomplete were excluded from the evaluation.

Groundwater data were used to identify COIs. COIs were identified as constituents with maximum concentrations in groundwater in excess of groundwater quality standards (GWQS)[2] for human receptors, and SWQS for ecological receptors. Based on the CSM (Section 2.2), groundwater in the south half of the Site, on the west side of the South Fly Ash Pond, has the potential to interact with surface water in the Lake of Egypt. Therefore, potential facility-related constituents in groundwater may potentially flow toward and into surface water in the Lake of Egypt. Surface water samples have been collected from the Lake of Egypt adjacent to the Site, and Gradient used the measured surface data to evaluate potential risks to receptors in using the lake for recreation and as a source of drinking water.

Groundwater in the northern portion of the Site, near Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3 and in the northern portion of the South Fly Ash pond has the potential to interact with surface water in Little Saline Creek. No surface water has been collected from Little Saline Creek, therefore, Gradient modeled the COI concentrations in Little Saline Creek based on the groundwater data from the groundwater monitoring wells located in this portion of the Site (*i.e.*, S-wells). The measured and modeled COI concentrations in surface water and sediment were compared to conservative, generic risk-based screening benchmarks for human health and ecological receptors. These generic screening benchmarks rely on default assumptions with limited consideration of site-specific characteristics. Human health benchmarks are receptor-specific values calculated for each pathway and environmental medium that are designed to be protective of human health. Human health and ecological screening benchmarks are inherently conservative because they are intended to screen out chemicals that are of no concern with a high level of confidence. Therefore, a measured or modeled COI concentration exceeding a screening benchmark does not indicate an unacceptable risk, but only that further risk evaluation is warranted. COIs with maximum concentrations exceeding a conservative screening benchmark are identified as COPCs requiring further evaluation.

As described in more detail below, this evaluation relied on the screening assessment to demonstrate that constituents present in groundwater underlying the facility do not pose an unacceptable human health or ecological risk. That is, after the screening step, no COPCs were identified and further assessment was not warranted.

3.2 Human and Ecological Conceptual Exposure Models

A CEM provides an overview of the receptors and exposure pathways requiring risk evaluation. The CEM describes the source of the contamination, the mechanism that may lead to a release of contamination, the environmental media to which a receptor may be exposed, the route of exposure (exposure pathway), and the types of receptors that may be exposed to these environmental media.

3.2.1 Human Conceptual Exposure Model

The human CEM for the Site depicts the relationships between the off-Site environmental media potentially impacted by constituents in groundwater and human receptors that could be exposed to these media. Figure 3.2 presents a human CEM for the Site. It considers a human receptor who could be exposed to COIs hypothetically released into groundwater and surface water. The following human receptors and exposure pathways were evaluated for inclusion in the Site-specific CEM.

[2] As discussed further in Section 3.3.2, GWQS are protective of human health and not necessarily of receptors. While receptors are not exposed to groundwater, groundwater can potentially enter into the adjacent surface water and impact receptors. Therefore, two sets of COIs were identified: one for humans and another for receptors.

- Residents – exposure to groundwater/surface water as drinking water;
- Residents – exposure to groundwater/surface water used for irrigation;
- Recreators in the Lake of Egypt to the east of the Site:
  - Boaters – exposure to surface water while boating;
  - Swimmers – exposure to surface water while swimming;
  - Anglers – exposure to surface water and consumption of locally caught fish.
- Recreators in Little Saline Creek to the north of the Site:[3]
  - Anglers – exposure to surface water and consumption of locally caught fish.

All of these exposure pathways were considered to be complete, except for residential exposure to groundwater used for drinking water or irrigation, and exposure to sediment. Section 3.2.1.1 explains why the residential drinking water and irrigation pathways are incomplete for groundwater. Section 3.2.1.2 discusses the use of surface water as a drinking water source. Section 3.2.1.3 provides additional description of the recreational exposures.

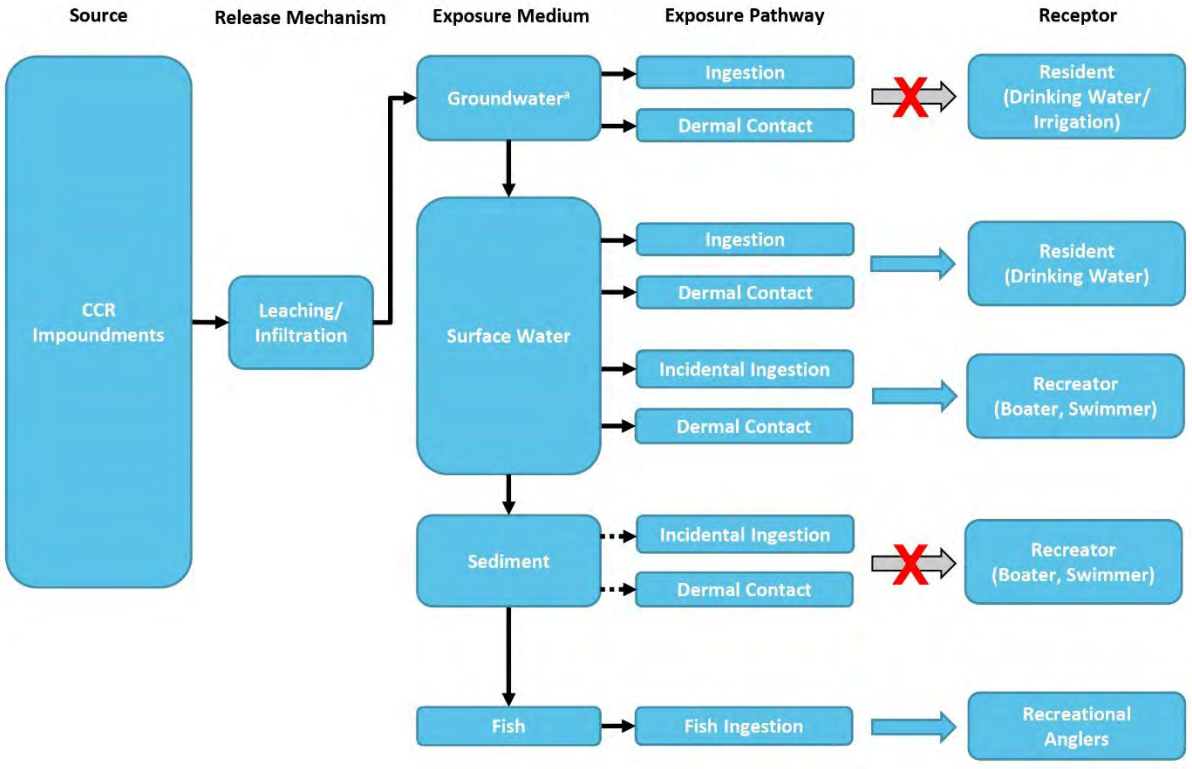


Figure 3.2 Human Conceptual Exposure Model. CCR = Coal Combustion Residuals. Dashed line/Red X = Incomplete or insignificant exposure pathway. (a) Groundwater in the vicinity of the Site is not used as a drinking water or irrigation source.

[3] Boating and swimming are assumed not to occur in Little Saline Creek due to its small size.

3.2.1.1 Groundwater as a Drinking Water/Irrigation Source

Groundwater beneath the facility generally flows northeast towards the Little Saline Creek (SIPC, 2007). However, in the southern section of the Site, there is a component of groundwater flow that is to the east toward the Lake of Egypt (SIPC, 2007). Gradient conducted a receptor survey in 2024 to identify potential users of groundwater in the vicinity of the facility. Specific sources that were used in this survey include the Illinois State Geological Survey (ISGS) ILWATER database (ISGS, 2024). Four private water wells were identified within 1,000 meters of the facility (Table 3.1, Figure 3.3). One private well (121990235000) is upgradient of the facility, and the other three wells are sidegradient of the facility, such that these wells are not expected to be impacted by any CCR constituents in groundwater that originate from any of the ponds that are being evaluated (Figure 3.3). Further, wells are screened in the sandstone or lime sandstone water bearing unit and range in depth from 95 to 260 ft bgs, far below the depths of the monitoring wells at the site (12-28 feet bgs) where impacts, if any, from site-related activities would be observed. Moreover, three of the private wells are on the opposite side of Little Saline Creek, which provides hydraulic separation from any potential impacts at the site since shallow groundwater is likely to discharge into the creek rather than flow underneath it.

Table 3.1 Summary of Water Wells Within 1,000 Meters of the MGS

Well Number	Type	Date Drilled	Owner	Depth (ft)	Formation	Latitude	Longitude
121990235000	Water Well	2/29/1968	Morganthaler, Carrol	95	Sandstone	37.612148	-88.968285
121990235100	Water Well	4/30/1968	Propes, Charlie	98	Sandstone	37.611752	-88.950049
121990252500	Water Well	10/31/1971	Fisher, William	150	Sandstone	37.628378	-88.962144
121992397400[a]	Water Well	7/20/2003	Gordon, Steve	260	Lime Sandstone	37.628378	-88.962144

Notes:
ft = Feet; MGS = Marion Power Generating Station..
(a) This well, drilled in 2003, listed a pumping rate of 20 gallons per minute (gpm), while the well at the same location (121990252500), drilled in 1971 listed a pumping rate of 7 gpm. It is not known whether the 1971 is still in use.
Source: ISGS (2024).

3.2.1.2 Surface Water as a Drinking Water Source

The Lake of Egypt is used as a public water supply (IEPA, 2024a). The intake for the Lake of Egypt Public Water District (Facility ID IL1995200) is located at the northeast corner of the Lake of Egypt (Figure 3.3). The Lake of Egypt Public Water District serves a population of 11,368 (IEPA, 2024a) and supplies "approximately 1 million gallons per day of drinking water to Union, Jackson, and Williamson Counties" (SIPC, 2018a).

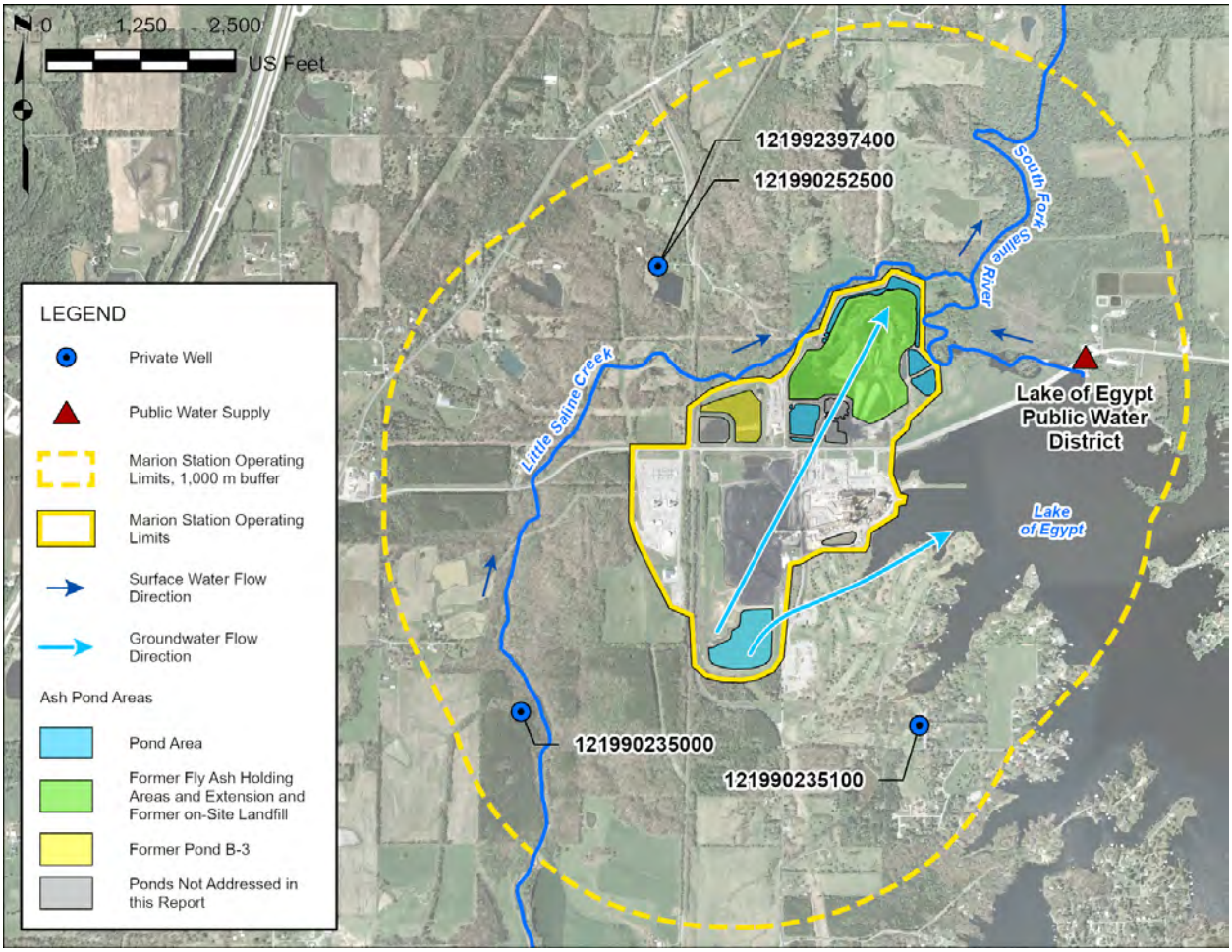


Figure 3.3 Water Wells Within 1,000 Meters of the Facility. Sources: Golder Associates Inc., 2021; USGS, 2022; Andrews Engineering, 2021; ISGS, 1909-2023; IEPA, 2024b; SIPC, 2007; USGS, 2011.

3.2.1.3 Recreational Exposures

Lake of Egypt, located to the east of the MGS facility, is a private lake owned by SIPC which allows the lake to be used for recreation. The lake is approximately 2,300 acres in size, and has an average depth of 18 feet and a maximum depth of 52 feet (SIPC, 2018a). The recreational uses of the Lake of Egypt include fishing, boating, swimming, and water sports such as water skiing (SIPC, 2018b). SIPC notes that "swimming is prohibited except at approved beaches marked by buoys" (SIPC, 2018b). Recreational exposure to surface water may occur during activities such as boating or fishing in the lake. Recreational anglers may also consume locally caught fish from the lake. The northwest bay of the lake (nearest the MGS) is a restricted area (SIPC, 2018b). Due to the depth of the lake, sediment exposure was not evaluated in Lake of Egypt.

Little Saline Creek is located immediately to the north of the Site. Gradient estimated the average creek width as 26 feet (based on measurements from an aerial photo), and the depth to be approximately 5 feet (based on a Google Earth photo from February 2020 in which bottom sediments were visible). Recreators in the Little Saline Creek may include anglers who could be exposed to surface water and consume locally caught fish. It is assumed that boating and swimming do not occur in Little Saline Creek due to its small size, and the availability of recreation areas at Lake of Egypt to the east.

3.2.2 Ecological Conceptual Exposure Model

The ecological CEM for the Site depicts the relationships between off-Site environmental media (surface water and sediment) potentially impacted by COIs in groundwater and ecological receptors that may be exposed to these media. The ecological risk evaluation considered both direct toxicity as well as secondary toxicity *via* bioaccumulation. Due to the fact that the dominant groundwater flow direction is to the northeast, and the relatively small size of Little Saline Creek, this surface waterbody has a higher potential to be influenced by CCR constituents. Given these factors, Little Saline Creek was identified as the primary focus for evaluating environmental risks for ecological receptors. Figure 3.4 presents the ecological CEM for the Site. The following ecological receptor groups and exposure pathways were considered:

- **Ecological Receptors Exposed to Surface Water:**
  - Aquatic plants, amphibians, reptiles, and fish.
- **Ecological Receptors Exposed to Sediment:**
  - Benthic invertebrates (*e.g.*, insects, crayfish, mussels).
- **Ecological Receptors Exposed to Bioaccumulative COIs:**
  - Higher trophic level wildlife (avian and mammalian) *via* direct exposures (surface water and sediment exposure) and secondary exposures through the consumption of prey (*e.g.*, plants, invertebrates, small mammals, fish).

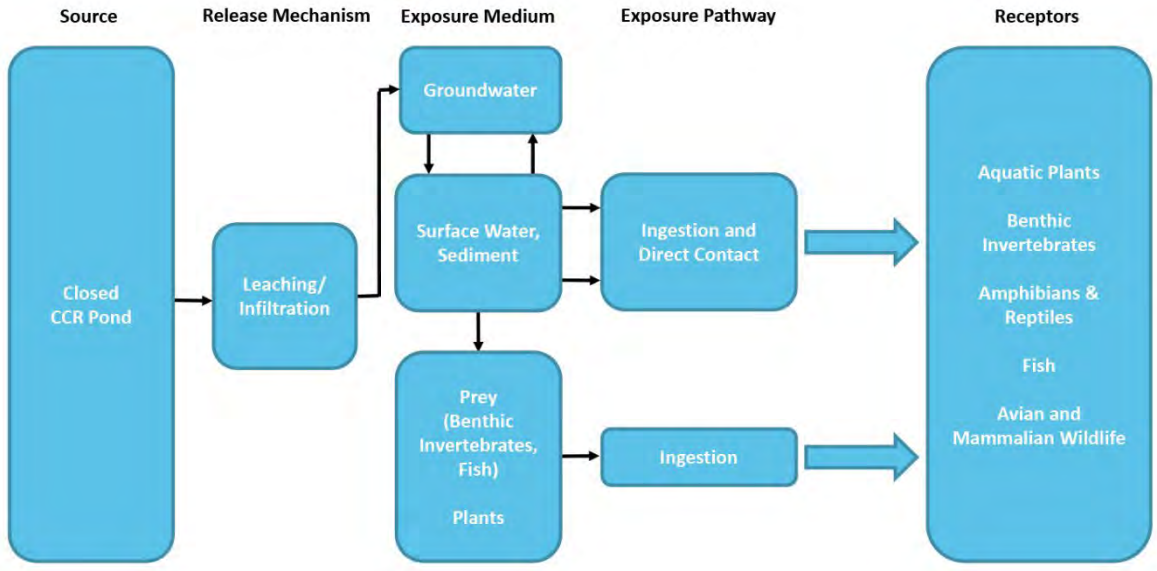


Figure 3.4 Ecological Conceptual Exposure Model. CCR = Coal Combustion Residuals.

3.3 Identification of Constituents of Interest

Risks were evaluated for COIs. A constituent was considered a COI if the maximum detected constituent concentration in groundwater exceeded a health-based benchmark. According to US EPA risk assessment guidance (US EPA, 1989), this screening step is designed to reduce the number of constituents carried through the risk evaluation that are anticipated to have a minimal contribution to the overall risk.

Identified COIs are the constituents that are most likely to pose a risk concern in the surface water adjacent to the Site.

3.3.1 Human Health Constituents of Interest

For the human health risk evaluation, COIs were conservatively identified as constituents with maximum concentrations in groundwater above the GWPS listed in the Illinois CCR Rule Part 845.600 (IEPA, 2021). The COIs were determined separately for the wells monitoring north and south of Lake of Egypt Road (the S-wells in the north that characterize groundwater quality near Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3, and the C-wells plus EBG well in the south that characterize groundwater quality near the South Fly Ash Pond). Gradient used the maximum detected concentrations from groundwater samples collected from these two groups of wells, regardless of hydrostratigraphic unit. The use of groundwater data in this risk evaluation does not imply that detected constituents are associated with the facility or that they have been identified as potential groundwater exceedances. Using this approach, the COIs that were identified from the S-wells included arsenic, beryllium, boron, cadmium, cobalt, lead, and thallium (Table 3.2). For the S-wells, the maximum concentrations for arsenic, beryllium, cadmium, cobalt, and lead were detected in well S-1; the maximum concentrations for boron and thallium were detected in well S-2. The COIs that were identified from the C-wells+EBG included boron, cadmium, cobalt, and thallium (Table 3.3). For the C-wells, the maximum concentrations were detected in well EBG for boron and cobalt, well C-3 for cadmium, and well C-2 for thallium. Although these constituents were identified as COIs, it's important to re-emphasize that this identification was based solely on whether their maximum concentration exceeded the GWPS. We did not take into account overall temporal or spatial patterns, nor did we consider how these concentrations related to natural background levels or potential contamination from non-CCR sources.

The water quality parameters that exceeded the GWPS included chloride and total dissolved solids in the S-wells, and chloride, sulfate, and total dissolved solids in the C-wells. However, these constituents were not included in the risk evaluation because the GWPS is based on aesthetic quality and there is an absence of studies regarding toxicity to human health. The US EPA secondary maximum contaminant levels (MCLs) for chloride, sulfate, and total dissolved solids are based on aesthetic quality. The secondary MCLs for chloride and sulfate (250 mg/L) are based on salty taste (US EPA, 2021). The secondary MCL for total dissolved solids (500 mg/L) is based on hardness, deposits, colored water, staining, and salty taste (US EPA, 2021). Given that these parameters are not likely to pose a human health risk concern in the event of exposure, they were not considered to be human health COIs.

Table 3.2 Human Health Constituents of Interest Based on Groundwater for S-Wells - Near Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3 (2018-2022)

Constituent[a]	Detected Maximum[b]	GWPS[c]	Human Health COI[d]
Total Metals (mg/L)			
Antimony	*0.0050*	0.0060	No
Arsenic	0.12	0.010	Yes
Barium	1.5	2.0	No
Beryllium	0.0081	0.0040	Yes
Boron	2.8	2.0	Yes
Cadmium	0.055	0.005	Yes
Chromium	0.069	0.10	No
Cobalt	0.054	0.0060	Yes
Lead	0.080	0.0075	Yes
Mercury	*0.0002*	0.0020	No
Selenium	0.017	0.050	No
Thallium	0.046	0.0020	Yes
Dissolved Metals (mg/L)			
Boron	3.1	2.0	Yes
Cadmium	*0.001*	0.005	No
Other (mg/L or SU)			
Chloride	480	200	No[e]
Fluoride	0.18	4.0	No
pH	6.9	9.0	No
Sulfate	310	400	No
Total Dissolved Solids	4500	1200	No[e]

Notes:
COI = Constituent of Interest; GWPS = Groundwater Protection Standard; IL = Illinois; mg/L = Milligrams per Liter; SU = Standard Units.
Italics indicate constituent was not detected; the value reported is the maximum detection limit.
Shaded cell indicates a compound identified as a COI.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021).
(b) The maximum detected groundwater concentration was used to identify COIs.
(c) The IL Part 845.600 GWPS (IEPA, 2021) were used to identify COIs.
(d) COIs are constituents for which the maximum concentration exceeds the groundwater standard.
(e) Maximum exceeds the GWPS but analyte is not considered to be a COI because the GWPS is based on aesthetic quality.

Table 3.3 Human Health Constituents of Interest Based on Groundwater for C-Wells - Near the South Fly Ash Pond (2018-2023)

Constituent[a]	Maximum Groundwater Concentration[b]	GWPS[c]	Human Health COI[d]
Total Metals (mg/L)			
Antimony	*0.030*	0.0060	No[e]
Arsenic	0.0075	0.010	No
Barium	0.20	2.0	No
Beryllium	0.00060	0.0040	No
Boron	12	2.0	Yes
Cadmium	0.013	0.0050	Yes
Chromium	0.0042	0.10	No
Cobalt	0.29	0.0060	Yes
Lead	0.0031	0.0075	No
Lithium	0.024	0.040	No
Mercury	0.000070	0.0020	No
Molybdenum	0.015	0.10	No
Selenium	0.033	0.050	No
Thallium	0.031	0.0020	Yes
Dissolved Metals (mg/L)			
Boron	0.92	2.0	No
Cadmium	*0.0010*	0.0050	No
Radionuclides (pCi/L)			
Radium 226 + Radium 228	2.7	5.0	No
Other (mg/L or SU)			
Chloride	570	200	No[f]
Fluoride	0.68	4.0	No
pH	7.0	9.0	No
Sulfate	670	400	No[f]
Total Dissolved Solids	4000	1200	No[f]

Table 3.3 Notes:
COI = Constituent of Interest; GWPS = Groundwater Protection Standard; IL = Illinois; mg/L = Milligrams per Liter; pCi/L = Picocuries per Liter; SU = Standard Units.
Italics indicate constituent was not detected; the value reported is the maximum detection limit.
Shaded cell indicates a compound identified as a COI.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021).
(b) The maximum detected groundwater concentration was used to identify COIs.
(c) The IL Part 845.600 GWPS (IEPA, 2021) were used to identify COIs.
(d) COIs are constituents for which the maximum concentration exceeds the groundwater standard.
(e) Antimony was not detected in 32 groundwater samples. Only 2 of the 32 samples had detection limits above the GWPS; most of the DLs ranged from 0.001 to 0.005 mg/L and thus were below the GWPS of 0.006 mg/L. Thus antimony was not considered a COI.
(f) Maximum exceeds the GWPS but analyte is not considered to be a COI because the GWPS is based on aesthetic quality.

3.3.2 Ecological Constituents of Interest

The Illinois GWPS, as defined in IEPA's guidance, were developed to protect human health but not necessarily ecological receptors. While ecological receptors are not exposed to groundwater, groundwater can potentially migrate into the adjacent surface water and impact ecological receptors. Therefore, to identify ecological COIs, the maximum concentrations of constituents detected in groundwater were compared to ecological surface water benchmarks protective of aquatic life.

The surface water screening benchmarks for freshwater organisms were obtained from the following hierarchy of sources:

- IEPA (2019) SWQS. IEPA SWQS are health-protective benchmarks for aquatic life exposed to surface water on a long-term basis (*i.e.*, chronic exposure). The SWQS for several metals are hardness dependent (cadmium, chromium, and lead). Screening benchmarks for these constituents were calculated assuming US EPA's default hardness of 100 mg/L (US EPA, 2022), due to an absence of hardness data for Little Saline Creek.[4]
- US EPA Region IV (2018) surface water Ecological Screening Values (ESVs) for hazardous waste sites.

Consistent with the human health risk evaluation, Gradient used the maximum detected concentrations from groundwater samples collected from the S-wells without considering spatial or temporal representativeness for ecological receptor exposures. The use of the maximum constituent concentrations in this evaluation is designed to conservatively identify COIs that warrant further investigation. The COIs identified for ecological receptors include cadmium, cobalt, lead, and thallium (Table 3.4).

[4] Hardness data are available from the South Fork Saline River near Carrier Mills, Illinois (USGS Site No. 03382100), approximately 26 miles downstream of the MGS. Based on 208 samples collected from October 1976 to April 1997, the average hardness at this location was 438 mg/L (USGS, 2024c). Due to the age of the samples and the distance from the site, the US EPA (2022) default hardness of 100 mg/L was used. Use of a higher hardness value would result in less stringent screening values, thus, use of the US EPA default hardness is conservative.

Table 3.4 Ecological Constituents of Interest Based on Groundwater for S-Wells (2018-2022)

Constituent[a]	Maximum Detected Groundwater Concentration	Ecological Benchmark[b]	Basis	Ecological COI[c]
Total Metals (mg/L)				
Antimony	ND	0.19	EPA R4 ESV	No
Arsenic	0.12	0.19	IEPA SWQC	No
Barium	1.5	5.0	IEPA SWQC	No
Beryllium	0.0081	0.064	EPA R4 ESV	No
Boron	2.8	7.6	IEPA SWQC	No
Cadmium	0.055	0.0011	IEPA SWQC	Yes
Chromium	0.069	0.21	IEPA SWQC	No
Cobalt	0.054	0.019	EPA R4 ESV	Yes
Lead	0.080	0.020	IEPA SWQC	Yes
Mercury	ND	0.0011	IEPA SWQC	No
Selenium	0.017	1.0	IEPA SWQC	No
Thallium	0.046	0.0060	EPA R4 ESV	Yes
Dissolved Metals (mg/L)				
Boron	3.1	7.6	IEPA SWQC	No
Cadmium		0.00093	IEPA SWQC	No
Other (mg/L or SU)				
Chloride	480	500	IEPA SWQC	No
Fluoride	0.18	4.0	IEPA SWQC	No
Sulfate	310	NA	NA	No
Total Dissolved Solids	4500	NA	NA	No
pH	6.9	NA	NA	No

Notes:
Blank cells indicate constituent was not detected.
Shaded cell indicates a compound identified as a COI.
COI = Constituent of Interest; EPA R4 = United States Environmental Protection Agency Region IV; ESV = Ecological Screening Value; IEPA = Illinois Environmental Protection Agency; NA = Not Applicable; ND = Not Detected; SWQC = Surface Water Quality Criteria.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021) that were detected in at least one groundwater sample from the S-wells.
(b) Ecological benchmarks are from: IEPA SWQC (IEPA, 2019); EPA R4 ESV (US EPA Region IV, 2018).
(c) Constituents with maximum detected concentrations exceeding a benchmark protective of surface water exposure are considered ecological COIs.

3.3.3 Surface Water and Sediment Modeling

Surface water sampling has not been conducted in Little Saline Creek to the north of the Site. To estimate the potential contribution to surface water from groundwater specifically associated with the Site, Gradient modeled concentrations in Little Saline Creek surface water from groundwater flowing into the Creek for the detected human and ecological COIs. This is because the constituents detected in groundwater above a health-based benchmark are most likely to pose a risk concern in the adjacent surface water. Gradient modeled COI concentrations in the surface water using a mass balance calculation based on the surface water and groundwater mixing. The model assumes a well-mixed groundwater-surface water location.

The maximum detected concentrations in groundwater from the S-wells from 2018 to 2022 were conservatively used to model COI concentrations in surface water. For COIs that were measured as both

total and dissolved fractions, we used the maximum of the total and dissolved COI concentrations for the modeling. For most metals, the maximum concentration was from the total fraction. Use of the total metal concentration for these COIs may overestimate surface water concentrations because dissolved concentrations, which are lower than total concentrations, represent the mobile fractions of constituents that could likely flow into and mix with surface water.

The modeling approach does not account for geochemical transformations that may occur during groundwater mixing with surface water. Gradient assumed that predicted surface water concentrations were influenced only by the physical mixing of groundwater as it enters the surface water and were not further influenced by the geochemical reactions in the water and sediment, such as precipitation. In addition, the model only predicts surface water concentrations as a result of the potential migration of COIs in Site-related groundwater and does not account for background concentrations in surface water.

For this evaluation, Gradient adapted a simplified and conservative form of US EPA's indirect exposure assessment methodology (US EPA, 1998) that was used in US EPA's coal combustion waste risk assessment (US EPA, 2014). The model is a mass balance calculation based on surface water and groundwater mixing and the concept that the dissolved and sorbed concentrations can be related through an equilibrium partitioning coefficient (K_d). The model assumes a well-mixed groundwater-surface water location, with partitioning among total suspended solids, dissolved water column, sediment pore water, and solid sediments.

Sorption to soil and sediment is highly dependent on the surrounding geochemical conditions. To be conservative, we ignored the natural attenuation capacity of soil and sediment and estimated the surface water concentration based only on the physical mixing of groundwater and surface water (*i.e.*, dilution) at the point where groundwater flows into surface water.

The aquifer properties used to estimate the volume of groundwater flowing into Little Saline Creek and surface water concentrations are presented in Table 3.5. The surface water and sediment properties used in the modeling are presented in Tables 3.6 and 3.7. In the absence of Site-specific information for Little Saline Creek, Gradient used default assumptions (*e.g.*, depth of the upper benthic layer and bed sediment porosity) to model sediment concentrations. The modeled surface water and sediment concentrations are presented in Table 3.8. These modeled concentrations reflect conservative contributions from groundwater. A description of the modeling and the detailed results are presented in Appendix A.

Table 3.5 Groundwater Properties Used in Modeling

Parameter	Value	Units	Notes
Aquifer thickness	3	m	Thickness of the groundwater unit at the interface of unlithified deposits and bedrock (10 ft or 3 m) (SIPC, 2021b).
Length of River	840	m	Length of river receiving potentially-impacted groundwater (estimated using Google Earth).
Cross-Sectional Area	2560	m^2	Length × thickness
Hydraulic Gradient	0.019	m/m	Average hydraulic gradient (estimated using groundwater elevation in wells S3 and S6; SIPC, 2007).
Hydraulic Conductivity	1.50E-04	cm/sec	Average hydraulic conductivity (assumed to be the same as that for Emery Pond wells; Golder Associates Inc., 2021).
COI Concentration	Constituent specific	mg/L	Maximum detected concentration in groundwater.

Notes:
COI = Constituent of Interest
(a) The cross-sectional area represents the area through which groundwater flows from the unlithified unit to Little Saline Creek.

Table 3.6 Surface Water Properties Used in Modeling

Parameter	Value	Unit	Notes/Source
Flow rate in little saline creek	2.5×10^{11}	L/yr	Average of peak flows 1959-1980 for Little Saline Creek Tributary Near Goreville, IL (USGS, 2024a)
Total suspended solids (TSS)	49	mg/L	Average TSS concentration for South Fork Saline River, Carrier Mills, IL (USGS, 2024b)
Depth of water column	1.5	m	Mean depth of Little Saline Creek estimated from Google Earth photos.
Suspended Sediment to Water Partition Coefficient	Constituent specific	mg/L	Values based on US EPA (2014).

Notes:
IL = Illinois; US EPA = United States Environmental Protection Agency; USGS = United States Geological Survey.

Table 3.7 Sediment Properties Used in Modeling

Parameter	Value	Unit	Notes/Source
Depth of Upper Benthic Layer	0.03	m	Default (US EPA, 2014).
Depth of Water Column	1.5	m	Mean depth of Little Saline Creek estimated from Google Earth photos.
Bed Sediment Particle Concentration	1	g/cm^3	Default (US EPA, 2014).
Bed Sediment Porosity	0.6	–	Default (US EPA, 2014).
Total Suspended Solids (TSS) Mass per Unit Area	0.075	kg/m^2	Depth of water column × TSS × conversion factors (10^{-6} kg/mg and 1,000 L/m^3).
Sediment Mass per Unit Area	30	kg/m^2	Depth of upper benthic layer × bed sediment particulate concentration × conversion factors (0.001 kg/g and 10^6 cm^3/m^3).
Sediment to Water Partitioning Coefficients	Constituent specific	mg/L	Values based on US EPA (2014).

Note:
US EPA = United States Environmental Protection Agency.

Table 3.8 Surface Water and Sediment Modeling Results for Little Saline Creek

COI	Maximum Measured Groundwater Concentration (mg/L)	Modeled Surface Water Concentration (mg/L)	Modeled Sediment Concentration (mg/kg)
Arsenic	0.12	1.15E-06	2.09E-04
Beryllium	0.0081	7.79E-08	2.77E-05
Boron	3.1	2.98E-05	1.35E-04
Cadmium	0.055	5.29E-07	2.16E-04
Cobalt	0.054	5.19E-07	1.60E-04
Lead	0.08	7.69E-07	1.20E-03
Thallium	0.046	4.42E-07	5.46E-06

Notes:
COI = Constituent of Interest; mg/L = Milligrams per Liter.

3.4 Human Health Risk Evaluation

The section below presents the results of the human health risk evaluation for recreators (boaters, swimmers, and anglers) in the Lake of Egypt to the east of the Site, and anglers in the Little Saline Creek to the north of the Site. Risks were assessed using the maximum measured COIs in Lake of Egypt, and the modeled COIs in the Little Saline Creek.

3.4.1 Recreators Exposed to Surface Water

Screening Exposures: In Lake of Egypt, recreators could be exposed to surface water *via* incidental ingestion and dermal contact while boating or swimming, and anglers could consume fish caught in the lake. In Little Saline Creek, it is assumed that anglers could consume fish caught in the creek. Measured concentrations were used in Lake of Egypt, and modeled concentrations were used for Little Saline Creek due to lack of sampling data. The maximum measured or modeled COI concentrations in surface water were used as conservative upper-end estimates of the COI concentrations to which a recreator might be exposed directly (incidental ingestion of COIs in surface water while boating) and indirectly (consumption of locally caught fish exposed to COIs in surface water).

Screening Benchmarks: Illinois surface water criteria (IEPA, 2019), known as human threshold criteria (HTC), are based on incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities, as well as the consumption of fish. The HTC values were calculated from the following equation (IEPA, 2019):

$$\mathrm{HTC} = \frac{\mathrm{ADI}}{\mathrm{W} + (\mathrm{F} \times \mathrm{BCF})}$$

where:

HTC = Human health protection criterion in milligrams per liter (mg/L)
ADI = Acceptable daily intake (mg/day)
W = Water consumption rate (L/day)
F = Fish consumption rate (kg/day)
BCF = Bioconcentration factor (L/kg tissue)

Illinois defines the acceptable daily intake (ADI) as the "maximum amount of a substance which, if ingested daily for a lifetime, results in no adverse effects to humans" (IEPA, 2019). US EPA defines its chronic reference dose (RfD) as an "estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure for a chronic duration (up to a lifetime) to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime" (US EPA, 2011). Illinois lists methods to derive an ADI from the primary literature (IEPA, 2019). In accordance with Illinois guidance, Gradient derived an ADI by multiplying the MCL by the default water ingestion rate of 2 L/day (IEPA, 2019). In the absence of an MCL, Gradient applied the RfD used by US EPA to derive its Regional Screening Levels (RSLs) (US EPA, 2024) as a conservative estimate of the ADI. The RfDs are given in mg/kg-day, while the ADIs are given in mg/day; thus, Gradient multiplied the RfD by a standard body weight of 70 kg to obtain the ADI in mg/day. The calculation of the HTC values is shown in Appendix B, Table B.1.

Gradient used bioconcentration factors (BCFs) from a hierarchy of sources. The primary BCFs were those that US EPA used to calculate the National Recommended Water Quality Criteria (NRWQC) for human

health (US EPA, 2002). Other sources included BCFs used in the US EPA coal combustion ash risk assessment (US EPA, 2014) and BCFs reported by Oak Ridge National Laboratory's Risk Assessment Information System (ORNL RAIS) (ORNL, 2020).[5] Lithium did not have a BCF value available from any authoritative source; therefore, the water quality criterion for lithium was calculated assuming a BCF of 1. This is a conservative assumption, as lithium does not readily bioaccumulate in the aquatic environment (ECHA, 2020a,b; ATSDR, 2010).

Illinois recommends a fish consumption rate of 0.020 kg/day (20 g/day) for an adult weighing 70 kg (IEPA, 2019). Illinois recommends a water consumption rate of 0.01 L/day for "incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities" (IEPA, 2019). Appendix B, Table B.1 presents the calculated HTC for fish and water and for fish consumption only.

The HTC for fish consumption for radium 226+228 was calculated as follows:

$$\mathrm{HTC} = \frac{\mathrm{TCR}}{(\mathrm{SF} \times \mathrm{BAF} \times \mathrm{F})}$$

where:

HTC = Human health protection criterion in picoCuries per liter (pCi/L)
TCR = Target cancer risk (1×10^5)
SF = Food ingestion slope factor (risk/pCi)
BAF = Bioaccumulation factor (L/kg tissue)
F = Fish consumption rate (kg/day)

The food ingestion slope factor (lifetime excess total cancer risk per unit exposure, in risk/pCi) used to calculate the HTC was the highest value of those for radium 226 (Ra226), radium 228 (Ra228), and "Ra228+D" (US EPA, 2001). According to US EPA (2001), "+D" indicates that "the risks from associated short-lived radioactive decay products (*i.e.,* those decay products with radioactive half-lives less than or equal to 6 months) are also included."

Screening Risk Evaluation, Lake of Egypt: The four COIs were not detected in the surface water data available from Lake of Egypt, therefore, Gradient used half of the maximum detection limit as the exposure concentration. The COI concentrations in surface water were compared to the calculated Illinois HTC values (Table 3.8). All surface water concentrations, all of which were non-detect, were below their respective benchmarks. The HTC values are protective of recreational exposure *via* water and/or fish ingestion and do not account for dermal exposures to COIs in surface water while boating. However, given that the measured COI surface water concentrations are well below HTC protective of water and/or fish ingestion, dermal exposures to COIs are not expected to be a risk concern. Moreover, the dermal uptake of metals is considered to be minimal and only a small proportion of ingestion exposures. Thus, none of the COIs evaluated pose an unacceptable risk to recreators exposed to surface water while boating and anglers consuming fish caught in the Lake of Egypt.

[5] Although recommended by US EPA (2015b), US EPA EpiSuite 4.1 (US EPA, 2019) was not used as a source of BCFs because inorganic compounds are outside the estimation domain of the program.

Table 3.9 Risk Evaluation for Recreators Exposed to Surface Water in Lake of Egypt

COI	Maximum Surface Water Concentration (Measured)[a]	HTC for Water and Fish	HTC for Water Only	HTC for Fish Only	COPC
Total Metals (mg/L)					
Boron	*0.01*	467	1400	700	No
Cadmium	*0.0015*	0.0019	1.0	0.0019	No
Cobalt	*0.0025*	0.0035	2.1	0.0035	No
Thallium	*0.001*	0.0017	0.40	0.0017	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; HTC = Human Threshold Criteria; mg/L = Milligrams per Liter.
Concentrations are listed only for the constituents identified as COIs in the C-wells.
(a) Concentrations in italics were not detected; half the detection limit was used for non-detects.

Screening Risk Evaluation, Little Saline Creek: The modeled COI concentrations in surface water were compared to the calculated Illinois HTC values (Table 3.10). All surface water concentrations were below their respective benchmarks. Thus, none of the COIs evaluated pose an unacceptable risk for anglers consuming fish caught in Little Saline Creek.

Table 3.10 Risk Evaluation for Recreators Exposed to Surface Water in Little Saline Creek

COI	Maximum Surface Water Concentration (Modeled)	HTC for Water and Fish	HTC for Water Only	HTC for Fish Only	COPC
Total Metals (mg/L)					
Arsenic	1.15E-06	2.25E-02	2.00E+00	2.27E-02	No
Beryllium	7.79E-08	2.05E-02	8.00E-01	2.11E-02	No
Boron	2.98E-05	4.67E+02	1.40E+03	7.00E+02	No
Cadmium	5.29E-07	1.85E-03	1.00E+00	1.85E-03	No
Cobalt	5.19E-07	3.49E-03	2.10E+00	3.50E-03	No
Lead	7.69E-07	1.00E-02	1.00E-02	1.00E-02	No
Thallium	4.42E-07	1.72E-03	4.00E-01	1.72E-03	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; HTC = Human Threshold Criteria; mg/L = Milligrams per Liter.
Concentrations are listed only for the constituents identified as COIs in the S-wells.
Modeled concentrations represent the potential effect on surface water quality resulting from the measured groundwater concentrations.

3.4.2 Use of Surface Water as Drinking Water

The Lake of Egypt is used as a public water supply (IEPA, 2024a). Gradient compared the maximum detected concentrations (or the maximum detection limit) from the available public water supply data (2018-2023) to the Illinois Class I GWPS (Table 3.11). There were no exceedances of the IL GWPS, therefore the use of surface water from the Lake of Egypt for residential drinking water does not pose an unacceptable risk to residents.

Table 3.11 Lake Public Water Supply Data Compared to GWPS (2018-2023)

Constituent[a]	Number of Detects	Number of Samples	Detected Minimum	Detected Maximum[b]	Maximum Laboratory Detection Limit	GWPS[c]	Exceedance
Total Metals							
Antimony	0	6			0.003	0.006	No
Arsenic	0	6			0.001	0.01	No
Barium	6	6	0.021	0.0263	NA	2	No
Beryllium	0	6			0.001	0.004	No
Cadmium	0	6			0.003	0.005	No
Chromium	0	6			0.005	0.1	No
Mercury	0	6			0.0002	0.002	No
Selenium	1	6	0.0024	0.0024	0.002	0.05	No
Thallium	0	6			0.002	0.002	No
Other							
Chloride	6	6	10.4	23	NA	200	No
Fluoride	6	6	0.553	0.73	NA	4	No
Sulfate	6	6	34.6	51.7	NA	400	No
Total Dissolved Solids	6	6	87	158	NA	1200	No
Radionuclides							
Radium 226 + Radium 228	1	1	1.03	1.03	NA	5	No

Notes:
GWPS = Groundwater Protection Standard; NA = Not Available.

3.5 Ecological Risk Evaluation

Based on the ecological CEM (Figure 3.4), ecological receptors could be exposed to surface water and dietary items (*i.e.*, prey and plants) potentially impacted by identified COIs.

3.5.1 Ecological Receptors Exposed to Surface Water in Little Saline Creek

Screening Exposures: The ecological evaluation considered aquatic communities in Little Saline Creek potentially impacted by identified ecological COIs. Modeled surface water concentrations were compared to risk-based ecological screening benchmarks.

Screening Benchmarks: Surface water screening benchmarks protective of aquatic life were obtained from the following hierarchy of sources:

- IEPA SWQS (IEPA, 2019), regulatory standards that are intended to protect aquatic life exposed to surface water on a long-term basis (*i.e.*, chronic exposure). For cadmium, the surface water benchmark is hardness dependent and calculated using a default hardness of 100 mg/L (US EPA, 2022);[6]
- US EPA Region IV (2018) surface water ESVs for hazardous waste sites.

[6] Conservatisms associated with using a default hardness value are discussed in Section 3.6.

Risk Evaluation: The maximum modeled COI concentrations in surface water were compared to the benchmarks protective of aquatic life (Table 3.12). The modeled surface water concentrations for the COIs were below their respective benchmarks. Thus, none of the COIs evaluated are expected to pose an unacceptable risk to aquatic life in Little Saline Creek.

Table 3.12 Risk Evaluation for Ecological Receptors Exposed to Surface Water in Little Saline Creek

COI	Maximum Surface Water Concentration (modeled)	Ecological Freshwater Benchmark	Basis	COPC
Cadmium	5.29E-07	1.13E-03	IEPA SWQC	No
Cobalt	5.19E-07	1.90E-02	EPA R4 ESV	No
Lead	7.69E-07	2.01E-02	IEPA SWQC	No
Thallium	4.42E-07	6.00E-03	EPA R4 ESV	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; ESV = Ecological Screening Value; IEPA = Illinois Environmental Protection Agency; SWQC = Surface Water Quality Criteria; US EPA = United States Environmental Protection Agency.
Criteria sources: IEPA SWQC: IEPA (2019a); EPA R4 ESV: US EPA Region IV (2018)

3.5.2 Ecological Receptors Exposed to Sediment in Little Saline Creek

Screening Exposures: COIs in impacted groundwater flowing into Little Saline Creek can sorb to sediments *via* chemical partitioning. In the absence of sediment data, sediment concentrations were modeled using maximum detected groundwater concentrations. Therefore, the modeled COI sediment concentrations reflect the potential maximum Site-related sediment concentration originating from groundwater.

Screening Benchmarks: Sediment screening benchmarks were obtained from US EPA Region IV (2018). The majority of the sediment ESVs are based on threshold effect concentrations (TECs) from MacDonald *et al.* (2000), which provide consensus values that identify concentrations below which harmful effects on sediment-dwelling organisms are unlikely to be observed. The benchmarks used in this evaluation are listed in Table 3.13.

Screening Risk Results: The maximum modeled COI sediment concentrations were below their respective sediment screening benchmarks (Table 3.13). The modeled sediment concentrations attributed to potential contributions from Site groundwater for all COIs were less than 1% of the sediment screening benchmark. Although thallium does not have an ESV, the modeled concentration is well below the soil ESV of 0.05 mg/kg (US EPA Region IV, 2018); therefore, thallium does not present an unacceptable risk to ecological receptors. Thus, the modeled sediment concentrations attributed to potential contributions from Site groundwater are not expected to significantly contribute to ecological exposures in Little Saline Creek adjacent to the Site.

Table 3.13 Risk Evaluation for Ecological Receptors Exposed to Sediment in Little Saline Creek

COI	Modeled Sediment Concentration (mg/kg)	ESV[a] (mg/kg)	COPC	% of Benchmark
Cadmium	2.16E-04	1.0E+00	No	0.02
Cobalt	1.60E-04	5.0E+01	No	0.0003
Lead	1.20E-03	3.6E+01	No	0.003
Thallium	5.46E-06	NA	No	NA

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; ESV = Ecological Screening Value; NA = Not Available; US EPA = United States Environmental Protection Agency.
(a) ESV from US EPA Region IV (2018).

3.5.3 Ecological Receptors Exposed to Bioaccumulative Constituents of Interest

Screening Exposures: COIs with bioaccumulative properties can impact higher trophic level wildlife exposed to these COIs *via* direct exposures (surface water and sediment exposure) and secondary exposures through the consumption of dietary items (*e.g.*, plants, invertebrates, small mammals, and fish).

Screening Benchmark: US EPA Region IV (2018) and IEPA SWQS (IEPA, 2019) guidance were used to identify constituents with potential bioaccumulative effects.

Risk Evaluation: The ecological COIs (cadmium, cobalt, lead, and thallium) were not identified as having potential bioaccumulative effects. Therefore, these COIs are not considered to pose an ecological risk *via* bioaccumulation. IEPA (2019) identifies mercury as the only metal with bioaccumulative properties, however, mercury was not considered an ecological COI. US EPA Region IV (2018) identifies selenium as having potential bioaccumulative effects; although selenium was detected in groundwater, it was not considered an ecological COI.

3.6 Uncertainties and Conservatisms

A number of uncertainties and their potential impact on the risk evaluation are discussed below. Wherever possible, conservative assumptions were used in an effort to minimize uncertainties and overestimate rather than underestimate risks.

Exposure Estimates:

- The risk evaluation included the IL Part 845.600 constituents detected in groundwater samples (above GWPS) collected from wells associated with the MGS facility. However, it is possible that not all of the detected constituents are related specifically to the MGS facility.
- The human health and ecological risk characterization was based on the maximum measured or modeled COI concentrations, rather than on averages. Thus, the variability in exposure concentrations was not considered. Assuming continuous exposure to the maximum concentration overestimates human and ecological exposures, given that receptors are mobile and concentrations change over time. For example, US EPA guidance states that risks should be estimated using average exposure concentrations as represented by the 95% upper confidence limit on the mean (US EPA, 1992). Given that exposure estimates based on the maximum concentrations did not exceed risk benchmarks, Gradient has greater confidence that there is no risk concern.

- Only constituents detected in groundwater were used to identify COIs and model COI concentrations in surface water. For the constituents that were not detected in facility groundwater, the detection limits were below the IL Part 845.600 GWPS for all constituents except antimony, and thus do not require further evaluation. (Antimony was not detected in 32 groundwater samples from 2018 to 2023; 30 of the detection limits ranged from 0.001 to 0.005 mg/L, thus were below the GWPS of 0.006 mg/L.)
- There are limited groundwater data available that have been analyzed for Appendix IV constituents to specifically characterize the ponds of interest. If additional data are collected, the new data could lead to different risk estimates (either increased or decreased risk).
- COI concentrations in Little Saline Creek were modeled using the maximum detected total COI concentrations in groundwater from the S-wells. Modeling surface water concentrations using total metal concentrations may overestimate surface water concentrations because dissolved concentrations, which are lower than total concentrations, represent the mobile fractions of constituents that could likely flow into and mix with surface water.
- The COIs identified in this evaluation also occur naturally in the environment. Contributions to exposure from natural or other non-MGS-related sources were not considered in the evaluation of modeled concentrations; only exposure contributions potentially attributable to Site groundwater mixing with surface water were evaluated. While not quantified, exposures from potential MGS-related groundwater contributions are likely to represent only a small fraction of the overall human and ecological exposure to COIs that also have natural or non-MGS-related sources.
- Screening benchmarks for human health were developed using exposure inputs based on US EPA's recommended values for reasonable maximum exposure (RME) assessments (Stalcup, 2014). RME is defined as "the highest exposure that is reasonably expected to occur at a site but that is still within the range of possible exposures" (US EPA, 2004). US EPA states the "intent of the RME is to estimate a conservative exposure case (*i.e.*, well above the average case) that is still within the range of possible exposures" (US EPA, 1989). US EPA also notes that this high-end exposure "is the highest dose estimated to be experienced by some individuals, commonly stated as approximately equal to the 90th percentile exposure category for individuals" (US EPA, 2015c). Thus, most individuals will have lower exposures than those presented in this risk assessment.

Toxicity Benchmarks:

- Screening-level ecological benchmarks were compiled from IEPA and US EPA guidance and designed to be protective of the majority of Site conditions, leaving the option for Site-specific refinement. In some cases, these benchmarks may not be representative of the Site-specific conditions or receptors found at the Site, or may not accurately reflect concentration-response relationships encountered at the Site. For example, the ecological benchmark for cadmium is hardness dependent, and Gradient relied on US EPA's default hardness of 100 mg/L. Use of a higher hardness value would increase the cadmium SWQS because benchmarks become less stringent with higher levels of hardness. Regardless of the hardness, the maximum modeled cadmium concentration is orders of magnitude below the SWQS.
- In addition, for the ecological evaluation, Gradient conservatively assumed all constituents to be 100% bioavailable. Modeled COI concentrations in surface water are considered total COI concentrations. In addition, the measured surface water data used in this report represent total concentrations. US EPA recommends using dissolved metals as a measure of exposure to ecological receptors because it represents the bioavailable fraction of metal in water (US EPA, 1993). Therefore, the modeled surface water COI concentrations may be an overestimation of exposure concentrations to ecological receptors.

- In general, it is important to appreciate that the human health toxicity factors used in this risk evaluation are developed to account for uncertainties, such that safe exposure levels used as benchmarks are often many times lower (even orders of magnitude lower) than the levels that cause effects that have been observed in human or animal studies. For example, toxicity factors incorporate a 10-fold safety factor to protect sensitive subpopulations. This means that a risk exceedance does not necessarily equate to actual harm.

4 Summary and Conclusions

A screening-level risk evaluation was performed for Site-related constituents in groundwater at the MGS in Marion, Illinois. The CSM developed for the Site indicates that groundwater beneath the facility may flow into the Lake of Egypt to the east of the Site, or into Little Saline Creek to the north of the Site, and may potentially impact surface water.

CEMs were developed for human and ecological receptors. In the Lake of Egypt, the complete exposure pathways for humans include recreators (boaters) in the who are exposed to surface water, and anglers who consume locally caught fish. The use of surface water from the Lake of Egypt as a drinking water source was also evaluated as a complete pathway. The complete exposure pathway for humans in Little Saline Creek includes anglers who consume locally caught fish. Based on the local hydrogeology, residential exposure to groundwater used for drinking water or irrigation is not a complete pathway and was not evaluated. The complete exposure pathways for ecological receptors include aquatic life (including aquatic and marsh plants, amphibians, reptiles, and fish) exposed to surface water; benthic invertebrates exposed to sediment; and avian and mammalian wildlife exposed to bioaccumulative COIs in surface water, sediment, and dietary items.

Groundwater data collected from 2018 to 2023 were used to estimate exposures. The surface water data collected from the Lake of Egypt (in 2020) were also evaluated. Surface water concentrations were modeled in Little Saline Creek using the maximum detected groundwater concentration in the S-wells from the northern portion of the Site. Surface water exposure estimates were screened against benchmarks protective of human health and ecological receptors for this risk evaluation.

US EPA has established acceptable risk metrics. Risks above these US EPA-defined metrics are termed potentially "unacceptable risks." Based on the evaluation presented in this report, no unacceptable risks to human or ecological receptors resulting from CCR exposures associated with the Site were identified. This means that the risks from the Site are likely indistinguishable from normal background risks. Specific risk assessment results include the following:

- For recreators exposed to surface water, all COIs were below the conservative risk-based screening benchmarks. Therefore, none of the COIs evaluated in surface water are expected to pose an unacceptable risk to recreators in the Lake of Egypt.
- For anglers consuming locally caught fish, the modeled concentrations of all COIs in surface water (as well as the measured data) were below conservative benchmarks protective of fish consumption. Therefore, none of the COIs evaluated are expected to pose an unacceptable risk to anglers consuming fish caught from the Lake of Egypt or Little Saline Creek.
- For Lake of Egypt surface water used as a public drinking water supply, all COIs were below the Illinois Class I GWPS, thus no unacceptable risks were identified for the use of Lake of Egypt surface water as drinking water.
- Groundwater downgradient of the Site is not being used as a drinking water, thus the use of groundwater is not a complete exposure pathway.
- Ecological receptors exposed to surface water in Little Saline Creek include aquatic and marsh plants, amphibians, reptiles, and fish. The risk evaluation showed that none of the modeled COIs in Little Saline Creek exceeded protective screening benchmarks. Ecological receptors exposed to

sediment include benthic invertebrates. The modeled sediment COIs did not exceed the conservative screening benchmarks; therefore, none of the COIs evaluated in sediment are expected to pose an unacceptable risk to ecological receptors in Little Saline Creek.

- Ecological receptors were also evaluated for exposure to bioaccumulative COIs. This evaluation considered higher trophic level wildlife with direct exposure to surface water and sediment and secondary exposure through the consumption of dietary items (*e.g.*, plants, invertebrates, small mammals, fish). None of the ecological COIs were identified as having potential bioaccumulative effects. Overall, this evaluation demonstrated that none of the COIs evaluated are expected to pose an unacceptable risk to ecological receptors.

It should be noted that this evaluation incorporates a number of conservative assumptions that tend to overestimate exposure and risk. The risk evaluation was based on the maximum detected COI concentration; however, US EPA guidance states that risks should be based on a representative average concentration such as the 95% upper confidence limit on the mean; thus, using the maximum concentration tends to overestimate exposure. Although the COIs identified in this evaluation also occur naturally in the environment, the contributions to exposure from natural background sources and nearby industry were not considered; thus, CCR-related exposures were likely overestimated. Exposure estimates assumed 100% metal bioavailability, which likely results in overestimates of exposure and risks. Exposure estimates were based on inputs to evaluate the "reasonable maximum exposure"; thus, most individuals will have lower exposures than those estimated in this risk assessment.

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Appendix A

Surface Water Modeling

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Gradient modeled concentrations of constituents of interest (COIs) in the Little Saline Creek surface water based on available groundwater data. First, we estimated the flow rate of COIs flowing into the Little Saline Creek *via* groundwater. Then, we adapted United States Environmental Protection Agency (US EPA) indirect exposure assessment methodology (US EPA, 1998) in order to model surface water concentrations in the Little Saline Creek.

Model Overview

The groundwater flow to the creek is represented by a one-dimensional, steady-state model. In this model, the groundwater plume from the northern portion of the Site migrates horizontally in the uppermost water-bearing unit prior to flowing to Little Saline Creek. The groundwater flow entering the creek is the flow going through a cross-sectional area that has a length equal to the length of the creek adjacent to the Site with potential impacts from the ponds system and a height equal to the thickness of the uppermost water-bearing unit. It was assumed that all the groundwater flowing through this layer would ultimately discharge to Little Saline Creek. The length of the groundwater discharge zone was estimated using Google Earth Pro (Google, LLC, 2022).

The groundwater flow to Little Saline Creek mixes with the surface water in the creek. The COIs entering the creek *via* groundwater dissolve into the water column, sorb to suspended sediments, or sorb to benthic sediments. Using US EPA's indirect exposure assessment methodology (US EPA, 1998), the model evaluates the surface water COI concentrations at a location downstream of the groundwater discharge point, assuming a well-mixed water column.

Groundwater Discharge Rate

The groundwater flow rate was evaluated using conservative assumptions. Gradient conservatively assumed that the groundwater concentrations were uniformly equal to the maximum detected concentration of each individual COI. Further, Gradient ignored adsorption by subsurface soil and assumed that all the groundwater flowing through the aquifer and intersecting the creek was flowing into the creek.

For each groundwater unit, the groundwater flow rate into the creek was derived using Darcy's Law:

$$Q = K \times i \times A$$

where:

Q	=	Groundwater flow rate (m^3/s)
K	=	Hydraulic conductivity (m/s)
i	=	Hydraulic gradient (m/m)
A	=	Cross-sectional area (m^2)

For each COI, the mass discharge rate into the creek was then calculated by:

$$m_c = C_c \times Q \times CF$$

where:

m_c	=	Mass discharge rate of the COI (mg/year)
C_c	=	Maximum groundwater concentration of the COI (mg/L)
Q	=	Groundwater flow rate (m^3/s)
CF	=	Conversion factors: 1,000 L/m^3 and 31,557,600 s/year

The values of the aquifer parameters used for these calculations are provided in Table A.1. The calculated mass discharge rates were then used as inputs for the surface water model.

The length of the discharge zone was estimated to be approximately 840 m and the height of the discharge zone was estimated to be 3 m; thus, the cross-sectional area was estimated to be 2,560 m^2 (SIPC, 2021). The average horizontal hydraulic gradient was 0.019 m/m (estimated using groundwater elevation in wells S3 and S6; SIPC, 2007). The average horizontal hydraulic conductivity was 1.5×10^{-4} cm/s (Golder Associates Inc., 2021).

Surface Water Concentration

Groundwater that flows into the creek will be diluted with the surface water flow. Constituents transported by groundwater into the surface water migrate into the water column and the bed sediments. The surface water model Gradient used to estimate the surface water concentrations is a steady-state model described in US EPA's indirect exposure assessment methodology (US EPA, 1998) and also used in US EPA's "Human and Ecological Risk Assessment of Coal Combustion Residuals," referred to herein as the CCR risk assessment (US EPA, 2014). This model describes the partitioning of constituents between surface water, suspended sediments, and benthic sediments based on equilibrium partition coefficients (K_d values). It estimates the concentrations of constituents in surface water, suspended sediments, and benthic sediments at steady-state equilibrium at a theoretical location downstream of the discharge point after complete mixing of the water column. In our analysis, we used the K_d values provided in the US EPA CCR risk assessment for all of the COIs (US EPA, 2014, Table J1). These coefficients are presented in Table A.2.

To be conservative, Gradient assumed that the constituents were not affected by dissipation or degradation once they entered the water body. The total water body concentration of the COI was calculated as follows (US EPA, 1998):

$$C_{wtot} = \frac{m_c}{V_f \times f_{water}}$$

where:

C_{wtot} = Total water body concentration of the COI (mg/L)
m_c = Mass discharge rate of the COI (mg/year)
V_f = Water body annual flow (L/year)
f_{water} = Fraction of the COI in the water column (unitless)

For the Little Saline Creek annual flow rate, Gradient used the average peak-flow discharge rate of about 279 cubic feet per second (cfs), or 2.5×10^{11} L/year, based on the discharge rates measured at the United States Geological Survey (USGS) gauging station near Goreville, Illinois (USGS Station 03382025) between 1959 and 1980[7] (USGS, 2024a). The surface water parameters are presented in Table A.3.

The fraction of COIs in the water column was calculated for each COI using the sediment/water and suspended solids/water partition coefficients (US EPA, 2014). The fraction of COIs in the water column is defined as follows (US EPA, 2014):

$$f_{water} = \frac{(1 + [K_{dsw} \times TSS \times 0.000001]) \times \frac{d_w}{d_z}}{\left([1 + (K_{dsw} \times TSS \times 0.000001)] \times \frac{d_w}{d_z}\right) + ([bsp + K_{dbs} \times bsc] \times \frac{d_b}{d_z})}$$

[7] The available data were for the years 1959 to 1980.

where:

K_{dsw}	=	Suspended sediment-water partition coefficient (mL/g)
K_{dbs}	=	Sediment-water partition coefficient (mL/g)
TSS	=	Total suspended solids in the surface water body (mg/L). Assumed equal to 49 mg/L based on the average suspended sediment concentration measured in South Fork Saline River at the USGS gauging station at Carrier Mills, Illinois (USGS Station 03382100) between 1976 and 1997 (USGS, 2024b).
0.000001	=	Units conversion factor
d_w	=	Depth of the water column (m). The depth of the water column was estimated as 1.52 m from Google Earth photos.
d_b	=	Depth of the upper benthic layer (m). Set equal to 0.03 m (US EPA, 2014).
d_z	=	Depth of the water body (m). Calculated as $d_w + d_b$. Set equal to 1.55 m.
bsp	=	Bed sediment porosity (unitless). Set equal to 0.6 (US EPA, 2014).
bsc	=	Bed sediment particle concentration (g/cm^3). Set equal to 1.0 g/cm^3 (US EPA, 2014).

The fraction of COIs dissolved in the water column (f_d) is calculated as follows (US EPA, 2014):

$$f_d = \frac{1}{1 + K_{dsw} \times TSS \times 0.000001}$$

The values for the fraction of COI in the water column and other calculated parameters are presented in Table A.4.

The total water column concentration (C_{wcTot}) of the COIs, comprising both the dissolved and suspended sediment phases, is then calculated as follows (US EPA, 2014):

$$C_{wcTot} = C_{wtot} \times f_{water} \times \frac{d_z}{d_w}$$

Finally, the dissolved water column concentration (C_{dw}) for the COIs is calculated as follows (US EPA, 2014):

$$C_{dw} = f_d \times C_{wcTot}$$

The dissolved water column concentration (C_{dw}) was then used to calculate the concentration of COIs sorbed to suspended solids in the water column (US EPA, 1998):

$$C_{sw} = C_{dw} \times K_{dsw}$$

where:

C_{sw}	=	Concentration sorbed to suspended solids (mg/kg)
C_{dw}	=	Concentration dissolved in the water column (mg/L)
K_{dsw}	=	Suspended solids/water partition coefficient (mL/g)

In the same way, using the total water body concentration and the fraction of COI in the benthic sediments, the model derives the total concentration in benthic sediments (US EPA, 2014):

$$C_{bstot} = f_{benth} \times C_{wtot} \times \frac{d_z}{d_b}$$

where:

C_{bstot} = Total COI concentration in bed sediment (mg/L or g/m^3)
C_{wtot} = Total water body COI concentration (mg/L)
f_{benth} = Fraction of COI in benthic sediments (unitless)
d_b = Depth of the upper benthic layer (m)
d_z = Depth of the water body (m). Calculated as $d_w + d_b$.

This value can be used to calculate dry weight sediment concentration as follows:

$$C_{seddw} = \frac{C_{bstot}}{bsc}$$

where:

C_{seddw} = Dry weight sediment concentration (mg/kg)
C_{bstot} = Total sediment concentration (mg/L)
bsc = Bed sediment bulk density. Used the default value of 1 g/cm^3 from US EPA (2014).

The total sediment concentration is composed of the sum of the COI concentration dissolved in the bed sediment pore water (equal to the concentration dissolved in the water column) and the COI concentration sorbed to benthic sediments (US EPA, 1998).

The COI concentration sorbed to benthic sediments was calculated as follows (US EPA, 1998):

$$C_{sb} = C_{dbs} \times K_{dbs}$$

where:

C_{sb} = Concentration sorbed to bottom sediments (mg/kg)
C_{dbs} = Concentration dissolved in the sediment pore water (mg/L)
K_{dbs} = Sediments/water partition coefficient (mL/kg)

For each COI, the modeled total water column concentration and concentration sorbed to sediment are presented in Table A.5.

Table A.1 Parameters Used to Estimate Groundwater Discharge to Surface Water

Parameter	Name	Value	Unit
A	Cross-Sectional Area	2,560	m^2
i	Hydraulic Gradient	0.019	m/m
K	Hydraulic Conductivity	1.50E-04	cm/s

Sources: SIPC, 2021; SIPC, 2007; Golder Associates Inc., 2021.

Table A.2 Partition Coefficients

Constituent	Mean Sediment-Water Partition Coefficient (K_{dbs})		Mean Suspended Sediment-Water Partition Coefficient (K_{dsw})	
	Value (log_{10}) (mL/g)	Value (mL/g)	Value (log_{10}) (mL/g)	Value (mL/g)
Metals				
Arsenic	2.4	2.51E+02	3.9	7.94E+03
Beryllium	2.8	6.31E+02	4.2	1.58E+04
Boron	0.8	6.31E+00	3.9	7.94E+03
Cadmium	3.3	2.00E+03	4.9	7.94E+04
Cobalt	3.1	1.26E+03	4.8	6.31E+04
Lead	4.6	3.98E+04	5.7	5.01E+05
Thallium	1.3	2.00E+01	4.1	1.26E+04

Notes:
mL/g = Milliliters per Gram.
Source: US EPA, 2014.

Table A.3 Surface Water Parameters

Parameter	Name	Value	Unit
TSS	Total Suspended Solids	49	mg/L
V_{fx}	Surface Water Flow Rate	2.5×10^{11}	L/year
d_b	Depth of Upper Benthic Layer (default)	0.03	m
d_w	Depth of Water Column	1.52	m
d_z	Depth of Water Body	1.55	m
bsc	Bed Sediment Bulk Density (default)	1	g/cm^3
bsp	Bed Sediment Porosity (default)	0.6	–
M_{TSS}	TSS Mass per Unit Area[a]	0.075	kg/m^2
M_S	Sediment Mass per Unit Area[b]	30	kg/m^2

Notes:
CF = Conversion Factor.
Source of default values: US EPA, 2014.
(a) $M_{TSS} = TSS \times d_w \times CF1 \times CF2$.
(b) $M_S = d_b \times bsc \times CF3 \times CF4$.
CF1 = 1,000 L/m^3; CF2 = 1E06 mg/kg; CF3 = 1E+06 cm^3/m^3; CF4 = 0.001 kg/g.

Table A.4 Calculated Parameters

COI	Fraction of COI in the Water Column (f_{water})	Fraction of COI in the Benthic Sediments ($f_{benthic}$)	Fraction of COI Dissolved in the Water Column ($f_{dissolved}$)
Metals			
Arsenic	0.219	0.781	0.720
Beryllium	0.1250	0.8750	0.5629
Boron	0.9108	0.0892	0.7198
Cadmium	0.1107	0.8893	0.2044
Cobalt	0.142	0.858	0.244
Lead	0.032	0.968	0.039
Thallium	0.800	0.200	0.618

Note:
COI = Constituent of Interest.

Table A.5 Surface Water and Sediment Modeling Results for Little Saline Creek

COI	Maximum Measured Groundwater Concentration (mg/L)	Modeled Surface Water Concentration (mg/L)	Modeled Sediment Concentration (mg/kg)
Arsenic	1.20E-01	1.15E-06	2.09E-04
Beryllium	8.10E-03	7.79E-08	2.77E-05
Boron	3.10E+00	2.98E-05	1.35E-04
Cadmium	5.50E-02	5.29E-07	2.16E-04
Cobalt	5.40E-02	5.19E-07	1.60E-04
Lead	8.00E-02	7.69E-07	1.20E-03
Thallium	4.60E-02	4.42E-07	5.46E-06

Notes:
COI = Constituent of Interest; mg/L = Milligrams per Liter.

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Appendix B

Screening Benchmarks

Table B.1 Calculated Water Quality Standards Protective of Incidental Ingestion and Fish Consumption

Human Health COI	Bioconcentration Factor (BCF)		Average Daily Intake (ADI)			Human Threshold Criteria (HTC)		
	BCF[a] (L/kg-tissue)	Basis	MCL (mg/L)	RfD (mg/kg-d)	ADI[b] (mg/day)	Water & Fish (mg/L)	Water Only (mg/L)	Fish Only (mg/L)
Arsenic	44	NRWQC (2002)	0.01	0.0003	0.02	0.022	2.0	0.023
Beryllium	19	NRWQC (2002)	0.004	0.002	0.008	0.021	0.80	0.021
Boron	1	(d)	NC	0.2	14	467	1400	700
Cadmium	270	US EPA (2014)	0.005	0.0001	0.01	0.0018	1.0	0.0019
Cobalt	300	ORNL (2023)	NC	0.0003	0.021	0.0035	2.1	0.0035
Lead	46	US EPA (2014)	0.01	NC	0.02	0.01	0.01	0.01
Thallium	116	NRWQC (2002)	0.002	0.00001	0.004	0.0017	0.40	0.0017

Notes:

ADI = Average Daily Intake; BCF = Bioconcentration Factor; COI = Constituent of Interest; F = Fish Consumption Rate; HTC = Human Threshold Criteria; MCL = Maximum Contaminant Level; NA = BCF Not Available and Therefore, WQC for Fish Only Not Calculated; NC = No Criterion Available; NRWQC = National Recommended Water Quality Criteria; ORNL = Oak Ridge National Laboratory; RfD = Reference Dose; W = Water Consumption Rate; WQC = Water Quality Criteria; SWQC = Surface Water Quality Criteria; US EPA = United States Environmental Protection Agency.

(a) BCFs from the following hierarchy of sources:

NRWQC (2002). National Recommended Water Quality Criteria: 2002. Human Health Criteria Calculation Matrix.

US EPA (2014). Human and Ecological Risk Assessment of Coal Combustion Residuals.

ORNL (2023). Risk Assessment Information System (RAIS) Chemical Toxicity Values.

(b) ADI based on the MCL is calculated as the MCL (mg/L) multiplied by a water ingestion rate of 2 L/day. In the absence of an MCL, the ADI was calculated as the RfD (mg/kg-d) multiplied by the body weight (70 kg).

(c) SWQC based on US EPA's action level.

(d) BCF of 1 was used as a conservative assumption, due to lack of published BCF.

Consumption of Water and Fish

$$HTC = \frac{ADI}{W + (F \times BCF)}$$

Consumption of Water Only

$$HTC = \frac{ADI}{W}$$

Consumption of Fish Only

$$HTC = \frac{ADI}{F \times BCF}$$

Where:

Human Threshold Criteria (HTC)	Chemical-specific	mg/L
Acceptable Daily Intake (ADI)	Chemical-specific	mg/day
Fish Consumption Rate (F)	0.02	kg/day
Bioconcentration Factor (BCF)/ Bioaccumulation Factor (BAF)	Chemical-specific	L/kg-tissue
Water Consumption Rate (W)	0.01	L/day
Body Weight	70	kg
Target Cancer Risk (TCR)	1.0E-05	unitless

GRADIENT

Attachment B

***Curriculum Vitae* of Ari Lewis, M.S.**

Ari S. Lewis, M.S.
Principal
Ari.Lewis@gradientcorp.com

Areas of Expertise

Human health risk assessment, hazard assessment, product safety evaluations, metals toxicology, molecular toxicology, natural product toxicity assessment.

Education

M.S., Environmental Toxicology (Cellular and Molecular Toxicology and Risk Analysis), Cornell University, 2002

B.A., Biology and Environmental Sciences, University of Pennsylvania, 1995

Professional Experience

2002 – Present GRADIENT, Boston, MA
Provides expertise in toxicology to oversee projects evaluating potential human health hazards and risks from environmental and product exposures, with an emphasis on risks from industrial chemicals.

1999 – 2002 CORNELL UNIVERSITY, Ithaca, NY
Research Assistant. Developed an *in vivo* system to study the developmental toxicity of environmental agents at the cellular and molecular level. Investigated the tissue-specific responses to sodium arsenite and heat shock by examining the associations between stress protein induction, molecular signal transduction, and sensitivity to stress-induced cell death.

2001 – 2002 ASSOCIATION OF COMPARATIVE AND ENVIRONMENTAL TOXICOLOGY, Ithaca, NY
President. Organized educational and social events to promote the integration of Cornell graduate students within the research-diverse program of Environmental Toxicology.

1994 – 1995 UNIVERSITY OF PENNSYLVANIA, Philadelphia, PA
Research Assistant. Designed and executed a clinical research project to collect, clone, and express Canine Tumor Necrosis Factor (TNF) protein for the purpose of developing an Enzyme-linked Immunosorbent Assay (ELISA) to evaluate TNF levels in septic canines.

Awards/Honors

Society of Chemical Hazard Communication Outstanding Volunteer Award, 2023
National Institute of Environmental Health Sciences, Research Training Fellowship, 1999-2002
Cornell Institute of Comparative and Environmental Toxicology, Travel Award, 2001

Ari S. Lewis, M.S.

Professional Affiliations

US EPA Science Advisory Board Environmental Justice Science and Analysis Review Panel (Member), 2024
US EPA Science Advisory Board EJScreen Review Panel (Member), 2023
Society for Chemical Hazard Communication (Program Committee)
Product Stewardship Society (Program Committee)
Society of Toxicology (Associate Member)
Past GreenScreen Advanced Training (Guest Lecturer, Acute Mammalian Toxicity and Systemic Toxicity)

Testimony

Lewis, AS. "Comments on H.R. Bill 1391 on Recycling Coal Combustion Residuals Accessibility Act of 2011." Presented to the House Subcommittee on Energy and the Environment, Washington, DC, April 14, 2011.

Example Projects

Environmental Justice Screening Analysis in Canada: For a multi-national food manufacturer, Gradient researched available socioeconomic, health, and environmental justice (EJ) screening factors for Ontario, Canada.

Propylene Glycol Scientific Review: On behalf of a trade organization, Gradient derived an acceptable daily intake (ADI) of propylene glycol by proposing a mode of action of toxicity.

Survey of Exposure to Quantify General Population Exposure: On behalf of a trade organization, developed state-of-the-science report regarding assessment of human far-field exposures to chemicals in commerce (including fenceline exposures) in the context of TSCA risk evaluations.

Data Availability and Initial Screening Assessment of Endocrine Disruption Properties for Petroleum-Related Substances: Gradient compiled relevant information regarding the endocrine disruption potential of hydrocarbons and petroleum substances, following guidance from the European Chemicals Agency (ECHA)/European Food Safety Authority (EFSA).

Toxicology Screening of Constituents Associated with Post-Combustion, Amine-Based Carbon Capture: Used toxicity and regulatory databases to screen chemicals in carbon capture waste streams for potential human health and environmental risk concerns. Intended to further research and data gaps for future risk assessment.

Recommended Best Practices for Assessing Risks in Baby Products: On behalf of a personal care product company, partnered with a global safety certification company to develop recommended best practices for assessing chemical risks associated with personal care products, focusing on those used in infant care.

State of Environmental Justice Screening Tools: Provided comprehensive assessment of EJSCREEN and other state environmental justice screening tools. Also included assessment of current environmental justice initiatives and intersection with chemical industry.

TSCA Fenceline Risk Assessment Comments: Provided comments on EPA's proposed approach to assess fenceline risks from facilities manufacturing or using priority chemicals.

Hazard and Risk Assessment of Surface Coating: On behalf of chemical working group, conducted weight-of-evidence evaluation of compound with suspected reproductive toxicity potential. Also conducted risk assessment for downstream workers and consumers.

1,4- Dioxane Assessment: For consumer product company evaluated presence of 1,4-dioxane in US groundwater and surface water supplies.

GHS Hazard Assessment: On behalf of a global oil and gas company, led project conducting GHS-based hazard assessments for a chemical portfolio consisting of more than 1,600 chemicals used in the formulation of tens of thousands of products. The hazard assessments were used to understand product-level hazards and update US and international Safety Data Sheets (SDSs) to meet GHS compliance requirements.

Risk Assessment of Contaminant in Baby Formula: On behalf of consumer products company, performed a risk assessment of cleaning fluids that accidentally leaked into powdered infant formula during the formulation process.

Development of Occupational Exposure Limits: After a change in harmonized hazard assignment, led project developing safe worker exposure levels to several fragrance substances for global fragrance company.

Risk Assessment for Hazardous Food Ingredient: On behalf of a food service client, Gradient evaluated the safety of a flavoring ingredient. We conducted a comprehensive hazard and risk assessment using data reported in the scientific literature and accepted risk assessment methodologies to determine whether there could be health risks for children or adults from regular consumption of food products containing this ingredient. The clients used our reports for their risk communication efforts.

Toxicity and Epidemiology of a Commercial Product: Provided litigation support for project involving the safety of a commercial product. Primary efforts included evaluating the toxicological and epidemiologic information of several different compounds used in commercial products.

Green Chemistry Assessment: Led toxicology of an alternatives assessment for a product using criteria outlined in US EPA's Design for the Environment (DfE) program. The assessment was submitted to US EPA for acceptance under this "green" chemistry program.

State-of-Knowledge Assessment of Hazards of New Technologies for Grid-Scale Battery Storage: Identified and evaluated potential health risks associated with the life cycle of batteries used for energy storage applications. We examined the chemical composition and life cycle risks associated with the production and disposal of a variety of battery types (*e.g.*, lithium ion, nickel cadmium, vanadium redox).

Risk Assessment Workshop: Invited instructor for risk assessment workshop focused on the derivation of health-based benchmarks for contaminants in drinking water. Workshop conducted for the utility industry.

Safety Data Sheet (SDS) for Metal Industry: On behalf of a trade association led a project developing a detailed, OSHA-compliant safety data sheet (SDS) for the manufacture and use of a metal in the United States (US). We performed a comprehensive toxicological and ecological hazard review of the metal and incorporated US-specific regulatory information.

Product Safety: Provided an in-depth review of lead exposure and toxicology issues. Findings were presented in a report that was used by the industry group as a basis to make informed decisions about design modification and safety testing of plumbing products.

Review of Antimicrobials: Oversaw project involving the extensive toxicology and regulatory review of various anti-microbial substances that are banned or under consideration for banning by the US Food and Drug Administration (US FDA).

Chemical Compliance: For a multinational chemicals company, led project registering and classifying hazards of chemical products to satisfy global regulatory requirements.

Product Stewardship: Led project providing ongoing support for a printer ink company. Work involves hazards assessment, registration support, and internal product standard development.

TSCA Support (PMN): For a large multinational chemicals company, led project providing technical expertise to fulfill regulatory requirements under the Toxic Substances Control Act (TSCA). Our expertise in read-across and complex chemistries, thorough analysis of exemptions, and careful documentation helped the client avoid unnecessary PMNs and create sustainable compliance strategies.

TSCA Support (Test Waivers): Oversaw project evaluating the scientific credibility of a US EPA Significant New Use Rule (SNUR) for a chemical of interest to an advanced materials manufacturer. The collective toxicity dataset and in silico models were used to support an argument against the scientific need for the EPA SNUR toxicity test requests.

Toxicity Assessment using Predictive Toxicology: On behalf of an office supply company, led project assessing toxicity of a newly developed compound. Because no existing toxicity information was available on the compound, we identified chemical surrogates expected to have a similar toxicological profile and conducted a structural alert analysis to better understand potential human health hazards.

Safety Data Sheet for Flavor Manufacturer: Led project involving SDS Requirements for natural food colorant products according to OSHA 2012 Haz Com Standard.

Coal Ash Regulatory Comment: In response to a Notice of Data Availability (NODA), Gradient assessed the potential impact of new data on US EPA's draft risk assessment of coal combustion waste (CCW). Our assessment was used by the client to propose revisions and additions to the US EPA's analysis.

Assessment of Coal Ash Surface Impoundment Closure Options: As a form of reliance material for a legal action, led an assessment of two closure scenarios for surface impoundments containing coal combustion residual (CCR) at an electric power utility.

Development of Coal Ash Surface Impoundment Closure Decision Framework: Served a principal investigation on project for Electric Power Research Institute supporting development of a comprehensive Framework that enables coal-fired utilities to evaluate the potential human health and environmental impacts associated with two closure options for surface impoundments (SI) containing coal combustion residual (CCR).

Constituent Profiles and Risk Issues: On behalf of a research organization sponsored by the power utility companies, oversaw a series of technical briefing documents providing an overview of the environmental fate and transport, human health and ecological risks associated with arsenic and selenium.

Development of a No Significant Risk Level: To comply with provisions of California's Proposition 65, developed a no significant risk level (NSRL) for an animal carcinogen that could volatilize from a consumer product.

Inhalation Criteria Development: Developed a series of health-based inhalation criteria (HBIC) for several different organic compounds present in printer cartridges. In some cases, derivation of the HBIC required surrogate selection, route-to-route extrapolation, and animal-to-human pharmacokinetic adjustments.

Risk Assessment of Emerging Chemicals: Provided technical oversight of a large risk assessment evaluating potential drinking water risks for emerging contaminants, a majority of which did not have established toxicity criteria. Researched and developed quantitative toxicity information that could be used to estimate potential risks.

Toxicity and Epidemiology of a Commercial Product: Provided litigation support for project involving the safety of a commercial product. Primary efforts included evaluating the toxicological and epidemiologic information of several different compounds used in commercial products.

Regulatory Comment on Coal Combustion Product Risk Assessment: Led evaluation of US EPA's technical approach for assessing human health and ecological risks associated with the storage of coal combustion products. Evaluations occurred in 2007 and on an updated version of the risk assessment in 2010. Our evaluations were provided to US EPA during a public comment period.

Overview Reports on Chemical Constituents in Coal Combustion Products: Lead author on a series of chapters summarizing the human health and ecological health effects of several metals found in coal combustion products, focusing on the use of this information in risk assessment and current regulatory standards and criteria. Metals included arsenic, thallium, selenium, and molybdenum.

Molybdenum Groundwater Limit: For an on-going project, leading effort to develop an alternative health-based guideline for molybdenum in drinking water.

Ecological Effects of Coal Combustion Products: Conducted literature review to evaluate the ecological effects of unintended releases of coal combustion products (CCPs), focusing effects on the growth, survival, reproduction, and population characteristics of aquatic and terrestrial organisms.

Mercury Risks from the Use of Coal Ash in Building Materials: Evaluated potential inhalation risks from mercury associated with the beneficial use of coal combustion products in wallboard, concrete, and structural fill.

Arsenic Content in Dietary Supplement: Evaluated whether the amount of inorganic arsenic in a dietary supplement product line would constitute an unacceptable inorganic arsenic exposure if products were taken individually or as part of a multi-product program. Estimated exposure from supplements and compared to international guidelines for arsenic in food, typical inorganic arsenic exposure in the US diet, and levels that are known to cause adverse effects in humans.

History of Use of a Dietary Ingredient (Toxic Tort): In the absence of extensive information on the toxicology of the ingredient *Hoodia gordonii*, researched its history of safe use as an appetite suppressant to refute a claim that a particular dietary supplement caused adverse health effects in an individual.

Toxic Tort Involving Dietary Supplement: Managed toxic tort project evaluating the claim that a dietary supplement containing multiple herbal ingredients was the cause of a stroke. Reviewed the health effects literature on the ingredients in the supplement, medical records of the plaintiff, and the risk factors for stroke.

Toxic Tort Involving Dietary Supplement: For a litigation project, assessed likelihood that a multi-ingredient dietary supplement was the cause of elevated liver enzymes and migraine headaches in a plaintiff. The evaluation involved examination of health information on the various ingredients in the product and examination of the plaintiff's medical records.

Evaluation of Structure-Function Claims: Evaluated several different structure-function claims for a product line for a major dietary supplement company. Activities included a comprehensive literature search, article summary, and a weight-of-evidence evaluation to determine if available science supported structure-function claims.

Toxic Tort Involving Pesticide Exposure: In the context of litigation, analyzed whether pesticide exposure was the cause of a specific birth defect. The evaluation involved a review of toxicological and epidemiological literature, as well as a reconstruction of potential dose *via* complex exposure pathways.

Arsenic Bioavailability Assessment: Led project providing input on a university study to evaluate the bioavailability of arsenic in soil with and without soil amendments aimed at reducing bioavailability.

PFC Regulatory Comments: Provided comments to a state agency regarding the toxicological significance of exposure to PFOA and PFOS *via* drinking water.

Class Action Determination for PFC Exposure: Assisted law firm to assess validity of a class action involving perfluorinated chemical exposure.

Residential Exposure Evaluation: Performed a risk evaluation in a community claiming that illegally disposed manufactured gas plant waste was a public health concern and decreased property values. The analysis was used as part of expert testimony.

Arsenic Exposure Assessment: Performed in-depth review of the relationship between exposure to arsenic in soil and the effect on arsenic body burden and health. Results were provided to client as part of a litigation effort.

Metal Risk Assessment: Interpreted the results of a metal bioassay and potential regulatory implications. Proposed experimental approach to establish chemical mode of action and human relevance of rodent bioassay results.

Human Health Risk Assessment: Provided input as a third-party consultant on a risk assessment of former chemical manufacturing plant. Role also included responding to community concerns.

Pesticide Re-registration of an Arsenic-based Pesticide: Managed a multi-faceted project in support of the re-registration of organic arsenic herbicides. This project included several presentations and technical submissions to US EPA regarding relevance of cancer data from animals to human risk, as well as directed responses to US EPA-issued risk assessments.

Lead Exposure and Toxicology: Assessed the validity of a tax allocation based on the contribution of historic gasoline emissions to current lead exposures in California. The findings were presented in a report that described the relative contribution of various lead sources to children's blood lead levels.

Arsenic Risk Assessment: Contributed to an expert report in a toxic tort case involving exposure to arsenic in a residential area. The report critically evaluated toxicological information regarding the carcinogenic effects of arsenic and the plausibility of health claims.

Arsenic Risk Assessment: Provided litigation support in lawsuit alleging that the presence of arsenic in a residential town caused a decrease in property value. The evaluation involved comparing levels of arsenic found in the town (in soil, water, dust, *etc.*) and arsenic exposures associated with adverse health effects.

Evaluation of Chemical Toxicity: Contributed to a weight-of-evidence evaluation of the low dose effects of Bisphenol A (BPA). The results were published in a peer-reviewed journal.

Arsenic Risk Assessment: Provided litigation support by evaluating the biological plausibility of the association between low level arsenic exposure and various health endpoints.

Manufactured Gas Plants: Contributed to an expert report that assessed the state of toxicological knowledge of contaminants released at a former MGP site.

Chromium Risk Assessment: Evaluated the feasibility of a nonlinear dose-response relationship between chromium and adverse health effects in litigation that involved occupational exposure to chromium(III).

Arsenic Risk Assessment: Provided litigation support in toxic tort case involving exposure to arsenic in a residential area. Assessed the strength of an association between arsenic exposure and several different health endpoints.

Regulatory Comment for Arsenic Risk Assessment: Contributed to an evaluation of the technical soundness of US EPA's risk assessment of chromated copper arsenate (CCA) treated wood.

Regulatory Comment for Arsenic Risk Assessment: Provided technical support to a consortium of registrants evaluating the technical validity of US EPA's approach to develop a cancer potency factor (CPF) for inorganic arsenic. The evaluation was presented in a technical white paper submitted to US EPA.

Human Health Risk Assessment: Prepared Method 3 risk characterizations in accordance with Massachusetts Contingency Plan (MCP) regulations for petroleum-impacted sites in Massachusetts.

Arsenic Risk Assessment: Provided information on inorganic arsenic's nonlinear dose-response relationship in response to a US EPA risk assessment of an industrial site with arsenic contamination.

Articles

Lewis, A; Dubé, EM; Bittner, A. 2017. "Key role of leachate data in evaluating CCP beneficial use." *ASH at Work* (Issue 1):32-34.

Kneeland, JM; Zhang, J; Lewis, AS. 2016. "The new TSCA: Greater certainty for safer chemicals." *ABA Environ. Disclosure Committee Newsl*. 14(2):11-14.

Lewis, A; Bittner, A. 2016. "Methods of closing CCR surface impoundments: Holistic assessment key to developing effective plans." *ASH at Work* (Issue 2):6-9.

Mayfield, DB; Lewis, AS. 2013. "Coal ash: A resource for rare earth and strategic elements." *ASH at Work* (Issue 1):17-21.

Mayfield, DB; Lewis, AS. 2013. "Coal ash recycling: A rare opportunity." *Waste Manag. World* 14(5).

Publications

Lewis, A; Manidis, T. 2024 (Fall). "Investigating the potential human health and environmental risks of carbon dioxide capture chemicals: A screening assessment." *Gradient Trends – Energy and the Environment* 91.

Lewis, AS. 2023 (Fall). "Cumulative risk assessment and environmental justice: A growing partnership." *Gradient Trends – Environmental Justice* 88.

Bittner, A; Lewis, A. 2020 (Winter). "Beneficial use assessment of building materials containing CCPs." *Gradient Trends - Risk Science & Application* 77 3,5.

Boroumand, A; Greenberg, G; Herman, K; Lewis A. 2017. "Incorporating green and sustainable remediation analysis in coal combustion residuals (CCR) surface impoundment closure decision making." *Remediation* 27(4):29-38.

Lewis, A; Bittner, A. 2017. "The relative impact framework for evaluating coal combustion residual surface impoundment closure options: Applications and lessons learned." *Coal Combustion and Gasification Products*. 9:34-36.

Lewis, A; Bittner, A; Radloff, K; Hensel, B. 2017. "Storage of coal combustion products in the United States: Perspectives on potential human health and environmental risks." In *Coal Combustion Products (CCP's): Characteristics, Utilization and Beneficiation.* (Eds.: Robl, T; Oberlink, A; Jones, R), Woodhead Publishing, Duxford, United Kingdom, p481-507.

Hower, JC; Granite, EJ; Mayfield, DB; Lewis, AS; Finkelman, RB. 2016. "Notes on contributions to the science of rare earth element enrichment in coal and coal combustion byproducts." *Minerals* 6(2):32.

Lewis, A; Seeley, M; Pizzurro, D; Sharma, M; Flewelling, S. 2015. "A hierarchical framework for the selection and development of toxicity criteria for the evaluation of potential drinking water risks from hydraulic fracturing fluids." *Toxicologist* 144(1):49. Presented at the Society of Toxicology (SOT) 54th Annual Meeting, San Diego, CA, March 22-26.

Rohr, AC; Campleman, SL; Long, CM; Peterson, MK; Weatherstone, S; Quick, W; Lewis, AS. 2015. "Potential Occupational Exposures and Health Risks Associated with Biomass-Based Power Generation." *Int. J. Environ. Res. Public Health* 12:8542-8605.

Lewis, AS; Beyer, LA; Zu, K. 2015. "Considerations in deriving quantitative cancer criteria for inorganic arsenic exposure *via* inhalation." *Environ. Int*. 74:258-273.

Mayfield, DB; Lewis, AS; Bailey, LA; Beck, BD. 2014. "Properties and effects of metals." In *Principles of Toxicology: Environmental and Industrial Applications Third Edition*. (Eds.: Roberts, SM; James, RC; Williams, PL), Wiley, p283-307.

Lynch, HN; Greenberg, GI; Pollock, MC; Lewis, AS. 2014. "A comprehensive evaluation of inorganic arsenic in food and considerations for dietary intake analyses." *Sci. Total Environ*. 496:299-313.

Lewis, AS; Reid, KR; Pollock, MC; Campleman, SL. 2012. "Speciated arsenic in air: Measurement methodology and risk assessment considerations." *J. Air Waste Manage. Assoc.* 62(1):2-17.

Hughes, MF; Beck, BD; Chen, Y; Lewis, AS; Thomas, DJ. 2011. "Arsenic exposure and toxicology: A historical perspective." *Toxicol. Sci.* 123(2):305-32.

Lewis, AS; Sax, SN; Wason, SC; Campleman, SL. 2011. "Non-chemical stressors and cumulative risk assessment: An overview of current initiatives and potential air pollutant interactions." *Int. J. Environ. Res. Public Health*. 8(6):2020-2073.

Lewis, AS; Beck, BD. 2010. "Nonlinear low-dose extrapolations." In *Cancer Risk Assessment: Chemical Carcinogenesis, Hazard Evaluation, and Risk Quantification*. (Eds.: Hsu, CH; Stedeford, T), John Wiley & Sons, Inc., Hoboken, NJ, p659-680.

Petito Boyce, C; Lewis, AS; Sax, SN; Beck, BD; Eldan, M; Cohen, SM. 2010. "Probabilistic modeling of dietary arsenic exposure (Letter)." *Environ. Health Perspect.* 118:A331.

Lewis, AS; Beyer, LA; Langlois, CJ; Yu, CJ; Wait, AD. 2008. "Considerations in toxicology study design and interpretation: An overview." *Inside Aloe Online – The Official Publication of the IASC*, August 15.

Petito Boyce, C; Lewis, AS; Sax, SN; Eldan, M; Cohen, SM; Beck BD. 2008. "Probabilistic analysis of human health risks associated with background concentrations of inorganic arsenic: Use of a margin of exposure approach." *Hum. Ecol. Risk Asses.* 14(6):1159-1201.

Lewis, AS. 2007. Correspondence regarding "Case Report: Potential Arsenic Toxicosis Secondary to Herbal Kelp Supplement." *Environ. Health Perspect*. 115(12):A575.

Goodman, JE; McConnell, EE; Sipes, IG; Witorsch, RJ; Slayton, TM; Yu, CJ; Lewis, AS; Rhomberg. LR. 2006. "An updated weight of the evidence evaluation of reproductive and developmental effects of low doses of bisphenol A." *Crit. Rev. Toxicol*. 36:387-457.

Cohen, SM; Arnold, LL; Eldan, M; Schoen, AS*; Beck, BD. 2006. "Methylated arsenicals: The implications of metabolism and carcinogenicity studies in rodents to human risk assessment." *Crit. Rev. Toxicol*. 36:99-133.

Schoen, A*; Beck, B; Sharma, R; Dubé, E. 2004. "Arsenic toxicity at low doses: Epidemiological and mode of action considerations." *Toxicol. Appl. Pharmacol*. 198:253-267.
****Awarded Top 10 Best Published Paper Demonstrating Application of Risk Assessment by the Society of Toxicology Risk Assessment Specialty Section.**

Posters and Presentations

Boomhower, SR; Marsh, C; Jack, MM; Lewis, AS. 2024. "Considerations for Revising a Safe Intake of Propylene Glycol." Poster # P20-14. Presented at EUROTOX 2024 – 58th Congress of The European Societies of Toxicology, Copenhagen, Denmark, September 8-11.

Kondziolka, JM; Lewis, AS. 2024. "Corrective Action Sustainability: Holistic Decision Support Tool." Presented at Southern Company Professional Development Meeting, Birmingham, AL, October 24.

Lewis, AS. 2024. "The Intersection of Environmental Justice Initiatives Coal Combustion Products." Presented at Southern Company Professional Development Meeting. 22p. September 26.

Lewis, AS. 2024. "Screening, Testing, and Assessing Ingredient Portfolios for Endocrine Disruption." Presented at the 2024 Society for Chemical Hazard Communication (SCHC) Annual Meeting, Charlotte, NC. 30p. September 24.

Lewis, AS. 2024. "Coal Transport and Environmental Justice: Two Trains on the Same Track." Presented at the National Coal Transportation Association (NCTA) 50th Annual Business Meeting and Conference, Tucson, AZ. 22p. September 11.

Kondziolka, J; Lewis, A. 2024. "Corrective Action Sustainability: Holistic Decision Support Tool." Presented at World of Coal Ash (WOCA) 2024, Grand Rapids, MI, May 14.

Lewis, A; Kondziolka, J; Biega, M; Tentori, E; Zhang, Q; Shrivastava, I; Hensel, B. 2024 "Example Application of a Holistic Decision Support Tool Used for Selecting Corrective Actions at Coal Combustion Product Sites." Abstract/Poster #: 182. Presented at World of Coal Ash (WOCA) 2024, Grand Rapids, MI, May 13-16.

Hensel, B; Lewis, A; Kondziolka, J. [Electric Power Research Institute (EPRI); Gradient]. 2023. "Decision Support Tool for Selecting Corrective Actions Considering Principles of Sustainability." Presented at National Groundwater Association (NGWA)'s Groundwater Week 2023, Las Vegas, NV. 18p. December 5.

Verslycke, T; Lewis, AS; Manidis, T; Lyon, D; Synhaeve, N; Hinkal, G; Saunders, L; Villalobos, SA; Colvin, K. 2023. "Screening Assessment of Endocrine Disruption Properties of a Large Portfolio of Petroleum-Related UVCB Substances." Poster # 1.06.P-Mo-006. Presented at the SETAC North America 44th Annual Meeting, Louisville, KY, November 12-16.

Verslycke, T; Lewis, AS. 2023. "Screening, Testing, and Assessing Ingredient Portfolios for Endocrine Disruption." Presented at the Personal Care Product Council Science Symposium, Arlington, VA, October 24-25, 35p.

Lewis, AS. 2023. "Update on US EPA Environmental Justice Policies: A Survey of Federal Activities." Presented at the Association of Battery Recyclers (ABR) Fall Meeting, Las Vegas, NV, October 19, 27p.

Verslycke, T; Lewis, AS. 2023. "Assessing Ingredient Portfolios for Endocrine Disruption." Presented at the 2023 Product Stewardship Conference (PSX), Boston, MA, October 17-19, 29p.

Slagowski, NL; Lemay, JC; Lewis, AS. 2023. "Evaluating Exposure and Risk in Communities with EJ Concerns: Uses and Limitations of Publicly Available Geographic Information System (GIS)-Based Tools." Presented at ACE 2023: Air & Waste Management Association (A&WMA)'s 116th Annual Conference & Exhibition, Orlando, FL, June 6, 20p.

Verslycke, T; Lewis, AS; Manidis, T; Lyon, D; Synhaeve, N; Hunkel, G; Saunders, L. 2023. "Screening Assessment of Endocrine Disruption Properties of a Large Portfolio of Petroleum-Related UVCB Substances." Poster # 13044. Presented at the SETAC Europe 33rd Annual Meeting, Dublin, Ireland, April 30-May 4.

Lewis, AS. 2022. "Evaluating Exposure and Risk in Fenceline Communities: The Uses and Limitations of Publicly Available Geographic Information System (GIS)-Based Tools." Presented at the SETAC North America 43rd Annual Meeting, Pittsburgh, PA, November 14.

Lewis, AS; DeMott, B; Skoglund, R. 2022. "Environmental Justice and Product Stewardship Beyond TSCA." Presented at the Product Stewardship (PSX) 2022 Annual Meeting, Louisville, KY, October 18-20.

Lewis, AS; Marsh, C. 2022. "Hazard Conclusion: Development, Documentation, and Confidence." Presented at the Society for Chemical Hazard Communication (SCHC) 2022 Annual Meeting, Arlington, VA, September 17-22.

Lewis, AS; Radloff, KA. 2021. "ACAA Risk Evaluation for Fly Ash Containing Controlled Low Strength Material (CLSM)." 24p. Presented at the American Coal Ash Association (ACAA) Controlled Low Strength Material Webinar. July 28.

Pouncey, GL Jr.; Fotouhi, D; Lewis, AS. 2021. "Environmental Regulation: Enforcement Priorities and Compliance: Issues to Watch Out For." 33p. Presented at the Knowledge Group Webcast. July 26.

Lewis, AS. 2021. "The Intersection of Environmental Justice and Risk Science." 23p. Presented at the EPRI Virtual Coal Combustion Products (CCP) P241 and P242 Summer 2021 Meeting: Session 2: CCP Site Characterization and Risk. July 21.

Lewis, AS. 2021. "The Intersection of Environmental Justice and Risk Science." 15p. Presented at the National Association of Women Lawyers (NAWL) Environmental Justice in Action Webinar. June 10.

Mayfield, DB; Lewis, AS; Mims, DM; Dale, AL; Rohr, AC. 2019. "Life Cycle Hazard Assessment of Battery Technologies for Grid-scale Energy Storage." Poster #MP317. Presented at the SETAC North America 40th Annual Meeting, Toronto, Ontario, November 3-7.

Lewis, AS; Reid, KR. 2019. "Alternative Assessment: What Tools Work for You." Presented at the Product Stewardship Conference, Columbus, OH. September 10-12.

Reid, KR; Mattuck, RL; Kagel, C; Lewis, AS [Moderator]. 2019. "From 60 Day Notice to Compliance: Navigating Prop 65 Testing and Exposure Assessment Challenges." Presented at the Product Stewardship Conference, Columbus, OH. September 10-12.

Briggs, N; Lewis, AS; Bittner, AB. 2019. "Evaluating Climate Change Impacts on CCP Surface Impoundments and Landfills." Presented at the World of Coal Ash (WOCA) Conference, St. Louis, MO. May 15-16.

Lewis, AS. 2019. "Regional Screening Levels for the Appendix IV Constituents without Maximum Contaminant Levels (MCLs): Looking Under the Hood." Presented at the World of Coal Ash (WOCA) Conference, St. Louis, MO. May 15-16.

Reid, KR; Lewis, AS; Mattuck, R; Peterson, M; Lewandowski, T. 2019. "Warning! Technical Challenges of Compliance with the New Proposition 65 Regulations." Presented at the SSPC Coatings+ Annual Conference, Orlando, FL. February 11-14.

Lewis, A. 2019. "Regulatory Updates For Key Metals." Presented at the EPRI GWRC Risk Assessment Workshop, Pensacola, FL. February 7.

Lewis, A. 2019. "Environmental Safety Benchmarks: Putting the Pieces Together." Presented at the EPRI GWRC Risk Assessment Workshop, Pensacola, FL. February 7.

Lewis, A. 2019. "Risk-Based Approaches for Establishing Alternative Groundwater Protection Standards." Presented at the EPRI Remediation Workshop, Pensacola, FL. February 5.

Lewis, AS; Bittner, A. 2018. "Risk-Based Approaches for Establishing Alternative Standards at Coal Combustion Sites." Presented at the World of Coal Ash (WOCA) Ponded Ash Workshop, Louisville, KY. October 30-31.

Lewis, A. 2018. "Proposal: Risk Evaluation of Controlled Low Strength Material (CLSM) Using US EPA Guidance." Presented at the American Coal Ash Association (ACAA) 2018 Fall Meeting, New Orleans, LA. October 2.

Lewis, AS; LaMotte, R. 2018. "The Big Reveal: Preparing for Increased Ingredient Transparency." Presented at the Product Stewardship Conference, Washington DC, September 27-19.

Lewis, A; Reid, K; Peterson, M. 2018. "Technical Challenges of Complying with the New Requirements of Proposition 65." Presented at the Society for Chemical Hazard Communication (SCHC), Fall Meeting, Arlington, VA. September 22-26.

Lewis, A. 2018. "Coal Ash Management and Beneficial Use: What's Happening in the US?". Presented at the Ash Development Association of Australia National Technical and Education Committee Workshop, Sydney, Australia, July 16, 41p.

Lewis, A. 2018. "Guidelines for Establishing Alternative Groundwater Protection Standard for CCP Storage Facilities." Report to Electric Power Research Institute (EPRI). Presented at EPRI Summer Meeting, Lake Tahoe CA, June 26, 20p.

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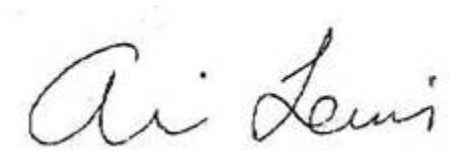
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EXHIBIT 37

Gradient, Human Health Risk Assessment, Marion Power Station (Dec. 20, 2024)

Human Health and Ecological Risk Assessment
Marion Power Station
Southern Illinois Power Cooperative
Marion, Illinois

Prepared by



Ari S. Lewis, M.S.
Principal

December 20, 2024
Corrected on January 29, 2025

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Abbreviations

ADI	Acceptable Daily Intake
BCF	Bioconcentration Factor
CCR	Coal Combustion Residuals
CEM	Conceptual Exposure Model
COI	Constituent of Interest
COPC	Constituent of Potential Concern
CSM	Conceptual Site Model
GWPS	Groundwater Protection Standard
GWQS	Groundwater Quality Standard
HTC	Human Threshold Criteria
ID	Identification
IEPA	Illinois Environmental Protection Agency
ISGS	Illinois State Geological Survey
K_d	Equilibrium Partitioning Coefficient
MCL	Maximum Contaminant Level
MGS	Marion Power Generating Station
NRWQC	National Recommended Water Quality Criteria
ORNL RAIS	Oak Ridge National Laboratory's Risk Assessment Information System
pCi/L	Picocuries per Liter
PRG	Preliminary Remediation Goal
RfD	Reference Dose
RME	Reasonable Maximum Exposure
RSL	Regional Screening Level
SIPC	Southern Illinois Power Cooperative
SWQS	Surface Water Quality Standard
US EPA	United States Environmental Protection Agency

1 Introduction

Southern Illinois Power Cooperative (SIPC) owns and operates the Marion Power Generating Station (MGS), a gas and coal-fired electric power generating facility in Marion, Illinois. The MGS is located in Williamson County, approximately eight miles south of Marion, Illinois, on the northwestern bank of the Lake of Egypt (Figure 1.1). The MGS began operation in 1963. The area surrounding the facility is a rural agricultural community (Kleinfelder, 2013). The MGS has several surface impoundments that have been used for storage of coal combustion residuals (CCR) and several impoundments that were used to support other operational purposes (*e.g.*, wastewater storage, surface water run-off collection). This report addresses potential impacts from the surface impoundments (*i.e.*, storage ponds) that did not routinely receive CCRs and consequently contain a *de minimis* amount of CCRs. These storage ponds include:

- Pond 4
- Pond 3 and Pond 3A
- Pond S-6
- Pond B-3
- South Fly Ash Pond

This report presents the results of an evaluation that characterizes potential risk to human and ecological receptors that may be exposed to CCR constituents in environmental media originating from the storage ponds listed above. This risk evaluation was performed to support a petition for relief from the closure schedule required under the Illinois coal ash rule (IEPA, 2021). Human health and ecological risks were evaluated for Site-specific constituents of interest (COIs). The conceptual site model (CSM) assumed that Site-related COIs in groundwater may migrate to the Lake of Egypt or to Little Saline Creek and affect surface water in the vicinity of the Site.

Consistent with United States Environmental Protection Agency (US EPA) guidance (US EPA, 1989), this report used a tiered approach to evaluate potential risks, which included the following steps:

1. Identify complete exposure pathways and develop a conceptual exposure model (CEM).
2. Identify Site-related COIs: Constituents detected in groundwater were considered COIs if their maximum detected concentration over the period from 2018 to 2023 exceeded a groundwater protection standard (GWPS) identified in Part 845.600 (IEPA, 2021), or a relevant surface water quality standard (SWQS) (IEPA, 2019).
3. Perform screening-level risk analysis: Compare maximum measured or modeled COI concentrations in surface water and sediment to conservative, health-protective benchmarks in order to determine constituents of potential concern (COPCs).
4. Perform refined risk analysis: If COPCs are identified, perform a refined analysis to evaluate potential risks associated with the COPCs.
5. Formulate risk conclusions and discuss any associated uncertainties.

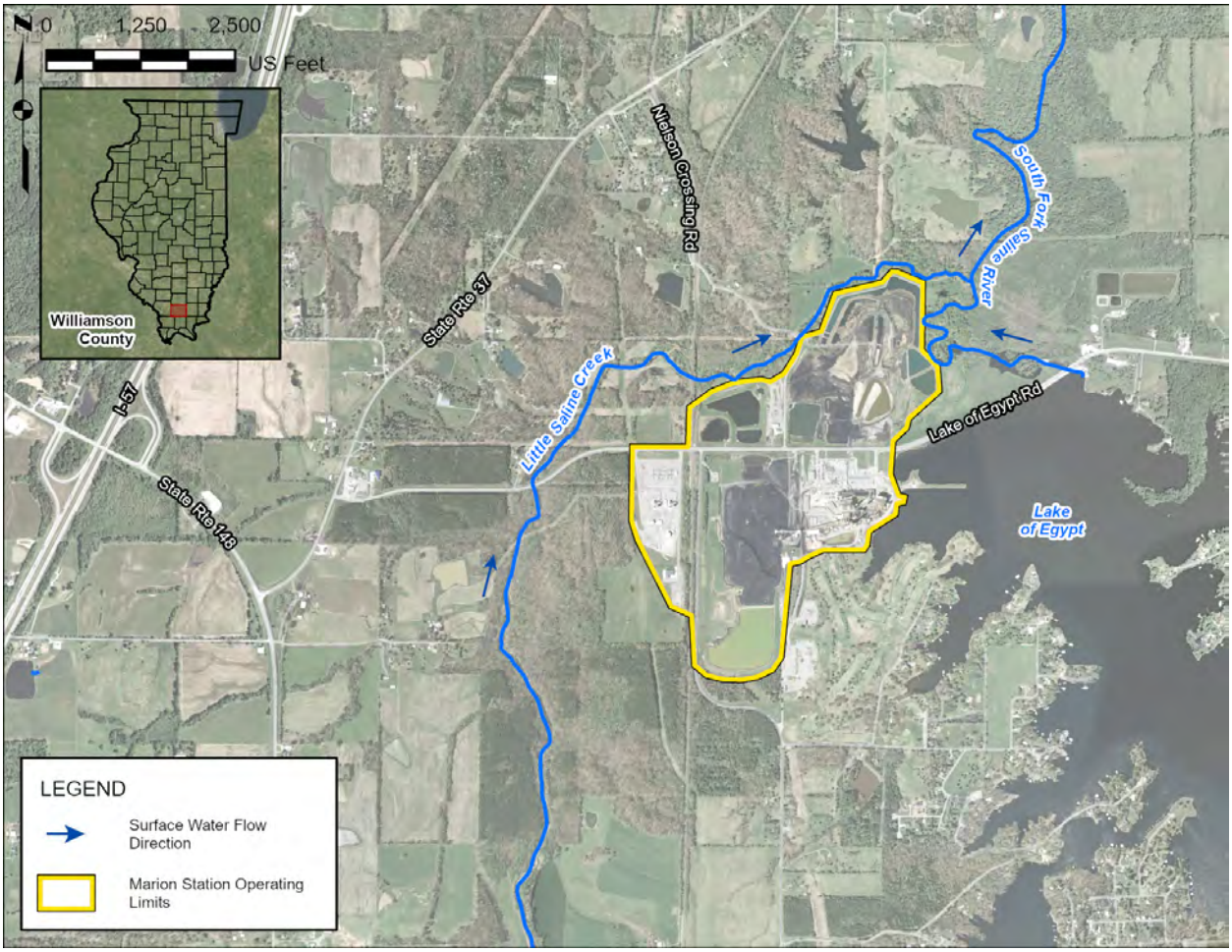


Figure 1.1 Site Location Map. Sources: Golder Associates Inc., 2021; USGS, 2022; US Census Bureau, 2016; USGS, 2011.

This assessment relies on a conservative (*i.e.*, health-protective) approach and is consistent with the risk approaches outlined in US EPA guidance (US EPA, 1989; US EPA, 2004; US EPA [Region IV], 2018). Specifically, we considered evaluation criteria detailed in Illinois Environment Protection Agency (IEPA) guidance documents (*e.g.*, IEPA, 2013, 2019), incorporating principles and assumptions consistent with the Federal CCR Rule (US EPA, 2015a) and US EPA's "Human and Ecological Risk Assessment of Coal Combustion Residuals" (US EPA, 2014).

US EPA has established acceptable risk metrics. Risks above these US EPA-defined metrics are termed potentially "unacceptable risks." Based on the evaluation presented in this report, no unacceptable risks to human or ecological receptors resulting from CCR exposures associated with the ponds listed above were identified. This means that the risks from the Site are likely indistinguishable from normal background risks. Specific risk assessment results include the following:

- No completed exposure pathways were identified for any groundwater receptors; consequently, no risks were identified relating to the use of groundwater for drinking water and other household purposes.
- No unacceptable risks were identified for the use of Lake of Egypt surface water as drinking water.
- No unacceptable risks were identified for recreators boating in Lake of Egypt.

- No unacceptable risks were identified for anglers consuming locally-caught fish.
- No unacceptable risks were identified for ecological receptors exposed to surface water or sediment.
- No bioaccumulative ecological risks were identified.

It should be noted that this evaluation incorporates a number of conservative assumptions that tend to overestimate exposure and risk (discussed in Section 3.5).

2 Site Overview

2.1 Site Description

The MGS is located in Williamson County, approximately eight miles south of Marion, Illinois, on the northwestern bank of the Lake of Egypt. The MGS facility is bordered to the east by Lake of Egypt, to the southeast by a golf course (Lake of Egypt Country Club), and to the south, west, and north by farmland (Figure 2.1). Little Saline Creek is located just north of the MGS facility boundary; it flows northeast and joins the South Fork Saline River about 600 feet east of the facility boundary (Figure 2.1).

Only "relatively small amounts of fly ash" were produced at the Site (SIPC, 2021a). Fly ash that was generated was transported and stored in the Initial Fly Ash Holding Area, Replacement Fly Ash Holding Area, Pond A-1, or the Former On-Site Landfill (SIPC, 2021a). The former Fly Ash Holding Areas are within the cover area for the Former On-Site Landfill (SIPC, 2021a). Other ponds located on Site (Figure 2.1) and a description of their historic and current operation are described below.

- Ponds 1 and 2 received sluiced bottom ash from power generation units 1, 2, 3, and 4 (Figure 1.1; SIPC, 2021a). During the entire pond operational life, bottom ash was removed from Ponds 1 and 2, and sold for beneficial reuse to shingle manufacturers, grit blasting companies, and local highway departments. Decanted water from Ponds 1 and 2 flowed into Pond 4.
- The Former Emery Pond was constructed in the late 1980s to hold stormwater drainage from the generating station (Figure 1.1; SIPC, 2021a). All CCRs in Emery Pond have been removed and the pond has been closed (SIPC, 2021a). Groundwater corrective action is currently on-going (Hanson Professional Services Inc., 2021).
- South Fly Ash Pond was constructed in 1989 and was originally intended to be a replacement for Pond A-1 (Figure 1.1; SIPC, 2021a). Ultimately, Pond A-1 did not need to be replaced. Thus, the South Fly Ash Pond was only used to receive decant water from the Former Emery Pond while it was operational. No CCRs were ever directly sent to or disposed of in the South Fly Ash Pond (SIPC, 2021a).
- Ponds 3 and 3-A were secondary ponds that received overflow from the fly ash holding areas (Figure 1.1; SIPC, 2021a). They also received storm water runoff, coal pile runoff, and water from the facility floor drains. In approximately 1982, Pond 3-A was separated from Pond 3 by construction of an internal berm. All sediment and debris were removed from Pond 3 in 2006 and 2011. All sediment and debris were removed from Pond 3-A in 2014. Subsequently, no CCRs were ever directly sent to or disposed in Ponds 3 or 3-A. Currently, water from the South Fly Ash Pond flows into Pond 3 (SIPC, 2021a).
- Pond S-6 was originally built to manage stormwater associated with the Former Landfill (Figure 1.1; SIPC, 2021b). Initially, water in Pond S-6 discharged to Little Saline Creek through Outfall 001; however, in approximately 1993, water from Pond S-6 was pumped to Pond 4. No CCRs were ever directly sent to or disposed in the Pond S-6 (SIPC, 2021a).
- Pond B-3 was built in 1985 and was primarily used as a secondary pond that received water from Pond A-1 (Figure 1.1; SIPC, 2021a). During periodic shutdowns of Pond A-1, Pond B-3 may have received some short-term discharges of fly ash from Unit 1, 2, and 3 prior to their shutdown (SIPC, 2021a). In 2017, Pond B-3 was dewatered and all sediment and CCR were excavated.

- Pond 4 was built in 1979 and historically received decant water from Ponds 1 and 2 for secondary treatment and received runoff from the coal pile (Figure 1.1; Kleinfelder, 2013; SIPC, 2021 a,b). No CCRs were ever directly sent to or disposed in the Pond 4. All sediment and debris were removed from Pond 4 in 2012. Currently, Pond 4 receives overflow from Pond S-6; water in Pond 4 discharges into the Little Saline Creek *via* Outfall 002 (Kleinfelder, 2013; SIPC, 2021a).

The ponds are shown in Figure 2.1. This Risk Assessment focuses on the storage ponds that supported operations but never directly received CCRs on a routine basis. These storage ponds include: Pond 4, Pond 3 and 3A, Pond S-6, Pond B-3, and the South Fly Ash Pond.

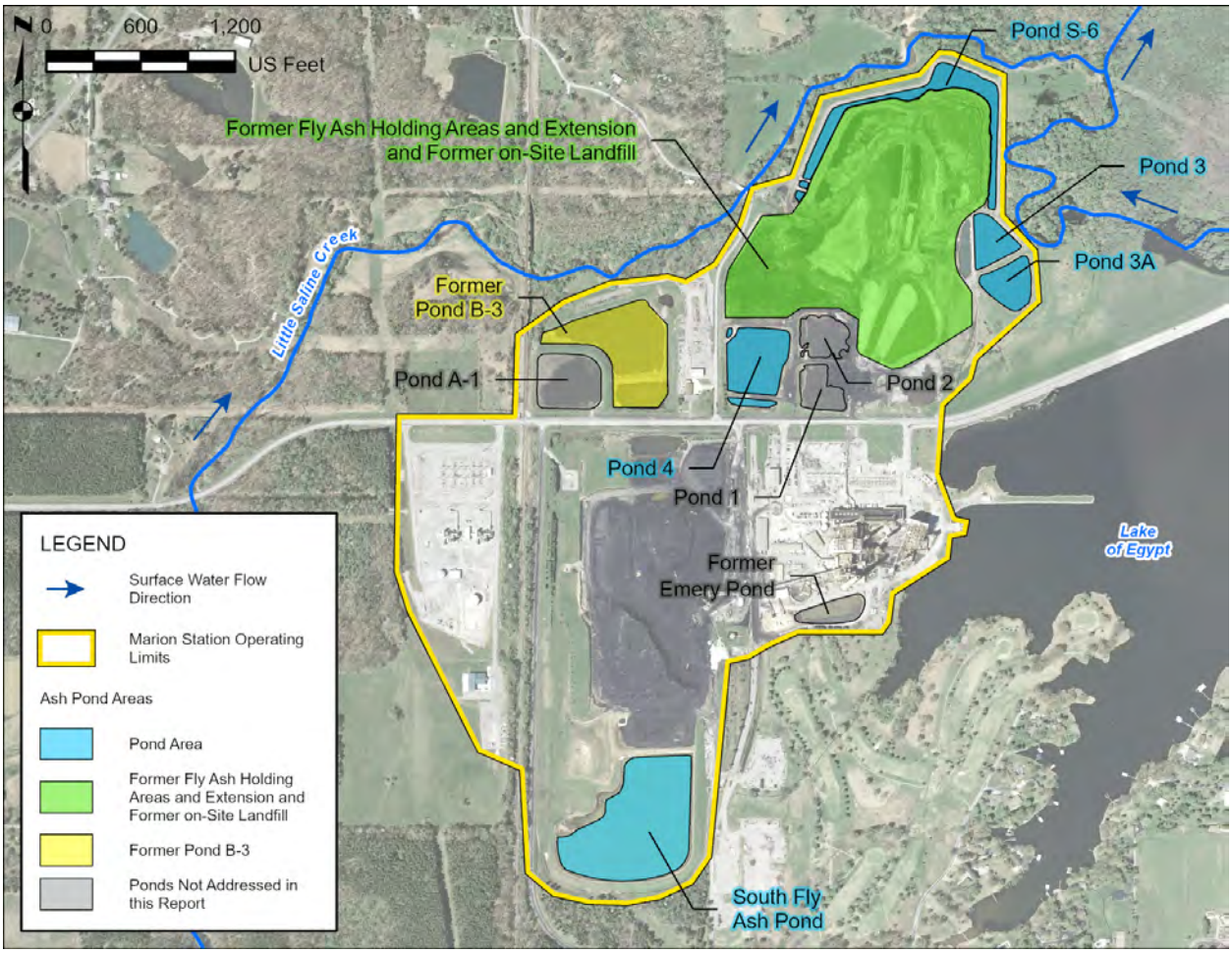


Figure 2.1 Site Layout. Sources: Golder Associates Inc., 2021; USGS, 2022; Andrews Engineering, 2021; SIPC, 2021a; USGS, 2011.

2.2 Geology/Hydrogeology

The Site is located at the southern edge of the Illinois Basin in the Shawnee Hills Section of the Interior Low Plateaus physiographic province (Golder Associates Inc., 2021). The Illinois Basin is a depositional and structural basin composed of sedimentary rocks ranging in age from Cambrian to Permian. The southern portion of the basin is characterized by extensive faulting, and some of these faults host commercially significant fluorite vein deposits (Golder Associates Inc., 2021). The regional stratigraphic sequence includes the following, from the surface downward (Golder Associates Inc., 2021):

- The Caseyville/Tradewater Formation: consists of lenticular, vertically and horizontally interbedded layers of sandstone, siltstone, and shale beneath a relatively thin layer of unconsolidated materials. It ranges from 190 to 500 feet in thickness.
- The Kinkaid Formation: consists of limestone, shale, claystone, and sandstone. It is separated from the overlying Pennsylvanian rocks of the Caseyville Formation by a laterally extensive unconformity. It ranges from 120 to 160 feet in thickness.
- The Degonia Formation: consists of thin, very-fine grained sandstone, siltstone, shale, and irregular chert beds. It ranges from 20 to 64 feet in thickness.
- The Clore Formation: consists of sandstone, shale and limestone, which sporadically outcrops at the surface. It ranges from 110 to 155 feet in thickness.

On Site, soils overlying the Caseyville/Tradewater Formation consist of glacial and alluvial deposits including layers of silty clay, clayey silt, silty sand and clayey sand (Kleinfelder, 2013). Table 2.1 provides a detailed summary of the Site lithology for the upper 50 feet (Golder Associates Inc., 2021).

Table 2.1 Site Geology

Lithology	Description
Peoria/Roxana Silt	Light yellow-tan to gray, fine sandy silt
Glasford Formation	Silty/sandy diamictons with thin lenticular bodies of silt, sand, and gravel
Caseyville Formation/Bedrock	Sedimentary rocks including sandstone, limestone, and shales

Source: Golder Associates, Inc., 2021; Kleinfelder, 2013.

The Site is located within the South Fork Saline River/Lake Egypt watershed. Groundwater in the southern/eastern portion of the Site flows toward and discharges into the Lake of Egypt; groundwater throughout the rest of property flows in a northeasterly direction toward Little Saline Creek (Figure 3.3; SIPC, 2007). The uppermost water-bearing zone (*i.e.*, the Unlithified Unit) is a shallow, hydraulically perched layer consisting of fill and residuum (silts and clays), with a saturated thickness of approximately up to 10 feet (Hanson Professional Services Inc., 2021). The average horizontal hydraulic conductivity is estimated to be approximately 1.5×10^{-4} cm/s in the Unlithified Unit (Golder Associates Inc., 2021). The hydraulic gradient was estimated to be 0.019 based on measured groundwater elevations at monitoring wells S-3 and S-6 (SIPC, 2007).

2.3 Conceptual Site Model

A CSM describes sources of contamination, the hydrogeological units, and the physical processes that control the transport of water and solutes. In this case, the CSM describes how groundwater underlying the MGS migrates and potentially interacts with surface water and sediment in the Lake of Egypt and Little

Saline Creek. The CSM was developed using site-specific hydrogeologic data, including information on groundwater flow and surface water characteristics.

Groundwater (and CCR-related constituents originating from the MGS) may migrate vertically downward through the Unlithified Unit. As noted in Section 2.2, the dominant groundwater flow direction at the Site is to the northeast toward Little Saline Creek. However, south of Lake of Egypt Road, groundwater has an eastern flow component toward the Lake of Egypt (SIPC, 2007). Dissolved constituents in groundwater that flows into these two water bodies may partition between sediment and surface water.

2.4 Groundwater Monitoring

Data from the following monitoring wells were included in this risk assessment, as they are used to monitor groundwater quality downgradient and upgradient of the MGS (Figure 2.3):

- Wells C-1, C-2, C-3 and Well EBG; these wells were used to characterize groundwater quality near the South Fly Ash Pond.
- Wells S-1, S-2, S-3, S-4, S-5, S-6; these wells were used to characterize groundwater quality near the Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3.

The monitoring well construction details are presented in Table 2.2. The analyses presented in this report rely on the available data from these wells collected between 2018 and 2023. Groundwater samples were analyzed for a suite of total metals, specified in Illinois CCR Rule Part 845.600 (IEPA, 2021),[1] as well as general water quality parameters (pH, chloride, fluoride, sulfate, and total dissolved solids). A summary of the groundwater data used in this risk evaluation is presented in Tables 2.3a and 2.3b. The use of groundwater data in this risk evaluation does not imply that detected constituents are associated with operations at MGS or that they have been identified as potential groundwater exceedances.

[1] Samples were analyzed for a longer list of inorganic constituents and general water quality parameters (chloride, fluoride, sulfate, and total dissolved solids), but these constituents were not evaluated in the risk evaluation.

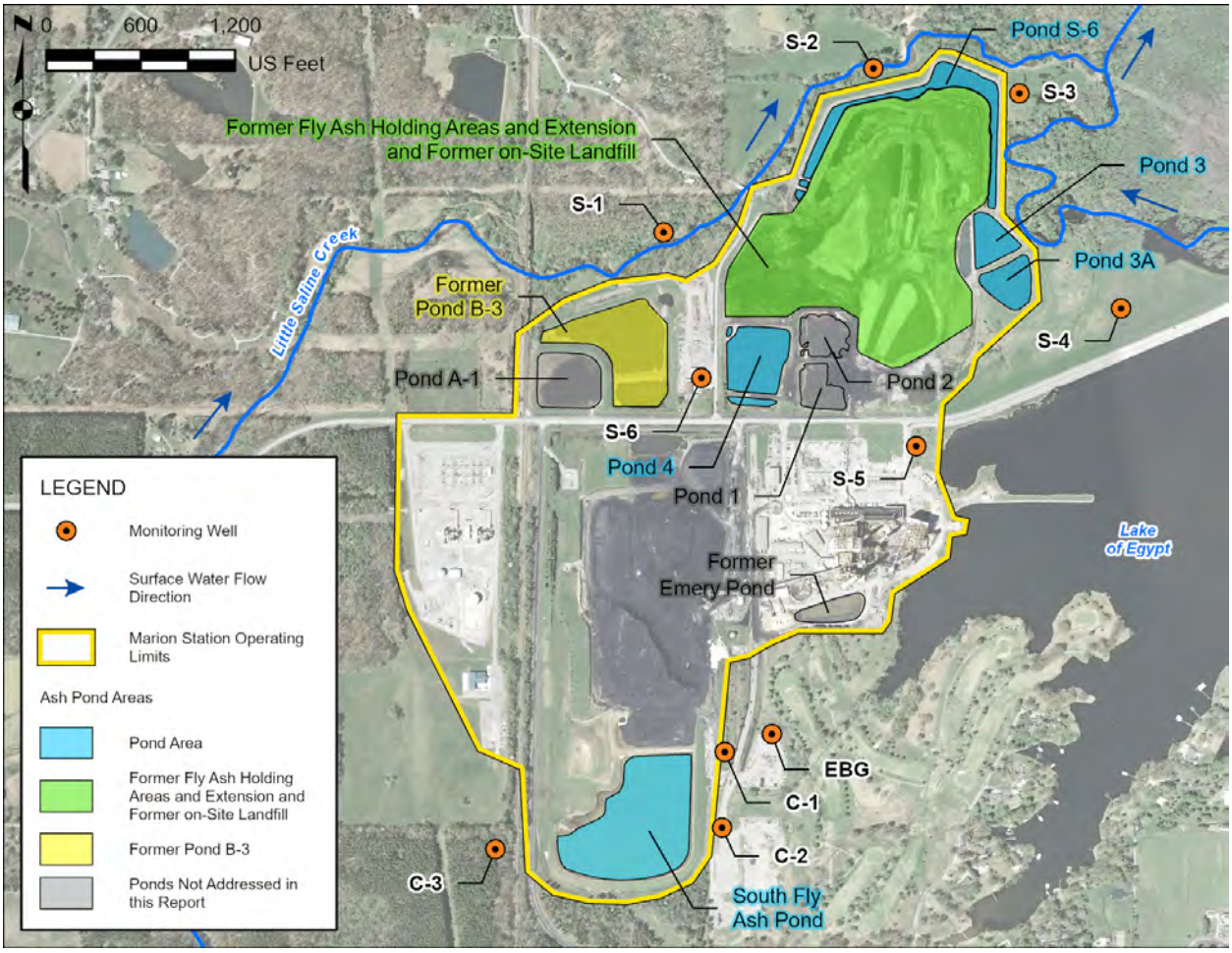


Figure 2.2 Monitoring Well Locations. Sources: Golder Associates Inc., 2021; USGS, 2022; SIPC, 2007; Andrews Engineering, 2021; SIPC, 2021a; USGS, 2011.

Table 2.2 Groundwater Monitoring Wells

Well	Date Constructed	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Well Depth (ft bgs)	Hydrostratigraphic Unit (Screened Interval)
C-1	2/16/2010	5	15	15	Unlithified Unit/Bedrock
C-2	2/16/2010	2	12	12	Unlithified Unit/Bedrock
C-3	(no info)	(no info)			Unlithified Unit/Bedrock
EBG	2/8/2017	18	28	28	Unlithified Unit/Bedrock
S-1	9/20/1993	15	25	25	Unlithified Unit/Bedrock
S-2	2/18/2010	16	26	27.5	Unlithified Unit/Bedrock
S-3	9/20/1993	15	25	25	Unlithified Unit/Bedrock
S-4	9/21/1993	8	18	18	Unlithified Unit/Bedrock
S-5	9/20/1993	12	22	22	Unlithified Unit/Bedrock
S-6	9/20/1993	12	22	22	Unlithified Unit/Bedrock

Notes:
bgs = Below Ground Surface; ft = Feet; EBG = Emery Pond Background Well.

Table 2.3a Groundwater Data Summary (2018-2023) for C-Wells + EBG

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	20	ND	ND	0.030
Arsenic	7	20	0.00040	0.0075	0.10
Barium	19	20	0.012	0.20	0.0050
Beryllium	3	21	0.00038	0.00060	0.020
Boron	36	81	0.011 J	12 J	0.50
Cadmium	5	77	0.00066	0.013	0.020
Chromium	8	21	0.00070	0.0042	0.030
Cobalt	13	21	0.00020 J	0.29 J	0.020
Lead	3	21	0.0011	0.0031	0.050
Lithium	8	13	0.014	0.024	0.060
Mercury	1	19	0.000070	0.000070	0.00020
Molybdenum	8	14	0.0012 J	0.015	0.040
Selenium	11	21	0.00060	0.033	0.025
Thallium	2	21	0.0012	0.031	0.040
Dissolved Metals (mg/L)					
Boron	12	24	0.040	0.92	0.50
Cadmium	0	24	ND	ND	0.0010
Radionuclides (pCi/L)					
Radium 226 + 228	9	11	0.12	2.7	0.33
Other (mg/L or SU)					
Chloride	61	63	2.4	570	20
Fluoride	19	24	0.10	0.68	0.50
pH	47	47	5.8	7.0	0
Sulfate	81	81	49	670	123
Total Dissolved Solids	51	51	100	4000	16

Notes:
EBG = Emery Pond Background Well; J = Estimated Value; mg/L = Milligrams per Liter; ND = Not Detected; pCi/L = Picocuries per Liter; SU = Standard Unit.
Blank cells indicate constituent not detected.

Table 2.3b Groundwater Data Summary (2018-2023) for S-Wells

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	12	ND	ND	0.0050
Arsenic	3	12	0.0089	0.12	0.050
Barium	12	12	0.020	1.5	NA
Beryllium	1	12	0.0081	0.0081	0.0050
Boron	35	126	0.0041	2.8	0.50
Cadmium	12	126	0.00068	0.055	0.002
Chromium	9	12	0.0014	0.069	0.0050
Cobalt	5	12	0.0012	0.054	0.010
Lead	7	12	0.0027	0.080	0.0050
Mercury	0	12	ND	ND	0.00020

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Selenium	3	12	0.0021	0.017	0.025
Thallium	1	12	0.046	0.046	0.025
Dissolved Metals (mg/L)					
Boron	14	48	0.0051	3.1	0.50
Cadmium	0	48	ND	ND	0.001
Other (mg/L or SU)					
Chloride	88	90	6.1	480	20
Fluoride	6	12	0.062	0.18	0.50
pH	66	66	5.7	6.9	NA
Sulfate	122	126	2.6	310	20
Total Dissolved Solids	66	66	78	4500	NA

Notes:
mg/L = Milligrams per Liter; NA = Not Available; ND = Not Detected; SU = Standard Unit.
Blank cells indicate constituent not detected.

2.5 Surface Water Monitoring

Surface water samples were collected by MGS from five locations in Lake of Egypt in June 2020. The sample locations are listed in Table 2.4, are shown in Figure 2.2, and the sampling results are summarized in Table 2.5. Surface water data are also available from the Lake of Egypt public water district as part of routine monitoring. The data used in this report were collected 2018-2023, and the sampling results are summarized in Table 2.6.

Table 2.4 Lake of Egypt Sample Locations

Sample ID	Description
LE-u	Upstream sample
LE-d	Spillway sample
LE-in	Public water supply intake
LE-b1	Bay sample #1
LE-b2	Bay sample #2



Figure 2.3 Surface Water Sample Locations. Source: Hanson (2021)

Table 2.5 Surface Water Data Summary for Lake of Egypt Samples

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Arsenic	0	5	ND	ND	0.025
Barium	5	5	0.00227	0.00265	NA
Boron	0	5	ND	ND	0.02
Cadmium	0	5	ND	ND	0.001
Chromium	0	5	ND	ND	0.005
Cobalt	0	5	ND	ND	0.005
Lead	0	5	ND	ND	0.001
Mercury	0	5	ND	ND	0.2
Selenium	0	5	ND	ND	0.001
Thallium	0	5	ND	ND	0.002
Other (mg/L)					
Chloride	1	5	4	4	4
Fluoride	0	5	ND	ND	0.1
pH	5	5	6.57	7.25	NA
Sulfate	5	5	16	17	NA
Total Dissolved Solids	5	5	44	60	NA

Notes:
mg/L = Milligrams per Liter; NA = Not Available; ND = Not Detected; SU = Standard Unit.
Blank cells indicate constituent was not detected.
Data collected on 6/1/2020.

Table 2.6 Surface Water Data Summary for Lake of Egypt Public Water District Data

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	6	ND	ND	0.003
Arsenic	0	6	ND	ND	0.001
Barium	6	6	0.021	0.0263	NA
Beryllium	0	6	ND	ND	0.001
Cadmium	0	6	ND	ND	0.003
Chromium	0	6	ND	ND	0.005
Mercury	0	6	ND	ND	0.0002
Selenium	1	6	0.0024	0.0024	0.002
Thallium	0	6	ND	ND	0.002
Radionuclides (pCi/L)					
Radium 226 + 228	1	1	1.03	1.03	NA
Other (mg/L)					
Chloride	6	6	10.4	23	NA
Fluoride	6	6	0.553	0.73	NA
Sulfate	6	6	34.6	51.7	NA
Total Dissolved Solids	6	6	87	158	NA

Notes:
mg/L = Milligrams per Liter; NA = Not Available; ND = Not Detected; pCi/L = Picocuries per Liter.
Data collected 2018-2023.

3 Risk Evaluation

3.1 Risk Evaluation Process

A risk evaluation was conducted to determine whether constituents present in groundwater underlying and downgradient of the MGS have the potential to pose adverse health effects to human and ecological receptors. The risk evaluation is consistent with the principles of risk assessment established by US EPA and has considered evaluation criteria detailed in Illinois guidance documents (*e.g.*, IEPA, 2013, 2019).

The general risk evaluation approach is summarized in Figure 3.1 and discussed below.

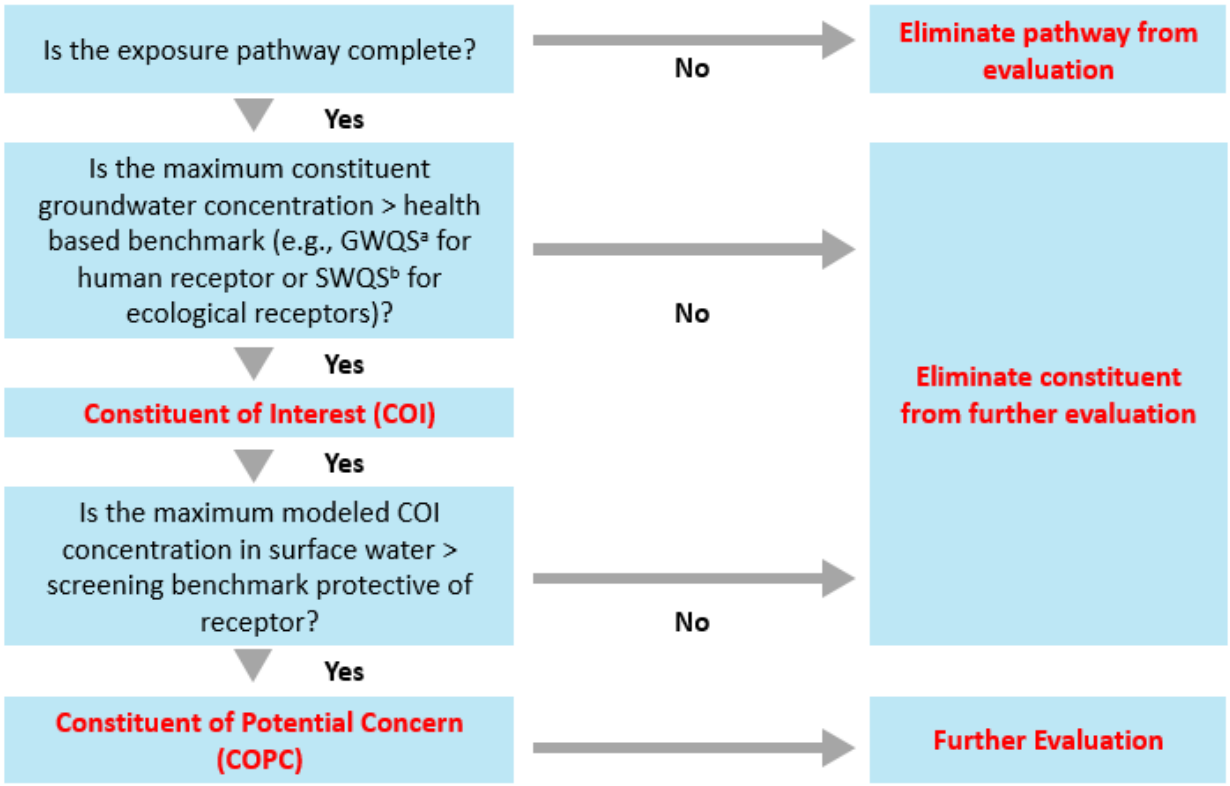


Figure 3.1 Overview of Risk Evaluation Methodology. IEPA = Illinois Environmental Protection Agency; GWQS = IEPA Groundwater Quality Standards; SWQS = IEPA Surface Water Quality Standards. (a) The IEPA Part 845 Groundwater Protection Standards (GWPS) were used to identify COIs. (b) IEPA SWQS protective of chronic exposures to aquatic organisms were used to identify ecological COIs. In the absence of an SWQS, US EPA Region IV Ecological Screening Values (ESVs) were used.

The first step in the risk evaluation was to develop the CEM and identify complete exposure pathways. All potential receptors and exposure pathways based on groundwater use and surface water use in the vicinity of the Site were considered. Exposure pathways that are incomplete were excluded from the evaluation.

Groundwater data were used to identify COIs. COIs were identified as constituents with maximum concentrations in groundwater in excess of groundwater quality standards (GWQS)[2] for human receptors, and SWQS for ecological receptors. Based on the CSM (Section 2.2), groundwater in the south half of the Site, on the west side of the South Fly Ash Pond, has the potential to interact with surface water in the Lake of Egypt. Therefore, potential facility-related constituents in groundwater may potentially flow toward and into surface water in the Lake of Egypt. Surface water samples have been collected from the Lake of Egypt adjacent to the Site, and Gradient used the measured surface data to evaluate potential risks to receptors in using the lake for recreation and as a source of drinking water.

Groundwater in the northern portion of the Site, near Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3 and in the northern portion of the South Fly Ash pond has the potential to interact with surface water in Little Saline Creek. No surface water has been collected from Little Saline Creek, therefore, Gradient modeled the COI concentrations in Little Saline Creek based on the groundwater data from the groundwater monitoring wells located in this portion of the Site (*i.e.*, S-wells). The measured and modeled COI concentrations in surface water and sediment were compared to conservative, generic risk-based screening benchmarks for human health and ecological receptors. These generic screening benchmarks rely on default assumptions with limited consideration of site-specific characteristics. Human health benchmarks are receptor-specific values calculated for each pathway and environmental medium that are designed to be protective of human health. Human health and ecological screening benchmarks are inherently conservative because they are intended to screen out chemicals that are of no concern with a high level of confidence. Therefore, a measured or modeled COI concentration exceeding a screening benchmark does not indicate an unacceptable risk, but only that further risk evaluation is warranted. COIs with maximum concentrations exceeding a conservative screening benchmark are identified as COPCs requiring further evaluation.

As described in more detail below, this evaluation relied on the screening assessment to demonstrate that constituents present in groundwater underlying the facility do not pose an unacceptable human health or ecological risk. That is, after the screening step, no COPCs were identified and further assessment was not warranted.

3.2 Human and Ecological Conceptual Exposure Models

A CEM provides an overview of the receptors and exposure pathways requiring risk evaluation. The CEM describes the source of the contamination, the mechanism that may lead to a release of contamination, the environmental media to which a receptor may be exposed, the route of exposure (exposure pathway), and the types of receptors that may be exposed to these environmental media.

3.2.1 Human Conceptual Exposure Model

The human CEM for the Site depicts the relationships between the off-Site environmental media potentially impacted by constituents in groundwater and human receptors that could be exposed to these media. Figure 3.2 presents a human CEM for the Site. It considers a human receptor who could be exposed to COIs hypothetically released into groundwater and surface water. The following human receptors and exposure pathways were evaluated for inclusion in the Site-specific CEM.

[2] As discussed further in Section 3.3.2, GWQS are protective of human health and not necessarily of receptors. While receptors are not exposed to groundwater, groundwater can potentially enter into the adjacent surface water and impact receptors. Therefore, two sets of COIs were identified: one for humans and another for receptors.

- Residents – exposure to groundwater/surface water as drinking water;
- Residents – exposure to groundwater/surface water used for irrigation;
- Recreators in the Lake of Egypt to the east of the Site:
  - Boaters – exposure to surface water while boating;
  - Swimmers – exposure to surface water while swimming;
  - Anglers – exposure to surface water and consumption of locally caught fish.
- Recreators in Little Saline Creek to the north of the Site:[3]
  - Anglers – exposure to surface water and consumption of locally caught fish.

All of these exposure pathways were considered to be complete, except for residential exposure to groundwater used for drinking water or irrigation, and exposure to sediment. Section 3.2.1.1 explains why the residential drinking water and irrigation pathways are incomplete for groundwater. Section 3.2.1.2 discusses the use of surface water as a drinking water source. Section 3.2.1.3 provides additional description of the recreational exposures.

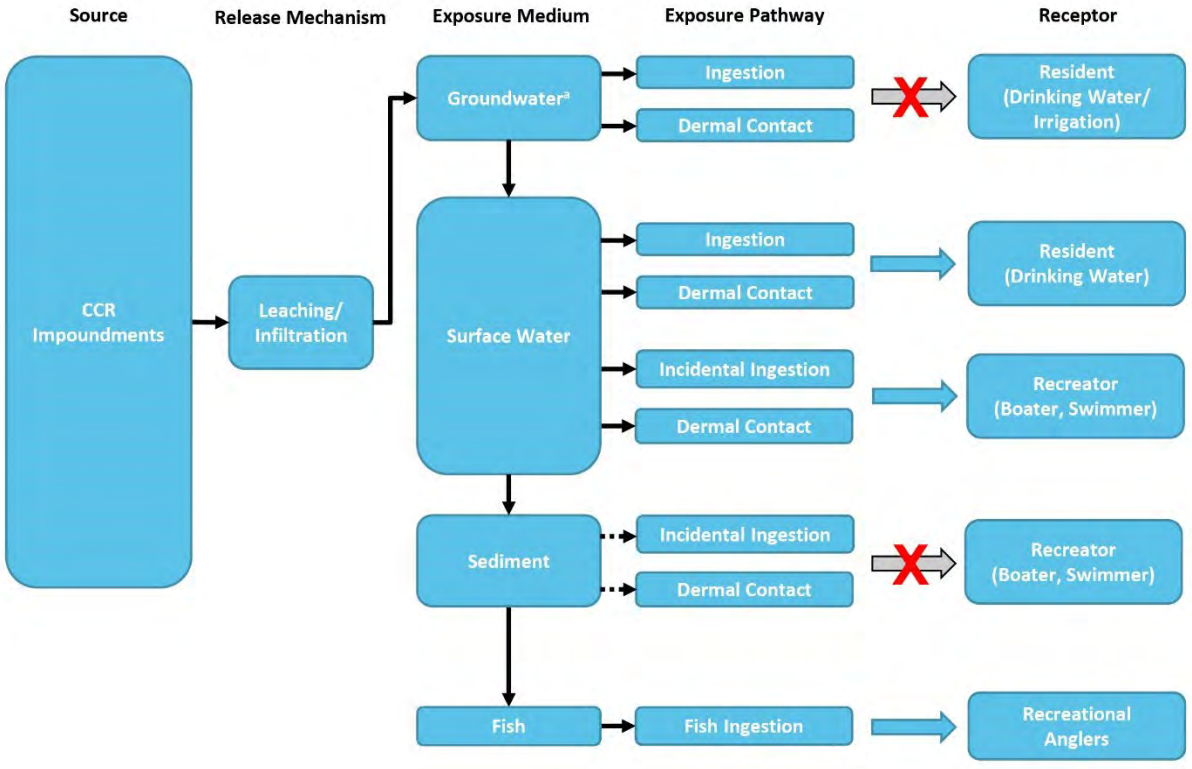


Figure 3.2 Human Conceptual Exposure Model. CCR = Coal Combustion Residuals. Dashed line/Red X = Incomplete or insignificant exposure pathway. (a) Groundwater in the vicinity of the Site is not used as a drinking water or irrigation source.

[3] Boating and swimming are assumed not to occur in Little Saline Creek due to its small size.

3.2.1.1 Groundwater as a Drinking Water/Irrigation Source

Groundwater beneath the facility generally flows northeast towards the Little Saline Creek (SIPC, 2007). However, in the southern section of the Site, there is a component of groundwater flow that is to the east toward the Lake of Egypt (SIPC, 2007). Gradient conducted a receptor survey in 2024 to identify potential users of groundwater in the vicinity of the facility. Specific sources that were used in this survey include the Illinois State Geological Survey (ISGS) ILWATER database (ISGS, 2024). Four private water wells were identified within 1,000 meters of the facility (Table 3.1, Figure 3.3). One private well (121990235000) is upgradient of the facility, and the other three wells are sidegradient of the facility, such that these wells are not expected to be impacted by any CCR constituents in groundwater that originate from any of the ponds that are being evaluated (Figure 3.3). Further, wells are screened in the sandstone or lime sandstone water bearing unit and range in depth from 95 to 260 ft bgs, far below the depths of the monitoring wells at the site (12-28 feet bgs) where impacts, if any, from site-related activities would be observed. Moreover, three of the private wells are on the opposite side of Little Saline Creek, which provides hydraulic separation from any potential impacts at the site since shallow groundwater is likely to discharge into the creek rather than flow underneath it.

Table 3.1 Summary of Water Wells Within 1,000 Meters of the MGS

Well Number	Type	Date Drilled	Owner	Depth (ft)	Formation	Latitude	Longitude
121990235000	Water Well	2/29/1968	Morganthaler, Carrol	95	Sandstone	37.612148	-88.968285
121990235100	Water Well	4/30/1968	Propes, Charlie	98	Sandstone	37.611752	-88.950049
121990252500	Water Well	10/31/1971	Fisher, William	150	Sandstone	37.628378	-88.962144
121992397400[a]	Water Well	7/20/2003	Gordon, Steve	260	Lime Sandstone	37.628378	-88.962144

Notes:
ft = Feet; MGS = Marion Power Generating Station..
(a) This well, drilled in 2003, listed a pumping rate of 20 gallons per minute (gpm), while the well at the same location (121990252500), drilled in 1971 listed a pumping rate of 7 gpm. It is not known whether the 1971 is still in use.
Source: ISGS (2024).

3.2.1.2 Surface Water as a Drinking Water Source

The Lake of Egypt is used as a public water supply (IEPA, 2024a). The intake for the Lake of Egypt Public Water District (Facility ID IL1995200) is located at the northeast corner of the Lake of Egypt (Figure 3.3). The Lake of Egypt Public Water District serves a population of 11,368 (IEPA, 2024a) and supplies "approximately 1 million gallons per day of drinking water to Union, Jackson, and Williamson Counties" (SIPC, 2018a).

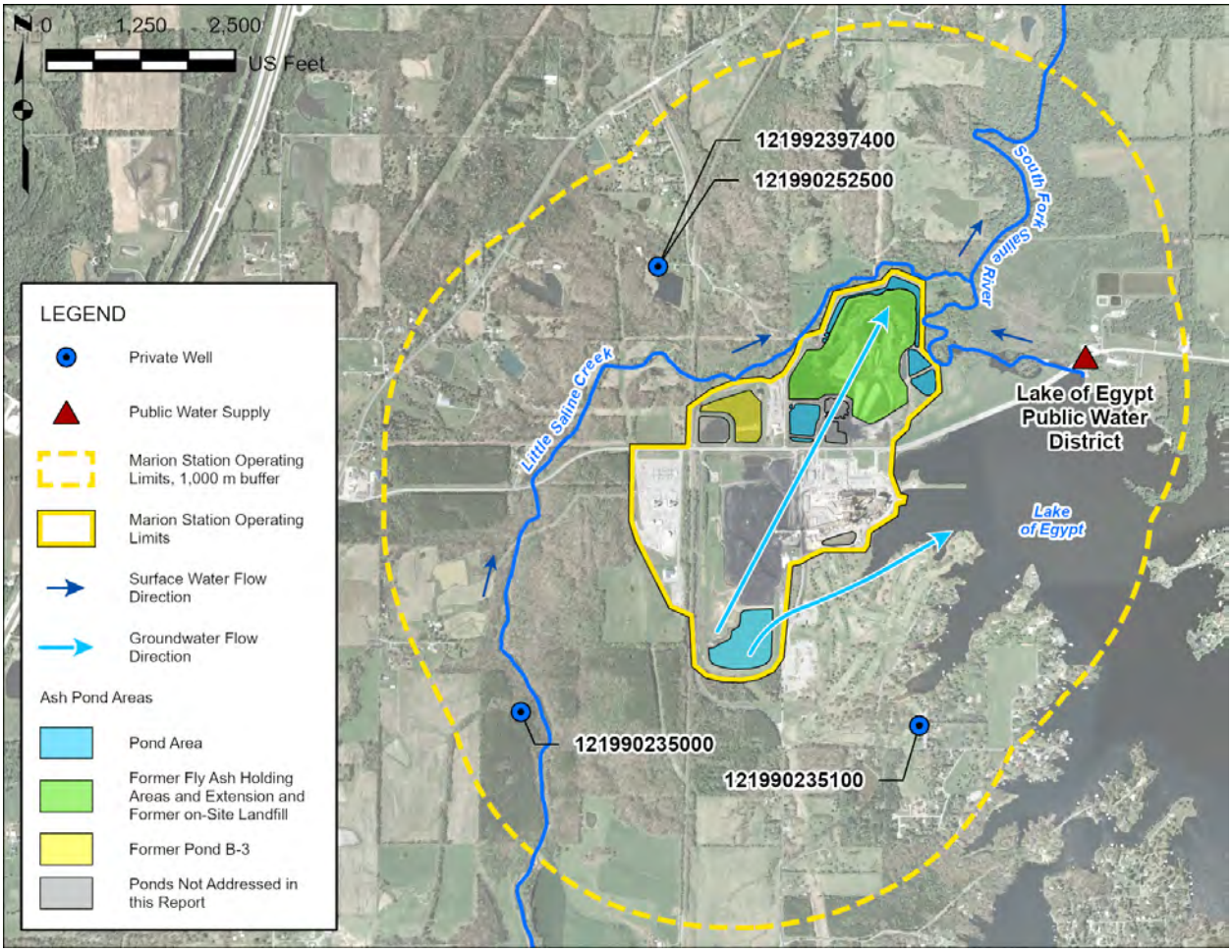


Figure 3.3 Water Wells Within 1,000 Meters of the Facility. Sources: Golder Associates Inc., 2021; USGS, 2022; Andrews Engineering, 2021; ISGS, 1909-2023; IEPA, 2024b; SIPC, 2007; USGS, 2011.

3.2.1.3 Recreational Exposures

Lake of Egypt, located to the east of the MGS facility, is a private lake owned by SIPC which allows the lake to be used for recreation. The lake is approximately 2,300 acres in size, and has an average depth of 18 feet and a maximum depth of 52 feet (SIPC, 2018a). The recreational uses of the Lake of Egypt include fishing, boating, swimming, and water sports such as water skiing (SIPC, 2018b). SIPC notes that "swimming is prohibited except at approved beaches marked by buoys" (SIPC, 2018b). Recreational exposure to surface water may occur during activities such as boating or fishing in the lake. Recreational anglers may also consume locally caught fish from the lake. The northwest bay of the lake (nearest the MGS) is a restricted area (SIPC, 2018b). Due to the depth of the lake, sediment exposure was not evaluated in Lake of Egypt.

Little Saline Creek is located immediately to the north of the Site. Gradient estimated the average creek width as 26 feet (based on measurements from an aerial photo), and the depth to be approximately 5 feet (based on a Google Earth photo from February 2020 in which bottom sediments were visible). Recreators in the Little Saline Creek may include anglers who could be exposed to surface water and consume locally caught fish. It is assumed that boating and swimming do not occur in Little Saline Creek due to its small size, and the availability of recreation areas at Lake of Egypt to the east.

3.2.2 Ecological Conceptual Exposure Model

The ecological CEM for the Site depicts the relationships between off-Site environmental media (surface water and sediment) potentially impacted by COIs in groundwater and ecological receptors that may be exposed to these media. The ecological risk evaluation considered both direct toxicity as well as secondary toxicity *via* bioaccumulation. Due to the fact that the dominant groundwater flow direction is to the northeast, and the relatively small size of Little Saline Creek, this surface waterbody has a higher potential to be influenced by CCR constituents. Given these factors, Little Saline Creek was identified as the primary focus for evaluating environmental risks for ecological receptors. Figure 3.4 presents the ecological CEM for the Site. The following ecological receptor groups and exposure pathways were considered:

- **Ecological Receptors Exposed to Surface Water:**
  - Aquatic plants, amphibians, reptiles, and fish.
- **Ecological Receptors Exposed to Sediment:**
  - Benthic invertebrates (*e.g.*, insects, crayfish, mussels).
- **Ecological Receptors Exposed to Bioaccumulative COIs:**
  - Higher trophic level wildlife (avian and mammalian) *via* direct exposures (surface water and sediment exposure) and secondary exposures through the consumption of prey (*e.g.*, plants, invertebrates, small mammals, fish).

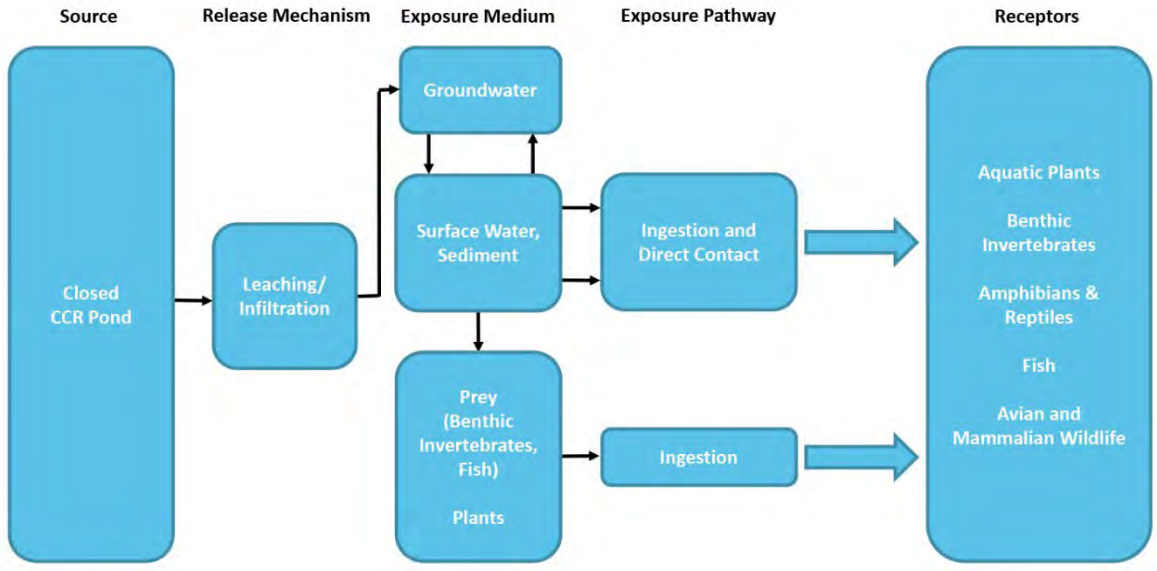


Figure 3.4 Ecological Conceptual Exposure Model. CCR = Coal Combustion Residuals.

3.3 Identification of Constituents of Interest

Risks were evaluated for COIs. A constituent was considered a COI if the maximum detected constituent concentration in groundwater exceeded a health-based benchmark. According to US EPA risk assessment guidance (US EPA, 1989), this screening step is designed to reduce the number of constituents carried through the risk evaluation that are anticipated to have a minimal contribution to the overall risk.

Identified COIs are the constituents that are most likely to pose a risk concern in the surface water adjacent to the Site.

3.3.1 Human Health Constituents of Interest

For the human health risk evaluation, COIs were conservatively identified as constituents with maximum concentrations in groundwater above the GWPS listed in the Illinois CCR Rule Part 845.600 (IEPA, 2021). The COIs were determined separately for the wells monitoring north and south of Lake of Egypt Road (the S-wells in the north that characterize groundwater quality near Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3, and the C-wells plus EBG well in the south that characterize groundwater quality near the South Fly Ash Pond). Gradient used the maximum detected concentrations from groundwater samples collected from these two groups of wells, regardless of hydrostratigraphic unit. The use of groundwater data in this risk evaluation does not imply that detected constituents are associated with the facility or that they have been identified as potential groundwater exceedances. Using this approach, the COIs that were identified from the S-wells included arsenic, beryllium, boron, cadmium, cobalt, lead, and thallium (Table 3.2). For the S-wells, the maximum concentrations for arsenic, beryllium, cadmium, cobalt, and lead were detected in well S-1; the maximum concentrations for boron and thallium were detected in well S-2. The COIs that were identified from the C-wells+EBG included boron, cadmium, cobalt, and thallium (Table 3.3). For the C-wells, the maximum concentrations were detected in well EBG for boron and cobalt, well C-3 for cadmium, and well C-2 for thallium. Although these constituents were identified as COIs, it's important to re-emphasize that this identification was based solely on whether their maximum concentration exceeded the GWPS. We did not take into account overall temporal or spatial patterns, nor did we consider how these concentrations related to natural background levels or potential contamination from non-CCR sources.

The water quality parameters that exceeded the GWPS included chloride and total dissolved solids in the S-wells, and chloride, sulfate, and total dissolved solids in the C-wells. However, these constituents were not included in the risk evaluation because the GWPS is based on aesthetic quality and there is an absence of studies regarding toxicity to human health. The US EPA secondary maximum contaminant levels (MCLs) for chloride, sulfate, and total dissolved solids are based on aesthetic quality. The secondary MCLs for chloride and sulfate (250 mg/L) are based on salty taste (US EPA, 2021). The secondary MCL for total dissolved solids (500 mg/L) is based on hardness, deposits, colored water, staining, and salty taste (US EPA, 2021). Given that these parameters are not likely to pose a human health risk concern in the event of exposure, they were not considered to be human health COIs.

Table 3.2 Human Health Constituents of Interest Based on Groundwater for S-Wells - Near Pond 4, Pond 3 and 3A, Pond S-6, and Pond B-3 (2018-2022)

Constituent[a]	Detected Maximum[b]	GWPS[c]	Human Health COI[d]
Total Metals (mg/L)			
Antimony	*0.0050*	0.0060	No
Arsenic	0.12	0.010	Yes
Barium	1.5	2.0	No
Beryllium	0.0081	0.0040	Yes
Boron	2.8	2.0	Yes
Cadmium	0.055	0.005	Yes
Chromium	0.069	0.10	No
Cobalt	0.054	0.0060	Yes
Lead	0.080	0.0075	Yes
Mercury	*0.0002*	0.0020	No
Selenium	0.017	0.050	No
Thallium	0.046	0.0020	Yes
Dissolved Metals (mg/L)			
Boron	3.1	2.0	Yes
Cadmium	*0.001*	0.005	No
Other (mg/L or SU)			
Chloride	480	200	No[e]
Fluoride	0.18	4.0	No
pH	6.9	9.0	No
Sulfate	310	400	No
Total Dissolved Solids	4500	1200	No[e]

Notes:
COI = Constituent of Interest; GWPS = Groundwater Protection Standard; IL = Illinois; mg/L = Milligrams per Liter; SU = Standard Units.
Italics indicate constituent was not detected; the value reported is the maximum detection limit.
Shaded cell indicates a compound identified as a COI.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021).
(b) The maximum detected groundwater concentration was used to identify COIs.
(c) The IL Part 845.600 GWPS (IEPA, 2021) were used to identify COIs.
(d) COIs are constituents for which the maximum concentration exceeds the groundwater standard.
(e) Maximum exceeds the GWPS but analyte is not considered to be a COI because the GWPS is based on aesthetic quality.

Table 3.3 Human Health Constituents of Interest Based on Groundwater for C-Wells - Near the South Fly Ash Pond (2018-2023)

Constituent[a]	Maximum Groundwater Concentration[b]	GWPS[c]	Human Health COI[d]
Total Metals (mg/L)			
Antimony	*0.030*	0.0060	No[e]
Arsenic	0.0075	0.010	No
Barium	0.20	2.0	No
Beryllium	0.00060	0.0040	No
Boron	12	2.0	Yes
Cadmium	0.013	0.0050	Yes
Chromium	0.0042	0.10	No
Cobalt	0.29	0.0060	Yes
Lead	0.0031	0.0075	No
Lithium	0.024	0.040	No
Mercury	0.000070	0.0020	No
Molybdenum	0.015	0.10	No
Selenium	0.033	0.050	No
Thallium	0.031	0.0020	Yes
Dissolved Metals (mg/L)			
Boron	0.92	2.0	No
Cadmium	*0.0010*	0.0050	No
Radionuclides (pCi/L)			
Radium 226 + Radium 228	2.7	5.0	No
Other (mg/L or SU)			
Chloride	570	200	No[f]
Fluoride	0.68	4.0	No
pH	7.0	9.0	No
Sulfate	670	400	No[f]
Total Dissolved Solids	4000	1200	No[f]

Table 3.3 Notes:
COI = Constituent of Interest; GWPS = Groundwater Protection Standard; IL = Illinois; mg/L = Milligrams per Liter; pCi/L = Picocuries per Liter; SU = Standard Units.
Italics indicate constituent was not detected; the value reported is the maximum detection limit.
Shaded cell indicates a compound identified as a COI.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021).
(b) The maximum detected groundwater concentration was used to identify COIs.
(c) The IL Part 845.600 GWPS (IEPA, 2021) were used to identify COIs.
(d) COIs are constituents for which the maximum concentration exceeds the groundwater standard.
(e) Antimony was not detected in 32 groundwater samples. Only 2 of the 32 samples had detection limits above the GWPS; most of the DLs ranged from 0.001 to 0.005 mg/L and thus were below the GWPS of 0.006 mg/L. Thus antimony was not considered a COI.
(f) Maximum exceeds the GWPS but analyte is not considered to be a COI because the GWPS is based on aesthetic quality.

3.3.2 Ecological Constituents of Interest

The Illinois GWPS, as defined in IEPA's guidance, were developed to protect human health but not necessarily ecological receptors. While ecological receptors are not exposed to groundwater, groundwater can potentially migrate into the adjacent surface water and impact ecological receptors. Therefore, to identify ecological COIs, the maximum concentrations of constituents detected in groundwater were compared to ecological surface water benchmarks protective of aquatic life.

The surface water screening benchmarks for freshwater organisms were obtained from the following hierarchy of sources:

- IEPA (2019) SWQS. IEPA SWQS are health-protective benchmarks for aquatic life exposed to surface water on a long-term basis (*i.e.*, chronic exposure). The SWQS for several metals are hardness dependent (cadmium, chromium, and lead). Screening benchmarks for these constituents were calculated assuming US EPA's default hardness of 100 mg/L (US EPA, 2022), due to an absence of hardness data for Little Saline Creek.[4]
- US EPA Region IV (2018) surface water Ecological Screening Values (ESVs) for hazardous waste sites.

Consistent with the human health risk evaluation, Gradient used the maximum detected concentrations from groundwater samples collected from the S-wells without considering spatial or temporal representativeness for ecological receptor exposures. The use of the maximum constituent concentrations in this evaluation is designed to conservatively identify COIs that warrant further investigation. The COIs identified for ecological receptors include cadmium, cobalt, lead, and thallium (Table 3.4).

[4] Hardness data are available from the South Fork Saline River near Carrier Mills, Illinois (USGS Site No. 03382100), approximately 26 miles downstream of the MGS. Based on 208 samples collected from October 1976 to April 1997, the average hardness at this location was 438 mg/L (USGS, 2024c). Due to the age of the samples and the distance from the site, the US EPA (2022) default hardness of 100 mg/L was used. Use of a higher hardness value would result in less stringent screening values, thus, use of the US EPA default hardness is conservative.

Table 3.4 Ecological Constituents of Interest Based on Groundwater for S-Wells (2018-2022)

Constituent[a]	Maximum Detected Groundwater Concentration	Ecological Benchmark[b]	Basis	Ecological COI[c]
Total Metals (mg/L)				
Antimony	ND	0.19	EPA R4 ESV	No
Arsenic	0.12	0.19	IEPA SWQC	No
Barium	1.5	5.0	IEPA SWQC	No
Beryllium	0.0081	0.064	EPA R4 ESV	No
Boron	2.8	7.6	IEPA SWQC	No
Cadmium	0.055	0.0011	IEPA SWQC	Yes
Chromium	0.069	0.21	IEPA SWQC	No
Cobalt	0.054	0.019	EPA R4 ESV	Yes
Lead	0.080	0.020	IEPA SWQC	Yes
Mercury	ND	0.0011	IEPA SWQC	No
Selenium	0.017	1.0	IEPA SWQC	No
Thallium	0.046	0.0060	EPA R4 ESV	Yes
Dissolved Metals (mg/L)				
Boron	3.1	7.6	IEPA SWQC	No
Cadmium		0.00093	IEPA SWQC	No
Other (mg/L or SU)				
Chloride	480	500	IEPA SWQC	No
Fluoride	0.18	4.0	IEPA SWQC	No
Sulfate	310	NA	NA	No
Total Dissolved Solids	4500	NA	NA	No
pH	6.9	NA	NA	No

Notes:
Blank cells indicate constituent was not detected.
Shaded cell indicates a compound identified as a COI.
COI = Constituent of Interest; EPA R4 = United States Environmental Protection Agency Region IV; ESV = Ecological Screening Value; IEPA = Illinois Environmental Protection Agency; NA = Not Applicable; ND = Not Detected; SWQC = Surface Water Quality Criteria.
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021) that were detected in at least one groundwater sample from the S-wells.
(b) Ecological benchmarks are from: IEPA SWQC (IEPA, 2019); EPA R4 ESV (US EPA Region IV, 2018).
(c) Constituents with maximum detected concentrations exceeding a benchmark protective of surface water exposure are considered ecological COIs.

3.3.3 Surface Water and Sediment Modeling

Surface water sampling has not been conducted in Little Saline Creek to the north of the Site. To estimate the potential contribution to surface water from groundwater specifically associated with the Site, Gradient modeled concentrations in Little Saline Creek surface water from groundwater flowing into the Creek for the detected human and ecological COIs. This is because the constituents detected in groundwater above a health-based benchmark are most likely to pose a risk concern in the adjacent surface water. Gradient modeled COI concentrations in the surface water using a mass balance calculation based on the surface water and groundwater mixing. The model assumes a well-mixed groundwater-surface water location.

The maximum detected concentrations in groundwater from the S-wells from 2018 to 2022 were conservatively used to model COI concentrations in surface water. For COIs that were measured as both

total and dissolved fractions, we used the maximum of the total and dissolved COI concentrations for the modeling. For most metals, the maximum concentration was from the total fraction. Use of the total metal concentration for these COIs may overestimate surface water concentrations because dissolved concentrations, which are lower than total concentrations, represent the mobile fractions of constituents that could likely flow into and mix with surface water.

The modeling approach does not account for geochemical transformations that may occur during groundwater mixing with surface water. Gradient assumed that predicted surface water concentrations were influenced only by the physical mixing of groundwater as it enters the surface water and were not further influenced by the geochemical reactions in the water and sediment, such as precipitation. In addition, the model only predicts surface water concentrations as a result of the potential migration of COIs in Site-related groundwater and does not account for background concentrations in surface water.

For this evaluation, Gradient adapted a simplified and conservative form of US EPA's indirect exposure assessment methodology (US EPA, 1998) that was used in US EPA's coal combustion waste risk assessment (US EPA, 2014). The model is a mass balance calculation based on surface water and groundwater mixing and the concept that the dissolved and sorbed concentrations can be related through an equilibrium partitioning coefficient (K_d). The model assumes a well-mixed groundwater-surface water location, with partitioning among total suspended solids, dissolved water column, sediment pore water, and solid sediments.

Sorption to soil and sediment is highly dependent on the surrounding geochemical conditions. To be conservative, we ignored the natural attenuation capacity of soil and sediment and estimated the surface water concentration based only on the physical mixing of groundwater and surface water (*i.e.*, dilution) at the point where groundwater flows into surface water.

The aquifer properties used to estimate the volume of groundwater flowing into Little Saline Creek and surface water concentrations are presented in Table 3.5. The surface water and sediment properties used in the modeling are presented in Tables 3.6 and 3.7. In the absence of Site-specific information for Little Saline Creek, Gradient used default assumptions (*e.g.*, depth of the upper benthic layer and bed sediment porosity) to model sediment concentrations. The modeled surface water and sediment concentrations are presented in Table 3.8. These modeled concentrations reflect conservative contributions from groundwater. A description of the modeling and the detailed results are presented in Appendix A.

Table 3.5 Groundwater Properties Used in Modeling

Parameter	Value	Units	Notes
Aquifer thickness	3	m	Thickness of the groundwater unit at the interface of unlithified deposits and bedrock (10 ft or 3 m) (SIPC, 2021b).
Length of River	840	m	Length of river receiving potentially-impacted groundwater (estimated using Google Earth).
Cross-Sectional Area	2560	m^2	Length × thickness
Hydraulic Gradient	0.019	m/m	Average hydraulic gradient (estimated using groundwater elevation in wells S3 and S6; SIPC, 2007).
Hydraulic Conductivity	1.50E-04	cm/sec	Average hydraulic conductivity (assumed to be the same as that for Emery Pond wells; Golder Associates Inc., 2021).
COI Concentration	Constituent specific	mg/L	Maximum detected concentration in groundwater.

Notes:
COI = Constituent of Interest
(a) The cross-sectional area represents the area through which groundwater flows from the unlithified unit to Little Saline Creek.

Table 3.6 Surface Water Properties Used in Modeling

Parameter	Value	Unit	Notes/Source
Flow rate in little saline creek	2.5×10^{11}	L/yr	Average of peak flows 1959-1980 for Little Saline Creek Tributary Near Goreville, IL (USGS, 2024a)
Total suspended solids (TSS)	49	mg/L	Average TSS concentration for South Fork Saline River, Carrier Mills, IL (USGS, 2024b)
Depth of water column	1.5	m	Mean depth of Little Saline Creek estimated from Google Earth photos.
Suspended Sediment to Water Partition Coefficient	Constituent specific	mg/L	Values based on US EPA (2014).

Notes:
IL = Illinois; US EPA = United States Environmental Protection Agency; USGS = United States Geological Survey.

Table 3.7 Sediment Properties Used in Modeling

Parameter	Value	Unit	Notes/Source
Depth of Upper Benthic Layer	0.03	m	Default (US EPA, 2014).
Depth of Water Column	1.5	m	Mean depth of Little Saline Creek estimated from Google Earth photos.
Bed Sediment Particle Concentration	1	g/cm^3	Default (US EPA, 2014).
Bed Sediment Porosity	0.6	–	Default (US EPA, 2014).
Total Suspended Solids (TSS) Mass per Unit Area	0.075	kg/m^2	Depth of water column × TSS × conversion factors (10^{-6} kg/mg and 1,000 L/m^3).
Sediment Mass per Unit Area	30	kg/m^2	Depth of upper benthic layer × bed sediment particulate concentration × conversion factors (0.001 kg/g and 10^6 cm^3/m^3).
Sediment to Water Partitioning Coefficients	Constituent specific	mg/L	Values based on US EPA (2014).

Note:
US EPA = United States Environmental Protection Agency.

Table 3.8 Surface Water and Sediment Modeling Results for Little Saline Creek

COI	Maximum Measured Groundwater Concentration (mg/L)	Modeled Surface Water Concentration (mg/L)	Modeled Sediment Concentration (mg/kg)
Arsenic	0.12	1.15E-06	2.09E-04
Beryllium	0.0081	7.79E-08	2.77E-05
Boron	3.1	2.98E-05	1.35E-04
Cadmium	0.055	5.29E-07	2.16E-04
Cobalt	0.054	5.19E-07	1.60E-04
Lead	0.08	7.69E-07	1.20E-03
Thallium	0.046	4.42E-07	5.46E-06

Notes:
COI = Constituent of Interest; mg/L = Milligrams per Liter.

3.4 Human Health Risk Evaluation

The section below presents the results of the human health risk evaluation for recreators (boaters, swimmers, and anglers) in the Lake of Egypt to the east of the Site, and anglers in the Little Saline Creek to the north of the Site. Risks were assessed using the maximum measured COIs in Lake of Egypt, and the modeled COIs in the Little Saline Creek.

3.4.1 Recreators Exposed to Surface Water

Screening Exposures: In Lake of Egypt, recreators could be exposed to surface water *via* incidental ingestion and dermal contact while boating or swimming, and anglers could consume fish caught in the lake. In Little Saline Creek, it is assumed that anglers could consume fish caught in the creek. Measured concentrations were used in Lake of Egypt, and modeled concentrations were used for Little Saline Creek due to lack of sampling data. The maximum measured or modeled COI concentrations in surface water were used as conservative upper-end estimates of the COI concentrations to which a recreator might be exposed directly (incidental ingestion of COIs in surface water while boating) and indirectly (consumption of locally caught fish exposed to COIs in surface water).

Screening Benchmarks: Illinois surface water criteria (IEPA, 2019), known as human threshold criteria (HTC), are based on incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities, as well as the consumption of fish. The HTC values were calculated from the following equation (IEPA, 2019):

$$\mathrm{HTC} = \frac{\mathrm{ADI}}{\mathrm{W} + (\mathrm{F} \times \mathrm{BCF})}$$

where:

HTC = Human health protection criterion in milligrams per liter (mg/L)
ADI = Acceptable daily intake (mg/day)
W = Water consumption rate (L/day)
F = Fish consumption rate (kg/day)
BCF = Bioconcentration factor (L/kg tissue)

Illinois defines the acceptable daily intake (ADI) as the "maximum amount of a substance which, if ingested daily for a lifetime, results in no adverse effects to humans" (IEPA, 2019). US EPA defines its chronic reference dose (RfD) as an "estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure for a chronic duration (up to a lifetime) to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime" (US EPA, 2011). Illinois lists methods to derive an ADI from the primary literature (IEPA, 2019). In accordance with Illinois guidance, Gradient derived an ADI by multiplying the MCL by the default water ingestion rate of 2 L/day (IEPA, 2019). In the absence of an MCL, Gradient applied the RfD used by US EPA to derive its Regional Screening Levels (RSLs) (US EPA, 2024) as a conservative estimate of the ADI. The RfDs are given in mg/kg-day, while the ADIs are given in mg/day; thus, Gradient multiplied the RfD by a standard body weight of 70 kg to obtain the ADI in mg/day. The calculation of the HTC values is shown in Appendix B, Table B.1.

Gradient used bioconcentration factors (BCFs) from a hierarchy of sources. The primary BCFs were those that US EPA used to calculate the National Recommended Water Quality Criteria (NRWQC) for human

health (US EPA, 2002). Other sources included BCFs used in the US EPA coal combustion ash risk assessment (US EPA, 2014) and BCFs reported by Oak Ridge National Laboratory's Risk Assessment Information System (ORNL RAIS) (ORNL, 2020).[5] Lithium did not have a BCF value available from any authoritative source; therefore, the water quality criterion for lithium was calculated assuming a BCF of 1. This is a conservative assumption, as lithium does not readily bioaccumulate in the aquatic environment (ECHA, 2020a,b; ATSDR, 2010).

Illinois recommends a fish consumption rate of 0.020 kg/day (20 g/day) for an adult weighing 70 kg (IEPA, 2019). Illinois recommends a water consumption rate of 0.01 L/day for "incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities" (IEPA, 2019). Appendix B, Table B.1 presents the calculated HTC for fish and water and for fish consumption only.

The HTC for fish consumption for radium 226+228 was calculated as follows:

$$\mathrm{HTC} = \frac{\mathrm{TCR}}{(\mathrm{SF} \times \mathrm{BAF} \times \mathrm{F})}$$

where:

HTC = Human health protection criterion in picoCuries per liter (pCi/L)
TCR = Target cancer risk (1×10^5)
SF = Food ingestion slope factor (risk/pCi)
BAF = Bioaccumulation factor (L/kg tissue)
F = Fish consumption rate (kg/day)

The food ingestion slope factor (lifetime excess total cancer risk per unit exposure, in risk/pCi) used to calculate the HTC was the highest value of those for radium 226 (Ra226), radium 228 (Ra228), and "Ra228+D" (US EPA, 2001). According to US EPA (2001), "+D" indicates that "the risks from associated short-lived radioactive decay products (*i.e.,* those decay products with radioactive half-lives less than or equal to 6 months) are also included."

Screening Risk Evaluation, Lake of Egypt: The four COIs were not detected in the surface water data available from Lake of Egypt, therefore, Gradient used half of the maximum detection limit as the exposure concentration. The COI concentrations in surface water were compared to the calculated Illinois HTC values (Table 3.8). All surface water concentrations, all of which were non-detect, were below their respective benchmarks. The HTC values are protective of recreational exposure *via* water and/or fish ingestion and do not account for dermal exposures to COIs in surface water while boating. However, given that the measured COI surface water concentrations are well below HTC protective of water and/or fish ingestion, dermal exposures to COIs are not expected to be a risk concern. Moreover, the dermal uptake of metals is considered to be minimal and only a small proportion of ingestion exposures. Thus, none of the COIs evaluated pose an unacceptable risk to recreators exposed to surface water while boating and anglers consuming fish caught in the Lake of Egypt.

[5] Although recommended by US EPA (2015b), US EPA EpiSuite 4.1 (US EPA, 2019) was not used as a source of BCFs because inorganic compounds are outside the estimation domain of the program.

Table 3.9 Risk Evaluation for Recreators Exposed to Surface Water in Lake of Egypt

COI	Maximum Surface Water Concentration (Measured)[a]	HTC for Water and Fish	HTC for Water Only	HTC for Fish Only	COPC
Total Metals (mg/L)					
Boron	*0.01*	467	1400	700	No
Cadmium	*0.0015*	0.0019	1.0	0.0019	No
Cobalt	*0.0025*	0.0035	2.1	0.0035	No
Thallium	*0.001*	0.0017	0.40	0.0017	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; HTC = Human Threshold Criteria; mg/L = Milligrams per Liter.
Concentrations are listed only for the constituents identified as COIs in the C-wells.
(a) Concentrations in italics were not detected; half the detection limit was used for non-detects.

Screening Risk Evaluation, Little Saline Creek: The modeled COI concentrations in surface water were compared to the calculated Illinois HTC values (Table 3.10). All surface water concentrations were below their respective benchmarks. Thus, none of the COIs evaluated pose an unacceptable risk for anglers consuming fish caught in Little Saline Creek.

Table 3.10 Risk Evaluation for Recreators Exposed to Surface Water in Little Saline Creek

COI	Maximum Surface Water Concentration (Modeled)	HTC for Water and Fish	HTC for Water Only	HTC for Fish Only	COPC
Total Metals (mg/L)					
Arsenic	1.15E-06	2.25E-02	2.00E+00	2.27E-02	No
Beryllium	7.79E-08	2.05E-02	8.00E-01	2.11E-02	No
Boron	2.98E-05	4.67E+02	1.40E+03	7.00E+02	No
Cadmium	5.29E-07	1.85E-03	1.00E+00	1.85E-03	No
Cobalt	5.19E-07	3.49E-03	2.10E+00	3.50E-03	No
Lead	7.69E-07	1.00E-02	1.00E-02	1.00E-02	No
Thallium	4.42E-07	1.72E-03	4.00E-01	1.72E-03	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; HTC = Human Threshold Criteria; mg/L = Milligrams per Liter.
Concentrations are listed only for the constituents identified as COIs in the S-wells.
Modeled concentrations represent the potential effect on surface water quality resulting from the measured groundwater concentrations.

3.4.2 Use of Surface Water as Drinking Water

The Lake of Egypt is used as a public water supply (IEPA, 2024a). Gradient compared the maximum detected concentrations (or the maximum detection limit) from the available public water supply data (2018-2023) to the Illinois Class I GWPS (Table 3.11). There were no exceedances of the IL GWPS, therefore the use of surface water from the Lake of Egypt for residential drinking water does not pose an unacceptable risk to residents.

Table 3.11 Lake Public Water Supply Data Compared to GWPS (2018-2023)

Constituent[a]	Number of Detects	Number of Samples	Detected Minimum	Detected Maximum[b]	Maximum Laboratory Detection Limit	GWPS[c]	Exceedance
Total Metals							
Antimony	0	6			0.003	0.006	No
Arsenic	0	6			0.001	0.01	No
Barium	6	6	0.021	0.0263	NA	2	No
Beryllium	0	6			0.001	0.004	No
Cadmium	0	6			0.003	0.005	No
Chromium	0	6			0.005	0.1	No
Mercury	0	6			0.0002	0.002	No
Selenium	1	6	0.0024	0.0024	0.002	0.05	No
Thallium	0	6			0.002	0.002	No
Other							
Chloride	6	6	10.4	23	NA	200	No
Fluoride	6	6	0.553	0.73	NA	4	No
Sulfate	6	6	34.6	51.7	NA	400	No
Total Dissolved Solids	6	6	87	158	NA	1200	No
Radionuclides							
Radium 226 + Radium 228	1	1	1.03	1.03	NA	5	No

Notes:
GWPS = Groundwater Protection Standard; NA = Not Available.

3.5 Ecological Risk Evaluation

Based on the ecological CEM (Figure 3.4), ecological receptors could be exposed to surface water and dietary items (*i.e.*, prey and plants) potentially impacted by identified COIs.

3.5.1 Ecological Receptors Exposed to Surface Water in Little Saline Creek

Screening Exposures: The ecological evaluation considered aquatic communities in Little Saline Creek potentially impacted by identified ecological COIs. Modeled surface water concentrations were compared to risk-based ecological screening benchmarks.

Screening Benchmarks: Surface water screening benchmarks protective of aquatic life were obtained from the following hierarchy of sources:

- IEPA SWQS (IEPA, 2019), regulatory standards that are intended to protect aquatic life exposed to surface water on a long-term basis (*i.e.*, chronic exposure). For cadmium, the surface water benchmark is hardness dependent and calculated using a default hardness of 100 mg/L (US EPA, 2022);[6]
- US EPA Region IV (2018) surface water ESVs for hazardous waste sites.

[6] Conservatisms associated with using a default hardness value are discussed in Section 3.6.

Risk Evaluation: The maximum modeled COI concentrations in surface water were compared to the benchmarks protective of aquatic life (Table 3.12). The modeled surface water concentrations for the COIs were below their respective benchmarks. Thus, none of the COIs evaluated are expected to pose an unacceptable risk to aquatic life in Little Saline Creek.

Table 3.12 Risk Evaluation for Ecological Receptors Exposed to Surface Water in Little Saline Creek

COI	Maximum Surface Water Concentration (modeled)	Ecological Freshwater Benchmark	Basis	COPC
Cadmium	5.29E-07	1.13E-03	IEPA SWQC	No
Cobalt	5.19E-07	1.90E-02	EPA R4 ESV	No
Lead	7.69E-07	2.01E-02	IEPA SWQC	No
Thallium	4.42E-07	6.00E-03	EPA R4 ESV	No

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; ESV = Ecological Screening Value; IEPA = Illinois Environmental Protection Agency; SWQC = Surface Water Quality Criteria; US EPA = United States Environmental Protection Agency.
Criteria sources: IEPA SWQC: IEPA (2019a); EPA R4 ESV: US EPA Region IV (2018)

3.5.2 Ecological Receptors Exposed to Sediment in Little Saline Creek

Screening Exposures: COIs in impacted groundwater flowing into Little Saline Creek can sorb to sediments *via* chemical partitioning. In the absence of sediment data, sediment concentrations were modeled using maximum detected groundwater concentrations. Therefore, the modeled COI sediment concentrations reflect the potential maximum Site-related sediment concentration originating from groundwater.

Screening Benchmarks: Sediment screening benchmarks were obtained from US EPA Region IV (2018). The majority of the sediment ESVs are based on threshold effect concentrations (TECs) from MacDonald *et al.* (2000), which provide consensus values that identify concentrations below which harmful effects on sediment-dwelling organisms are unlikely to be observed. The benchmarks used in this evaluation are listed in Table 3.13.

Screening Risk Results: The maximum modeled COI sediment concentrations were below their respective sediment screening benchmarks (Table 3.13). The modeled sediment concentrations attributed to potential contributions from Site groundwater for all COIs were less than 1% of the sediment screening benchmark. Although thallium does not have an ESV, the modeled concentration is well below the soil ESV of 0.05 mg/kg (US EPA Region IV, 2018); therefore, thallium does not present an unacceptable risk to ecological receptors. Thus, the modeled sediment concentrations attributed to potential contributions from Site groundwater are not expected to significantly contribute to ecological exposures in Little Saline Creek adjacent to the Site.

Table 3.13 Risk Evaluation for Ecological Receptors Exposed to Sediment in Little Saline Creek

COI	Modeled Sediment Concentration (mg/kg)	ESV[a] (mg/kg)	COPC	% of Benchmark
Cadmium	2.16E-04	1.0E+00	No	0.02
Cobalt	1.60E-04	5.0E+01	No	0.0003
Lead	1.20E-03	3.6E+01	No	0.003
Thallium	5.46E-06	NA	No	NA

Notes:
COI = Constituent of Interest; COPC = Constituent of Potential Concern; ESV = Ecological Screening Value; NA = Not Available; US EPA = United States Environmental Protection Agency.
(a) ESV from US EPA Region IV (2018).

3.5.3 Ecological Receptors Exposed to Bioaccumulative Constituents of Interest

Screening Exposures: COIs with bioaccumulative properties can impact higher trophic level wildlife exposed to these COIs *via* direct exposures (surface water and sediment exposure) and secondary exposures through the consumption of dietary items (*e.g.*, plants, invertebrates, small mammals, and fish).

Screening Benchmark: US EPA Region IV (2018) and IEPA SWQS (IEPA, 2019) guidance were used to identify constituents with potential bioaccumulative effects.

Risk Evaluation: The ecological COIs (cadmium, cobalt, lead, and thallium) were not identified as having potential bioaccumulative effects. Therefore, these COIs are not considered to pose an ecological risk *via* bioaccumulation. IEPA (2019) identifies mercury as the only metal with bioaccumulative properties, however, mercury was not considered an ecological COI. US EPA Region IV (2018) identifies selenium as having potential bioaccumulative effects; although selenium was detected in groundwater, it was not considered an ecological COI.

3.6 Uncertainties and Conservatisms

A number of uncertainties and their potential impact on the risk evaluation are discussed below. Wherever possible, conservative assumptions were used in an effort to minimize uncertainties and overestimate rather than underestimate risks.

Exposure Estimates:

- The risk evaluation included the IL Part 845.600 constituents detected in groundwater samples (above GWPS) collected from wells associated with the MGS facility. However, it is possible that not all of the detected constituents are related specifically to the MGS facility.
- The human health and ecological risk characterization was based on the maximum measured or modeled COI concentrations, rather than on averages. Thus, the variability in exposure concentrations was not considered. Assuming continuous exposure to the maximum concentration overestimates human and ecological exposures, given that receptors are mobile and concentrations change over time. For example, US EPA guidance states that risks should be estimated using average exposure concentrations as represented by the 95% upper confidence limit on the mean (US EPA, 1992). Given that exposure estimates based on the maximum concentrations did not exceed risk benchmarks, Gradient has greater confidence that there is no risk concern.

- Only constituents detected in groundwater were used to identify COIs and model COI concentrations in surface water. For the constituents that were not detected in facility groundwater, the detection limits were below the IL Part 845.600 GWPS for all constituents except antimony, and thus do not require further evaluation. (Antimony was not detected in 32 groundwater samples from 2018 to 2023; 30 of the detection limits ranged from 0.001 to 0.005 mg/L, thus were below the GWPS of 0.006 mg/L.)
- There are limited groundwater data available that have been analyzed for Appendix IV constituents to specifically characterize the ponds of interest. If additional data are collected, the new data could lead to different risk estimates (either increased or decreased risk).
- COI concentrations in Little Saline Creek were modeled using the maximum detected total COI concentrations in groundwater from the S-wells. Modeling surface water concentrations using total metal concentrations may overestimate surface water concentrations because dissolved concentrations, which are lower than total concentrations, represent the mobile fractions of constituents that could likely flow into and mix with surface water.
- The COIs identified in this evaluation also occur naturally in the environment. Contributions to exposure from natural or other non-MGS-related sources were not considered in the evaluation of modeled concentrations; only exposure contributions potentially attributable to Site groundwater mixing with surface water were evaluated. While not quantified, exposures from potential MGS-related groundwater contributions are likely to represent only a small fraction of the overall human and ecological exposure to COIs that also have natural or non-MGS-related sources.
- Screening benchmarks for human health were developed using exposure inputs based on US EPA's recommended values for reasonable maximum exposure (RME) assessments (Stalcup, 2014). RME is defined as "the highest exposure that is reasonably expected to occur at a site but that is still within the range of possible exposures" (US EPA, 2004). US EPA states the "intent of the RME is to estimate a conservative exposure case (*i.e.*, well above the average case) that is still within the range of possible exposures" (US EPA, 1989). US EPA also notes that this high-end exposure "is the highest dose estimated to be experienced by some individuals, commonly stated as approximately equal to the 90th percentile exposure category for individuals" (US EPA, 2015c). Thus, most individuals will have lower exposures than those presented in this risk assessment.

Toxicity Benchmarks:

- Screening-level ecological benchmarks were compiled from IEPA and US EPA guidance and designed to be protective of the majority of Site conditions, leaving the option for Site-specific refinement. In some cases, these benchmarks may not be representative of the Site-specific conditions or receptors found at the Site, or may not accurately reflect concentration-response relationships encountered at the Site. For example, the ecological benchmark for cadmium is hardness dependent, and Gradient relied on US EPA's default hardness of 100 mg/L. Use of a higher hardness value would increase the cadmium SWQS because benchmarks become less stringent with higher levels of hardness. Regardless of the hardness, the maximum modeled cadmium concentration is orders of magnitude below the SWQS.
- In addition, for the ecological evaluation, Gradient conservatively assumed all constituents to be 100% bioavailable. Modeled COI concentrations in surface water are considered total COI concentrations. In addition, the measured surface water data used in this report represent total concentrations. US EPA recommends using dissolved metals as a measure of exposure to ecological receptors because it represents the bioavailable fraction of metal in water (US EPA, 1993). Therefore, the modeled surface water COI concentrations may be an overestimation of exposure concentrations to ecological receptors.

- In general, it is important to appreciate that the human health toxicity factors used in this risk evaluation are developed to account for uncertainties, such that safe exposure levels used as benchmarks are often many times lower (even orders of magnitude lower) than the levels that cause effects that have been observed in human or animal studies. For example, toxicity factors incorporate a 10-fold safety factor to protect sensitive subpopulations. This means that a risk exceedance does not necessarily equate to actual harm.

4 Summary and Conclusions

A screening-level risk evaluation was performed for Site-related constituents in groundwater at the MGS in Marion, Illinois. The CSM developed for the Site indicates that groundwater beneath the facility may flow into the Lake of Egypt to the east of the Site, or into Little Saline Creek to the north of the Site, and may potentially impact surface water.

CEMs were developed for human and ecological receptors. In the Lake of Egypt, the complete exposure pathways for humans include recreators (boaters) in the who are exposed to surface water, and anglers who consume locally caught fish. The use of surface water from the Lake of Egypt as a drinking water source was also evaluated as a complete pathway. The complete exposure pathway for humans in Little Saline Creek includes anglers who consume locally caught fish. Based on the local hydrogeology, residential exposure to groundwater used for drinking water or irrigation is not a complete pathway and was not evaluated. The complete exposure pathways for ecological receptors include aquatic life (including aquatic and marsh plants, amphibians, reptiles, and fish) exposed to surface water; benthic invertebrates exposed to sediment; and avian and mammalian wildlife exposed to bioaccumulative COIs in surface water, sediment, and dietary items.

Groundwater data collected from 2018 to 2023 were used to estimate exposures. The surface water data collected from the Lake of Egypt (in 2020) were also evaluated. Surface water concentrations were modeled in Little Saline Creek using the maximum detected groundwater concentration in the S-wells from the northern portion of the Site. Surface water exposure estimates were screened against benchmarks protective of human health and ecological receptors for this risk evaluation.

US EPA has established acceptable risk metrics. Risks above these US EPA-defined metrics are termed potentially "unacceptable risks." Based on the evaluation presented in this report, no unacceptable risks to human or ecological receptors resulting from CCR exposures associated with the Site were identified. This means that the risks from the Site are likely indistinguishable from normal background risks. Specific risk assessment results include the following:

- For recreators exposed to surface water, all COIs were below the conservative risk-based screening benchmarks. Therefore, none of the COIs evaluated in surface water are expected to pose an unacceptable risk to recreators in the Lake of Egypt.
- For anglers consuming locally caught fish, the modeled concentrations of all COIs in surface water (as well as the measured data) were below conservative benchmarks protective of fish consumption. Therefore, none of the COIs evaluated are expected to pose an unacceptable risk to anglers consuming fish caught from the Lake of Egypt or Little Saline Creek.
- For Lake of Egypt surface water used as a public drinking water supply, all COIs were below the Illinois Class I GWPS, thus no unacceptable risks were identified for the use of Lake of Egypt surface water as drinking water.
- Groundwater downgradient of the Site is not being used as a drinking water, thus the use of groundwater is not a complete exposure pathway.
- Ecological receptors exposed to surface water in Little Saline Creek include aquatic and marsh plants, amphibians, reptiles, and fish. The risk evaluation showed that none of the modeled COIs in Little Saline Creek exceeded protective screening benchmarks. Ecological receptors exposed to

sediment include benthic invertebrates. The modeled sediment COIs did not exceed the conservative screening benchmarks; therefore, none of the COIs evaluated in sediment are expected to pose an unacceptable risk to ecological receptors in Little Saline Creek.

- Ecological receptors were also evaluated for exposure to bioaccumulative COIs. This evaluation considered higher trophic level wildlife with direct exposure to surface water and sediment and secondary exposure through the consumption of dietary items (*e.g.*, plants, invertebrates, small mammals, fish). None of the ecological COIs were identified as having potential bioaccumulative effects. Overall, this evaluation demonstrated that none of the COIs evaluated are expected to pose an unacceptable risk to ecological receptors.

It should be noted that this evaluation incorporates a number of conservative assumptions that tend to overestimate exposure and risk. The risk evaluation was based on the maximum detected COI concentration; however, US EPA guidance states that risks should be based on a representative average concentration such as the 95% upper confidence limit on the mean; thus, using the maximum concentration tends to overestimate exposure. Although the COIs identified in this evaluation also occur naturally in the environment, the contributions to exposure from natural background sources and nearby industry were not considered; thus, CCR-related exposures were likely overestimated. Exposure estimates assumed 100% metal bioavailability, which likely results in overestimates of exposure and risks. Exposure estimates were based on inputs to evaluate the "reasonable maximum exposure"; thus, most individuals will have lower exposures than those estimated in this risk assessment.

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Appendix A

Surface Water Modeling

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Gradient modeled concentrations of constituents of interest (COIs) in the Little Saline Creek surface water based on available groundwater data. First, we estimated the flow rate of COIs flowing into the Little Saline Creek *via* groundwater. Then, we adapted United States Environmental Protection Agency (US EPA) indirect exposure assessment methodology (US EPA, 1998) in order to model surface water concentrations in the Little Saline Creek.

Model Overview

The groundwater flow to the creek is represented by a one-dimensional, steady-state model. In this model, the groundwater plume from the northern portion of the Site migrates horizontally in the uppermost water-bearing unit prior to flowing to Little Saline Creek. The groundwater flow entering the creek is the flow going through a cross-sectional area that has a length equal to the length of the creek adjacent to the Site with potential impacts from the ponds system and a height equal to the thickness of the uppermost water-bearing unit. It was assumed that all the groundwater flowing through this layer would ultimately discharge to Little Saline Creek. The length of the groundwater discharge zone was estimated using Google Earth Pro (Google, LLC, 2022).

The groundwater flow to Little Saline Creek mixes with the surface water in the creek. The COIs entering the creek *via* groundwater dissolve into the water column, sorb to suspended sediments, or sorb to benthic sediments. Using US EPA's indirect exposure assessment methodology (US EPA, 1998), the model evaluates the surface water COI concentrations at a location downstream of the groundwater discharge point, assuming a well-mixed water column.

Groundwater Discharge Rate

The groundwater flow rate was evaluated using conservative assumptions. Gradient conservatively assumed that the groundwater concentrations were uniformly equal to the maximum detected concentration of each individual COI. Further, Gradient ignored adsorption by subsurface soil and assumed that all the groundwater flowing through the aquifer and intersecting the creek was flowing into the creek.

For each groundwater unit, the groundwater flow rate into the creek was derived using Darcy's Law:

$$Q = K \times i \times A$$

where:

Q	=	Groundwater flow rate (m^3/s)
K	=	Hydraulic conductivity (m/s)
i	=	Hydraulic gradient (m/m)
A	=	Cross-sectional area (m^2)

For each COI, the mass discharge rate into the creek was then calculated by:

$$m_c = C_c \times Q \times CF$$

where:

m_c	=	Mass discharge rate of the COI (mg/year)
C_c	=	Maximum groundwater concentration of the COI (mg/L)
Q	=	Groundwater flow rate (m^3/s)
CF	=	Conversion factors: 1,000 L/m^3 and 31,557,600 s/year

The values of the aquifer parameters used for these calculations are provided in Table A.1. The calculated mass discharge rates were then used as inputs for the surface water model.

The length of the discharge zone was estimated to be approximately 840 m and the height of the discharge zone was estimated to be 3 m; thus, the cross-sectional area was estimated to be 2,560 m^2 (SIPC, 2021). The average horizontal hydraulic gradient was 0.019 m/m (estimated using groundwater elevation in wells S3 and S6; SIPC, 2007). The average horizontal hydraulic conductivity was 1.5×10^{-4} cm/s (Golder Associates Inc., 2021).

Surface Water Concentration

Groundwater that flows into the creek will be diluted with the surface water flow. Constituents transported by groundwater into the surface water migrate into the water column and the bed sediments. The surface water model Gradient used to estimate the surface water concentrations is a steady-state model described in US EPA's indirect exposure assessment methodology (US EPA, 1998) and also used in US EPA's "Human and Ecological Risk Assessment of Coal Combustion Residuals," referred to herein as the CCR risk assessment (US EPA, 2014). This model describes the partitioning of constituents between surface water, suspended sediments, and benthic sediments based on equilibrium partition coefficients (K_d values). It estimates the concentrations of constituents in surface water, suspended sediments, and benthic sediments at steady-state equilibrium at a theoretical location downstream of the discharge point after complete mixing of the water column. In our analysis, we used the K_d values provided in the US EPA CCR risk assessment for all of the COIs (US EPA, 2014, Table J1). These coefficients are presented in Table A.2.

To be conservative, Gradient assumed that the constituents were not affected by dissipation or degradation once they entered the water body. The total water body concentration of the COI was calculated as follows (US EPA, 1998):

$$C_{wtot} = \frac{m_c}{V_f \times f_{water}}$$

where:

C_{wtot} = Total water body concentration of the COI (mg/L)
m_c = Mass discharge rate of the COI (mg/year)
V_f = Water body annual flow (L/year)
f_{water} = Fraction of the COI in the water column (unitless)

For the Little Saline Creek annual flow rate, Gradient used the average peak-flow discharge rate of about 279 cubic feet per second (cfs), or 2.5×10^{11} L/year, based on the discharge rates measured at the United States Geological Survey (USGS) gauging station near Goreville, Illinois (USGS Station 03382025) between 1959 and 1980[7] (USGS, 2024a). The surface water parameters are presented in Table A.3.

The fraction of COIs in the water column was calculated for each COI using the sediment/water and suspended solids/water partition coefficients (US EPA, 2014). The fraction of COIs in the water column is defined as follows (US EPA, 2014):

$$f_{water} = \frac{(1 + [K_{dsw} \times TSS \times 0.000001]) \times \frac{d_w}{d_z}}{\left([1 + (K_{dsw} \times TSS \times 0.000001)] \times \frac{d_w}{d_z}\right) + ([bsp + K_{dbs} \times bsc] \times \frac{d_b}{d_z})}$$

[7] The available data were for the years 1959 to 1980.

where:

K_{dsw}	=	Suspended sediment-water partition coefficient (mL/g)
K_{dbs}	=	Sediment-water partition coefficient (mL/g)
TSS	=	Total suspended solids in the surface water body (mg/L). Assumed equal to 49 mg/L based on the average suspended sediment concentration measured in South Fork Saline River at the USGS gauging station at Carrier Mills, Illinois (USGS Station 03382100) between 1976 and 1997 (USGS, 2024b).
0.000001	=	Units conversion factor
d_w	=	Depth of the water column (m). The depth of the water column was estimated as 1.52 m from Google Earth photos.
d_b	=	Depth of the upper benthic layer (m). Set equal to 0.03 m (US EPA, 2014).
d_z	=	Depth of the water body (m). Calculated as $d_w + d_b$. Set equal to 1.55 m.
bsp	=	Bed sediment porosity (unitless). Set equal to 0.6 (US EPA, 2014).
bsc	=	Bed sediment particle concentration (g/cm^3). Set equal to 1.0 g/cm^3 (US EPA, 2014).

The fraction of COIs dissolved in the water column (f_d) is calculated as follows (US EPA, 2014):

$$f_d = \frac{1}{1 + K_{dsw} \times TSS \times 0.000001}$$

The values for the fraction of COI in the water column and other calculated parameters are presented in Table A.4.

The total water column concentration (C_{wcTot}) of the COIs, comprising both the dissolved and suspended sediment phases, is then calculated as follows (US EPA, 2014):

$$C_{wcTot} = C_{wtot} \times f_{water} \times \frac{d_z}{d_w}$$

Finally, the dissolved water column concentration (C_{dw}) for the COIs is calculated as follows (US EPA, 2014):

$$C_{dw} = f_d \times C_{wcTot}$$

The dissolved water column concentration (C_{dw}) was then used to calculate the concentration of COIs sorbed to suspended solids in the water column (US EPA, 1998):

$$C_{sw} = C_{dw} \times K_{dsw}$$

where:

C_{sw}	=	Concentration sorbed to suspended solids (mg/kg)
C_{dw}	=	Concentration dissolved in the water column (mg/L)
K_{dsw}	=	Suspended solids/water partition coefficient (mL/g)

In the same way, using the total water body concentration and the fraction of COI in the benthic sediments, the model derives the total concentration in benthic sediments (US EPA, 2014):

$$C_{bstot} = f_{benth} \times C_{wtot} \times \frac{d_z}{d_b}$$

where:

C_{bstot} = Total COI concentration in bed sediment (mg/L or g/m^3)
C_{wtot} = Total water body COI concentration (mg/L)
f_{benth} = Fraction of COI in benthic sediments (unitless)
d_b = Depth of the upper benthic layer (m)
d_z = Depth of the water body (m). Calculated as $d_w + d_b$.

This value can be used to calculate dry weight sediment concentration as follows:

$$C_{seddw} = \frac{C_{bstot}}{bsc}$$

where:

C_{seddw} = Dry weight sediment concentration (mg/kg)
C_{bstot} = Total sediment concentration (mg/L)
bsc = Bed sediment bulk density. Used the default value of 1 g/cm^3 from US EPA (2014).

The total sediment concentration is composed of the sum of the COI concentration dissolved in the bed sediment pore water (equal to the concentration dissolved in the water column) and the COI concentration sorbed to benthic sediments (US EPA, 1998).

The COI concentration sorbed to benthic sediments was calculated as follows (US EPA, 1998):

$$C_{sb} = C_{dbs} \times K_{dbs}$$

where:

C_{sb} = Concentration sorbed to bottom sediments (mg/kg)
C_{dbs} = Concentration dissolved in the sediment pore water (mg/L)
K_{dbs} = Sediments/water partition coefficient (mL/kg)

For each COI, the modeled total water column concentration and concentration sorbed to sediment are presented in Table A.5.

Table A.1 Parameters Used to Estimate Groundwater Discharge to Surface Water

Parameter	Name	Value	Unit
A	Cross-Sectional Area	2,560	m^2
i	Hydraulic Gradient	0.019	m/m
K	Hydraulic Conductivity	1.50E-04	cm/s

Sources: SIPC, 2021; SIPC, 2007; Golder Associates Inc., 2021.

Table A.2 Partition Coefficients

Constituent	Mean Sediment-Water Partition Coefficient (K_{dbs})		Mean Suspended Sediment-Water Partition Coefficient (K_{dsw})	
	Value (log_{10}) (mL/g)	Value (mL/g)	Value (log_{10}) (mL/g)	Value (mL/g)
Metals				
Arsenic	2.4	2.51E+02	3.9	7.94E+03
Beryllium	2.8	6.31E+02	4.2	1.58E+04
Boron	0.8	6.31E+00	3.9	7.94E+03
Cadmium	3.3	2.00E+03	4.9	7.94E+04
Cobalt	3.1	1.26E+03	4.8	6.31E+04
Lead	4.6	3.98E+04	5.7	5.01E+05
Thallium	1.3	2.00E+01	4.1	1.26E+04

Notes:
mL/g = Milliliters per Gram.
Source: US EPA, 2014.

Table A.3 Surface Water Parameters

Parameter	Name	Value	Unit
TSS	Total Suspended Solids	49	mg/L
V_{fx}	Surface Water Flow Rate	2.5×10^{11}	L/year
d_b	Depth of Upper Benthic Layer (default)	0.03	m
d_w	Depth of Water Column	1.52	m
d_z	Depth of Water Body	1.55	m
bsc	Bed Sediment Bulk Density (default)	1	g/cm^3
bsp	Bed Sediment Porosity (default)	0.6	–
M_{TSS}	TSS Mass per Unit Area[a]	0.075	kg/m^2
M_S	Sediment Mass per Unit Area[b]	30	kg/m^2

Notes:
CF = Conversion Factor.
Source of default values: US EPA, 2014.
(a) $M_{TSS} = TSS \times d_w \times CF1 \times CF2$.
(b) $M_S = d_b \times bsc \times CF3 \times CF4$.
CF1 = 1,000 L/m^3; CF2 = 1E06 mg/kg; CF3 = 1E+06 cm^3/m^3; CF4 = 0.001 kg/g.

Table A.4 Calculated Parameters

COI	Fraction of COI in the Water Column (f_{water})	Fraction of COI in the Benthic Sediments ($f_{benthic}$)	Fraction of COI Dissolved in the Water Column ($f_{dissolved}$)
Metals			
Arsenic	0.219	0.781	0.720
Beryllium	0.1250	0.8750	0.5629
Boron	0.9108	0.0892	0.7198
Cadmium	0.1107	0.8893	0.2044
Cobalt	0.142	0.858	0.244
Lead	0.032	0.968	0.039
Thallium	0.800	0.200	0.618

Note:
COI = Constituent of Interest.

Table A.5 Surface Water and Sediment Modeling Results for Little Saline Creek

COI	Maximum Measured Groundwater Concentration (mg/L)	Modeled Surface Water Concentration (mg/L)	Modeled Sediment Concentration (mg/kg)
Arsenic	1.20E-01	1.15E-06	2.09E-04
Beryllium	8.10E-03	7.79E-08	2.77E-05
Boron	3.10E+00	2.98E-05	1.35E-04
Cadmium	5.50E-02	5.29E-07	2.16E-04
Cobalt	5.40E-02	5.19E-07	1.60E-04
Lead	8.00E-02	7.69E-07	1.20E-03
Thallium	4.60E-02	4.42E-07	5.46E-06

Notes:
COI = Constituent of Interest; mg/L = Milligrams per Liter.

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Appendix B

Screening Benchmarks

Table B.1 Calculated Water Quality Standards Protective of Incidental Ingestion and Fish Consumption

Human Health COI	Bioconcentration Factor (BCF)		Average Daily Intake (ADI)			Human Threshold Criteria (HTC)		
	BCF[a] (L/kg-tissue)	Basis	MCL (mg/L)	RfD (mg/kg-d)	ADI[b] (mg/day)	Water & Fish (mg/L)	Water Only (mg/L)	Fish Only (mg/L)
Arsenic	44	NRWQC (2002)	0.01	0.0003	0.02	0.022	2.0	0.023
Beryllium	19	NRWQC (2002)	0.004	0.002	0.008	0.021	0.80	0.021
Boron	1	(d)	NC	0.2	14	467	1400	700
Cadmium	270	US EPA (2014)	0.005	0.0001	0.01	0.0018	1.0	0.0019
Cobalt	300	ORNL (2023)	NC	0.0003	0.021	0.0035	2.1	0.0035
Lead	46	US EPA (2014)	0.01	NC	0.02	0.01	0.01	0.01
Thallium	116	NRWQC (2002)	0.002	0.00001	0.004	0.0017	0.40	0.0017

Notes:

ADI = Average Daily Intake; BCF = Bioconcentration Factor; COI = Constituent of Interest; F = Fish Consumption Rate; HTC = Human Threshold Criteria; MCL = Maximum Contaminant Level; NA = BCF Not Available and Therefore, WQC for Fish Only Not Calculated; NC = No Criterion Available; NRWQC = National Recommended Water Quality Criteria; ORNL = Oak Ridge National Laboratory; RfD = Reference Dose; W = Water Consumption Rate; WQC = Water Quality Criteria; SWQC = Surface Water Quality Criteria; US EPA = United States Environmental Protection Agency.

(a) BCFs from the following hierarchy of sources:

NRWQC (2002). National Recommended Water Quality Criteria: 2002. Human Health Criteria Calculation Matrix.

US EPA (2014). Human and Ecological Risk Assessment of Coal Combustion Residuals.

ORNL (2023). Risk Assessment Information System (RAIS) Chemical Toxicity Values.

(b) ADI based on the MCL is calculated as the MCL (mg/L) multiplied by a water ingestion rate of 2 L/day. In the absence of an MCL, the ADI was calculated as the RfD (mg/kg-d) multiplied by the body weight (70 kg).

(c) SWQC based on US EPA's action level.

(d) BCF of 1 was used as a conservative assumption, due to lack of published BCF.

Consumption of Water and Fish

$$HTC = \frac{ADI}{W + (F \times BCF)}$$

Consumption of Water Only

$$HTC = \frac{ADI}{W}$$

Consumption of Fish Only

$$HTC = \frac{ADI}{F \times BCF}$$

Where:

Human Threshold Criteria (HTC)	Chemical-specific	mg/L
Acceptable Daily Intake (ADI)	Chemical-specific	mg/day
Fish Consumption Rate (F)	0.02	kg/day
Bioconcentration Factor (BCF)/ Bioaccumulation Factor (BAF)	Chemical-specific	L/kg-tissue
Water Consumption Rate (W)	0.01	L/day
Body Weight	70	kg
Target Cancer Risk (TCR)	1.0E-05	unitless

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EXHIBIT 38

Andrew Bittner, M.Eng., P.E. Closure Impact Assessment, Pond 4 (Dec. 20, 2024)

Closure Impact Assessment
Pond 4
Marion Generating Station, Marion, Illinois

Prepared by

Andrew Bittner, M.Eng., P.E.

Prepared for

Southern Illinois Power Company
11543 Lake of Egypt Rd
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December 20, 2024
Corrected on January 29, 2025

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Abbreviations

BMP	Best Management Practice
CBR	Closure-by-Removal
CCR	Coal Combustion Residual
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CY	Cubic Yards
EJ	Environmental Justice
FEMA	Federal Emergency Management Agency
GHG	Greenhouse Gas
GWPS	Groundwater Protection Standard
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
N_2O	Nitrous Oxide
NO_x	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
PM	Particular Matter
SIPC	Southern Illinois Power Cooperative
TDS	Total Dissolved Solids
US	United States
US DOT	United States Department of Transportation
VOC	Volatile Organic Compound

Executive Summary

Southern Illinois Power Cooperative (SIPC) owns and operates the Marion Generating Station (Site), a gas and coal-fired power generating station. The station is located approximately eight miles south of Marion, Illinois, on the northwestern bank of the Lake of Egypt. The facility began operation in 1963. The area surrounding the facility is a rural agricultural community (Kleinfelder and Wendland, 2013).

The Site has several surface impoundments that have been used for storage of coal combustion residuals (CCR) and impoundments that were used to support other operational purposes (*e.g.*, wastewater storage, surface water run-off collection). The focus of my analysis in this report is Pond 4. Pond 4 was built in 1979 and is in the central portion of the Site. Historically, Pond 4 received decant water from other ponds that received bottom ash, and it has been used to receive runoff from the coal pile (Kleinfelder, 2013; SIPC, 2021a). No CCRs were ever directly sent to or disposed in Pond 4. Currently, Pond 4 receives overflow from Pond S-6. Water in Pond 4 discharges into the Little Saline Creek *via* Outfall 002 (Kleinfelder, 2013; SIPC, 2021a).

The goal of this Closure Impact Assessment was to holistically evaluate a closure scenario with respect to a wide range of factors, including risks to human health and the environment, risks of future releases, effects on groundwater, surface water, and air quality, impacts to the local community, and impacts on worker safety. Specifically, I evaluated the impacts and potential benefits associated with one specific closure scenario at Pond 4: closure-by-removal (CBR). CBR would include dewatering of the pond and excavation of sediment in the pond; it may also include either on-Site disposal or off-Site disposal of the excavated sediment. Post-excavation, this scenario could also include a retrofit of Pond 4 with an impermeable bottom liner to allow for continued operation and use of the pond. Results of the closure impact assessment were compared to the impacts associated with current operational conditions at Pond 4.

Based on the assessment, CBR does not lead to greater environmental benefit as compared to continued operation of Pond 4. Specifically, CBR will not result in any reduction in risks to human health or the environment and will not result in any improvement to groundwater or surface water quality. However, implementing CBR may have several adverse effects compared to the continued operation of Pond 4. Specifically, closure may cause short-term impacts to air quality, result in increased greenhouse gas (GHG) emissions and increased energy consumption, cause an increase in worker injuries, and result in increased accidents, traffic, and noise to nearby communities.

1 Introduction

Southern Illinois Power Cooperative (SIPC) owns and operates the Marion Generating Station (Site), a gas and coal-fired power generating station. The station is located approximately eight miles south of Marion, Illinois, on the northwestern bank of the Lake of Egypt (Figure 1.1). Power generation Units 1, 2, and 3 started operating in 1963; Unit 4 started operating in 1978. Unit 123 replaced the retired Units 1, 2, and 3 in the early 2000s, and Unit 4 ceased operation in 2020 (Kleinfelder, 2013; SIPC, 2021b).

The Site has several surface impoundments that have been used for storage of CCR and impoundments that were used to support other operational purposes (*e.g.*, wastewater storage, surface water run-off collection). Only "relatively small amounts of fly ash" were ever produced at the Site (SIPC, 2021b). Fly ash that was generated was transported and stored in the Initial Fly Ash Holding Area, Replacement Fly Ash Holding Area, Pond A-1, or the Former On-Site Landfill (SIPC, 2021b). The former Fly Ash Holding Areas are within the cover area for the Former On-Site Landfill (SIPC, 2021b). Other ponds located on Site (Figure 1.1) and a description of their historic and current operation are described below.

- Ponds 1 and 2 received sluiced bottom ash from power generation units 1, 2, 3, and 4 (Figure 1.1; SIPC, 2021b). During the entire pond operational life, bottom ash was removed from Ponds 1 and 2 and sold for beneficial reuse to shingle manufacturers, grit blasting companies, and local highway departments. Decanted water from Ponds 1 and 2 flowed into Pond 4. Ponds 1 and 2 are no longer in operation and are currently being closed (SIPC, 2021b).
- The Former Emery Pond was constructed in the late 1980s to hold stormwater drainage from the generating station (Figure 1.1; SIPC, 2021b). All CCRs in Emery Pond have been removed and the pond has been closed (SIPC, 2021b). Groundwater corrective action is currently on-going (Hanson Professional Services Inc., 2021).
- South Fly Ash Pond was constructed in 1989 and was originally intended to be a replacement for Pond A-1 (Figure 1.1; SIPC, 2021b). Ultimately, Pond A-1 did not need to be replaced. Thus, the South Fly Ash Pond was only used to receive decant water from the Former Emery Pond while it was operational. No CCRs were ever directly sent to or disposed of in the South Fly Ash Pond (SIPC, 2021b).
- Ponds 3 and 3-A were secondary ponds that received overflow from the fly ash holding areas (Figure 1.1; SIPC, 2021b). They also received storm water runoff, coal pile runoff, and water from the facility floor drains. In approximately 1982, Pond 3-A was separated from Pond 3 by construction of an internal berm. All sediment and debris were removed from Pond 3 in 2006 and 2011. All sediment and debris were removed from Pond 3-A in 2014. Subsequently, no CCRs were ever directly sent to or disposed in Ponds 3 or 3-A. Currently, water from the South Fly Ash Pond flows into Pond 3 (SIPC, 2021b).
- Pond S-6 was originally built to manage stormwater associated with the Former Landfill (Figure 1.1; SIPC, 2021a. Initially, water in Pond S-6 discharged to Little Saline Creek through Outfall 001; however, in approximately 1993, water from Pond S-6 was pumped to Pond 4. No CCRs were ever directly sent to or disposed in the Pond S-6 (SIPC, 2021b).
- Pond B-3 was built in 1985 and was primarily used as a secondary pond that received water from Pond A-1 (Figure 1.1; SIPC, 2021b). During periodic shutdowns of Pond A-1, Pond B-3 may have received some short-term discharges of fly ash from Unit 1, 2, and 3 prior to their shutdown (SIPC,

2021b). Pond A-1 was taken off-line approximately 3 to 4 times between 1985 and 2003, each lasting about 2 weeks. In 2017, Pond B-3 was dewatered and all sediment and CCR were excavated.

- Pond 4 was built in 1979 and historically received decant water from Ponds 1 and 2 for secondary treatment and received runoff from the coal pile (Figure 1.1; Kleinfelder, 2013; SIPC, 2021a,b). No CCRs were ever directly sent to or disposed of in Pond 4. All sediment and debris were removed from Pond 4 in 2012. Currently, Pond 4 receives overflow from Pond S-6; water in Pond 4 discharges into the Little Saline Creek *via* Outfall 002 (Kleinfelder, 2013; SIPC, 2021b).

This Closure Impact Assessment is focused solely on Pond 4 (Figure 1.1).

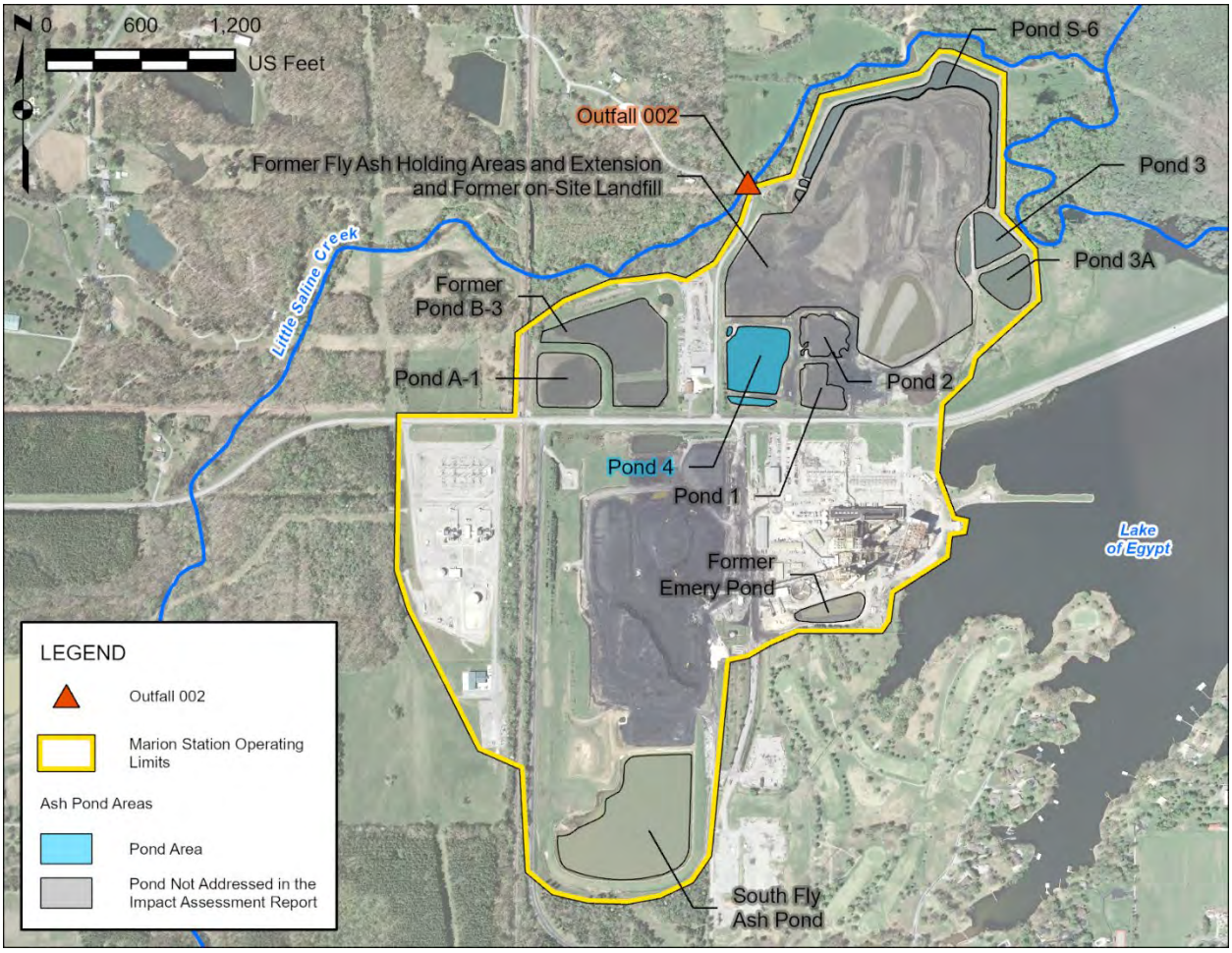


Figure 1.1 Site Location Map. Sources: Golder Associates, 2021; Andrews Engineering, 2021; USGS, 2011.

Based on the Human Health and Ecological Risk Assessment conducted for the Site (Gradient, 2024), there are no current risks to human health or the environment due to CCR-related constituents associated with Pond 4. As a result, closing Pond 4 would not result in any reduction of risk to human health or the environment. In this report, I evaluate the potential impacts that would be incurred if Pond 4 were to be closed. The Pond 4 closure scenario was assumed to be CBR. This closure scenario would include dewatering of the pond and excavation of sediment in the pond; CBR may include either on-Site disposal or off-Site disposal of the excavated sediment. Post-excavation, this scenario could also include a retrofit of Pond 4 with an impermeable bottom liner to allow for continued operation and use of the pond. This

impact assessment holistically assesses the CBR closure scenario based on a series of metrics, including the efficiency, reliability, and ease of implementation of the closure scenario, as well as its potential positive and negative short- and long-term impacts on human health and the environment. These metrics are largely consistent with factors that are recommended for consideration in a closure alternatives evaluation specified in Section 845.710 of Title 35, Part 845 of the Illinois Administrative Code (IAC Part 845; IEPA, 2021).

2 Qualifications

I am a Principal at Gradient, an environmental consulting firm located in Boston, Massachusetts, and a licensed professional engineer. During my 26 years of professional experience, I have consulted and testified on a variety of projects related to the fate and transport of constituents in the environment, hydrogeology, groundwater and surface water modeling, site characterization, and remediation system design. I have a master's degree in environmental engineering from the Massachusetts Institute of Technology and bachelor's degrees in environmental engineering and physics from the University of Michigan. A copy of my *curriculum vitae* is provided in Appendix A.

I have applied my knowledge to address a range of complex challenges in the electric power, oil and gas, chemical manufacturing, pharmaceutical, mining, agrichemical, and waste disposal sectors. Related to CCRs, my experience includes projects involving regulatory comment, closure alternatives analysis, corrective action alternatives analysis, relative impact assessments, and fate and transport modeling. I have worked on projects at approximately 75 CCR coal ash landfills and surface impoundments. Additionally, I have published and presented on a variety of topics, including fate and transport of coal ash constituents in groundwater and surface water, closure evaluations at coal ash disposal facilities, groundwater and surface water modeling, remedial system optimization, and the impact of environmental regulations in the United States (US) and abroad.

3 Site Overview

3.1 Site Description

The Marion Generating Station is located in Marion, Illinois, on the west shores of the Lake of Egypt. The Site is bounded by Lake of Egypt to the east, Lake of Egypt Country Club to the southeast, Little Saline Creek to the north, and agricultural fields to the west and south (Figure 3.1). Little Saline Creek flows to the northeast (USGS, 2022). This Closure Impact Assessment addresses potential impacts associated with closure of Pond 4 by CBR.

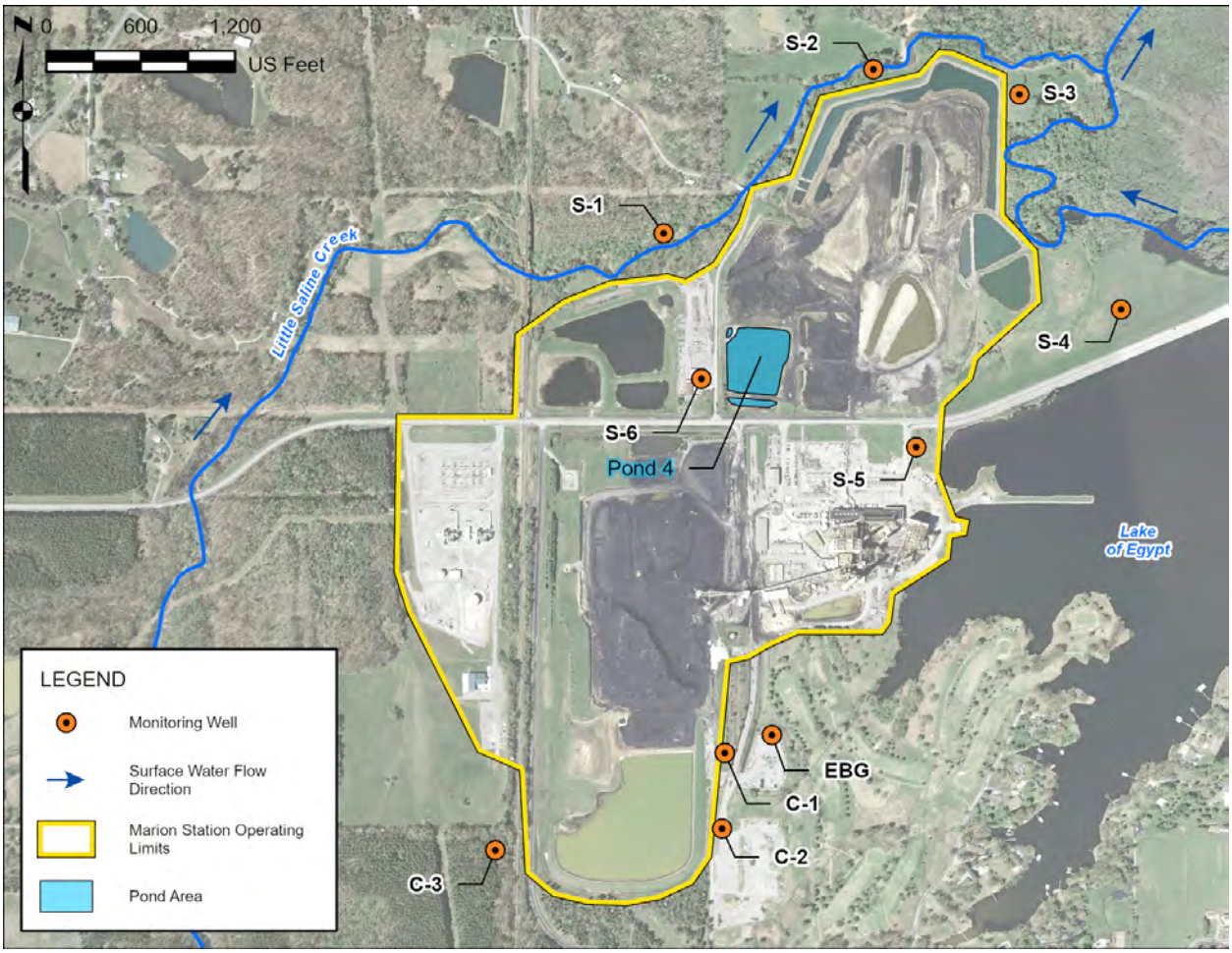


Figure 3.1 Site Location Map with Groundwater Monitoring Well Locations. Sources: USGS, 2022; Golder Associates, 2021; Andrews Engineering, 2021; USGS, 2011). Note: Monitoring Wells associated with the Former Emery Pond are not shown on this map.

Pond 4 was built in 1979 (Kleinfelder, 2013). It is approximately 3.7 acres in size with a total volume of approximately 1,370,059 ft^3 (50,743 cubic yards [CY]; Haley & Aldrich, 2021). Pond 4 is located in the central portion of the Site (Figure 3.1; SIPC, 2021a). During operation, bottom ash from power generating

units 1, 2, 3 and 4 was sluiced to Ponds 1 and 2 (SIPC, 2021a). Pond 4 received decant water from Ponds 1 and 2 for secondary treatment prior to the shutdown of Unit 4. Pond 4 also received runoff from the coal pile area. Pond 4 never received direct discharge of CCRs. Around 1993, following the requirements of an Illinois Environmental Protection Agency (IEPA)-issued permit, SIPC installed pumps to transfer water from Pond S-6 to Pond 4 (SIPC, 2021a). In 2012, Pond 4 was excavated to the clay layer underlying the pond, removing all plant debris and any accumulated CCR or coal fines. Since 2012, Pond 4 has only received overflow from Pond S-6 and stormwater runoff. Water in Pond 4 is discharged into the Little Saline Creek *via* Outfall 002 (Kleinfelder, 2013; SIPC, 2021a). Figures 3.2-3.5 show the Site conditions of Pond 4 in 2011 prior to the excavation.



Figure 3.2 2011 Photographs of Pond 4 – General Conditions. Source: Kleinfelder, 2013.

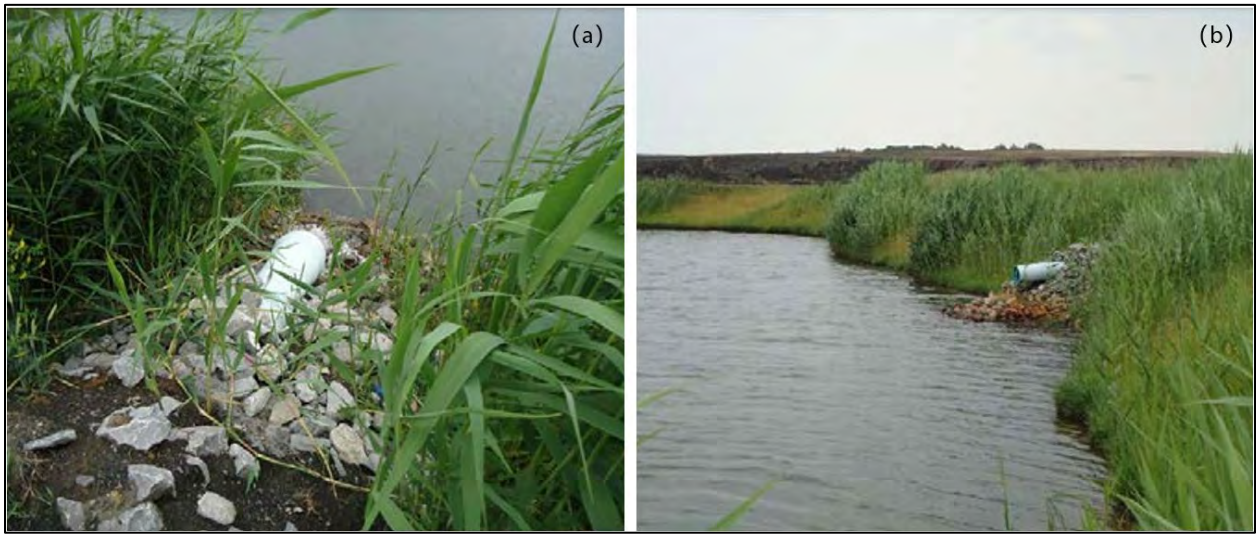


Figure 3.3 2011 Photographs of Pond 4 – (a) Discharge Pipe from Pond 1 into Pond 4; (b) Discharge Pipe from Pond 2 into Pond 4. Source: Kleinfelder, 2013.



Figure 3.4 2011 Photographs of Pond 4 – (a) Intake from Pond 4 to Outlet Structure (pipe submerged); (b) Outlet Structure from Pond 4. Source: Kleinfelder, 2013.

Based on a 2021 Pond Investigation Report by Haley & Aldrich, the average sediment thickness in Pond 4 is approximately 1.67 feet, which means that sediment is currently less than 10% of the total volume in Pond 4[1] (Haley & Aldrich, 2021). Sediment samples collected from Pond 4 had low concentrations of sulfate and calcium which suggests there is minimal CCR in the pond (Haley & Aldrich, 2021). Shake test concentrations of Pond 4 sediments were all below Class I groundwater standards. Based on these results, the limited amount of CCR materials that may be present in Pond 4 sediment "are not expected to result in groundwater impacts above the Part 620 Class I groundwater standards" (Haley & Aldrich, 2021).

3.2 Hydrogeology

The Site is located on the southern edge of the Illinois Basin in the Shawnee Hills Section of the Interior Low Plateaus physiographic province (Golder, 2021). The Illinois Basin is a depositional and structural basin composed of sedimentary rocks ranging in age from Cambrian to Permian. The southern portion of the basin is characterized by extensive faulting, and some of these faults host commercially significant fluorite vein deposits (Golder, 2021). The regional stratigraphic sequence includes the following, from the surface downward (Golder, 2021):

- The Caseyville/Tradewater Formation: consists of lenticular, vertically and horizontally interbedded layers of sandstone, siltstone, and shale beneath a relatively thin layer of unconsolidated materials. It ranges from 190 to 500 feet in thickness.
- The Kinkaid Formation: consists of limestone, shale, claystone, and sandstone. It ranges from 120 to 160 feet in thickness.
- The Degonia Formation: consists of thin, very-fine grained sandstone, siltstone, shale, and irregular chert beds. It ranges from 20 to 64 feet in thickness.
- The Clore Formation: consists of sandstone, shale and limestone, which sporadically outcrops at the surface. It ranges from 110 to 155 feet in thickness.

[1] Based on the sediment and pond volumes reported by Haley & Aldrich, Inc. (2021), the sediment volume in Pond 4 is approximately 6.6% of its total volume; however, Haley & Aldrich, Inc. (2021) reported a value of 10.9% instead.

On Site, soils overlying the Caseyville/Tradewater Formation consist of glacial and alluvial deposits including layers of silty clay, clayey silt, silty sand and clayey sand (Kleinfelder, 2013). Table 3.1 provides a detailed summary of the Site lithology for the upper 50 feet (Golder, 2021).

Table 3.1 Site Geology

Lithology	Description
Peoria/Roxana Silt	Light yellow-tan to gray, fine sandy silt
Glasford Formation	Silty/sandy diamictons with thin lenticular bodies of silt, sand, and gravel
Caseyville Formation/Bedrock	Sedimentary rocks including sandstone, limestone, and shales

Sources: Golder, 2021; Kleinfelder, 2013.

The Site is located within the South Fork Saline River/Lake Egypt watershed. Groundwater in the southern/eastern portion of the Site flows toward and discharges into the Lake of Egypt; groundwater throughout the rest of property flows in a northeasterly direction toward Little Saline Creek (Figure 3.5; SIPC, 2007). The uppermost water-bearing zone (*i.e.*, the Unlithified Unit) is a shallow, hydraulically perched layer consisting of fill and residuum (silts and clays), with a saturated thickness of approximately up to 10 feet (Hanson Professional Services Inc., 2021). The average horizontal hydraulic conductivity is estimated to be approximately 1.5×10^{-4} cm/s in the Unlithified Unit (Golder, 2021). The hydraulic gradient was estimated to be 0.019 based on measured groundwater elevations at monitoring wells S-3 and S-6 (SIPC, 2007).

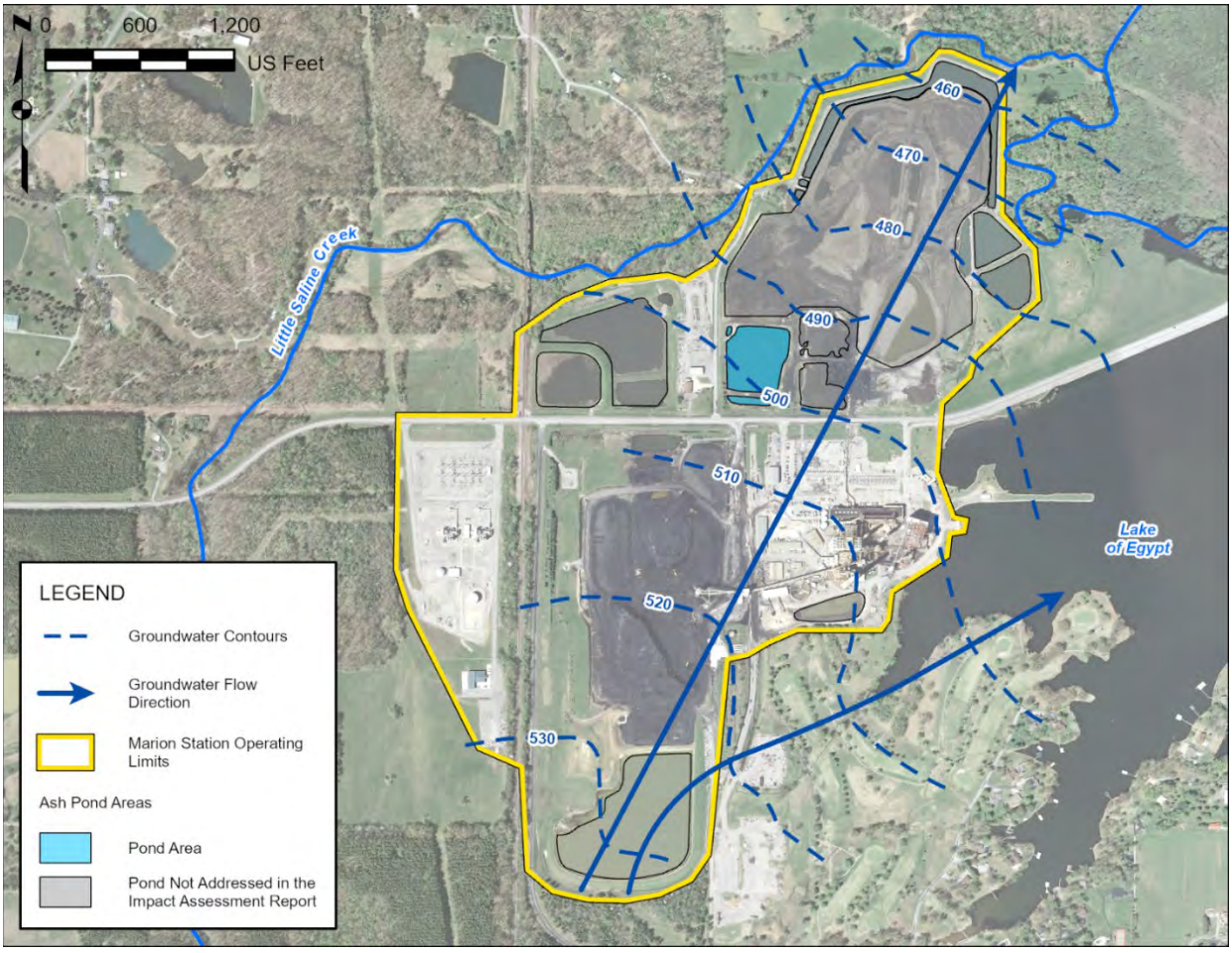


Figure 3.5 2007 Groundwater Elevations, Contours, and Flow Direction at the Site. Source: SIPC, 2007.

3.3 Groundwater Monitoring

Groundwater samples have been collected from a series of monitoring wells to monitor groundwater quality near Pond 4 ("S" series wells; Figure 3.1). Groundwater samples were analyzed for a suite of total metals, specified in IAC 845.600 (IEPA, 2021),[2] as well as general water quality parameters (pH, chloride, fluoride, sulfate, and total dissolved solids). Groundwater quality data from samples collected at "S" wells over the past five years are summarized in Table 3.2.

Table 3.2 Groundwater Data Summary (2018-2023) from Monitoring Wells ("S" Wells) Located Near Pond 4

Constituent	Samples with Constituent Detected	Samples Analyzed	Minimum Detected Value	Maximum Detected Value	Maximum Laboratory Detection Limit
Total Metals (mg/L)					
Antimony	0	12	ND	ND	0.0050
Arsenic	3	12	0.0089	0.12	0.050
Barium	12	12	0.020	1.5	NA
Beryllium	1	12	0.0081	0.0081	0.0050
Boron	35	126	0.0041	2.8	0.50
Cadmium	12	126	0.00068	0.055	0.002
Chromium	9	12	0.0014	0.069	0.0050
Cobalt	5	12	0.0012	0.054	0.010
Lead	7	12	0.0027	0.080	0.0050
Mercury	0	12	ND	ND	0.00020
Selenium	3	12	0.0021	0.017	0.025
Thallium	1	12	0.046	0.046	0.025
Dissolved Metals (mg/L)					
Boron	14	48	0.0051	3.1	0.50
Cadmium	0	48	ND	ND	0.001
Other (mg/L or SU)					
Chloride	88	90	6.1	480	20
Fluoride	6	12	0.062	0.18	0.50
pH	66	66	5.7	6.9	NA
Sulfate	122	126	2.6	310	20
Total Dissolved Solids	66	66	78	4500	NA

Notes:
mg/L = Milligrams per Liter; NA = Not Available; ND = Not Detected; SU = Standard Unit.
Source: Gradient (2024).

[2] Samples were analyzed for a longer list of inorganic constituents and general water quality parameters (chloride, fluoride, sulfate, and total dissolved solids), but these constituents were not evaluated in the risk evaluation.

4 Closure Impact Assessment

The goal of this Closure Impact Assessment was to holistically evaluate a closure scenario with respect to a wide range of factors, including risks to human health and the environment, risks of future releases, effects on groundwater, surface water, and air quality, impacts to the local community, and impacts on worker safety. Specifically, I evaluated the impacts and potential benefits associated with one specific closure scenario at Pond 4: CBR. Results of the closure impact assessment were compared to the impacts associated with current operational conditions at Pond 4.

4.1 Introduction

For this report, the Pond 4 closure scenario was assumed to be CBR. This scenario would include dewatering of the pond and excavation of sediment in the pond; CBR may include either on-Site disposal or off-Site disposal of the excavated sediment. Post-excavation, this scenario could also include a retrofit of Pond 4 with an impermeable bottom liner to allow for continued operation and use of the pond. This impact assessment holistically assesses the CBR closure scenario based on a series of metrics, described below.

- **Risks to Human Health and the Environment:** This metric evaluates the impact of closure by CBR on the reduction of risks to human health and the environment due to exposure to CCR-related constituents in groundwater and surface water.
- **Risks of Potential Future CCR Releases:** This metric evaluates the residual risk of potential CCR releases. Sub-categories include CCR releases due to a dike failure event and CCR releases under flood conditions.
- **Groundwater Quality:** This metric describes the likelihood of groundwater concentration exceedances of relevant regulatory standards.
- **Surface Water Quality:** This metric describes the likelihood of surface water concentration exceedances of relevant regulatory standards.
- **Air Quality:** This metric describes the air quality impacts of closure activities under CBR, including the generation of fugitive dust and emissions from diesel-powered construction equipment.
- **Climate Change and Sustainability:** This metric describes sustainability and climate change-related aspects of CBR, including GHG emissions and energy consumption during closure activities.
- **Worker Safety:** This metric describes potential for worker fatalities and injuries to occur during closure activities, either on-Site or off-Site (*i.e.*, due to haul truck accidents).
- **Community Impacts:** This metric describes potential for fatalities and injuries to occur in the community due to off-Site haul truck accidents. It also includes the nuisance impacts that may arise from closure activities, including traffic and noise.
- **Environmental Justice (EJ):** This metric evaluates the possible impacts of the closure activities on EJ communities.

- **Recreational Value:** This metric evaluates the potential impacts resulting from noise and visual disturbances to recreators during closure activities.

Section 4.2 summarizes the CBR scenario that I evaluated as part of this assessment. Section 4.3 presents my analysis of the various closure alternatives with respect to the metrics listed above, and Section 4.4 summarizes the conclusions of this Closure Impact Assessment.

4.2 Summary of Closure Approach

For this report, I assumed the closure scenario was CBR, which may include the following elements:

- Removal of liquids. Water would be managed in accordance with the National Pollutant Discharge Elimination System (NPDES) permit for the facility;
- Excavation of sediments;
- Site restoration such as placement of topsoil along the side slopes and bottom of Pond 4 and revegetation with native grasses;
- Disposal of the excavated sediments at either an on-Site area or an off-Site landfill; and
- Post-excavation, this scenario may also include a retrofit of Pond 4 with an impermeable bottom liner to allow for continued operation and use of the pond.

Based on a 2021 report, the total sediment volume in Pond 4 was estimated to be approximately 91,077 ft^3 (*i.e.*, 3,373 CY; Haley & Aldrich, 2021). On-Site disposal may be feasible if there is an existing on-Site landfill or construction of a new on-Site landfill is demonstrated to be viable. For this report, I assumed that that excavated sediments from Pond 4 would be transported to the West End Disposal Facility located in Thompsonville, Illinois (1710 McFarland Road), which is approximately 35 road miles from the Site. Excavated sediments could be hauled to the off-Site landfill using haul trucks with an assumed capacity of 16.5 CY.

Based on my previous experience for similarly sized units, I assumed that CBR-related closure activities would take approximately 2-4 months. Key parameters for the CBR scenario are shown in Table 4.1.

Table 4.1 Key Parameters for the CBR Scenario

Parameter	Value
Size of Pond 4 (acres)	3.7
Volume of sediments (yd^3)	3,373
Estimated duration of construction activities (months)	2 - 4
Truckloads required	205
Length of the haul route between Pond 4 and disposal area (mi)	35
Total vehicle miles traveled (mi)	14,350

Source: Haley & Aldrich, 2021.

4.3 Closure Impact Assessment

4.3.1 Risks to Human Health and the Environment

A Human Health and Ecological Risk Assessment (Gradient, 2024) concluded that, under current conditions at the Site, there are no unacceptable risks to human health or the environment associated with the use of groundwater or the discharge of groundwater to surface water. Because the current operational conditions in Pond 4 do not present a risk to human health or the environment, there are not likely to be any unacceptable risks after Pond 4 is closed. As a result, there is no risk reduction achieved by closing Pond 4.

4.3.2 Risks of Potential Future CCR Releases

Environmental impacts can occur at coal ash impoundments due to the sudden release of CCR during infrastructure failures and flooding events. This section evaluates the risk of CCR releases resulting from a dike failure or flood event.

Releases Due to Dike Failure

Sites in Illinois may be subject to seismic risks arising from the Wabash Valley Seismic Zone and the New Madrid Seismic Zone (IEMA, 2020). Specifically, the Wabash Valley Fault System is approximately 85 miles northeast of the Site, the New Madrid fault zone is located approximately 80 miles southwest of the Site, and the St. Genevieve fault zone is approximately 40 miles west of the Site (Hanson Professional Services Inc., 2019a). Although the Marion Generating Station property is located within a seismic impact zone (Hanson Professional Services Inc., 2019a), the Site does not lie within 200 feet of an active fault or fault damage zone at which displacement has occurred in Holocene time (Hanson Professional Services Inc., 2019b). As a result, there is minimal risk of dike failure under current conditions due to seismic impact. Furthermore, because there are currently only negligible amounts of CCR related materials in Pond 4, there is very little risk of a release of CCR due to a seismic event. Under the CBR scenario, all of the sediments in Pond 4 will be excavated and relocated, which would eliminate the risk of a future CCR release.

Flood-Related Releases

Based on the effective Federal Emergency Management Agency (FEMA) Flood Map for the Site, Pond 4 is not located within the 100-year flood zone (*i.e.*, Zone A) for the Lake of Egypt (FEMA, 2024). For this reason and because there are currently only negligible amounts of CCR related materials in Pond 4, there is very little risk of a flood-related CCR release at Pond 4. Under the CBR scenario, all sediments in Pond 4 would be excavated and disposed, eliminating the risk of any flood-related CCR releases.

4.3.3 Groundwater Quality

Concentrations of constituents detected in groundwater near Pond 4 were compared to the relevant groundwater protection standards (GWPSs) and to a Site-specific background concentration (Table 4.2; "S" Wells on Figure 3.1). GWPSs were defined based on IAC 845.600. The site-specific background concentration was estimated based on the maximum concentration detected at monitoring well C-3 which is located upgradient of the power generation station (Figure 3.1). Exceedances were identified when the constituent concentrations exceed either the corresponding GWPS or the background concentration, whichever is higher.

Table 4.2 Groundwater Exceedances Summary for (2018-2023) - Monitoring Wells ("S" Wells) Located Near Pond 4

Constituent[a]	Maximum Concentration Detected	Groundwater Protection Standard (GWPS; IAC 845.600)	Background Concentration (Well C-3)[b]	Exceedance of Benchmark Identified (Location of Exceedance)[c]
Total Metals (mg/L)				
Antimony	--	0.0060	--	No
Arsenic	0.12	0.010	0.0033	Yes (S-1)
Barium	1.5	2.0	0.23	No
Beryllium	0.0081	0.0040	--	Yes (S-1)
Boron	2.8	2.0	0.414	Yes (S-2)
Cadmium	0.055	0.005	0.013	Yes (S-1, S-2, S-3, S-4, S-5, and S-6)
Chromium	0.069	0.10	0.0029	No
Cobalt	0.054	0.0060	0.0072	Yes (S-1 and S-6)
Lead	0.080	0.0075	0.0062	Yes (S-1, S-2, and S-6)
Mercury	--	0.0020	--	No
Selenium	0.017	0.050	0.012	No
Thallium	0.046	0.0020	--	Yes (S-2)
Dissolved Metals (mg/L)				
Boron	3.1	2.0	0.031	Yes (S-2)
Cadmium	--	0.005	--	No
Other (mg/L or SU)				
Chloride	480	200	570	No
Fluoride	0.18	4.0	0.19	No
pH	6.9	9.0	7	No
Sulfate	310	400	414	No
Total Dissolved Solids	4,500	1,200	4,000	Yes (S-4)

Notes:
COI = Constituent of Interest; GWPS = Groundwater Protection Standard; IL = Illinois; mg/L = Milligrams per Liter; SU = Standard Units.
"--" indicate constituent was not detected
(a) The constituents are those listed in the IL Part 845.600 GWPS (IEPA, 2021).
(b) Well C-3 (Figure 3.1) is located upgradient of the Site and the maximum level of concentrations identified at C-3 were used to represent the Site background concentrations.
(c) Exceedances were identified when the constituent concentrations exceed either the GWPS or the background concentrations, whichever is higher.
Source: Gradient (2024).

The "S" series monitoring wells are located in close proximity to other historic ponds and disposal areas that received CCR during their operation, including Ponds 1 and 2, the Initial Fly Ash Holding Area, Replacement Fly Ash Holding Area, Pond A-1, and the Former On-Site Landfill. Moreover, Shake Tests performed on Pond 4 sediments did not identify concentrations of any constituents in excess of Class I groundwater standards (Haley & Aldrich, 2021). Because of this, and since CCRs were never directly sent to or disposed in Pond 4, GWPS and background concentration exceedances that have been observed at the "S" series monitoring wells are likely the result of other nearby historic ponds and disposal areas that received CCR during their operation. Thus, closure of Pond 4 by CBR is not likely to result in any improvement in groundwater quality.

4.3.4 Surface Water Quality

The impacts to surface water quality from groundwater adjacent to Pond 4 flowing into the Little Saline Creek was estimated by modeling the mixing of groundwater flowing into the stream (Gradient, 2024). Even using a conservative methodology,[3] modeling results concluded that surface water concentrations potentially attributable to groundwater discharges in the area near Pond 4 are below all relevant human health and ecological surface water screening benchmarks. The model predicted surface water concentrations in Little Saline Creek are presented in Table 4.3a and 4.3b. Consequently, closure of Pond 4 by CBR is not likely to affect surface water quality in Little Saline Creek resulting from groundwater discharges into the creek. However, construction activity associated with the closure and/or pond retrofit may result in exposed terrain which could increase the potential for surface runoff and increased sedimentation in the creek.

Table 4.3a Surface Water Modeling Results for the Little Saline Creek – Human Health Benchmarks

COI	Maximum Surface Water Concentration (Modeled)	HTC for Water and Fish	HTC for Water Only	HTC for Fish Only	Exceedance of Benchmarks
Total Metals (mg/L)					
Arsenic	1.15E-06	2.25E-02	2.00E+00	2.27E-02	No
Beryllium	7.79E-08	2.05E-02	8.00E-01	2.11E-02	No
Boron	2.98E-05	4.67E+02	1.40E+03	7.00E+02	No
Cadmium	5.29E-07	1.85E-03	1.00E+00	1.85E-03	No
Cobalt	5.19E-07	3.49E-03	2.10E+00	3.50E-03	No
Lead	7.69E-07	1.00E-02	1.00E-02	1.00E-02	No
Thallium	4.42E-07	1.72E-03	4.00E-01	1.72E-03	No

Notes:
COI = Constituent of Interest; HTC = Human Threshold Criteria; mg/L = Milligrams per Liter.
Concentrations are listed only for the constituents identified as COIs in the "S" Wells.
Modeled concentrations represent the potential effect on surface water quality resulting from the measured groundwater concentrations.
Source: Gradient (2024).

[3] The maximum detected concentrations in groundwater from the "S" Wells from 2018 to 2023 were conservatively used to model constituents of interest (COI) concentrations in surface water.

Table 4.3b Surface Water Modeling Results for the Little Saline Creek – Ecological Benchmarks

COI	Maximum Surface Water Concentration (modeled)	Ecological Freshwater Benchmark	Basis	Exceedance of Benchmark
Total Metals (mg/L)				
Cadmium	5.29E-07	1.13E-03	IEPA SWQC	No
Cobalt	5.19E-07	1.90E-02	EPA R4 ESV	No
Lead	7.69E-07	2.01E-02	IEPA SWQC	No
Thallium	4.42E-07	6.00E-03	EPA R4 ESV	No

Notes:
COI = Constituent of Interest; ESV = Ecological Screening Value; IEPA = Illinois Environmental Protection Agency; SWQC = Surface Water Quality Criteria; EPA = United States Environmental Protection Agency; R4 = Region 4; mg/L = Milligrams per Liter.
Concentrations are listed only for the constituents identified as COIs in the "S" Wells.
Modeled concentrations represent the potential effect on surface water quality resulting from the measured groundwater concentrations.
Sources: Gradient (2024); IEPA SWQC: IEPA (2019a); EPA R4 ESV: US EPA Region IV (2018).

4.3.5 Air Quality

Construction activities can adversely impact air quality. Air pollution due to construction and/or pond retrofit occurs both on-Site and off-Site (*i.e.*, along haul routes). For this analysis, two categories of air pollution are of primary concern: equipment emissions and fugitive dust. The equipment emissions of greatest concern are those found in diesel exhaust. Most construction equipment is diesel-powered, including the dump trucks used to haul material to and from the Site. Diesel exhaust contains air pollutants, including nitrogen oxides (NO_x), particular matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs) (Hesterberg *et al*., 2009; Mauderly and Garshick, 2009). Fugitive dust, another major air pollutant at construction sites, is generated by earthmoving operations and other soil- and sediment-handling activities. Along haul routes, an additional source of fugitive dust is road dust along unpaved dirt roads. Careful planning and the use of Best Management Practices (BMPs) such as wet suppression are used to minimize and control fugitive dust during construction activities; however, it is not possible to prevent dust generation entirely.

During closure, air quality impacts would be expected both near the Pond 4 construction and retrofit area and along haul roads for off-Site disposal.

4.3.6 Climate Change and Sustainability

In addition to the air pollutants listed above in Section 4.3.5, construction equipment emits GHGs, including carbon dioxide (CO_2) and possibly nitrous oxide (N_2O). Moreover, construction activities have high energy demands. The energy for construction comes from the burning of fossil fuels (*e.g.*, the diesel used to power construction equipment). This section describes the impact of closure on two metrics related to climate change and sustainable construction: GHG emissions and energy consumption.

GHG Emissions

The potential impact of the CBR scenario associated with GHG emissions from construction equipment is proportional to the vehicle miles required. The off-Site disposal of Pond 4 sediments would require a total of 14,350 vehicle miles, which would result in higher GHG emissions than the current Pond 4 operation.

Energy Consumption

Energy consumption at a construction site is synonymous with fossil fuel consumption, because the energy to power construction vehicles and equipment comes from the burning of fossil fuels. The potential energy consumption impact associated with the CBR scenario is proportional to the vehicle miles required. Off-Site disposal of Pond 4 sediments would require a total of 14,350 vehicle miles. This would result in higher energy consumption/fossil fuel consumption than the current Pond 4 operation.

4.3.7 Worker Safety

Best practices would be employed during construction and/or pond retrofit in order to ensure worker safety and comply with all relevant regulations, permit requirements, and safety plans. However, it is impossible to completely eliminate the risk of accidents occurring during construction activities.

Accidents may occur either on-Site or off-Site. On-Site accidents include injuries and deaths arising from the use of heavy equipment and/or earthmoving operations. Off-Site accidents include injuries and deaths due to haul truck accidents.

Table 4.4 shows the expected number of accidents and injuries to vehicle occupants (workers) and non-occupants (community members) due to the hauling of sediments from the Site under the CBR scenario assuming off-Site disposal. Values in Table 4.4 are based on the "per vehicle mile traveled" crash rates reported by United States Department of Transportation (US DOT) for large trucks in the US (US DOT, 2023) and total vehicle miles estimated in Table 4.1.

Table 4.4 Expected Injuries and Fatalities Under the CBR Scenario

Factor	Value
Worker Injuries	0.003
Worker Fatalities	2.3×10^{-4}
Community Injuries	0.0037
Community Fatalities	2.78×10^{-5}

4.3.8 Community Impacts

Closure activities can impact communities near the Site as well as communities located along trucking routes. Community impacts may include air pollution, haul truck accidents, and nuisance impacts from traffic and noise.

Accidents

Haul truck accidents have the potential to injure or kill community members as well as workers. Table 4.4 (above) shows the number of community injuries and fatalities that would be expected under the CBR scenario due to off-Site hauling of sediments from the Site.

Traffic

Haul routes are expected to use major arterial roads and highways, if possible, which will reduce the incidence of traffic. However, heavy use of local roads for construction operations may result in traffic

near the Site. Potential sources of traffic include the mobilization of equipment and materials, the daily arrival and departure of the workforce, and transport of the excavated sediment (TVA, 2015).

For the CBR scenario (assuming off-Site disposal of sediment), approximately 205 truckloads would be required to transport excavated sediments to the off-Site landfill (Table 4.1). Therefore, some traffic would be expected adjacent to the Site during the 2-4 month construction period.

Noise

Construction generates a great deal of noise, both in the vicinity of the Site and along haul routes. However, in a similar closure impact analysis performed by TVA (2015), the authors found that "[T]ypical noise levels from construction equipment used for closure are expected to be 85 dBA or less when measured at 50 ft. These types of noise levels would diminish with distance…at a rate of approximately 6 dBA per each doubling of distance and therefore would be expected to attenuate to the recommended EPA noise guideline of 55 dBA at 1,500 ft." As identified in Google Street View (Google LLC, 2024), there are no residences located within 1,500 ft of Pond 4 of the Site and, thus, closure will not cause any adverse noise impacts.

Haul routes are expected to use major arterial roads and highways, if possible, which would reduce the noise impacts on nearby communities. However, local roads near the Site may experience noise pollution under the CBR scenario due to high volumes of truck traffic. Notably, dump trucks generate significant noise pollution, with noise levels of approximately 88 decibels or higher expected within a 50 ft radius of the truck (Exponent, 2018). This noise level is similar to the noise level of a gas-powered lawnmower or a leaf blower (CDC NCEH, 2019). Decibel levels above 80 can damage hearing after two hours of exposure (CDC NCEH, 2019).

4.3.9 Environmental Justice

The State of Illinois defines environmental justice (EJ) communities to be those communities with a minority population above twice the state average and/or a total population below twice the state poverty rate (IEPA, 2019b). Relative to other communities, EJ communities experience an increased risk of adverse health impacts due to environmental pollution (US EPA, 2016).

As shown in a map of EJ communities throughout the state (US EPA, 2024), the nearest EJ community (Marion) lies approximately 6 miles from the Site to the north (Figure 4.1). As described above, noise impacts due to CBR-related construction are expected to be limited to potential receptors located within 1,500 feet (or 0.28 miles) of the Site. Similarly, the air quality impacts of construction are expected to be limited to potential receptors located within 1,000 feet (or 0.19 miles) of the Site (CARB, 2005; BAAQMD, 2017). The EJ community near Marion is therefore unlikely to be affected by impacts to on-Site air emissions and noise pollution.

EJ communities located along the potential haul routes to the off-Site landfills may be negatively impacted throughout the excavation period by the air pollution, noise, traffic, and accidents generated by hauling activities. A review of the EJ communities in Illinois (Figure 4.1) reveals that the off-Site landfill (*i.e.*, the West End Disposal Facility in Thompsonville, Illinois) is not located within the 1-mile buffer zone of an EJ community. Moreover, none of the three major haul routes suggested by Google Maps (Figure 4.1; Google LLC, 2024) would require hauling sediment through any EJ communities or buffer zones. Therefore, no EJ impacts would be expected to occur under this disposal scenario.

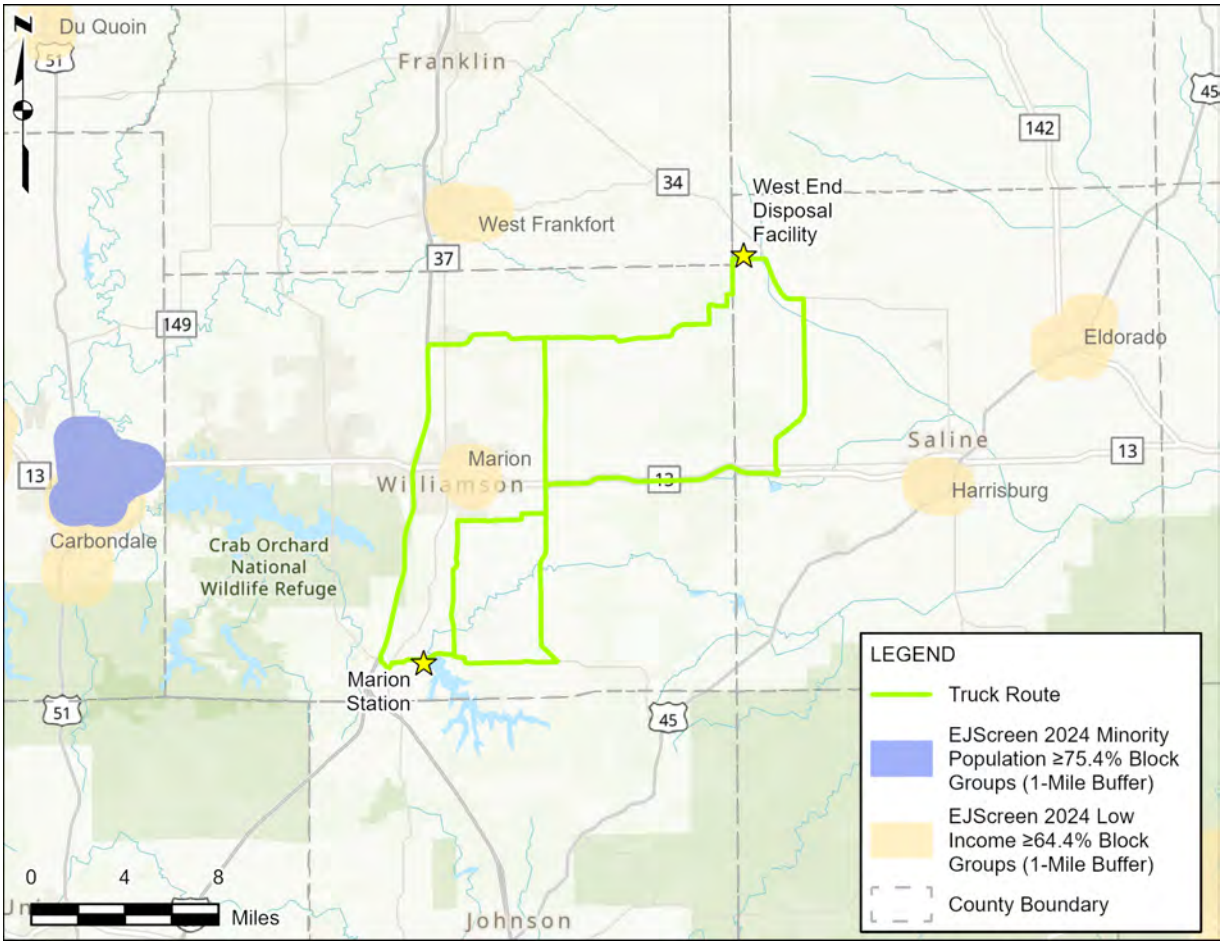


Figure 4.1 EJ Communities in the Vicinity of the Site and the Off-Site Landfill. Sources: US EPA (2024); IEPA (2019b); Google LLC (2024).

4.3.10 Scenic, Recreational, and Historical Value

During construction activities, negative impacts on scenic and recreational value may occur along the Lake of Egypt. Construction activities at the Pond 4 may not be visible to recreators given the separation between Pond 4 and the lake. Based on a review of the Illinois Department of Natural Resources (IDNR) Historic Preservation Division database and the Illinois State Archaeological Survey database, there are no historic sites located within 1,000 meters of Pond 4 (IDNR, 2023; ISAS, 2023). Thus, no impacts on historical sites would be expected under the CBR scenario.

4.4 Summary

The impacts associated the potential closure scenario, (*i.e.*, CBR) at Pond 4 were analyzed. CBR does not lead to greater environmental or human health benefit as compared to continued operation of Pond 4. Specifically, CBR will not result in any reduction in risks to human health or the environment and will not result in any improvement to groundwater quality or surface water quality. However, implementing CBR will have several adverse effects compared to the continued operation of Pond 4. Specifically, closure may cause short-term impacts to air quality, result in increased GHG emissions and increased energy consumption, cause an increase in worker injuries, and result in increased accidents, traffic, noise to nearby communities.

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Appendix A

***Curriculum Vitae* of Andrew Bittner, M.Eng., P.E.**

Andrew B. Bittner, M.Eng., P.E.
Principal
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Areas of Expertise

Contaminant fate and transport in porous and fractured media, migration of coal ash combustion products in groundwater and surface water, non-aqueous phase liquid (NAPL) transport, surface water and groundwater hydrology, groundwater and surface water modeling, remedial investigation design, remedy evaluation and optimization, cost allocation, international regulatory compliance and remediation.

Education & Certifications

M.Eng., Environmental Engineering and Water Resources, Massachusetts Institute of Technology, 2000

B.S.E., Environmental Engineering, University of Michigan, 1997

B.S., Physics, University of Michigan, 1997

Licensed Professional Engineer: Idaho, New Hampshire, Nevada

Professional Experience

2000 – Present GRADIENT, Boston, MA
Environmental Engineer. Specializes in the fate and transport of contaminants in groundwater and surface water, coal combustion products, groundwater hydrology, groundwater flow and contaminant transport modeling, NAPL transport, and remedial investigation and design. Has served as principal-in-charge, testifying expert, and consulting expert on large, multi-disciplinary projects at coal combustion product surface impoundments and landfills, pharmaceutical facilities, automotive facilities, manufacturing plants, dry cleaning facilities, and Superfund sites. Extensive experience in South America and at other international sites.

1997 – 1999 PARSONS ENGINEERING SCIENCE, Canton, MA
Environmental Engineer. Specialized in industrial wastewater treatability. On-site supervisor for bioremediation bench scale treatment and laboratory study for a major pharmaceutical company. Built hydraulic models for pharmaceutical wastewater treatment facilities. Designed hazardous waste treatment systems for a major pharmaceutical company. Performed site investigations to delineate NAPL plumes and design remedial recovery plans.

Professional Affiliations

National Ground Water Association; Chi Epsilon – Environmental Engineering Honor Society

Technical Session Chair:

- World of Coal Ash Conference. Lexington, KY. May 8-11, 2017. Session title: "Groundwater."
- Battelle Conference on Remediation of Chlorinated and Recalcitrant Compounds. Palm Springs, CA. May 23-26, 2016. Session title: "Coal Ash Facility Restoration."
- Battelle Conference on Remediation of Chlorinated and Recalcitrant Compounds. Monterey, CA. May 21-24, 2012. Session title: "Environmental Remediation in Emerging Markets."
- Defense Research Institute. Panelist for session titled "Groundwater-Surface Water Connectivity and the Clean Water Act." New Orleans, LA. May 13-14, 2019.
- World of Coal Ash Conference. St. Louis, MO. May 13-16, 2019. Session title: "Project-Specific Case Studies."
- World of Coal Ash Conference. Covington, KY. May 16-19, 2022. Session title: "Regulatory."

Projects – *Coal Combustion Products*

Industry Research Group: Reviewed and submitted comments related to US EPA's proposed legacy impoundment rule. The review focused both on US EPA's risk models, fate and transport models, and their conceptual site model for both legacy impoundments and coal combustion residual management units (CCRMUs).

Utility Client: Evaluated the amount of greenhouse gas emissions that would be generated during the potential hauling of coal ash from surface impoundments to off-site landfills. Used SiteWise, a tool developed by US ACE, to determine the amount PM10, SOx, NOx, and CO2 generated during the transportation process. Our analysis supported communications with the public and regulators regarding different surface impoundment closure alternatives.

Utility Client: Conducted a relative impact assessment of potential closure options at a former CCR disposal facility in Illinois. Ranked each closure option based on 10 different metrics including human health and environmental risks, water and air quality, safety, community and habitat impacts, risk of potential release, climate change and sustainability, and cost.

Electric Power Research Institute: Modeled groundwater impacts from coal combustion product (CCP) surface impoundments with intersecting groundwater conditions and evaluated hydrogeological factors and other characteristics that influence risks to human health and the environment (HHE).

Utility Client: Served as litigation consulting expert regarding the fate and transport of metal constituents in groundwater from 18 different coal combustion residual (CCR) disposal facilities at 7 sites in the Midwest.

Utility Client: Prepared expert report and provided testimony related to the fate and transport of metal constituents in groundwater from 11 different coal combustion residual (CCR) disposal facilities at 6 sites in West Virginia, Virginia, and Ohio.

Utility Client: Prepared expert report in support of "Petition for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 ILL. Admin. Code Part 845." Report assessed current risks to human and environmental receptors and evaluated net environmental benefits (*i.e.*, NEBA) of potential closure options at a former CCR disposal facility.

Utility Client: Prepared Closure Alternatives Assessment (CAA), Corrective Measures Assessment (CMA), and Corrective Action Alternatives Analysis (CAAA) reports for multiple CCR surface impoundments located at a series of midwestern power plants. Reports were prepared consistent with requirements of 35 ILL. Admin. Code Part 845.

Utility Client: Evaluated risks to human health and the environment associated with CCR surface impoundments at six coal fired power plants in the southern US. Evaluations included assessing CCR constituent migration in groundwater and the flux of constituents into nearby surface waters.

Utility Client: Calculated alternative groundwater protection standards (GWPSs) at a coal fired power plant facility in the midwestern US. Alternative standards were calculated based on site-specific human and ecological receptors and attenuation factors.

Utility Client: Prepared expert report and testified before state pollution control board regarding proposed coal ash disposal regulations.

Electric Power Research Institute: Evaluated the performance of alternative liners, including engineered clay liners, natural clay liners, and geomembrane composite-lined systems at CCP impoundments. Used a probabilistic approach to model the flux of CCP constituents through each liner and the subsequent transport of constituents through the underlying vadose and saturated zone.

Industry Research Group: Developed methodology to evaluate performance equivalency of various surface impoundment liner systems. The methodology, which was submitted to US EPA in order to inform future rulemakings, presented a process to evaluate and compare hydraulic flux and travel times through different liner systems including geocomposite, compacted clay, and natural clay liners.

Confidential Client: Developed a screening-level risk assessment for a manufacturing facility beneficially using coal fly ash as a soil stabilizer. The risk assessment compared estimated coal ash constituent exposure concentrations in soil, groundwater, and surface water to relevant benchmarks protective of human health and the environment.

Manufacturing Client: Performed beneficial use risk assessments consistent with US EPA Federal Coal Combustion Residual (CCR) Rule and Secondary Use Guidance for multiple commercial and construction products containing coal ash – including carpet backing, interior and exterior trim, and backer board. Analysis evaluated risks to groundwater, surface water, indoor air, and soil. Evaluation also considered exposure pathways for residents, construction workers, and landfill workers associated with installation of products, active life of the installed products, and post-life disposal in a landfill.

Electric Power Research Institute: Developed framework for creating alternative groundwater standards at CCP storage sites. The framework considers the development of alternative standards for the protection of human health and the environment, current and future uses of groundwater near CCP management units, and potential attenuation that may occur between the current point of compliance and a relevant point of exposure.

Utility Client: Prepared expert report and provided testimony related to the fate and transport of metal constituents in groundwater, including sulfate, boron, and arsenic, from over 30 different coal combustion residual surface impoundments at 15 sites in North Carolina and South Carolina.

Industry Research Group: Prepared technical comments regarding proposal to add boron to list of Appendix IV constituents to the Federal CCR Rule. Evaluated technical practicability and cost implications associated with the potential boron addition.

Industry Research Group: Prepared technical comments regarding portion of Federal CCR Rule that requires the groundwater protection standard (GWPS) of Appendix IV constituents with no MCL to be the background concentration. Evaluated technical practicability, cost implications, and potential benefits associated with the requirement for the four current Appendix IV constituents with no established MCL – cobalt, lithium, molybdenum, and lead.

Confidential Client: Developed a screening-level risk assessment for a steel production and recycling facility that is beneficially using coal fly ash as a soil stabilizer. The risk assessment addressed a requirement in the Federal Coal Combustion Residuals (CCR) Disposal Rule for a characterization of risk from unencapsulated beneficial use of CCR. Used the Industrial Waste Evaluation Model (IWEM) to evaluate potential transport of coal ash constituents, including arsenic, in groundwater as a result of the beneficial reuse.

Utility Client: Prepared expert report interpreting data produced during a field investigation performed at a large midwestern coal ash landfill.

Utility Client: For litigation support, modeled the fate and transport of arsenic and other coal ash related constituents in groundwater and surface water downgradient of a large midwestern coal ash surface impoundment located in a karst environment. Model simulations compared potential impacts to groundwater and surface water resulting from potential surface impoundment closure scenarios.

Manufacturing Client: Performed beneficial use risk assessments consistent with US EPA Federal Coal Combustion Residual (CCR) Rule and Secondary Use Guidance for multiple commercial and construction products containing coal ash. Analysis evaluated risks to groundwater, surface water, indoor air, worker safety, and residential safety. Evaluation also considered exposure pathways associated with installation of products, active life of the installed products, and post-life disposal in a landfill. Used the Industrial Waste Evaluation Model (IWEM) to evaluate potential transport of coal ash constituents, including arsenic, in groundwater as a result of the beneficial reuse.

Industry Research Group: Developed a groundwater fate and transport model to evaluate the level of groundwater protection provided by various coal ash surface impoundment closure options, including closure in place and closure by removal. Model simulated transport of arsenic (III) and arsenic (V) in groundwater downgradient of coal ash disposal facilities. Model results are being used by utilities in support of closure planning which is required by Federal Coal Combustion Residual Rule.

Confidential Client: Prepared expert report on human health and ecological risks due to a potential spill of barged coal combustion byproducts (CCBs) on a large midwestern river. Modeled the fate and transport of key CCB constituents, including arsenic, in surface water for a range of spill scenarios and river flow conditions and estimated potential downstream concentrations at drinking water intake locations.

Industry Research Group: Evaluated technical approach used by United States Environmental Protection Agency (US EPA) to simulate the migration of arsenic, selenium, and other metals in groundwater from overlying coal combustion storage units. Model analyses were included in regulatory comments submitted in response to US EPA's 2010 Coal Combustion Product Risk Assessment.

Industry Research Group: Developed relative risk framework to assess impacts to groundwater associated coal combustion product (CCP) surface impoundment closure scenarios. Framework identified potential deterministic and probabilistic modeling approaches to simulate potential migration of CCP constituents, including arsenic, boron, selenium, and molybdenum through the vadose and saturated zones for each closure alternative.

Industry Research Group: Modeled the downward migration of leachate from unlined coal combustion product surface impoundments using a probabilistic framework for a wide range of climatic and site conditions. Model results provided estimated durations for interactions between the impoundment leachate and nearby surface and groundwater.

Industry Research Group: As part of a relative risk framework, performed detailed sensitivity analysis of all factors associated with a coal ash surface impoundment closure that may impact the fate and transport of constituents in groundwater. Factors analyzed included surface impoundment characteristics (*e.g.*, volume, depth, and leachate quality), hydrogeological conditions (*e.g.*, hydraulic conductivity, hydraulic gradient, soil type, depth to groundwater, and surface water proximity), climatic characteristics (*e.g.*, precipitation), and closure details (*e.g.*, closure type and duration).

Projects – *Fate & Transport and Modeling*

Confidential Client, New Hampshire: Prepared expert report regarding the source of MTBE detected in a private, residential well and evaluated the timing of potential MTBE releases at an upgradient retail fuel dispensing station.

Confidential Client: Provided environmental site management and risk communication support for a property developer at a former Superfund site. Presented at public meetings with local officials, led discussions with state environmental agencies, conducted a public site visit, prepared a site investigation work plan, analyzed environmental data, proposed a low-impact remediation approach in collaboration with the stormwater design team, and submitted an environmental impact report.

Mining Client: Prepared expert report regarding the fate and transport of metal constituents in soils and groundwater from various sources at 4 different mining sites located in Ontario and Manitoba, Canada.

Manufacturing Client: Provided oral testimony related to the fate and transport of dioxins and furans in the environment resulting from waste disposal and wastewater treatment lagoons at a paper mill in South Carolina.

PRP Group: Reviewed hydrogeological characteristics and evaluated potential off-site migration of contaminants at a former industrial site in Nevada. Presented the findings of our assessment to the Nevada Division of Environmental Protection (NDEP) and to representatives of the neighboring property to support discussions relating to a groundwater remedial alternatives study.

Manufacturing Client: Consulting expert for a class certification case. Evaluated PFAS transport from known and potential sources.

Natural Gas Processing Facility: Prepared an expert report evaluating the hydrogeological conditions at and downgradient of a natural gas processing plant and provided assessment of the fate and transport over time of light non-aqueous phase liquids (LNAPLs) released from the plant and associated pipelines.

Confidential Client, Rhode Island: Designed and calibrated a groundwater flow and solute transport model for multiple chlorinated organic constituents at a northeastern Superfund site. Used one-year long tracer test to calibrate model. Model was used to predict the future effectiveness of various remedial alternatives.

Confidential Client: Designed and calibrated a groundwater flow and solute transport model for a Superfund site that has groundwater impacted with volatile organic compounds including benzene, tetrachloroethylene, trichloroethylene, and vinyl chloride. The model was used successfully to present the case to US EPA for shutting down the source remedy.

Confidential Client, Brazil: Developed 3-D numerical groundwater and solute transport model using MODFLOW and MT3D for volatile organic compounds and pesticides. Used model to evaluate and design remediation alternatives. Managed multiple site investigation and characterization studies. Projects involved calculation of risks to human health from exposure to soils, groundwater, indoor air, and outdoor air.

Savage Well Superfund Site: For a potentially responsible party (PRP) group, managed the development of a 3-D numerical groundwater and solute transport model for tetrachloroethylene (PCE) at a Superfund site in New Hampshire. Calibrated the model using approximately 10 years of data with review and oversight by US EPA and United States Geological Survey (USGS). Designed an optimization algorithm to develop the optimal groundwater pump and treat system.

Confidential Client, Massachusetts: Developed a 2-D contaminant transport model for PCE to demonstrate that contaminant contribution from a dry-cleaning operation to the town water supply wells was insignificant compared to contribution from other potential sources. Managed the installation and operation of a pump and treat system at the site.

Confidential Client, Argentina: Developed a 2-D numerical groundwater and solute transport model using MODFLOW and MT3D. Used the calibrated model to design a hydraulic barrier system to control off-site migration.

Confidential Client: Performed site-specific vapor intrusion modeling using the Johnson-Ettinger model at a pharmaceutical facility. Performed a detailed sensitivity analysis for each model input parameter.

Confidential Client: Performed NAPL transport and travel time calculations through porous media vadose and saturated zones and clay confining layers.

Confidential Client: Wrote critique of US EPA geochemistry model.

Projects – *Remediation*

Confidential Client: Developed a remedial strategy at a former mining site contaminated with metals located in Brazil. Evaluated historical constituent concentrations in soil, surface water, and sediment, developed a conceptual site model, and designed a site-characterization sampling program to define whether remediation was warranted.

Confidential Client: Evaluated potential liabilities related to range of issues including waste surface impoundment closure, groundwater remediation, and regulatory compliance at sites around the world that were involved in a corporate transaction.

Manufacturing Client, New Hampshire: Served as consulting expert for a case related to a failed groundwater remedy. Evaluated remedy design and installation and performed probabilistic modeling to determine appropriate design factors.

PRP Group, Nevada: Provided hydrogeological support at an industrial site with groundwater impacts due to benzene, chlorobenzene, chloroform, perchlorate, and chromium. Evaluated and critiqued a remedial investigation (RI) report related to a neighboring property and developed a conceptual site model (CSM) describing the fate and transport mechanisms of constituents in groundwater. Prepared submittals and presented conclusions at meetings with the state environmental agency.

Confidential Client, Brazil: Designed and implemented nanoscale zero valent iron remedy to prevent off-site arsenic migration. Upon completion of remedy, negotiated site closure with state of Rio de Janeiro environmental agency.

Confidential Client, Brazil: Designed and implemented a pilot scale enhanced *in-situ* bioremediation remedy for groundwater impacted with chlorinated organic compounds at a former agricultural product manufacturing facility.

Confidential Client, New Hampshire: As an independent third party, performed a review of a proposed Electrical Resistive Heating remedy for a chlorinated solvent dense non-aqueous phase liquid (DNAPL) source zone.

Confidential Client, New York: Provided regulatory comments regarding a US EPA Proposed Remedial Action Plan at a Region II Superfund site on Long Island. Provided support during mediation and during negotiations with US EPA.

Confidential Client, New Jersey: Provided regulatory comments regarding a US EPA Proposed National Priorities List (NPL) listing at a Region II Superfund site.

Confidential Client, Brazil: Managed multiple conceptual and detailed engineering remedial design projects for a soil vapor extraction system, dual-phase extraction system, and a pump and treat system. Remediation efforts focused on soil and groundwater contamination by pesticides and chlorinated solvents.

Confidential Client, Brazil: Managed site remediation projects to operate and maintain a soil vapor extraction system, dual-phase extraction system, and a hydraulic barrier system.

Confidential Client, Argentina: Managed conceptual and detailed engineering remedial design project for dual-phase extraction system focused on the remediation of volatile organic compounds in soil and groundwater.

Confidential Client: On-site supervisor for bioreactor bench scale study at a pharmaceutical wastewater treatment plant. Performed an in-depth investigation on the bio-inhibitory effects due to the chronic exposure of biomass to manganese. Performed laboratory work required to support the bioreactors including tests for mixed liquor volatile suspended solids (MLVSS), total suspended solids (TSS), chemical oxygen demand (COD), dissolved oxygen (DO), ammonia (NH_3), and respirometry.

Confidential Client: Lead environmental engineer for a belt filter press replacement project for a pharmaceutical company wastewater treatment plant. Designed and sized polymer addition system.

Projects – *Site Characterization*

Confidential Client, Brazil: Provided strategic oversight for a series of environmental investigations, remedial actions, and agency negotiations for an automotive facility located in São Paolo.

Confidential Client: Managed large-scale cost allocation at a midwestern Superfund site. Forensically evaluated the sources of tar to river sediments considering site industrial operational history, contaminant fate and transport, chemistry, site modification and filling history, and observed contaminant patterns. Calculated the mass of tar present in the environment using both visual observations and analytical data.

Confidential Client, Brazil: Managed large-scale site investigations and human health risk assessment projects at a former pharmaceutical facility located in São Paulo. Key compounds were petroleum hydrocarbons and volatile organic compounds.

Confidential Client, New York: Served as consulting expert for large cost allocation involving over 16 responsible parties and chlorinated organic groundwater plumes extending for nearly 2 miles. Evaluated lateral and vertical groundwater flow direction, chemical usage history, and groundwater chemistry to support a *de minimis* contribution argument for our client.

Confidential Client, Ohio: Served as consulting expert for cost allocation project at a midwestern landfill. Evaluated differences in toxicity and risk associated with municipal solid waste and industrial hazardous waste. Used data to devise risk-weighted allocation approach for remedy costs.

Confidential Client, Brazil: Managed site investigation to evaluate groundwater responses due to seasonal precipitation events and their effect on potential contaminant fate and transport.

Confidential Client: Managed site investigation project identifying sources of PCE present at a former electrical resistor manufacturing facility. Soil, groundwater, and soil gas data were evaluated and used to identify individual sources of PCE to the subsurface. The impact of each source on remediation costs related to the site was evaluated and successfully used as a tool to mediate between responsible parties. Served as consulting expert during mediation between responsible parties.

Confidential Client, New Jersey: Delineated NAPL plumes and investigated spill history, sewer maps, and gas chromatography fingerprint results at an East Coast Superfund site. Designed French Drain to recover NAPL from subsurface.

City of Pittsfield, Massachusetts: Technical consultant to the city for mediation between General Electric (GE) and governmental agencies. Evaluated reports and clean-up standards and attended mediation sessions on behalf of the city.

Projects – *Clean Water Act*

Municipal Client, Ohio: Consulting expert for significant nexus evaluation to determine whether wetlands and surface water tributaries are jurisdictional waters of the United States.

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EXHIBIT 39

Second Amended Petition Redline

BEFORE THE
ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: PETITION OF SOUTHERN ILLINOIS POWER COOPERATIVE FOR AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845 OR, IN THE ALTERNATIVE, A FINDING OF INAPPLICABILITY	AS 2021-006 (Adjusted Standard)

SECOND AMENDED PETITION FOR AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845 ~~OR, IN THE ALTERNATIVE,~~AND A FINDING OF INAPPLICABILITY

Submitted on behalf of
Southern Illinois Power Cooperative

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I. INTRODUCTION

This Second Amended Petition for an Adjusted Standard ("Petition") concerns eight existing and former ponds located at Southern Illinois Power Cooperative's ("~~SIPC~~SIPC's") Marion Generating Station ("Marion Station") in Williamson County, Illinois. These ponds are as follows: Pond 3 (including Pond 3A), Pond 4, former Pond B-3, South Fly Ash Pond, ~~and~~ Pond 6 (~~collectively,~~together the "De Minimis Units"), ~~and~~ the ~~former~~Initial Fly Ash Holding Area, the former Replacement Fly Ash Holding Area, and the former Fly Ash Holding Area Extension (~~collectively,~~together the "Former Fly Ash Holding Units").[1] ~~.~~ This Second Amended Petition also addresses a unit known as the Former Landfill Unit, located on top portions of the Former Fly Ash Holding Units.

This Second Amended Petition amends the Amended Petition for Adjusted Standard filed by SIPC on ~~May 11~~September 2, 2021~~, including to reflect~~. The Amended Petition reflected the results of a Pond Investigation Report for Certain Ponds at ~~Southern Illinois Power Company's~~SIPC's Marion Station ("Pond Investigation Rep."), ~~attached as~~ (Ex. 29),[2] ~~, as well as~~ the Updated Opinion of Lisa Bradley~~, which is attached as Updated Ex. 28~~ ("Updated Bradley Op.") (Updated Ex. 28), and the Supplemental Declaration of Kenneth W. Liss~~, which attached as Ex. 30~~ ("Supp. Liss Dec.").~~[3]~~ (Ex. 30). A redline comparison showing changes made since the initial Petition ~~is~~was attached as ~~Ex.~~Exhibit 31. This Second Amended Petition reflects an

[1] The De Minimis Units and the Former Fly Ash Holding Units are depicted on the Site Map prepared by Andrews Engineering for SIPC (May 2021) ("Site Map"), Ex. 3.

[2] For Exhibit 29, the Pond Investigation Report, SIPC ~~has~~ attached to the electronically filed version of ~~this~~the Amended Petition only the Report itself and not the appendices, as they are several hundred pages long. Those appendices ~~are~~were being transmitted separately to the Board and to IEPA. *See* Pond Investigation Rep., Ex. 29.

~~[3] SIPC has attached only new or updated (labeled "Updated Ex. ___") exhibits to this Petition. All other exhibits referred to within are attached to SIPC's original petition.~~

updated proposed adjusted standard, a Human Health and Ecological Risk Assessment from Gradient Corporation (Ex. 37), the Expert Opinion of Andrew Bittner setting forth a closure impact assessment for Pond 4 (Ex. 38), and the Expert Opinion of Ari Lewis regarding the De Minimis Units (Ex. 36).[3]

As discussed herein, neither the De Minimis Units nor the Former Fly Ash Holding Units are regulated "CCR surface impoundments" for purposes of Illinois's ~~newly enacted~~ Standards for the Disposal of Coal Combustion Residuals ("Part 845"). Nor are they CCR surface impoundments regulated by the federal CCR regulations upon which Part 845 was based. None of these former or current ponds ~~poses~~pose the types of risks to the environment and human health that federal and state CCR regulations aim to address. In fact, they fall into categories of units that were intended to be excluded from the definition of CCR surface impoundment. Indeed, some of the ponds at issue closed decades ago and have not contained water since then, ~~while another~~some are secondary and tertiary finishing ponds containing *de minimis* amounts of CCR, and one had any water and CCR removed years ago. Nevertheless~~, while discussions continue~~, the Illinois Environmental Protection Agency ("IEPA") has so far taken the incorrect position that all eight current and former ponds, and the Former Landfill Area, are covered by Part 845.

Compliance with Part 845 is plainly not required for the ~~ponds and former ponds~~units at issue, which do not fall under the definition of "CCR surface impoundment" and therefore are not covered by Part 845. ~~And~~However, to the extent the Illinois Pollution Control Board (the

[3] SIPC has attached only new (beginning with Exhibit 32) or updated (labeled "Second Amended Pet. Updated Ex. ___") exhibits to this Petition. All other exhibits referred to within are attached to SIPC's initial or Amended Petition, as the case may be.

"Board") finds that any of the units at issue are regulated CCR surface impoundments (they are not), an adjusted standard is warranted because they differ from the surface impoundments the Board targeted for regulation under Part 845 and the ~~exorbitant costs of compliance with Part 845 are not warranted in light of the fact that the~~ units at issue pose minimal—if any—risk to human health and the environment. The updated adjusted standard proposed in this Second Amended Petition will not result in any adverse impact to health or the environment while allowing for adjustments based on the units' unique characteristics.

Accordingly, for the reasons set forth herein, SIPC respectfully requests that the Board issue a finding of inapplicability with respect to the current and former ponds at issue or, in the alternative, an adjusted standard ~~exempting the units at issue from Part 845 requirements~~as set forth in Appendix A to this Second Amended Petition.

II. FACTUAL AND PROCEDURAL BACKGROUND.[4]

A. Nature of Petitioner's Activity and General Plant Description

Marion Station is a gas and coal-fired power plant located approximately seven miles south of the City of Marion in Williamson County, Illinois. *See* Site Map, Ex. 3. Marion Station currently consists of one operating coal-fired unit (Unit 123), with a nominal capacity of 1402 Metric Million British Thermal Units per hour ("mmBtu/~~hour~~hr"), and two additional gas-fired combined-cycle units (Units 5 and 6).

[4] The Declarations of Wendell Watson (Second Amended Pet. Updated Ex. 1) and Todd Gallenbach~~,~~ ~~Exs. 1 and~~ (Updated Ex. 2~~,~~) are provided in support of facts stated herein regarding Marion Station and the current and former ponds at issue. SIPC's investigation into the facts set forth herein is ongoing, and SIPC reserves the right to further supplement or amend its Second Amended Petition to reflect receipt of new or additional information.

Unit 123 was constructed in the early 2000s, repowering the existing steam turbine that had been powered by retired Units 1, 2, and 3. Units 1, 2, and 3 were 33-megawatt ("MW") coal-fired cyclone generating units constructed in the 1960s. An additional 173 MW coal-fired unit (Unit 4) came online in 1978. Unit 4 shut down permanently in October 2020. A 109 MW circulating fluidized bed boiler provides steam to generating Unit 123. The two gas-fired simple-cycle units (Units 5 and 6) are nominally rated at 969 mmBtu/hr each (dependent upon ambient air temperature). Marion Station uses Illinois basin bituminous coal for Unit 123. Since 1978, SIPC also has burned more than ten million tons of mine waste, helping to clean up many abandoned mines.

SIPC owns 4,674 acres around Marion Station and employs ~~seventy-eight~~seventy-seven people. Nearby Lake of Egypt (the "Lake") was constructed in 1963 to provide cooling water for the ~~station's~~Station's coal-fired generating units. The Lake provides some local public water supply and is also used for recreational purposes, such as boating and fishing. The local water authority periodically tests the Lake water for public use. *See, e.g.*, Lake Egypt Water District IL 1995200, Annual Drinking Water Quality Report (Jan. 1–Dec. 30, 2019), Ex. 4. SIPC owns several parcels bordering the plant property. Other nearby land uses include agricultural and recreational use, including a golf course and a country club. Shawnee National Forest is located approximately fifteen miles to the south of Marion Station. The closest identified potential groundwater well is at the Lake of Egypt Country Club, located more than 2,000 feet away from any pond at issue in this proceeding. That well is up gradient from the Station's pond system.

B. CCR Management at Marion Station.

Coal combustion residuals ("CCR") are a byproduct of the coal-fired power generation process. Currently, only Unit 123 generates CCR (in the form of ash) at the Station. ~~One hundred percent of the~~The majority of CCR generated from Unit 123 is handled dry and used for mine reclamation beneficial use off-site and a portion is sold for beneficial uses allowed under 415 Ill. Comp. Stat. 5/3.135. Unit 123 controls SO^2 through its combustion process, and thus, no scrubber is needed.

There is no wet handling of CCR generated from current operations at Marion Station. While in operation, ~~prior~~former Units 1, 2, and 3 generated CCR in the form of fly ash and bottom ash. Former Unit 4 generated CCR in the form of fly ash and bottom ash~~,~~ as well as scrubber sludge from an SO^2 scrubber installed around 1978. This was the first wet SO^2 scrubber installed in Illinois—and one of the first in the nation—and reflects SIPC's early environmental commitment, which continues to this day. The historic handling, storage, and disposal of CCR at Marion Station is described below.

1. Fly Ash.

SIPC began collecting fly ash from former Units 1, 2, and 3 after installing electrostatic precipitators ("ESPs")[5] at each unit in 1975 in accordance with the Clean Air Act.[6] Because Units 1, 2, and 3 were cyclone units, they generated relatively small amounts of fly ash as

[5] ESPs are control devices that capture particulate matter in the exhaust gas, including fly ash.

[6] Prior to installation of the ESPs, most of the fly ash from Units 1, 2, and 3 would have been expected to exit the stack with exhaust gases, and only minimal amounts of fly ash may have been collected from the cyclone Units 1, 2, and 3. On information and belief, any minimal amounts of fly ash collected would likely have been conveyed to Pond 1, Pond 2, or the Initial Fly Ash Holding Area, which had an outlet to Pond 3.

compared to other types of coal-fired boilers. Cyclone boilers produce less than twenty-five percent of the fly ash pulverized coal units produce.

Between 1975 and 1978, on information and belief, fly ash from Units 1, 2, and 3 was collected wet using a hydroveyer system and conveyed to an area labeled on historic documents as a "fly ash holding area" (the "Initial Fly Ash Holding Area") located just to the west of Pond 3. *See* Site Map, Ex. 3. In 1977, SIPC received a permit from IEPA to abandon and cover the Initial Fly Ash Holding Area and to construct an additional holding area for fly ash (the "Replacement Fly Ash Holding Area"). *See* IEPA Water Pollution Control Permit, No. 1977-EN-5732 (Nov. 14, 1977) ("1977 Permit"), Ex. 5.

In 1978, Unit 4 was constructed. Around the same time, the hydroveyer system was modified to allow for dry collection of fly ash. From 1978 until 2003, most of the fly ash collected from Unit 4 was collected dry using the hydroveyer system. Most of that fly ash was disposed of at a former on-site, permit-exempt landfill ("Former Landfill"), often mixed with scrubber sludge as discussed further below.

Also around 1978, documents indicate that SIPC constructed the Replacement Fly Ash Holding Area to the North of Pond 2. *See* 1977 Permit, Ex. 5. The Replacement Fly Ash Holding Area likely received spent water from the hydroveyer system, which is believed to have contained only *de minimis* amounts of fly ash. *See* Letter from SIPC to IEPA (July 27, 1982), Ex. 6. On information and belief, the Replacement Fly Ash Holding Area also was designated to receive sluiced fly ash from Unit 4 during intermittent emergencies in which the fly ash was unable to be conveyed to the Former Landfill. *Id*.

In or around 1981, SIPC received a permit from IEPA to build a fly ash holding area extension (the "Fly Ash Holding Area Extension"), to the west of the Replacement Fly Ash Holding Area, and a berm around a portion of the Former Landfill ~~area~~ that received fly ash and scrubber sludge from Unit 4. *See* IEPA Water Pollution Control Permit, No. 1981-EN-2776-1 (Oct. 13, 1981) ("1981 Permit"), Ex. 7. That bermed area collected ~~storm water~~stormwater runoff from the ~~landfill~~Former Landfill, and that collected water eventually became what is now denominated as Pond 6 (discussed *infra*).

On information and belief, between 1978 and 1985, limited fly ash from Units 1, 2, and 3[7] may have been sluiced to the Replacement Fly Ash Holding Area. In 1985, former Pond A-1 was constructed. After 1985, water from the hydroveyer system and, on information and belief, any fly ash from Units 1, 2, and 3 were conveyed to Pond A-1 or, in limited cases of Pond A-1 outrages between 1985 and 2003 (*see infra* ~~at 12–13~~at14–15), former Pond B-3. *See, e.g.*, Letter from SIPC to IEPA (Sept. 16, 1993) ("1993 Letter"), Ex. 8.

On information and belief, the Replacement Fly Ash Holding Area and the Fly Ash Holding Area Extension stopped receiving wastes after former Pond A-1 was built. Subsequently, those two units were drained of water—other than occasional ~~storm water~~stormwater runoff—and, by the early 1990s, were covered at least in part by the Former Landfill. Currently, the area that previously contained those units is within the ~~landfill~~Former Landfill cover area ~~that~~and part of the Proposed Closure Plan SIPC ~~has proposed~~submitted to IEPA for the Former Landfill, as described further below. Declaration of Kenn Liss ("Liss

[7] Units 1, 2, and 3 were run infrequently after the installation of Unit 4.

Dec."), Ex. 9; *see also* Andrews Engineering, SIPC's Proposed Closure Plan for IEPA Site No. 199055505 (Dec. 16, 2020) ("Former Landfill Closure Plan"), Ex. 10.

In 2003, SIPC repowered the old ~~boilers~~Units 1, 2, and 3 with a Circulating Fluidized Bed ("CFB"), now referred to as Unit 123. The CFB allowed SIPC to convert its fly ash system to one hundred percent dry ash handling and disposal and ended even the minimal wet fly ash discharge that had previously occurred at Marion Station.

2. Scrubber Sludge.

Unit 4 came online in 1978 and produced scrubber sludge, which was predominately calcium sulfite. The scrubber sludge was mixed with fly ash~~,~~ and moved via a conveyer to the Former Landfill, which ceased accepting waste prior to October 2015 and for which SIPC has submitted a landfill ~~closure plan~~Closure Plan to IEPA at IEPA's request (*see infra* at 15–16). Former Landfill Closure Plan, Ex. 10. In 2009, the scrubber was modified to a forced oxidation system, which produced calcium sulfate, better known as gypsum. One hundred percent of the gypsum generated at Marion Station was sold as an agricultural modifier or an ingredient for cement. With the closure of Unit 4, Marion Station no longer generates scrubber sludge or gypsum.

3. Bottom Ash.

Historically, bottom ash from now-retired Units 1, 2, 3, and 4 was sluiced to Ponds 1 and 2. On information and belief, SIPC sold one hundred percent of its bottom ash to shingle manufactures, grit blasting companies, and local highway departments for more than forty years. For almost the entire lives of the ponds, the water in Ponds 1 and 2, from which bottom ash was removed, discharged to Pond 4 and, from there, through permitted Wastewater Discharge Outfall

002. Beneficial use Ponds 1 and 2 are no longer in use with the closure of Unit 4 and ~~are undergoing closure~~have been cleaned to the clay. Ash from Unit 123's fluidized bed boiler is handled dry and beneficially used offsite.

4. Other Non-CCR Waste Streams.

Minor other non-CCR waste streams from the Marion Station, including air heater wash water and flue gas desulfurization decant excess water, were historically discharged to the former Emery Pond. ~~Former~~The former Emery Pond was built in the late 1980s as a ~~storm water~~stormwater storage structure for drainage from the adjacent plant area, including the more recent Gypsum Loadout Area. *See* Hanson, Emery Pond Corrective Action and Selected Remedy Plan, Including GMZ Petition (Mar. 29, 2019), Ex. 11. Process ~~waste water~~wastewater discharges to the former Emery Pond have ceased and any water or CCR in the former Emery Pond has been removed pursuant to closure and related plans overseen by IEPA. ~~Former~~The former Emery Pond's closure has been conducted consistent with Part 257~~,~~ and, although the field work was completed before adoption of Part 845, the closure was generally consistent with Part 845 as well. A new storm basin is located in the area of the former Emery Pond.

C. The Ponds Subject to This Petition.

This Petition concerns the De Minimis Units~~:~~ five current or former ponds at SIPC's Marion Generating Station~~—~~: the South Fly Ash Pond, Pond 3 (including Pond 3A), Pond 6, Pond 4, and former Pond B-3, which have contained only *de minimis*, if any, amounts of CCR. These current and former ponds are described in Section C.1. This Petition also addresses the Former Fly Ash Holding Units: three former fly ash ponds that closed and were dewatered

decades ago, at least one of which under IEPA oversight and permitting, and are now part of the Former Landfill, which are described below Section C.2.

1. The De Minimis Units.

A map showing the location of the De Minimis Units is attached to SIPC's May 11, 2021, Petition. Site Map, Ex. 3. As discussed below, none of the De Minimis Units receive or received meaningful direct discharges of CCR and, to the extent they contain CCR as a result of limited historic or incidental discharges, such CCR should be *de minimis* in light of historic practices. In addition, as discussed *infra* at ~~30–32~~31–33, Haley & Aldrich, Inc., on behalf of SIPC, has completed an investigation of the De Minimis Units pursuant to an investigation protocol negotiated with IEPA, which confirmed that the De Minimis Units contain only *de minimis* amounts of CCR ~~and thus are not the types of units that were intended to be regulated under Part 257 or Part 845, and do not pose an appreciable threat to human health or the environment warranting regulation under Part 845~~. *See infra* at ~~30–32~~31–33; *see also* Pond Investigation Rep., Ex. 29.

South Fly Ash Pond – The South Fly Ash Pond was built around 1989 as a potential replacement for Pond A-1, in case one was needed. *See* IEPA Water Pollution Control Permit, No. 1989-EN-3064 (May 17, 1989), Ex. 12. Ultimately, Pond A-1 did not need replacement and operated until 2003, as described above~~. The~~; thus, despite being permitted as a fly ash settling pond, the South Fly Ash Pond ~~has historically received~~was never used for that purpose. Rather, the South Fly Ash Pond served as a secondary finishing pond, receiving decant water from the former Emery Pond~~, which has ceased since former~~ until Emery Pond stopped receiving process ~~waste water~~wastewater discharges in the ~~Fall~~fall of 2020. No fly ash, bottom ash, or scrubber

sludge was ever directly sent to or placed into the South Fly Ash Pond. If the pond received any CCR throughout its life, it was *de minimis*, consisting only of any residual CCR in decanted pond overflow ~~or storm water~~from the former Emery Pond or stormwater.

The Pond Investigation Report confirms that the South Fly Ash Pond contains minimal sediments, with a mean sediment thickness of approximately 1.57 feet, representing approximately 11 percent of historic pond volume[8]. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment ~~which~~that is used for the storage, treatment, or disposal of CCR. *Id*. at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from ~~10~~ten percent to ~~64~~sixty-four percent in the sediment samples that were taken from the South Fly Ash Pond) is estimated to include CCR material.[9] *Id*. at 14. Further, the South Fly Ash Pond has a berm, but boring logs associated with the berm do not indicate the presence of fly ash in that berm. *Id.* at Attachment C (boring logs for B-B3a and B-B3b).

Pond 3 (including 3A) – Water from the South Fly Ash Pond is permitted to flow to Pond 3, then Ponds 6 and 4, before discharging through Outfall 002.[9][10] *See* IEPA Reissued National

[8] As explained in the Pond Investigation ~~report~~Report, the South Fly Ash Pond's water level was lowered for operational reasons during the time the bathymetric survey. *See* Pond Investigation Rep., Ex. 29 at 7. As a point of comparison, Haley & Aldridge also estimated sediment volume as a percentage of pond volume using the 2007 pond elevation for the South Fly Ash Pond and Pond 4, which was determined to be more representative of historical conditions. *See id.*

[9] The CCR percentages included here and below, as reflected in Exhibit 29, include the estimated percentage of materials, through polarized light microscopy ("PLM"), determined to be fly ash, bottom ash and/or slag. Pond Investigation Rep., Ex. 29 at 14.

[9][10] SIPC timely applied for a National Pollution Discharge Elimination System ("NPDES") permit renewal and is currently working with IEPA on permit reissuance.

Pollutant Discharge Elimination System Permit, No. IL0004316 (February 1, 2007) ("2007 NPDES Permit"), Ex. 13. On information and belief, Pond 3 may have received some overflow from the Initial Fly Ash Holding Area and later the Fly Ash Holding Area Extension, serving as a secondary finishing pond. *See* IEPA Water Pollution Control Permit, No. 1973-ED-1343-OP (June 1973), Ex. 14. Pond 3 also received ~~storm water~~stormwater runoff, coal pile runoff, and water from the ~~plant's~~Station's floor drains. Later, by 1982, a berm was built within Pond 3 to separate Pond 3 ~~from the pond~~into two areas, with one area now known and referred to as Pond 3A.

Pond 3 has been cleaned to remove pond sediment and debris, including vegetation, twice—once in 2006 and again in 2011. Pond 3A was drained of water and cleaned of debris and sediment in 2014. Those cleanings would also have removed any CCR that may have collected in the pond from historic operations. Starting around 2007, SIPC built a berm around Pond 3 to prevent landfill runoff from reaching that pond. Since the pond's last cleanings, any CCR that has entered Pond 3 or Pond 3A is *de minimis*, such as through ~~storm water~~stormwater, potential overflow from South Fly Ash Pond, or air deposition; no ash has been placed in the pond for treatment, storage, or disposal.

The Pond Investigation Report, which included a survey of the ponded areas of Pond 3, confirms that Pond 3 (including 3A) contains minimal sediments, with a mean sediment thickness of approximately 1.38 feet in Pond 3 and 1.45 feet in Pond 3A, representing approximately 9 percent and 13.3 percent of pond volume, respectively. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment which is used for the storage, treatment or disposal of CCR. *Id*. at 7–8 ("In Haley

& Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from ~~20~~twenty-three percent to ~~34~~thirty-four percent in the samples that were taken from Pond 3/3A) is estimated to include CCR material. *Id*. at 14~~.~~ (explaining slag, fly ash and bottom ash (i.e. CCR) makes up 23% and 34%, respectively, of the sediment samples from Pond 3). Additionally, samples from Pond 3A contain carbon contents much higher than would be expected from CCR materials. *Id.* at 8–10. A carbon to nitrogen/hydrogen correlation analysis demonstrates that coal is the likely common contributor to the organic content in pond sediment samples with a high carbon content. *Id.*

Pond 6 – Pond 6 was developed to manage ~~storm water~~stormwater runoff associated with the Former Landfill ~~at the facility~~ and grew within a berm built ~~for runoff~~to capture runoff from the Former Landfill that was addressed in a 1982 construction permit issued by IEPA. Originally, Pond 6 discharged through Outfall 001. In or around 1993, in accordance with another IEPA-issued permit, SIPC extended Pond 6 and installed pumps to pump water from Pond 6 to Pond 4, where it then discharged through Outfall 002 to Little Saline Creek. *See* 1993 Letter, Ex. 8. Outfall 001 was subsequently eliminated. Any CCR discharges Pond 6 received throughout its life were *de minimis*, consisting of incidental amounts of CCR inflow from other ponds and ~~storm water~~stormwater runoff~~.~~ from the Former Landfill. Thus, Pond 6 was designed and served as a stormwater management unit to contain runoff from the Former Landfill and was not designed to accumulate CCR and liquids or to treat, store, or dispose of CCR in more than *de minimis* amounts.

The Pond Investigation Report confirms that Pond 6 contains minimal sediments, with a mean sediment thickness of approximately 0.84 feet, representing approximately 8.2 percent of pond volume. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment which is used for the storage, treatment or disposal of CCR. *Id*. at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from ~~30~~thirty percent to ~~53~~fifty-three percent in the samples that were taken from Pond 6) is estimated to include CCR material. *Id*. at 14.

~~Moving forward, Pond 6 is expected to receive non-CCR runoff from the Former Landfill, and SIPC plans to manage Pond 6 in conjunction with the closure and post-closure management requirements of Part 811 with IEPA oversight.~~

Pond 4 – Pond 4 is a stormwater runoff and secondary finishing pond that received no more than *de minimis* amounts of CCR. Pond 4 has primarily served two purposes at the ~~facility~~Station: to receive decant water from Ponds 1 and 2, when they were in operation before Unit 4's shutdown, and to receive coal pile runoff. Pond 4 ~~currently receives~~has also received decanted overflow water from Pond 6 for approximately thirty years and discharges through Outfall 002 into the Little Saline Creek.

During an outage in ~~2012~~2010, Pond 4 was dewatered and cleaned down to the clay, removing plant debris and any ash ~~and~~, coal fines, and other sediment that may have collected in the pond. There were two types of materials in the pond after it was dewatered: (1) dry and dark materials (consisting of sixty to seventy percent of the pond materials) and (2) muddy materials

high in organic matter. Declaration of Jason McLaurin, Ex. 32. The dry and dark materials were taken to the coal yard to further dry and then were burned at the Station for fuel. *Id*. Again, this demonstrates the materials consisted of primarily coal fines deposited into the pond as a result of stormwater runoff from the coal pile and that the amount of CCR present in Pond 4 has been consistently *de minimis*. Since its cleaning in ~~2012~~2010, any CCR that has entered Pond 4 is *de minimis*, such as through ~~storm water~~stormwater, overflow from Pond 6, or air deposition. Pond 4's primary use continues to be to catch stormwater runoff from the coal pile.

The Pond Investigation Report confirms that Pond 4 contains minimal sediments, with a mean sediment thickness of approximately 1.67 feet, representing approximately 10.9 percent of pond volume. *See* Pond Investigation Rep., Ex. 29 at 7. That is far less than the amount of sediment present in a typical CCR surface impoundment which is used for the storage, treatment or disposal of CCR. *Id*. at 7–8 ("In Haley & Aldrich's experience, for typical CCR impoundments, the volume of CCR materials is often a major portion (>50%) of the overall impoundment volume."). Further, of that small amount of sediment, only a fraction (ranging from ~~25~~twenty-five percent to ~~68~~sixty-eight percent in the samples that were taken from Pond 4) is estimated to include CCR material. *Id*. at 14. Additionally, samples from Pond 4 contained carbon contents much higher than would be expected from CCR materials. *Id.* at 8–10. A carbon to nitrogen/hydrogen correlation analysis demonstrated that coal is the likely common contributor to the organic content in pond sediment samples with a high carbon content. *Id.*

Pond B-3 – Former Pond B-3 was built by 1985 and was used primarily as a secondary pond to Pond A-1. Pond A-1 received some fly ash (as described above) and coal pile runoff until 2003, at which time all fly ash was handled dry and the runoff was directed to Pond 4.

During periodic, intermittent outages of Pond A-1, former Pond B-3 may have received some discharges of fly ash from Units 1, 2, and 3 prior to their shut down in 2003. On information and belief, Pond A-1 was taken offline at most three to four times between 1985 and 2003, and each of those outages lasted approximately two weeks. Most (or all) of those outages would have occurred during boiler shutdowns, when Marion Station was operating at less than full capacity and generating less ash. Accordingly, any fly ash sluiced to former Pond B-3 during these intermittent outages would have been minimal.

In 2017, former Pond B-3 was cleaned out down to the clay and has not held water since that time. A BTU analysis showed the material removed had a heat content comparable to coal—not CCR—and at least a portion of the material was consumed for energy production.

Because former Pond B-3 no longer holds ~~any significant amount of~~ water, except in a small area of the former pond where ~~storm water~~stormwater may collect after storms before drainage and evaporation, it was not able to be included as part of the bathymetric survey conducted in conjunction with the ~~pond investigation~~Pond Investigation Report. However, Haley & Aldridge performed an analysis of two samples taken of a berm associated with former Pond B-3 in conjunction with the ~~pond investigation report~~Pond Investigation Report, as well as nine samples taken in 2017, and concluded that those samples contained little, if any, CCR material.[~~10~~11] *See* Pond Investigation Rep., Ex. 29 at 12 (including shake test results for samples B-B3a and B-B3b).

[~~10~~11] Hanson Engineering, which performed the bathymetric survey and collected the data analyzed in the Pond Investigation Report, attempted to take a soil boring from the area of former Pond B-3 but was unable to access the agreed-upon IEPA sampling location. *See* Pond Investigation Rep., Ex. 29 at 6.

2. The Former Fly Ash Holding Units.

As discussed below, the Former Fly Ash Holding Units no longer contain water and are covered by the Former Landfill (or, in the case of the Fly Ash Holding Area Extension, a combination of dry CCR disposed in the landfill area, as well as sediments and other materials cleaned out from the pond system). The Former Fly Ash Holding Units were located within the green area on the site map attached to SIPC's May 11, 2021 ~~original~~, initial Petition. Site Map, Ex. 3.

The Initial Fly Ash Holding Area – On information and belief, the Initial Fly Ash Holding Area received wet fly ash that was collected from Units 1, 2, and 3 until approximately 1977. In October 1977, IEPA issued a permit to SIPC for the Replacement Fly Ash Holding Area with a condition that required the Initial Fly Ash Holding Area to be abandoned and covered. *See* 1977 Permit, Ex. 5. In the early 1990s, plant personnel observed that while ~~storm water~~stormwater might on occasion collect for short periods after precipitation, the Initial Fly Ash Holding Area contained no pond or other area that continuously held water. Further, as of that time, the area was covered by a combination of the Former Landfill and a soil/vegetation cover. Based upon these area observations and in light of the "abandon and cover" permit condition, SIPC believes that the area was covered before the 1990s pursuant to the permit condition issued and approved by IEPA.

The Replacement Fly Ash Holding Area – In October 1977, IEPA issued a permit to SIPC to construct the Replacement Fly Ash Holding Area to the north of Pond 2. *See* 1977 Permit, Ex. 5. On information and belief, the Replacement Fly Ash Holding Area likely received spent water from the hydroveyer system, which likely contained *de minimis* amounts of fly ash.

The Replacement Fly Ash Holding Area also may have received discharges of fly ash from Units 1, 2, and 3 prior to the construction of Pond A-1 in 1985. On information and belief, the Replacement Fly Ash Holding Area may have also been designated to receive sluiced fly ash from Unit 4 during intermittent emergencies in which the fly ash was unable to be conveyed to the Former Landfill. It is unknown whether the Replacement Fly Ash Holding Area ever received sluiced fly ash from Unit 4 during emergencies. By the early 1990s, the Replacement Fly Ash Holding Area had been drained of water and was covered by the Former Landfill.

The Fly Ash Holding Area Extension – In or around 1982, SIPC received a permit from IEPA to construct the Fly Ash Holding Area Extension to the west of the Replacement Fly Ash Holding Area and build a berm around a portion of the Former Landfill area that received fly ash and scrubber sludge from Pond 4. *See* 1981 Permit, Ex. 7. The extent to which the Fly Ash Holding Area Extension actually received any fly ash is unknown. ~~By~~As with the Initial Fly Ash Holding Area, by the early 1990s~~,~~ the Fly Ash Holding Area Extension ~~also~~ did not hold water and was covered in part by the Former Landfill. The remaining area was covered by soil and other material from the ~~plant~~Station, including debris cleaned from the pond system.

All three Former Fly Ash Holding Units are in the area of the Former Landfill. *See* Site Map, Ex. 3. These units were included in the ~~landfill~~Former Landfill area and, thus, were of part of the Former Landfill operation for decades before the landfill ceased operating in 2015. At least most of the area that at one time encompassed these units when operating was covered by 1991, and the entire area was covered before October 2015 by ~~landfill~~Former Landfill material, which included dry CCR, soil, and sediments. As discussed above, use of the Former Landfill is believed to have started around 1978 for scrubber sludge and fly ash disposal. SIPC estimates

that the maximum volume of scrubber sludge and ash deposited in the Former Landfill was approximately 1.5 million cubic yards.

In September of 1992, SIPC submitted to IEPA an Initial Facility Report ("IFR") for the Former Landfill. *See* IEPA Initial Facility Report – for On-Site Facilities (Sept. 18, 1992), Ex. 15. In 1993, SIPC installed groundwater monitoring wells around the Former Landfill in accordance with Illinois landfill regulations. After that time, SIPC submitted annual groundwater monitoring reports to IEPA pursuant to the landfill regulations. Because the Former Landfill did not receive CCR after the effective date of 40 C.F.R. Part 257, Subpart D, the landfill is not subject to ~~the~~those requirements ~~of Part 257~~. *See* 40 C.F.R. § 257.50(d).

As discussed below, in March 2020, IEPA issued a Violation Notice ("VN") for the Former Landfill, alleging violations of Section 21 of the Illinois Environmental Protection Act ("the Act"), the Illinois landfill regulations, and Illinois's groundwater quality standards, and listing several remedial actions SIPC could take to resolve the alleged violations. *See* IEPA Violation Notice L-2020-00035 (Mar. 20, 2020) ("2020 Landfill VN"), Ex. 16. In December 2020, and in response to IEPA's request, SIPC submitted a ~~landfill closure plan~~Former Landfill Closure Plan to IEPA consistent with the Illinois landfill regulations for closure cited by IEPA in the landfill VN (2020 Landfill VN, Ex. 16), and since that time, SIPC has negotiated some elements of that plan with IEPA. SIPC ~~is~~was ready to proceed with that ~~landfill closure plan as soon as it receives IEPA's approval.~~ Closure Plan, in accordance with the requirements of 35 Ill. Admin. Code § 811.314, upon receiving IEPA's approval for the plan. *See* Former Landfill Closure Plan, Ex. 10, Figure B-05. In March 2021, nearly three months after receiving SIPC's proposed Closure Plan, an IEPA representative for the first time informed SIPC of a new

position that the Former Landfill was regulated by and required to close pursuant to Part 845, rather than pursuant to the Illinois landfill regulations under which the Former Landfill had been operating for decades (and under which IEPA had issued the VN). Subsequently, IEPA withdrew the Landfill VN via a letter dated May 6, 2021.

~~As set forth in the proposed landfill closure plan, SIPC intends to close the Former Landfill in accordance with the requirements of 35 Ill. Admin. Code § 811.314. At a minimum, the final proposed cover system for the Former Landfill will consist of a conventional soil cap with a minimum thickness of 6 feet (3-foot low permeability layer overlain by a 3-foot final protective layer) or an alternate geosynthetic cap with a minimum thickness of 4 feet consisting from the bottom up of the following: 1-foot thick low-permeability layer, 40-mil linear low-density polyethylene (LLDPE) geomembrane, a double-sided geocomposite drainage layer and a 3-foot final protective layer. The proposed Former Landfill cover includes the area that once contained the Former Fly Ash Holding Units. *See* Former Landfill Closure Plan, Ex. 10, Figure B-05.~~

Despite issuing a VN to SIPC for alleged violations of landfill regulations, IEPA now appears to argue—apparently based on its proximity to the Former Fly Ash Holding Units—that the Former Landfill (which has been treated by SIPC and regulators as a landfill for more than thirty years) meets the definition of a CCR surface impoundment, "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR," under ~~a rule~~Part 845 that became effective as of April 21, 2021 (and which explicitly exempts CCR landfills from coverage). As discussed *infra* at Part III.B, IEPA's position is incorrect. In

addition, this development has delayed finalization and execution of SIPC's proposed ~~landfill closure plan.~~Former Landfill Closure Plan. The Former Landfill area, including the Former Fly Ash Holding Units, is not a CCR surface impoundment and this area qualifies for a finding of inapplicability. However, to the extent the Board finds this area is a CCR surface impoundment, SIPC has proposed an adjusted standard that would close the entirety of this area consistent with Part 845 performance standards and with a Part 845 compliant groundwater monitoring and corrective action program.

D. The Federal CCR Rule and the WIIN Act.

CCR disposal is regulated at the federal level pursuant to Part 257, Subpart D, which was promulgated on April 17, 2015. *See* Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21,302 (April 17, 2015) ("Final Rule"), attached in relevant part as Second Amended Pet. Updated Ex. 17. Part 257 was promulgated pursuant to the federal Resource Conservation and Recovery Act, Subtitle D, and includes comprehensive technical requirements for regulated CCR landfills and CCR surface impoundments. Part 257 defines a "CCR surface impoundment" as "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." 40 C.F.R. § 257.53.

In December 2016, the President signed the Water Infrastructure Improvements for the Nation Act (the "WIIN Act"), Pub. L. No 114-322 (2016). The WIIN Act authorized states to adopt permit programs that, upon approval by the U.S. Environmental Protection Agency ("U.S. EPA"), may operate in lieu of Part 257. 42 U.S.C. § 6945(d)(1)(B). State programs must be as protective as Part 257. *Id.* § 6945(d)(1)(B)(ii). The WIIN Act further allows U.S. EPA to

enforce violations of the Part 257 and requires U.S. EPA to develop a federal permitting program for CCR surface impoundments that would apply in states that elect not to seek approval of a state CCR permitting program. 42 U.S.C. § 6945(d)(2)(B).

In 2024, U.S. EPA amended Part 257 (the "2024 Legacy Rule"). *See* Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Legacy CCR Surface Impoundments, 89 Fed. Reg. 38,950 (May 8, 2024) (the "2024 Legacy Pond Final Rule"), attached in relevant part as Ex. 33. The 2024 Legacy Rule amends Part 257 to include CCR regulations for inactive surface impoundments at inactive electric utilities, referred to as "legacy CCR surface impoundments," requiring owners and operators of legacy CCR surface impoundments to comply with all existing requirements applicable to inactive CCR surface impoundments at active facilities, except for the location restrictions and liner design criteria. In addition, the 2024 Legacy Rule establishes groundwater monitoring, corrective action, closure, and post closure care requirements for other areas where CCR was disposed of or managed on land outside of regulated units at regulated CCR facilities, referred to in the 2024 Legacy Rule as "CCR management units" (regardless of how or when that CCR was placed).

E. The Illinois CCR Act and Part 845.

On July 30, 2019, the Illinois Legislature adopted the Illinois Coal Ash Pollution Prevention Act ("Illinois CCR Act"). 415 Ill. Comp. Stat. 5/22.59. In the findings section of ~~that~~the Illinois CCR Act, the Legislature stated that "CCR generated by the electric generating industry has caused groundwater contamination and other forms of pollution at active and inactive plants throughout this State," and "environmental laws should be supplemented to

ensure consistent, responsible regulation of all existing CCR surface impoundments[.]"[11][12] 415 Ill. Comp. Stat 5/22.59(a)(3), (4).

The Illinois CCR Act copied Part 257's definition of a CCR surface impoundment: "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." 415 Ill. Comp. Stat. 5/3.143. A pond that does not satisfy this definition is not subject to Part 257 or the Illinois CCR Act.

The Illinois CCR Act prohibits any person from allowing the discharge of contaminants from a CCR surface impoundment to the environment so as to cause a violation of the Illinois CCR Act; requires owner and operators of CCR surface impoundments to obtain construction permits from IEPA; requires IEPA approval prior to closing any CCR surface impoundment; and requires post-closure financial assurance for closed CCR surface impoundments.[12][13] 415 Ill. Comp. Stat. 5/22.59(b), (d), (f).

The Illinois CCR Act also set forth a fee regime, pursuant to which covered CCR surface impoundment owners and operators must pay initial and annual fees to IEPA for certain closed CCR surface impoundments, as well as those that have not completed closure. 415 Ill. Comp. Stat. 5/22.59(j). The Illinois CCR Act also required the Board to adopt rules governing CCR surface impoundments that must be at least as protective and comprehensive as Part 257. *See* 415 Ill. Comp. Stat. 5/22.59(g).

[11][12] Prior to passage of the Illinois CCR Act, most CCR surface impoundments in Illinois were regulated as ~~waste water~~wastewater treatment units. *See* ~~R 2020-019~~R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA's Statement of Reasons (Mar. 30, 2020) ("IEPA Statement of Reasons"), Ex. 18 at 4.

[12][13] The Illinois CCR Act's financial assurance requirements do not apply to SIPC because it is a not-for-profit electric cooperative. 415 Ill. Comp. Stat. 5/22.59(f).

F. The Part 845 Rulemaking.

On March 30, 2020, IEPA proposed regulations titled "Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments" to be included as Part 845 of Illinois Administrative Code's Title 35. According to the Statement of Reasons issued with the proposed regulations,

> ~~The~~[t]he foremost purpose and effect of this regulatory proposal is to fulfill Illinois EPA's statutory obligation to propose CCR rules consistent with the requirements in Section 22.59(g). The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois. . . . Groundwater has an essential and pervasive role in the social and economic well-being of Illinois, and is important to the vitality, health, safety, and welfare of its citizens. This rule has been developed based on the goals above and the principle that groundwater resources should be utilized for beneficial and legitimate purposes. *See* 415 ILCS 55/1 *et seq*. ***Its purpose is to prevent waste and degradation of Illinois' groundwater***. The proposed rule establishes a framework to manage the underground water resource to allow for maximum benefit of the State.

IEPA Statement of Reasons, Ex. 18 at 10 (emphasis added)~~13~~.[14] IEPA's Statement of Reasons attached a list of "power generating facilities with CCR surface impoundments [that] may be affected by Illinois EPA's proposed rule." *Id*. at 36–37. IEPA indicated, incorrectly, on that list that Marion Station includes nine CCR surface impoundments. *Id*. at 37.

The Board held two sets of hearings and received 138 written public comments on the proposed rules. SIPC submitted public comments to the Board on September 25, 2020. In those

~~13 For all citations to R 2020-019 rulemaking materials—except Board orders and the final Part 845—we provided excerpted documents including only the relevant and cited page numbers, which were attached to SIPC's May 11, 2021 Petition. The page number cited here, and for all R 2020-019 materials, is the page number of the document, not the page number of the exhibit.~~

[14] For all citations to R2020-019 rulemaking materials—except Board orders and the final Part 845—we provided excerpted documents including only the relevant and cited page numbers, which were attached to SIPC's May 11, 2021, initial Petition. The page number cited here, and for all R2020-019 materials, is the page number of the original document, not the page number of the Exhibit.

comments, SIPC stated that only one of the units at Marion Station of the nine ponds then identified by IEPA—former Emery Pond (which is not at issue in this Petition)—is ~~actually~~ a regulated CCR surface impoundment as defined in the then-proposed regulations, the Illinois CCR Act, and Part 257. *See* ~~R 2020-019~~R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, SIPC Comments to Illinois Pollution Control Board (Sept. 25, 2020), Ex. 19.

G. The Board's Opinion and the Final Rule.

The Board issued its Second Notice Opinion and Order ("Second Notice Opinion") on February 4, 2021. The Second Notice Opinion largely adopted IEPA's proposed rules, including its definition of "CCR surface impoundment" as a "natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR." ~~R 2020-019~~R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845,* Illinois Pollution Control Board's Second Notice Opinion and Order at 11 (Feb. 4, 2021) ("Second Notice Opinion and Order"); *see also* 35 Ill. Admin. Code § 845.120. Thus, the Board, like the legislature in the Illinois CCR Act, adopted Part 257's definition of "CCR surface impoundment."

The final Part 845 also adopted the following definitions that are relevant to the instant ~~petition~~Petition:

> "Existing CCR surface impoundment" means a CCR surface impoundment in which CCR is placed both before and after October 19, 2015, or for which construction started before commenced prior to October 19, 2015 and in which CCR is placed on or after October 19, 2015. A CCR surface impoundment has started commenced construction if the owner or operator has obtained the federal, State, and local approvals or permits necessary to begin physical construction and

> a continuous on-site, physical construction program had begun before prior to October 19, 2015.
>
> . . .
>
> "Inactive CCR surface impoundment" means a CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains CCR on or after October 19, 2015. Inactive CCR surface impoundments may be located at an active facility or inactive facility.

35 Ill. Admin. Code § 845.120. The Board declined industry's request to adopt a new definition of *de minimis* units in Part 845, at least in part because it did not want to "create" new language that was not in Part 257, which could create inconsistency. Second Notice Opinion and Order at 14–15. In so doing, the Board appeared to recognize that such units may not be subject to Part 845, just as such units are not subject to Part 257, because they are not "CCR surface impoundments." The Second Notice Opinion suggested that there is authority to determine such units are not covered CCR surface impoundments subject to Part 845, and that operators of *de minimis* units could—if necessary—petition for a variance or an adjusted standard from Part 845 if it disagrees with how the IEPA characterized a unit:

> Regulatory relief mechanisms are available to owners and operators when they disagree with an IEPA determination concerning whether a unit is a CCR surface impoundment. In those instances, an owner or operator may seek an adjusted standard or a variance from the Board

Id. at 14.

Following approval by the Joint Committee on Administrative Rules ("JCAR"), the Board adopted Part 845 as final on April 15, 2021, with an effective date of April 21, 2021. *See* ~~R 2020-019~~R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, Illinois Pollution Control Board's Final Order Adopted Rule (Apr. 15, 2021) ("Final Order").

H. The ~~Violation Notices~~Pond Investigation

~~SIPC has received, over the course of the past three years, three VNs from IEPA that are relevant to this Petition.[14]~~

~~1. The Pond VNs.~~

~~On July 28, 2020, IEPA issued VN No. W-2020-00046 (the "Initial Fee VN") to SIPC alleging that SIPC failed to pay initial fees for current and former ponds at Marion Station that IEPA alleged were CCR surface impoundments that had not completed closure by the effective date of the Illinois CCR Act. *See* IEPA Violation Notice W-2020-00046 (July 28, 2020), Ex. 20. Specifically, the VN alleged that SIPC had not paid initial fees for Ponds 1, 2, 3, 4, 6, A-1, B-3, and South Fly Ash Pond. Relevant to this Petition, SIPC explained in response to IEPA's VN that Ponds 3, 4, 6, B-3, and South Fly Ash Pond do not meet the definition of a "CCR surface impoundment" under the Illinois CCR Act, including because they are *de minimis* ponds. SIPC proposed, but IEPA rejected, terms for a compliance commitment agreement to resolve the alleged violations. For the three ponds, all no longer in operation and at issue in the VN but not this Petition Ponds 1, 2, and A-1, SIPC denies they are regulated CCR surface impoundments[15]but is still discussing them with IEPA.~~

~~On December 16, 2020, IEPA issued another VN, No. W-2020-00087 (the "Annual Fee VN"), this time alleging that SIPC failed to pay annual fees as required by the Act for the same~~

~~[14] By a letter dated July 3, 2018, IEPA also issued a VN to SIPC pursuant to Section 31(a)(1) of the Act (Violation Notice No. W-2018-00041), alleging violations of groundwater quality standards for various constituents based on groundwater sampling at monitoring wells surrounding or near former Emery Pond. As discussed *supra*, SIPC closed former Emery Pond by removal pursuant to an IEPA-approved closure compliant with Part 257, and it is not included in this Petition.~~

~~[15] SIPC has explained to IEPA in response to the VN why the other three ponds are not regulated CCR surface impoundments: former Ponds 1 and 2 temporarily contained, when in operation, beneficially used CCR, as discussed above, and water, and CCR was removed from Pond A-1 before October 2015.~~

~~current and former ponds at issue in VN No. W-2020-00046. *See* IEPA Violation Notice W-2020-00087 (Dec. 16, 2020), Ex. 21. Again, SIPC responded, denying the allegations but proposing terms for a compliance commitment agreement to resolve the alleged violations. IEPA again rejected SIPC's proposal. SIPC remains in active negotiations with IEPA regarding the allegations in the Annual Fee VN.~~

~~As discussed *infra* at Part III.A, SIPC believes the history of the De Minimis Units, alone, makes clear that they are not CCR surface impoundments and should not be subject to the requirements of Part 845. In addition~~SIPC has received VNs from IEPA that are related to the units that are the subject of this Petition.[15] *See* 2020 Landfill VN, Ex. 16; IEPA Violation Notice W-2020-00046 (July 28, 2020), Ex. 20; IEPA Violation Notice W-2020-00087 (Dec. 16, 2020), Ex. 21. In connection with discussions related to these VNs, IEPA requested, and SIPC agreed, that SIPC complete a pond investigation pursuant to an agreed protocol designed to yield information related to whether the five De Minimis Units at issue in this Petition qualify as excluded *de minimis* units. The investigation was intended to gather information related to the extent and composition of the sediments in the De Minimis Units.

The pond investigation involved (1) completion of a bathymetric survey to determine the amount of sediments below water in the De Minimis Units (with the exception of former Pond B-3, which no long holds water); and (2) analysis of pond sediments to determine whether and to what extent they contain CCR. At the request of IEPA, soil borings were also taken from the

[15] By a letter dated July 3, 2018, IEPA also issued a VN to SIPC pursuant to Section 31(a)(1) of the Act (Violation Notice No. W-2018-00041), alleging violations of groundwater quality standards for various constituents based on groundwater sampling at monitoring wells surrounding or near the former Emery Pond. As discussed *supra*, SIPC closed the former Emery Pond by removal pursuant to an IEPA-approved closure compliant with Part 257, and it is not included in this Petition.

berms associated with Ponds 3 (including 3A), B-3, and 4.[16] Field work and data collection was completed by Hanson Engineering, Inc. Haley & Aldridge analyzed the results and authored the ~~report~~Pond Investigation Report. SIPC provided an initial version of that ~~report~~Report to IEPA on August 6, 2021. ~~H&A~~Haley & Aldridge subsequently updated the ~~report~~Report following a call with IEPA, including to address questions raised by IEPA, and that updated version is the version attached as Ex. 29.

~~As discussed *supra* at Part C.1., the results of the pond investigation confirm that the De Minimis Units are not CCR surface impoundments under Part 845 (or under Part 257). As discussed *infra*, the results of that investigation also confirm that the De Minimis Units do not have a material adverse effect on groundwater at Marion Station. In short, the Pond Investigation Report confirms that (1) only a fraction of the relatively thin sediment layer present in the De Minimis Units is CCR material; (2) the De Minimis Units are the type of "de minimis units" the U.S. EPA explicitly excluded from regulation under Part 257 (*see infra* at Part A.I.); and (3) regulating the De Minimis Units under Part 845 is not necessary for the protection of human health or the environment.~~

~~2. The Landfill VN.~~

~~As discussed *supra* at Part II.C.2, by letter dated March 20, 2020, IEPA issued a VN to SIPC pursuant to Section 31(a)(1) of the Act, No. L-2020-00035 (the "Landfill VN"), alleging SIPC's failure to comply with various requirements of Illinois landfill regulations in its operation~~

[16] IEPA also requested that borings be taken from former Pond A-1 (which is not part of this Petition) and former Pond B-3. As discussed ~~*supra* at 13~~, SIPC was unable to collect either of those borings because bedrock was encountered at the surface of former Pond A-1 (confirming no CCR present) and the designated boring area of former Pond B-3 was inaccessible. *See* Pond Investigation Rep., Ex. 29 at 6.

~~and management of the Former Landfill. *See* 2020 Landfill VN, Ex. 16. Specifically, IEPA alleged violations of Part 811's intermediate and final cover requirements, Parts 815 and 812's requirements for filing an IFR, Part 811's requirements related to final slope and stabilization, and Part 811 groundwater monitoring requirements. Nowhere in that VN did IEPA allege violations of or even reference Part 257, the Illinois CCR Act, or Part 845.~~

~~SIPC denied the allegations in the VN but provided certain requested information to IEPA and, in December 2020, submitted a proposed plan to close the Former Landfill in compliance with Parts 811 and 815. In March 2021, nearly three months after receiving SIPC's proposed landfill closure plan, an IEPA representative for the first time informed SIPC of a new position that the Former Landfill was regulated by and required to close pursuant to Part 845, rather than pursuant to the Illinois landfill regulations under which the Former Landfill had been operating for decades (and under which IEPA had issued the VN). Subsequently, IEPA withdrew the Landfill VN via a letter dated May 6, 2021. As set forth herein, SIPC disagrees with IEPA's new position.~~

I. Requested Relief

Through this ~~petition~~Petition, SIPC requests a finding of inapplicability from the Part 845 requirements for the De Minimis Units and the Former Fly Ash Holding Units (including the Former Landfill) or, in the alternative, an adjusted standard ~~exempting~~for the De Minimis Units and the Former Fly Ash Holding Units ~~from the requirements of Part 845~~as set forth in Appendix A.

III. REQUEST FOR FINDING OF INAPPLICABILITY.

The Board has recognized that a Petition for an adjusted standard can, in the alternative, seek a finding of inapplicability from the regulation at issue. *See* AS 2009-003, *In the Matter of Petition of Westwood Lands, Inc. for an Adjusted Standard from Portions of 35 Ill. Adm. Code 807.14 and 35 Ill. Adm. Code 807.104 and 35 Ill. Adm. Code 810.103 or, in the Alternative, a Finding of Inapplicability*, Opinion and Order of the Board (Oct. 7, 2010) (granting request for a finding of inapplicability from solid waste regulations); AS 2004-002, *In the Matter of Petition of Jo'Lyn Corporation and Falcon Waste and Recycling Inc. for an Adjusted Standard from 35 Ill. Adm. Code 807.103 and 35 Ill. Adm. Code 810.103, or in the Alterative, a Finding of Inapplicability*, Opinion and Order of the Board (Apr. 7, 2004) (granting a request for a finding of inapplicability from solid waste regulations). Such relief is appropriate here on the basis that none of the units at issue are CCR surface impoundments subject to Part 845, as set forth further below.

A. The De Minimis Units Are Not Subject to Part 845.

Part 845 is clear that it only regulates "CCR surface impoundments." The regulation's "Scope and Purpose" section specifies that Part 845 applies to "owners and operators of new and existing CCR surface impoundments," 35 Ill. Admin. Code § 845.100(a), and "inactive CCR surface impoundments at active and inactive electric utilities or independent power producers." *Id.* § 845.100(b). As discussed below, none of the units at issue are CCR surface impoundments, new or existing CCR surface impoundments, or inactive CCR surface impoundments, and therefore, none of the current and former ponds at issue are covered by Part 845.

1. The De Minimis Units Are Not "CCR Surface Impoundments."

As discussed below, the De Minimis Units are not "CCR surface impoundments" as defined in Part 257 or Part 845. Both Part 257 and Part 845 define a CCR surface impoundment as "a natural topographic depression, man-made excavation, or diked area, which ***is*** designed to hold an accumulation of CCR and liquids, ***and*** the unit[17] treat***s***, store***s***, or dispose***s*** of CCR." 40 C.F.R. § 257.53 (emphasis added); *see also* 35 Ill. Admin. Code § 845.120. None of the De Minimis Ponds meet this two-part definition~~, which focuses on the **present** function of an impoundment as of the effective date of Part 257~~.[18]

As discussed above, the De Minimis Units are not ~~presently~~ designed to—and do not—hold a necessary accumulation of CCR and liquids. ~~To the extent they ever did, they have not done so since long before October 19, 2015.~~ Accordingly, the De Minimis Units do not fall within the first part of the definition of CCR surface impoundment. ~~And~~Further, none of the De Minimis Units ~~currently~~ treat, store, or dispose of CCR, and (to the extent they ever did) have not done so since October 19, 2015, as required by the second part of the definition of CCR surface impoundment. ~~The De Minimis Units therefore fall outside the plain language of the definition of "CCR surface impoundment" and, consequently, Part 845.~~

[17] Part 845 substitutes "surface impoundment" for "unit," but this works no substantive change. 35 Ill. Admin. Code § 845.120

[18] Part 257, upon promulgation, did not impose any requirements on any CCR surface impoundments that no longer existed or had closed before the rule's effective date—i.e., those that no longer contained water and could no longer impound liquid. Final Rule, Second Amended Pet. Updated Ex. 17 at 21,343. Whether a unit met the definition of CCR surface impoundment depended on what waste was managed in the unit ***as of October 19, 2015***. The court's decision in *Util. Solid Waste Activities Grp. v. Envtl. Prot. Agency*, 901 F.3d 414 (D.C. Cir. 2018) ("*USWAG*") reversed and remanded the ~~federal rules~~Final Rule to the U.S. EPA to regulate any ash pond that was a "legacy pond," which is an inactive CCR surface impoundment at a closed or no longer operating facility. The *USWAG* decision described the risks posed by legacy ponds as risks associated with open, wet ponds that were not closed. See *USWAG*, 901 F.2d at 432–33. The *USWAG* decision's remand did **not** speak to ponds at active facilities that contained *de minimis* CCR or could no longer contain water and impound liquid as of the effective date of the ~~rule~~Final Rule. Accordingly, the *USWAG* decision did not order U.S. EPA to regulate units like the De Minimis Units or the Former Fly Ash Holding Units.

The De Minimis Units primarily received CCR only through their service as secondary finishing ponds (through decanted overflow water), stormwater runoff, or air deposition. The only unit to ever receive direct disposal of CCR was former Pond B-3. However, that disposal occurred only three to four times during then entire course of its operation (when Pond A-1 was not in operation). *See supra* at Part II.C.1. When materials from B-3 were removed in 2017, it had a high BTU content, and at least a portion of those materials were burned, suggesting any CCR in the pond was *de minimis*.

The fact that certain of the De Minimis Units *may* have received historic, largely indirect, discharges of CCR does not bring them within the definition of a "CCR surface impoundment." To the contrary, both the history and the current condition of the De Minimis Units make clear that they are precisely the type of *de minimis* units ~~that the U.S. EPA intended to exclude~~excluded from the definition of CCR surface impoundment in Part 257 and ~~which, accordingly, should also be excluded from~~ Part 845 ~~under the same definition~~.

In its preamble to the Final Rule, U.S. EPA stated that

> The Agency received many comments on the proposed definition of CCR surface impoundment. The majority of commenters argued that the definition was overly broad and would inappropriately capture surface impoundments that are not designed to hold an accumulation of CCR. Commenters were concerned that the proposed definition could be interpreted to include downstream secondary and tertiary surface impoundments, such as polishing, cooling, wastewater and holding ponds that receive only *de minimis* amounts of CCR.

Final Rule, Second Amended Pet. Updated Ex. 17 at 21,357.

In response to those concerns, U.S. EPA reviewed the risk assessment on which Part 257 was based "to determine the characteristics of the surface impoundments that are the source of the risks the rule seeks to address." *Id*.

> Specifically, these are units that contain a large amount of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants. . . . EPA agrees with commenters that ***units containing only truly "de minimis" levels of CCR are unlikely to present the significant risks this rule is intended to address***.

Id. (emphasis added).

Accordingly, U.S. EPA amended the definition of CCR surface impoundment in the Final Rule "to clarify the types of units that are covered by the rule": "a natural topographic depression, man-made excavation, or diked area, which ***is*** designed to hold an accumulation of CCR and liquids, ***and the unit treats, stores, or disposes of CCR***." *Id.* (emphasis added). The intent of the amendment was to implement U.S. EPA's determination, as described in Part 257's preamble, that *de minimis* units would be **excluded** from Part 257 requirements. U.S. EPA's amended definition is, as noted above, the same definition used in Part 845. *See* 35 Ill. Admin. Code § 845.120.

In making the change, U.S. EPA noted that it "

> agrees with commenters that relying solely on the criterion from the proposed rule that the unit be designed to accumulate CCR could inadvertently capture units that present significantly lower risks, such as process water or cooling water ponds, because, although they will accumulate any trace amounts of CCR that are present, they *will not contain the significant quantities* that give rise to the risks modeled in EPA's assessment. By contrast, units that are designed to hold an accumulation of CCR and in which treatment, storage, or disposal occurs will contain substantial amounts of CCR and consequently are a potentially significant source of contaminants." ~~Final Rule, Updated Ex. 17 at 21,357.~~

Final Rule, Second Amended Pet. Updated Ex. 17 at 21,357. U.S. EPA further stated that "CCR surface impoundments do not include units generally referred to as cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds, or aeration ponds. These units are not designed to hold an accumulation of CCR, and *in fact, do not generally contain*

significant amounts of CCR." *Id.* (emphasis added). Further, U.S. EPA stated that secondary or tertiary ponds that do not receive "significant amounts of CCR from a preceding impoundment" would not fall within the definition of a regulated CCR surface impoundment. *See Id.* at 21,357; *see also*, U.S. EPA, *Frequent Questions about Definitions and Implementing the Final Rule Regulating the Disposal of Coal Combustion Residuals*,[19] Ex. 34 ("Surface runoff, coal pile runoff, CCR landfill leachate, stormwater and evaporation ponds would not generally be expected to meet the definition of a CCR surface impoundment, because based on their typical design and function, such units are not usually designed primarily to hold an accumulation of CCR and liquid and would not be expected to treat, store, or dispose of CCR.")

U.S. EPA reiterated the *de minimis* exception in the 2024 Legacy Rule, explaining that "evaporation ponds, or secondary or tertiary finishing ponds that have not been properly cleaned up" are expected to "contain no more than a *de minimis* amount of CCR" and, therefore, would not be regulated under Part 257. 2024 Legacy Pond Final Rule, Ex. 33 at 39,050. Further, U.S. EPA stated in its proposal for the 2024 Legacy Rule that "the following would not be considered CCR [management units]: . . . closed or inactive process water ponds, cooling water ponds, wastewater treatment ponds, and storm water holding ponds or aeration ponds. These units are not designed to hold an accumulation of CCR, and *in fact, do not generally contain a significant amount of CCR*. . . ." Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments, 88 Fed. Reg. 31,982, 32,018 (May 18, 2023) (emphasis added), attached in relevant part as Ex. 35.

[19] Available at https://www.epa.gov/coalash/frequent-questions-about-definitions-and-implementing-final-rule-regulating-disposal-coal#q7.

SIPC's request that the Board find Part 845 inapplicable to the De Minimis Ponds is consistent with federal law as the units contain little to no CCR and, therefore, are not federally regulated.

The Illinois CCR Act and Part 845 both incorporate Part 257's definition of "CCR surface impoundment," ~~with~~including the amended language that implemented U.S. EPA's determination that *de minimis* units would not be considered regulated surface impoundments. Thus, Part 845 and the Illinois CCR Act do not apply to *de minimis* units.

The Board declined to "create" a new definition of "*de minimis,*" as it is not expressly defined in Part 257, but that decision did not mean that *de minimis* units would be covered under Part 845. Second Notice Opinion and Order at 14–15. Indeed, that decision was based at least in part on concerns about assuring conformity with ~~U.S. EPA's rule. *Id*~~Part 257, *id.* at 15~~. And~~, and Part 257 does not apply to *de minimis* units as such units are described by U.S. EPA, including in the Preamble to its ~~final CCR rule~~Final Rule. *See* Final Rule, Second Amended Pet. Updated Ex. 17 at 21,357. Consistently, the Board also implicitly recognized in its discussion of defining *de minimis* units that IEPA might make decisions about whether a unit qualifies as an excluded *de minimis* unit, and, if a company disagreed, it could ~~chose~~choose to seek relief from the Board, including, for example, through an adjusted standard. Second Notice Opinion and Order at 14. IEPA, and the Board, may determine that a unit is *de minimis* and thus not regulated because the regulations do not apply to such units under the identical "CCR surface impoundment" definitions in Part 257 and Part 845. Here, for the reasons set forth below, SIPC asks the Board in the first instance~~19~~20 to determine that the De Minimis Units are not regulated CCR surface impoundments.

~~19~~20 As set forth below, if the Board denies this request, SIPC asks the Board for an adjusted standard with respect to the De Minimis Units.

Both the Pond Investigation Report and the history of the De Minimis Units outlined above ~~shows~~show that ~~they~~the units do not "contain a large amount of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." Final Rule, Second Amended Pet. Updated Ex. 17 at 21,357; *see also* Pond Investigation Rep., Ex. 29. To the extent any of the De Minimis Units ever received discharges of CCR, the discharges were mostly indirect, either from pond overflow or process ~~waste water~~wastewater. The only De Minimis Unit that is known to have received direct ~~wastewater~~ discharges of CCR—former Pond B-3~~20~~21—likely only did so for short periods of time, has not received any CCR for decades, and is no longer able to contain water. *See supra* at Part II.C.1. Accordingly, none of the ~~ponds~~De Minimis Ponds at issue ever contained "significant quantities" or "substantial amounts" of CCR. Further, all ~~of~~ the De Minimis Units have been cleaned of debris since Marion Station switched to fully dry handling ~~of~~ fly ash, and those cleanings would have removed any CCR that would have accumulated in them as a result of historic operations. As a result, the De Minimis Units simply do not present the "significant risks" Part 257~~,~~ and Part 845~~,~~ are intended to address.

This conclusion is bolstered by the results and analysis set forth in the Pond Investigation Report. As summarized in that report, Haley & Aldridge reviewed extensive information relating to the De Minimis Units, including bathymetric survey results, results of analyses of pond sediments, and results of a ~~polarized light microscopy ("~~PLM~~")~~ analyses, which characterize the fraction of CCR in sediment samples. Based on that information, Haley & Aldridge determined that the De Minimis Units contain on average less than 2 feet of total sediments. Of that less than two feet, Haley & Aldridge determined that the average fraction of

~~20~~21 While the South Fly Ash Pond was *designed* to receive direct discharges of CCR, it never did receive direct discharges of CCR. *See supra* at ~~8–9~~9–10.

CCR materials in the De Minimis Units was approximately 40forty percent. Pond Investigation Rep., Ex. 29 at 13. In other words, the De Minimis Units contain only a small amount of sediment, and only a fraction of those sediments appearappears to contain CCR materials. Haley and& Aldridge accordingly concluded that "these results are consistent with what we understand to be the function of [the De Minimis Units], which generally did not receive direct discharges of CCR materials, were not designed to hold an accumulation of CCR and water, and have not been used for the treatment, storage and disposal of CCR." Pond Investigation Rep., Ex. 29 at 7.

Haley & Aldridge also contrasted the volume and type of pond sediments in the De Minimis Units with the characteristics of a "typical" CCR surface impoundment that is used to treat, store, or dispose of CCR. As discussed in the Pond Investigation Report, the volume of sediments in such CCR surface impoundments generally is greater than 50fifty percent of pond volume. In contrast, the volume of sediments in the De Minimis Units ranged from 8.2 percent (Pond 6) to 13.3 percent (Pond 3A). Similarly, the total volume of sediments in the De Minimis Units is far smaller than one would expect to see in a CCR surface impoundment used for the treatment storage or disposal of CCR. *See* Pond Investigation Rep., Ex. 29 at 7. These results further bolster the conclusion that the De Minimis Units are not CCR surface impoundments as defined in Part 257 (or Part 845) or Part 257.

Further, and as discussed *infra* at 44, Haley & Aldridge reviewed multiple years of groundwater monitoring data collected by SIPC and determined that any CCR that is in the De Minimis Units has not had any appreciable impact on groundwater at SIPC. *See* Pond Investigation Rep., Ex. 29 at 26; *see also* Updated Bradley Op., Updated Ex. 28 at 21. Dr. Bradley. Ms. Lewis concurs with this conclusion and determines that the De Minimis Units do

not pose appreciable risk to human health or the environment—and are therefore not the type of units intended by regulated by Part 257845 or Part 845257—based on her review of the Pond Investigation Report and her own review of SiteStation groundwater monitoring data and pond histories. Updated BradleyAri Lewis, M.S. *Support for the Petition of an Adjusted Standard for Pond 4, Ponds 3 and 3A, Pond S-6, Former Pond B-3, and South Fly Ash Pond* (Dec. 20, 2024) ("Lewis Op."), Updated Ex. 28 at 21–2236. As discussed by DrMs. BradleyLewis in her updated report, the De Minimis Units are precisely the types of *de minimis* units that U.S. EPA sought to exclude from regulation under Part 257 because they do not "***present the significant risks [Part 257] is intended to address***." Final Rule, Second Amended Pet. Updated Ex. 17 at 21,357; *see also* Lewis Op., Ex. 36. They should likewise be excluded under Part 845, as discussed below.

Given that the De Minimis Units are not CCR surface impoundments under Part 257, the Board should find that they also are not covered by Part 845. As noted above, the definition of "CCR surface impoundment" is identical in both Part 257 and Part 845, and plainly excludes the De Minimis Units. As a practical matter, it would be anomalous, to say the least, that the same words mean something different in Part 845 and that a unit is subject to Part 845 but excluded byfrom Part 257 under the same rule language. Part 257 clearly excludes units such as the De Minimis Units. Further, the administrative record is clear that the legislature, IEPA, and the Board in adopting the same definition of "CCR surface impoundments" as Part 257, all intended for Part 845 to regulate the same universe of "CCR surface impoundments" as Part 257. *See, e.g.*, R 2020-019R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA Responses to

Pre-Filed Questions (Aug. 3, 2020) ("IEPA Responses"), attached in relevant part as Updated Ex. 22 at 7–8 ("It is the Agency's position that the same universe of CCR surface impoundments [that is regulated by Part 257] is intended to be regulated by Part 845."); *id*. at 17 ("CCR surface impoundments not subject to Part 257, are not subject to the requirements of Part 845. (Agency Response)"); ~~R 2020-019~~R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, Hearing Transcript (Aug. 11, 2020), Ex. 23 at 43–44 (Q: "[M]y question was is Part 845 intended to apply to the same ponds that are subject to requirements under Part 257 given that they both define CCR surface impoundments in an identical fashion?" A: "In the Agency's opinion, they will be the same ones."); Final Order at 8 (noting that "many of the technical elements required of owners and operators of CCR surface impoundments are already required under federal law.").

Indeed, to the extent IEPA *had* desired to deviate from Part 257 for the scope of units of covered by Part 845, it admitted that it did not conduct its own risk assessment or otherwise gather evidence that would support doing so. *See, e.g*., IEPA Responses, Updated Ex. 22 at 55 (Q: "Are you familiar with the Risk Assessment performed by U.S. EPA when it finalized the 2015 Federal CCR Rule?" A: "No."); ~~R 2020-019~~R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, First Supplement to IEPA Pre-Filed Responses (Aug. 5, 2020), Ex. 24 at 37–38 (admitting that IEPA did not perform its own risk assessment and IEPA relied upon U.S. EPA's risk assessment "to the extent that USEPA's risk assessment was used by USEPA to develop the

requirements of Part 257"). There is no question, then, that the De Minimis Units are excluded from regulation under both Part 257 **and** Part 845.

2. The De Minimis Units Are Not Existing or Inactive CCR Surface Impoundments.

The De Minimis Units also do not fall within the definition of "existing CCR surface impoundment" or "inactive CCR surface impoundment" under either Part 845 or Part 257. As an initial matter, under either regulatory scheme, a unit cannot be an "existing CCR surface impoundment" or an "inactive CCR surface impoundment" unless it is first a "CCR surface impoundment" which, as discussed above, the De Minimis Units are not. *See, e.g.*, Second Notice Opinion and Order at 15 ("The Board notes that for an impoundment to be an inactive surface impoundment, first it must be a *CCR surface impoundment*, which is defined in Section 845.120 as being designed to 'hold CCR and liquid.'" (emphasis in original)). Furthermore, it is undisputed that none of the De Minimis Units "received" CCR or had CCR "placed" in them—other than any small amounts that may have been incidentally deposited through indirect overflow discharges, runoff, or air—on or after October 2015. Other than B-3, they also did not "receive" CCR or have CCR "placed" in them—again, other than any small amounts that may have been incidentally deposited through indirect overflow discharges, runoff, or air—prior to October 2015. These ponds, used for secondary overflow, stormwater runoff, and landfill runoff, are exactly types of units U.S. EPA expected would be *de minimis.* The De Minimis Units thus are clearly not "existing CCR surface impoundments" under Part 257 or Part 845.

The De Minimis Units are likewise not "inactive CCR surface impoundments." Part 257 defines an "inactive surface impoundment" as a "CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after

October 19, 2015" 40 C.F.R. § 257.53. Part 845 similarly defines "inactive CCR surface impoundment" as a "CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains CCR on or after October 19, 2015." 35 Ill. Admin. Code § 845.120. There is no dispute that CCR was never "placed" in the South Fly Ash Pond or Pond 6, either before or after October 19, 2015. Those ponds plainly are not inactive CCR surface impoundments. To the extent any CCR was ever "placed" in the Ponds 3, 4, or B-3 decades ago, the historical record is clear that any historic receipt of CCR by those ponds was temporary and intermittent in nature and of a *de minimis* ~~amounts of CCR~~amount not intended to be covered under Part 257 or Part 845. Accordingly, the De Minimis Units do not ~~*presently*~~ contain more than *de minimis* amounts of CCR, which is not sufficient to meet the requirements for regulation as an inactive CCR surface impoundment under either Part 257 or Part 845. Accordingly, the De Minimis Units should not be regulated as inactive CCR surface impoundments under Part 257 or Part 845.

B. The Former Fly Ash Holding Units Are Not Subject to Part 845.

1. The Former Fly Ash Holding Units Are Not CCR Surface Impoundments, Existing CCR Surface Impoundments, or Inactive CCR Surface Impoundments.

The Former Fly Ash Holding Units are likewise not "CCR surface impoundments" subject to Part 257 or Part 845. The Former Fly Ash Holding Units are—and have been since at least the early 1990s—dry and operated in conjunction with the ~~on-site~~ Former Landfill, which, in turn, has been operated and regulated as an on-site, permit-exempt landfill pursuant to 35 Ill. Admin. Code Part 815 for decades. *See e.g.* 2020 Landfill VN, Ex. 16. The Former Fly Ash Holding Units are not currently, and were not as of October 19, 2015, "designed to hold an

accumulation of CCR and liquids" and accordingly, fall outside of the plain definition of "CCR surface impoundment." *See supra* at Part III.A.1; *see also* U.S. EPA, Comment Summary and Response Document: Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities; Proposed Rule, Vol. 3 (Dec. 2014), Ex. 25 at 73 ("CCR surface impoundments that have been dewatered and are no longer able to hold free liquids" prior to October 19, 2015 "are not subject to [Part 257].").

Because the Former Fly Ash Holding Units are not CCR surface impoundments, they do not fall within the definition of "existing" or "inactive CCR surface impoundments." *See supra* at Part III.A.2 (relating to the De Minimis Units and emphasizing that ~~in order~~ to be regulated as an existing or inactive CCR surface impoundment, the unit at issue must first be a "CCR surface impoundment" within the meaning of Parts 845 and 257). ~~The Former Fly Ash Holding Units also do not satisfy other key elements of the "existing" and "inactive" CCR surface impoundment definitions.~~

~~The Former Fly Ash Holding Units cannot be "existing CCR surface impoundments" because they did not receive CCR after October 19, 2015. The Former Fly Ash Holding Units cannot be "inactive CCR surface impoundments" because, to the extent the units contained CCR after October 19, 2015, the units did not contain water after October 19, 2015. The Former Fly Ash Holding Units are thus plainly excluded from the Part 257 definition of "inactive CCR surface impoundment," which requires that an inactive unit contain CCR ***and water*** after October 19, 2015. *See* 40 C.F.R. § 257.53. In promulgating its definition of an inactive CCR surface impoundment, U.S. EPA noted that Part 257 "was designed to address units that pose the highest level of risk: "units that contain a large amount of CCR ***managed with water***, under a hydraulic head that promotes the rapid leaching of contaminants." Final Rule, Updated Ex. 17 at 21,357 (emphasis added). As a result, U.S. EPA decided not to "impose any requirements on any CCR surface impoundments that have in fact 'closed' before the rule's effective date [October 19, 2015] – i.e., those [like the Former Fly Ash Holding Area Units] that no longer contain water and can no longer impound liquid." *Id.* at 21,343. As discussed above, the record is clear that the legislature, IEPA, and the Board all intended for Part 845 to encompass the same universe of CCR surface impoundments as Part 257. *See supra* at Part III.A.1. Accordingly, because the Former Fly Ash Holding Units are not regulated as inactive CCR surface~~

~~impoundments under Part 257, they also should not be regulated as inactive CCR surface impoundments under Part 845.~~

2. The Former Fly Ash Holding Units Have Been Managed for Decades as a Landfill, which Is Excluded from Regulation under Part 845.

The Former Fly Ash Holding Units are not subject to Part 845 for the separate reason that they function (and have functioned for decades) as part of the Former Landfill, and both Part 257 and Part 845 make clear that CCR landfills are not surface impoundments. Part 257 specifically defines a CCR landfill as **not** being a CCR surface impoundment: "CCR landfill or landfill means an area of land or an excavation that receives CCR ***and which is not a surface impoundment***, an underground injection well, a salt dome formation, a salt bed formation, an underground or surface coal mine, or a cave." 40 C.F.R. § 257.53 (emphasis added). Part 257 likewise contains separate and distinct requirements for CCR landfills and CCR surface impoundments. *Compare*~~,~~ *e.g.*, 40 C.F.R. § 257.70 *with* 40 C.F.R. § 257.71 and 40 C.F.R. § 257.84 *with* 40 C.F.R § 257.83. The 2024 Legacy Rule continues to make this distinction by promulgating federal requirements for CCR landfills that ceased receiving CCR prior to October 19, 2015. 2024 Legacy Pond Final Rule, Ex. 33 at 38,951. There is simply no question that the U.S. EPA intended to regulate CCR landfills separately from CCR surface impoundments in Part 257.~~21~~22

Part 845 is likewise clear that it does not regulate CCR landfills; the "Scope and Purpose" section states "this Part ***does not apply*** to landfills that receive CCR." 35 Ill. Admin. Code § 845.100(h) (emphasis added); *see also* IEPA Responses, Updated Ex. 22 at 6 ("A man-made excavation where CCR is disposed could be a CCR surface impoundment or a landfill***, but a***

~~21~~22 As noted *supra*, the Former Landfill at Marion Station is not regulated pursuant to Part 257 because it stopped receiving waste prior to October 2015. 40 C.F.R. § 257.53.

landfill that receives CCR is not a CCR surface impoundment.")~~)~~ (emphasis added)). The Board explicitly declined to extend Part 845's reach to landfills and other unconsolidated piles of CCR during the rulemaking, stating "that regulation of these unconsolidated coal ash fills and piles is beyond the scope of [the Illinois CCR Act]." Second Notice Opinion and Order at 12. Instead, the Board opted to open a separate sub-docket to explore regulating CCR in landfills and unconsolidated coal ash fills and piles. *Id*. IEPA agreed with the Board, taking the position that "limiting Part 845 to CCR surface impoundments is necessary and appropriate." ~~R 2020-019~~R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA Post-Hearing Comments (Oct. 30, 2020), Ex. 26 at 10. There is no question that the Former Landfill~~ including~~, which includes the Former Fly Ash Holding Area Units~~ at Marion Station operated as a landfill and~~, has been regulated as a landfill for decades. *See supra* at Part II.C.2. Indeed, as recently as March 2020, IEPA issued a VN to SIPC for alleged violations of the Illinois landfill regulations at the Former Landfill. As part of the Former Landfill, the Former Fly Ash Holding Units cannot be subject to Part 845. Illinois landfill regulations, consistent with Part 257 and Part 845, clearly state that a landfill is not a surface impoundment.~~22~~23

3. The Board Should Reject IEPA's Apparent Position that the Historic Presence of a CCR Surface Impoundment Converts a Landfill into a CCR Surface Impoundment.

Finally, the Board should reject IEPA's apparent new and convoluted argument that, notwithstanding its regulation of the Former Landfill as a landfill for decades—including its

~~22~~23 35 Ill. Admin. Code § 810.103 ("~~"~~'Landfill' means a unit or part of a facility in or on which waste is placed and accumulated over time for disposal, and that is not a land application unit, a surface impoundment or an underground injection well."); *see also* 35 Ill. Admin. Code § 810.104 ("For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, a surface impoundment is not a landfill.").

recent issuance of a VN asserting alleged violations of Illinois landfill regulationsregulation—, the landfill regulations do not apply, and the entire Former Landfill area, including the Former Fly Ash Holding Units, is actually a CCR surface impoundment subject to Part 845.

IEPA's argument appears to be this: the Former Fly Ash Holding Units were once, decades ago, used to store CCR and water. They no longer contain water and no longer receive CCR, but the fact that they once did and appear on a map in the vicinity of the Former Landfill somehow converts the (now closed) Former Landfill, which both SIPC and IEPA have recognized for decades as a landfill, into a CCR surface impoundment. This is an illogical and absurd result, and one that runs directly contrary to the definition of "CCR surface impoundment" in Part 257, Part 845, and Illinois landfill regulations.

As discussed *supra*, both Part 845 and the Illinois CCR Act incorporated Part 257's present tense language in their definitions of CCR surface impoundment. *See supra* at Part III.A.1. Those definitions must be construed to exclude units that have for decades operated as part of a landfill. In its preamble to Part 257, U.S. EPA made clear its intention to avoid exactly this type of result:

> EPA did not propose to require "closed" surface impoundments to "reclose." ***Nor did EPA intend, as the same commenters claim, that "literally hundreds of previously closed . . . surface impoundments—many of which were properly closed decades ago under state solid waste programs, have changed owners, and now have structures built on top of them—would be considered active CCR units***." Accordingly, the final rule does not impose any requirements on any CCR surface impoundments that have in fact "closed" before the rule's effective date—***i.e., those that no longer contain water and can no longer impound liquid***.

Final Rule, Updated Ex. 17 at 21,343 (emphasis added).

Treating the Former Fly Ash Holding Units, and indeed the entire Former Landfill, as CCR surface impoundments after years of regulating the area as a landfill thus flies in the face of

~~U.S. EPA's stated intent not to regulate units that "now have structures built on top of them" and that "no longer contain water and can no longer impound liquid." *Id.* It also contravenes the stated intent of the legislature, IEPA, and the Board for Part 845 to apply to the same universe of "CCR surface impoundments" as Part 257. As a practical matter, it also~~ upends years of settled expectations about the requirements for operation and closure, raising significant retroactivity and fairness concerns for this not-for-profit cooperative and its owners. The Board should reject IEPA's last-minute overreach and find that Part 845 does not apply to the Former Landfill, including the Former Fly Ash Holding Units.[~~23~~24]

IV. PETITION FOR AN ADJUSTED STANDARD.

If the Board declines to issue a finding of inapplicability and determines that the current and former ponds at issue in this Petition are "CCR surface impoundments," SIPC requests in the ~~alternative~~ that the Board grant an adjusted standard from 35 ~~Illinois Administrative~~Ill. Admin. Code Part 845 for the De Minimis Units and the Former Landfill (including the Former Fly Ash Holding Units). When petitioned, the Board may grant an adjusted standard from a rule of general applicability for persons who can justify such an adjustment under the applicable statutory factors. 415 Ill. Comp. Stat. 5/28.1(a).

In this Petition, SIPC is requesting an adjusted standard as described below and with the language presented in the attached Appendix A. The adjusted standard would result in the closure of all the units subject to this Petition consistent with Part 845 performance standards. It

[~~23~~24] The Indiana Office of Environmental Adjudication recently rejected similar attempts by environmental groups to argue that a portion of a former Duke Energy ash pond—which had been closed for decades—was subject to Part 257, stating that "an impoundment's regulatory status over three decades ago is not relevant to determining whether it is currently subject to the Federal CCR Rule." *In the Matter of Objection to the Issuance of Partial Approval of Closure/Post Closure Plan Duke Gallagher Generating Station Ash Pond System*, No. 20-S-J-5096 (OEA May 4, 2021), Ex. 27 at 14.

will also require groundwater monitoring and corrective action for each of the units consistent with Part 845 requirements. SIPC's proposed adjusted standard accounts for the unique characteristics of these units while ensuring no adverse impact to health or the environment.

As set forth below, the requested adjusted standard is warranted ~~here~~ based on the factors set forth in Section 28.1 of the Act, including consistency with Section 27(a). Accordingly, SIPC's request for an adjusted standard for the De Minimis Units and the Former Landfill (including the Former Fly Ash Holding Units) should be granted in the event the Board does not grant its request for a finding of inapplicability.

A. Regulatory Standard.

Section 28.1 of the Act describes the factors the Board must consider in granting an adjusted standard:

> (c) If a regulation of general applicability does not specify a level of justification required of a petitioner to qualify for an adjusted standard[~~24~~25], the Board may grant individual adjusted standards whenever the Board determines, upon adequate proof by petitioner, that:
>
> (1) factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;
>
> (2) the existence of those factors justifies an adjusted standard;
>
> (3) the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and
>
> (4) the adjusted standard is consistent with any applicable federal law.

415 Ill. Comp. Stat. 5/28.1(c)(1)–(4).

Part 845, which is a regulation of general applicability, does not specify a level of

~~24~~25 Part 845 does not specify a level of justification required to qualify for an adjusted standard.

justification or other requirements for an adjusted standard outside of those set forth in Section 28.1 of the Act. Any adjusted standard must also be "consistent" with subsection (a) of ~~section~~Section 27 of the Act, which provides that ~~"~~

> the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be[~~25~~26], and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution.~~"~~

415 Ill. Comp. Stat. 5/27(a).~~26~~27 Extremely high costs of controlling a particular pollutant have been determined to be economically unreasonable.[28] A treatment or control technology is not economically reasonable if it would not significantly improve environmental conditions or increase the aesthetic or recreational value of the receiving water body, especially given high associated implementation costs.[29]

As discussed below, granting the requested adjusted standard for the De Minimis Units

~~25~~26 The physical conditions at Marion Station and character of the area involved, including the character of surrounding land uses, zoning classifications, and the nature of the receiving body of water are discussed *supra* at Part II.A.

~~26~~27 The Illinois Court of Appeals has held that the Board's review is limited to the factors set forth in Sections 27(a) and 28.1: "The Act sets forth the factors the Board is to consider when determining whether to grant an adjusted standard. The Board lacks the authority to add to or rewrite the statutory factors." *Emerald Performance Materials, LLC v. Ill. Pollution Control Bd.*, 2016 IL App (3d) 150526, ¶ 27.

[28] *EPA v. Pollution Control Bd.*, 308 Ill. App. 3d 741, 752 (2d Dist. 1999) (upholding Board's finding that compliance would be economically unreasonable where "[a]ccording to the uncontested figures Swenson presented, the cost of installing a powder coating system would be more than 15 times the average control cost the Board historically has used to measure reasonableness"); *see also Granite City Div. of Nat. Steel Co. v. Ill. Pollution Control Bd.*, 155 Ill. 2d 149, 183 (1993) ("The Act specifically provides for variance and adjusted standard procedures by which the Board may relieve a discharger from compliance with its environmental control standards upon a showing of unreasonable economic or individual hardship.").

[29] *See, e.g.*, R 1981-024, *In the Matter of Proposed Water Quality Standard for Wood River (Olin, East Alton)*, Proposed Rule First Notice Order and Opinion of the Board, at 6 (Nov. 12, 1982); PCB 2009-038, *Ameren Energy Generating Co. v. IEPA*, Order and Opinion of the Board, at 42 (Mar. 18, 2010).

and the Former Landfill (including the Former Fly Ash Holding Units) is justified by the factors set forth in Section 28.1 and consistent with the factors set forth in Section 27.

B.____~~The~~ De Minimis Units Pond 3/3a and South Fly Ash Pond.

1. SIPC Requests an Adjusted Standard ~~Exempting the~~for De Minimis Units ~~from all Provisions of Part 845~~ Pond 3/3a and the South Fly Ash Pond.

~~To the extent the Board determines that the De Minimis Units are "CCR Surface Impoundments" under Part 845, the Board should grant an adjusted standard from section 845.100 exempting the De Minimis Units from the requirements of Part 845. SIPC's proposed language is set forth *infra* in Part IV.D.~~

In the event the Board denies SIPC request for a finding of inapplicability, the Board should grant the very limited adjusted standard from Part 845 for De Minimis Units Pond 3/3A and the South Fly Ash Pond set forth in Appendix A. The primary adjustments requested from Part 845 for Pond 3/3A and the South Fly Ash Pond are related to the timeframe for submitting operating and closure construction permit application materials. These adjustments are a necessary step to the application of the remaining Part 845 requirements to these units. As of the filing of this Petition, the applicability of Part 845 has been stayed for Pond 3/3A and the South Fly Ash Pond and deadlines for submitting these permit application materials have passed. *See* 35 Ill. Adm. Code §§ 845.230, 845.700. As explained further below, these units are also not subject to Part 257's CCR requirements. Thus, these adjustments simply provide a reasonable timeframe for SIPC to take the steps necessary to comply with the remainder of Part 845's requirements.

Under the adjusted standard, SIPC also proposes to commit itself to closing these units via removal in accordance with Section 845.740. Thus, the closure alternatives assessment for

the units would consider only closure by removal with off-site disposal or on-site disposal (to the extent practicable). These units will otherwise be subject to the remainder of applicable Part 845 requirements, including those related to permitting, location restrictions, design criteria, operating criteria, groundwater monitoring and corrective action, closure and post-closure care, and recordkeeping.[30]

2. The Factors Relating to Pond 3/3A and the ~~De Minimis Ponds~~South Fly Ash Pond Are Substantially and Significantly Different from the Factors and Circumstances on which the Board Relied in Adopting Part 845.

In determining whether to grant an adjusted standard, the Board first considers whether the factors relating to the ~~Petitioner~~Petition are significantly different from the factors considered in adopting the regulation at issue (Part 845). *See* 415 Ill. Comp. Stat. 5/28.1(c)(1). As discussed below, ~~here~~ they are here.

Like the Part 257 rules relating to surface impoundments, Part 845 was intended to address the risks posed by CCR surface impoundments that have resulted or are likely to result in groundwater contamination:

> The second purpose and effect of this regulatory proposal is to protect the groundwater within the state of Illinois. The proposed rule contains a program for groundwater monitoring and the remediation of contaminated groundwater resulting from leaking CCR surface impoundments. Groundwater has an essential and pervasive role in the social and economic well-being of Illinois, and is important to the vitality, health, safety, and welfare of its citizens. This rule has been developed based on the goals above and the principle that groundwater resources should be utilized for beneficial and legitimate purposes . . . Its purpose is to prevent waste and degradation of Illinois' groundwater. The proposed rule establishes a framework to manage the underground water resource to allow for maximum benefit of the State.

[30] As a "not-for-profit electric cooperative as defined in Section 3.4 of the Electric Supplier Act," SIPC is exempt from the financial assurance requirements in Part 845. 415 Ill. Comp. Stat. 5/22.59(f).

IEPA Statement of Reasons, Ex. 18 at 10; *see also id*. at 3–4 ("The presence of [certain contaminants that can be found in CCR] threatens groundwater as these contaminants are soluble and mobile. When the CCR surface impoundments are not lined with impermeable material, these contaminants may leach into the ***groundwater***, affecting the potential use of the ***groundwater***." (emphasis added)).

In its Second Notice Opinion, the Board likewise emphasized that "[a]mong the program's primary goals is protecting groundwater from contamination by CCR pollutants leaking from surface impoundments." Second Notice Opinion and Order at 1; *see also id*. at 3 ("In Illinois, CCR has caused groundwater contamination and other forms of pollution that are harmful to human health and the environment."); *id*. at 41 ("[T]he installation and operation of a leachate collection system in a new CCR surface impoundments serves the same purpose as in a landfill to reduce the head on the liner to reduce the threat of groundwater contamination."); *id*. at 48 ("The Board finds that the proposed leachate collection system provides additional groundwater protection against the potential threats of contamination from new CCR surface impoundments, while allowing the operation of the impoundments in compliance with Part 845.").[~~27~~31]

In determining which types of CCR surface impoundments pose the risks that Part 845 seeks to address, Part 257 is instructive; both because of its identical definition of "CCR surface impoundment" and the fact that IEPA did not perform any risk assessment of its own to support its Part 845 proposal and, instead, modeled its proposal on Part 257, which was based upon U.S. EPA's risk assessment. In other words, because the IEPA-proposed and Board-adopted Part 845

[~~27~~31] The Illinois legislature also made clear that the Illinois CCR Act is intended to address and prevent groundwater contamination caused by CCR surface impoundments. *See* 415 Ill. Comp. Stat. 5/22.59(a)(3) ("The General Assembly finds that . . . CCR generated by the electric generating industry has caused ***groundwater*** contamination . . . ." (emphasis added)).

rules were based upon Part 257, and IEPA never conducted a risk assessment, Part 845 too must be based upon U.S. EPA's risk assessment. U.S. EPA was clear that it was targeting for regulation those "units that contain *a large amount* of CCR managed with water, under a hydraulic head that promotes the rapid leaching of contaminants." Final Rule, Second Amended Pet. Updated Ex. 17 at 21,357 (emphasis added); Lewis Op., Ex. 36 at 4–10.

The factors relating to Pond 3/3A and the ~~De Minimis Units~~South Fly Ash Pond are substantially and significantly different than those that motivated U.S. EPA in Part 257, and also the state legislature, IEPA, and the Board in regulating CCR surface impoundments in Illinois with the aim of protecting Illinois groundwater. As discussed above, these and the other De Minimis Units do not contain large amounts of CCR under a hydraulic head that promotes rapid leaching of contaminants to groundwater. ~~With the exception of Pond B-3 (which no longer contains water or any CCR but, as discussed above, at one time received very limited CCR during a handful of short periods), the De Minimis Units~~Lewis Op., Ex. 36 at 8–10, 14. These units are not known to have ever received direct wastewater discharges of CCR. To the extent ~~the De Minimis Units~~they received historic, indirect discharges of CCR, the amounts of CCR were *de minimis* in nature. *Id.* The South Fly Ash Pond served as a secondary pond, receiving only decanted water from the former Emery Pond. Pond 3/3A received overflow from the Initial Fly Ash Holding Area and later the Fly Ash Holding Area Extension, stormwater runoff, coal pile runoff, and water from the plant's floor drains. Further, ~~with~~since the closure of Unit 4 and the former Emery Pond, all CCR generated at the Station ~~will be~~is handled dry ~~and none of the De Minimis Units will~~, meaning no unit on site is continuing to receive any ~~future~~ direct discharges of CCR.

As ~~Dr. Bradley~~Ms. Lewis explains in her ~~updated~~ report, the U.S. EPA determined *de minimis* units—like ~~those at issue in this Petition~~Ponds 3/3A and the South Fly Ash Pond—do not pose the risk to groundwater, human health, or the environment that Part 257 (or Part 845) seeks to prevent. *See* ~~Updated Bradley Op., Updated Ex. 28 at 21.~~Lewis Op., Ex. 36 at E-1–E-2, 11–20 (explaining the De Minimis Units "do not present the same level of risk as the surface impoundments evaluated in the US EPA CCR risk assessment.").

These forgoing facts, alone, are sufficient to establish that Pond 3/3A and the ~~De Minimis Units~~South Fly Ash Pond do not pose a similar threat to groundwater as the CCR surface impoundments that motivated Part 257 and Part 845. This conclusion is bolstered by the Pond Investigation Report. As described in the report, Haley & Aldridge reviewed the results of shake tests taken of pond sediment samples, as well as the results of Site groundwater monitoring wells, and determined that any potential presence of CCR in ~~the De Minimis Unit sediments~~Pond 3/3A and the South Fly Ash Pond should not be expected to cause and has not had a material adverse impact on groundwater at the Site. *See* Pond Investigation Rep., Ex. 29 at 26; *see also* ~~Updated Bradley Op., Updated Ex. 28 at 21–22~~Lewis Op., Ex. 36 at 11–16. Further, a site-specific assessment of the De Minimis Units, including Pond 3/3A and the South Fly Ash Pond, confirms there is no unacceptable risk to human health or the environment from CCR constituents that may have migrated to groundwater. Lewis Op., Ex. 36 at 17–20 (demonstrating no unacceptable risk to human health or ecological receptors). Thus, the requested adjusted standard may be granted based upon this ~~Amended~~ Petition.

Another important difference between ~~the De Minimis Units~~these units and the CCR surface impoundments that drove Part 845 is the burden of compliance. During the rulemaking,

IEPA argued, and the Board agreed, that certain Part 845 requirements, including expedited timeframes for compliance, were feasible and reasonable because units subject to Part 845 were also subject to Part 257, and therefore, owners had years to develop and implement compliance plans. *See* Final Order at 8–9. However, as discussed above, the De Minimis Units, including Pond 3/3A and South Fly Ash Pond, are not subject to Part 257, and thus, there has been no need to undertake compliance actions under Part 257, such as groundwater and location restriction assessments. Accordingly, the ~~feasibility~~timing and cost of Part 845 compliance for ~~these De Minimis Units~~Pond 3/3A and the South Fly Ash Pond differs substantially from the units the Board anticipated would be covered by Part 845, which were units subject to Part 257 and that already had years of Part 257 compliance activity that could be used to comply with Part 845.

3. The Factors Relating to the ~~De Minimis Units~~Pond 3/3A and the South Fly Ash Pond—which Differ from those Relied upon by the Board in Passing Part 845—Justify an Adjusted Standard.

The factors unique to the ~~De Minimis Units~~Pond 3/3A and the South Fly Ash Pond —namely that they are not subject to Part 257 and do not contain a large quantity of CCR managed under a hydraulic head—justify the requested adjusted standard. As discussed above, the De Minimis Units like Pond 3/3A and the South Fly Ash Pond simply do not present the risks that Part 845 was intended to address. ~~And~~Additionally, the adjusted standard is only requesting adjustments to provide a timeline for coming into compliance with the full scope of Part 845 in the event a finding of inapplicability is not granted for Pond 3/3A or the South Fly Ash Pond. Further, as discussed below, ~~regulation under Part 845 will be extremely costly and burdensome for no meaningful environmental benefit~~the adjusted standard will have no

adverse impact to human health or the environment. Accordingly, SIPC's adjusted standard is justified.

4. The Requested Adjusted Standard Will Not Result in Adverse Environmental or Health Effects.

The adjusted standard requested for Pond 3/3A and the South Fly Ash Pond "will not result in environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting" Part 845. 415 Ill. Comp. Stat. 5/28.1(c)(3).

As discussed above, the history of receipt of minimal~~, if any, direct CCR discharges makes clear that the De Minimis Units have minimal~~ amounts of CCR ~~and, therefore,~~indicate these units do not present the types of risk to human health and the environment that Part 845 (and Part 257) seek to address. ~~Moreover, one of the De Minimis Units – Pond B-3 – does not contain water, has not contained water since 2017, and has previously been cleaned up, removing any CCR that remained in it. As a result, none of the De Minimis Units have the characteristics of the CCR surface impoundments that drove the risks identified by EPA's risk assessment that warranted pond regulation under Part 257 – a substantial amount of CCR managed under a hydraulic head. The Pond Investigation Report confirms this conclusion. *See* Pond Investigation Rep., Ex. 29. Accordingly, as discussed above, Dr. Bradley has determined that the De Minimis Units are not expected to a have a substantial or significant adverse threat to human health or the environment warranting regulation under Part 845. Updated Bradley Op., Updated Ex. 28, at 21–22. As a result, Petitioner's~~ Neither of these units present a risk to human health or the environment. *See Gradient,* Human Health Risk Assessment, Marion Power Station (Dec. 20, 2024) ("Risk Assessment"), Ex. 37. Further, the units are not anticipated to pose a reasonable probability of adverse effects on health or the environment. Lewis Op., Ex. 36 at 4–20.

Significantly, the adjusted standard proposed for Pond 3/3A and the South Fly Ash Pond will require full compliance with the requirements of Part 845. The only adjustment being sought is for deadlines to submit operating and construction permit application materials. SIPC is further committing to close these units via a closure by removal, thereby removing any potential for sediments from these units to impact groundwater in the future. There is no adjustment being sought from the portions of Part 845 aimed at protecting human health and the environment, including its closure standards, groundwater monitoring requirements and corrective action requirements. Thus, the proposed adjusted standard will not result in any adverse environmental or health effects.

5. The Requested Adjusted Standard Is Consistent with Federal Law.

As discussed above, Pond 3/3A and the South Fly Ash Pond are not regulated as existing CCR surface impoundments or inactive CCR surface impoundments under Part 257. Accordingly, any adjustment from Part 845 for these units is consistent with federal law. *See* 35 Ill. Admin. § Code 104.406(i).

Further, Part 845 is not currently a federally designated program, thus Part 845 and Part 257 operate independently and concurrently. Owners and operators of CCR surface impoundments must comply with both sets of regulations and an adjustment from Part 845 has no impact on a requirement to comply with Part 257. Thus, the Board is free to grant an adjustment from Part 845 requirements without consideration of Part 257.

C. De Minimis Unit Former Pond B-3

1. SIPC Requests an Adjusted Standard for De Minimis Unit Former Pond B-3.

As explained above, former Pond B-3 was dewatered and cleaned to the clay in 2017, well before the promulgation of Part 845. Nothing remains within the unit other than an internal berm. Thus, it makes little sense to require Part 845 requirements related to continued operation or an extended closure construction application process apply to former Pond B-3, which poses no ongoing risk, does not currently have the characteristics of a CCR surface impoundment (lacking both water—other than the occasional stormwater—and sediment), and is nearly closed consistent with Part 845 closure by removal standards.

SIPC's adjusted standard for former Pond B-3 seeks to have those Part 845 provisions apply that are necessary to ensure the unit is closed consistent with Part 845 and in a way that is protective of human health and the environment. Under the adjusted standard, the unit will be subject to the same operating permit, and other operating requirements, applicable to units that completed closure prior to June 30, 2021. *See* 35 Ill. Admin. Code § 845.230(d)(3). SIPC will be required to submit a final closure plan for the unit to IEPA for review and approval and complete closure of former Pond B-3 in a manner consistent with Section 845.740's closure by removal requirements. Former Pond B-3 will also be subject to Part 845, Subpart F's groundwater monitoring and corrective action requirements and any recordkeeping requirements relevant to the Part 845 provisions that apply under the adjusted standard.

Given the unique nature of this unit, Part 845's location restrictions, design criteria, and other operating criteria, as explained below, do not make practical sense for former Pond B-3. Also, given that closure by removal consistent with Part 845 requirements is nearly complete

under the unit's current state, the adjusted standard seeks to have the closure process completed as quickly as possible, by requiring a closure plan and approval from IEPA but not requiring a closure construction permit. As explained further below, application of these requirements makes little sense given the unique nature of this unit and the adjusted standard will have no detrimental impact on human health or the environment.

2. The Factors Relating to former Pond B-3 Are Substantially and Significantly Different from the Factors and Circumstances on which the Board Relied in Adopting Part 845.

The factors relating to former Pond B-3 are substantially and significantly different from the factors considered by the Board in adopting Part 845 for the same reasons described in Section IV.B.2 above. *See* 415 Ill. Comp. Stat. 5/28.1(c)(1). Former Pond B-3 only ever accumulated small amounts of CCR compared to those CCR surface impoundments that were the subject of the risk assessment completed to justify promulgation of Part 257 and, correspondingly, Part 845. *See supra*, IV.B.2. Former Pond B-3 primarily served as a secondary pond, receiving decant water from Pond A-1. During three to four outages at Pond A-1, former Pond B-3 may have received discharges of fly ash from Units 1, 2, and 3 prior to their shut down in 2003. When former Pond B-3 was closed in 2017, tests confirmed its sediment was high in BTU content and at least a portion of the removed sediment was burned as fuel. This supports the conclusion that former Pond B-3 differs from the types of units intended to be regulated under Part 845 because it did not ever hold significant amounts of CCR. *See* Lewis Op. Ex. 36.

Additionally, since 2017, unlike all (or nearly all) of the units regulated under Part 845, this unit has been cleaned of sediments and no longer holds water, except in a small area of the former pond where stormwater may collect after storms before drainage and evaporation.

Samples taken of the berm at former Pond B-3 indicate it contains little, if any, CCR material. Pond Investigation Rep, Ex. 29 at 12. This further distinguishes former Pond B-3. There is no ongoing management of sediment with water, let alone CCR with water, that would justify the unit being subject to many of the Part 845 requirements related to ongoing operation, such as location restrictions, design criteria, and operating criteria. Many of these portions of Part 845 address physical circumstances that do not exist at former Pond B-3. *See generally* Second Notice Opinion and Order at 32–61. Instead, former Pond B-3 is most similar to a unit that underwent closure prior to the promulgation of Part 845. Thus, it makes sense for former Pond B-3 to be subject to the same operating permit, design criteria, and operating criteria applicable to such units under Part 845. This is what SIPC has proposed in its adjusted standard.

Further, given that former Pond B-3 has been cleaned to the clay, the only material that remains is a small internal berm with little, if any, CCR. Pond Investigation Rep., Ex. 29 at Appendix C. It makes little sense for closure of the unit under 845 to be completed via any method other than closure by removal (consistent with Section 845.740). Additionally, due to the limited steps that remain to complete closure of the unit by removal and the fact that the berm contains little, if any, CCR, it makes little practical sense for the unit to be subject to the full closure construction permitting requirements of Part 845.

The proposed adjusted standard for former Pond B-3 takes into account the unit's unique characteristics, while ensuring it closes with IEPA oversight, consistent with Part 845 closure performance standards, and subject to groundwater monitoring and corrective action requirements to protect against any risk to human health and the environment.

3. The Factors Relating to the Former Pond B-3—which Differ from those Relied upon by the Board in Passing Part 845—Justify an Adjusted Standard.

The factors unique to former Pond B-3 —namely that it is not subject to Part 257, does not contain, and has never contained, a large quantity of CCR managed under a hydraulic head, and has been dewatered and cleaned to the clay—justify the requested adjusted standard. As discussed above, former Pond B-3 simply does not present the risks that Part 845 was intended to address. Additionally, as discussed below, the adjusted standard for former Pond B-3 will have no adverse impact to human health or the environment. Accordingly, SIPC's adjusted standard is justified.

4. The Requested Adjusted Standard Will Not Result in Adverse Environmental or Health Effects.

~~requested~~ The adjusted standard requested for former Pond B-3 "will not result in environmental or health effects substantially ~~and~~or significantly more adverse than the effects considered by the Board in adopting" Part 845. 415 Ill. Comp. Stat. 5/28.1(c)(3).

~~Finally, granting the adjusted standard will not leave the De Minimis Units unregulated. To the contrary, the De Minimis Units that still contain water and are now acting as storm water ponds (Ponds 3 (including 3A), 4, 6, and the South Fly Ash Pond) have been and will continue to be covered by Marion Station's NPDES permit as part of the flow to permitted Outfall 002. *See* 2012 NPDES Permit, Ex. 13. Any groundwater impact from those storm water ponds, as well as former Pond B-3, also remains subject to Part 620 groundwater standards. Furthermore, as discussed below, Pond 6 will be monitored and regulated as part of the Former Landfill area after the landfill undergoes closure pursuant to Part 811.~~

As discussed above, the history of receipt of minimal amounts of CCR indicate this unit does not present the types of risk to human health and the environment that Part 845 and Part 257 seek to address. *See* Lewis Op., Ex 36. B-3 has been cleaned of sediment and no longer contains water (other than the occasional stormwater). It does not currently present a human health or environmental risk. *See* Risk Assessment, Ex. 37 (identifying no unacceptable risks to human or ecological receptors resulting from CCR exposures associated the De Minimis Units). Further, the former Pond B-3 is not anticipated to pose a reasonable probability of adverse effects on health or the environment. Lewis Op., Ex. 36 at 4–20.

More importantly, while evidence demonstrates that this unit does not and would not be expected to pose any risk to human health or the environment (*id.*) the adjusted standard also requires compliance with all Part 845 requirements necessary to ensure that is and remains the case. For example, the adjusted standard requires that closure of former Pond B-3 is completed consistent with Part 845 closure standards. It also requires that former Pond B-3 be subject to the groundwater monitoring and corrective action requirements in Part 845, meaning, if former Pond B-3 is causing or contributing to exceedances of the groundwater protection standards in Section 845.600, SIPC will be required to undertake corrective action to remediate that contamination. Thus, to the extent former Pond B-3 poses any risk to human health or the environment (and there is no indication that it does), those risks will be addressed under the adjusted standard.

5. The Requested Adjusted Standard Is Consistent with Federal Law.

As discussed above, the De Minimis Units, including former Pond B-3, are not regulated as existing CCR surface impoundments or inactive CCR surface impoundments under Part 257.

Accordingly, ~~exempting them~~any adjustment from ~~regulation under~~ Part 845 for former Pond B-3 is consistent with federal law. *See* 35 Ill. ~~Adm~~Admin. Code § 104.406(i).

Further, Part 845 is not currently a federally designated program, thus Part 845 and Part 257 operate independently and concurrently. Owners and operators of CCR surface impoundments must comply with both sets of regulations and an adjustment from Part 845 has no impact on a requirement to comply with Part 257. Thus, the Board is free to grant an adjustment from Part 845 requirements without consideration of Part 257.

6. ~~The Efforts Necessary for the De Minimis Units to Comply with Part 845 Are Not Economically Reasonable~~Consideration of Section 27(a) Factors.

Existing physical conditions, the character of the area involved, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution all support granting the adjusted standard for former Pond B-3. 415 Ill. Comp. Stat. 5/27(a). There are costs associated with the Part 845 requirements from which SIPC seeks an adjustment at former Pond B-3. Additionally, given the physical condition of the unit and surrounding area, these requirements make no practical sense as applied because, as explained above, former Pond B-3 was cleaned and closed years ago. A unit such as this simply does not cause a hazard, risk of structural instability, or contain material that could contribute fugitive dust, for example. The unit also poses no active threat to human health or the environment, including groundwater or a neighboring water body. Risk Assessment, Ex. 37; Lewis Op., Ex. 36.

D. De Minimis Unit Pond 4

1. SIPC Requests an Adjusted Standard for De Minimis Unit Pond 4

SIPC requests two adjustments from Part 845 requirements for De Minimis Unit Pond 4. First, like Pond 3/3A, the South Fly Ash Pond, and former Pond B-3, the adjusted standard

provides 12 months from its entry for SIPC to submit an operating permit application for Pond 4. Again, this adjustment is necessary because the deadline for submitting an initial operating permit application under Part 845 has passed (*see* 35 Ill. Admin. Code §§ 845.230; § 845.700) and Pond 4 is not subject to Part 257, so SIPC will not have already undertaken the activities necessary to compile the operating permit application. This adjustment will allow a reasonable period of time for SIPC to prepare its operating permit application for Pond 4.

Second, the adjusted standard provides an adjustment to the Part 845 closure construction permit application deadline. Under the adjusted standard, SIPC will be required to either initiate closure or begin retrofitting Pond 4, by way of submitting a construction permit application, upon the earlier of the following occurrences: (1) within 12 months of a finding that CCR within Pond 4 are the source of an exceedance of the Section 845.600 groundwater protection standards, or (2) the end of the life of the Marion Station. Thus, the adjusted standard will allow SIPC to continue the operation of Pond 4 through the end of Marion Station's life, so long as it is not contributing to groundwater contamination, as measured through a Part 845 compliant groundwater monitoring program. If Pond 4 is found to contribute to a groundwater protection standard exceedance, this extension no longer applies and SIPC must submit a closure or retrofit construction permit for Pond 4 within twelve months of that finding. As explained below, these adjustments account for Pond 4's unique condition and will be protective of health and the environment.

~~In evaluating a petition for an~~Under the adjusted standard, ~~the Board must take into account the technical feasibility and economic reasonableness of reducing a particular type of pollution. 415 Ill. Comp. Stat. 5/27(a). Extremely high costs of controlling a particular pollutant~~

have been determined to be economically unreasonable.[28] A treatment or control technology is not economically reasonable if it would not significantly improve environmental conditions or increase the aesthetic or recreational value of the receiving water body, especially given high associated implementation costs.[29] As discussed below, compliance with Part 845 is not reasonable for the De Minimis Units, which pose little to no risk to the environment and which will continue to be monitored and regulated pursuant to Marion Station's NPDES Permit and Part 620 groundwater regulations. Pond 4 will be subject to the remainder of Part 845's requirements, including any other applicable permitting requirements, location restrictions, design criteria, operating criteria, groundwater monitoring and corrective action requirements, closure and post-closure care requirements, and recordkeeping requirements. Through its adjusted standard, SIPC is also committing to closing this unit via closure by removal requirements (35 Ill. Admin. Code § 845.740). Thus, the closure alternatives assessment for the unit would consider only closure by removal with off-site disposal or on-site disposal (to the extent practicable).

[28] *EPA v. Pollution Control Bd.*, 308 Ill. App. 3d 741, 752 (2d Dist. 1999) (upholding Board's finding that compliance would be economically unreasonable where "[a]ccording to the uncontested figures Swenson presented, the cost of installing a powder coating system would be more than 15 times the average control cost the Board historically has used to measure reasonableness"); *see also Granite City Div. of Nat. Steel Co. v. Ill. Pollution Control Bd.*, 155 Ill. 2d 149, 183 (1993) ("The Act specifically provides for variance and adjusted standard procedures by which the Board may relieve a discharger from compliance with its environmental control standards upon a showing of unreasonable economic or individual hardship.").

[29] *See, e.g.*, R 1981-024, *In the Matter of Proposed Water Quality Standard for Wood River (Olin, East Alton)*, Proposed Rule First Notice Order and Opinion of the Board, at 6 (Nov. 12, 1982); PCB 2009-038, *Ameren Energy Generating Co. v. IEPA*, Order and Opinion of the Board, at 42 (Mar. 18, 2010).

Requiring SIPC to comply with Part 845 for the De Minimis Units, including for operation and closure, would require SIPC to incur substantial costs to mitigate risks that do not exist,[30] including costs to do the following:

- Perform location restriction demonstrations including certification for each De Minimis Unit (35 Ill. Admin. Code §§ 845.300–340);
- Perform a hydrogeological site investigation for each De Minimis Unit (35 Ill. Admin. Code § 845.620);
- Install a groundwater monitoring system for each De Minimis Unit and collect groundwater monitoring data on at least a quarterly basis for at least 5 years with the potential to reduce the frequency to semiannually thereafter (35 Ill. Admin. Code § 845.650);
- Prepare a hazard potential classification assessment and certification (35 Ill. Admin. Code § 845.400(a)(2));
- Prepare a structural stability assessment and certification (35 Ill. Admin. Code § 845.450(e));
- Prepare a safety factor assessment and certification with the operating permit application and subsequent annual inspections (35 Ill. Admin. Code § 845.460(b));
- Prepare a fugitive dust control plan and certification with the operating permit application and subsequent annual inspections (35 Ill. Admin. Code § 845.500(b)(7));
- Close the units in place or by removal (35 Ill. Admin. Code § 845.710); and
- Perform numerous other assessments and analyses (*see, e.g.*, 35 Ill. Admin. Code §§ 845.510(e)(3), .530, .540).[31]

Many of these requirements make no practical sense as applied to the De Minimis Units, one of which (Pond B-3) was cleaned and closed years ago, another of which (Pond 6) will be addressed as part of the landfill closure under the Part 811 landfill requirements, and all of which

[30] As mentioned above, because the De Minimis Units are not subject to Part 257, none of these actions have been undertaken to date and all compliance costs would be attributed to Part 845.

[31] Due to the prescriptive nature of Part 845, technically feasible compliance alternatives to meet the requirements of Part 845 are very limited.

~~received and contain little, if any, CCR. Such units simply do not cause a hazard, risk of structural instability, or contain material that could contribute fugitive dust, for example.~~

2. The Factors Relating to Pond 4 Are Substantially and Significantly Different from the Factors and Circumstances on which the Board Relied in Adopting Part 845.

The factors relating to the Pond 4 are substantially and significantly different from the factors considered in adopting Part 845 for the same reasons described in Section IV.B.2, above. See 415 Ill. Comp. Stat. 5/28.1(c)(1). Pond 4 only ever accumulated small amounts of CCR compared to those CCR surface impoundments that were the subject of the risk assessment completed to justify promulgation of Part 257 and, correspondingly, Part 845. *See supra*, IV.B.2. Pond 4 never directly received CCR. It received decant water from Ponds 1 and 2, stormwater runoff from the coal pile, and overflow water from Pond 6. As part of regular maintenance activities at the Marion Station in 2010, Pond 4 was dewatered, and its contents removed. The majority of removed materials were dark in color, taken to the coal yard, and burned as fuel at the Station. This would not have been possible if the materials were CCR or high in CCR content. The Pond Investigation Report found that the materials sampled in Pond 4 contained high carbon content, which is also inconsistent with a finding that the materials are CCR or high in CCR content. Pond Investigation Rep., Ex. 29 at 8-10. This supports the conclusion that Pond 4 differs from the types of units intended to be regulated under Part 845 because it did not ever hold significant amounts of CCR. *See* Lewis Op., Ex. 36.

Additionally, unlike the CCR surface impoundments regulated under Part 845, Pond 4's primary purpose is not CCR management. Rather, its primary purpose has historically been and

continues to be stormwater management of the coal pile: an operating need for as long as the Marion Station is in operation.

3. The Factors Relating to Pond 4—which Differ from those Relied upon by the Board in Passing Part 845—Justify an Adjusted Standard.

The factors unique to Pond 4 —namely that it is not subject to Part 257, does not contain and has never contained a large quantity of CCR managed under a hydraulic head, and is primarily used for coal pile stormwater management—justify the requested adjusted standard. As discussed above, Pond 4 simply does not present the risks that Part 845 was intended to address. Additionally, as discussed below, the adjusted standard for Pond 4 will have no adverse impact to human health or the environment. Accordingly, SIPC's adjusted standard is justified.

4. The Requested Adjusted Standard Will Not Result in Adverse Environmental or Health Effects.

The adjusted standard requested for Pond 4 "will not result in environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting" Part 845. 415 Ill. Comp. Stat. 5/28.1(c)(3).

Extending the closure construction permit deadline for Pond 4 will not have an adverse impact on human health or the environment. Pond 4 will still be subject to the groundwater monitoring and corrective action requirements in Part 845. Accordingly, if the Pond contributes to a groundwater protection standard exceedance, it will result in corrective action, similar to any other unit regulated under Part 845. Additionally, as explained above, to the extent Pond 4 is found to have contributed to an exceedance of the groundwater protection standards, the extension of its closure construction permit deadline to the end of the life of Marion Station will no longer apply. Instead, SIPC will be required to submit a closure or retrofit construction permit

within 12 months of such a finding. Thus, the adjusted standard ensures that Pond 4 is monitored for groundwater impacts and that any groundwater impacts will be remediated, resulting in no adverse impact on health or the environment.

Additionally, Pond 4 does not present a current risk to human health or the environment. Risk Assessment, Ex. 37 (identifying no unacceptable risks to human health or ecological receptors resulting from CCR exposures associated the De Minimis Units); Andrew Bittner, M.Eng., P.E. *Closure Impact Assessment, Pond 4* at 2 (Dec. 20, 2024) ("Bittner Op."), Ex. 38. Further, the units are not anticipated to pose a reasonable probability of adverse effects on health or the environment. Lewis Op., Ex. 36 at 4–20.

The closure impact assessment for Pond 4 further concludes that there is no reduction in risk to health or the environment that would be achieved through the closure of Pond 4, thus the extension of the closure construction permit deadline will not have an adverse impact on health or the environment. Bittner Op., Ex. 38 at 12. Specifically, this report demonstrates there is little risk of flood related CCR release from Pond 4; based on current groundwater monitoring data, Pond 4 is not the likely source of any potential groundwater protection standard exceedances; closure of Pond 4 is unlikely to affect the surface water quality in Little Saline Creek (however, construction activity associated with a closure or retrofit could increase the potential for surface runoff and sedimentation to the creek); and construction activities associated with closure or retrofit could result in air quality impacts (e.g., related to fugitive dust, green-house gas emissions) in greater amounts than the current status quo. Bittner Op., Ex. 38 at 12–16. Thus, extending the time period for closing Pond 4 will not have an adverse human health or environmental impact.

5. The Requested Adjusted Standard Is Consistent with Federal Law.

As discussed above, Pond 4 is not regulated as an existing CCR surface impoundment or inactive CCR surface impoundment under Part 257. Accordingly, any adjustment from Part 845 for Pond 4 is consistent with federal law. *See* 35 Ill. Admin. Code § 104.406(i).

Further, Part 845 is not currently a federally designated program, thus Part 845 and Part 257 operate independently and concurrently. Owners and operators of CCR surface impoundments must comply with both sets of regulations and an adjustment from Part 845 has no impact on a requirement to comply with Part 257. Thus, the Board is free to grant an adjustment from Part 845 requirements without consideration of Part 257.

6. Consideration of Section 27(a) Factors.

Existing physical conditions, the character of the area involved, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution all support granting the adjusted standard for Pond 4. 415 Ill. Comp. Stat. 5/27(a).

~~Compliance with Part 845 would also require that SIPC~~ If Pond 4 does not receive the requested adjusted standard, SIPC will be required to either retrofit or close the ~~De Minimis Units~~unit. *See* 35 Ill. Admin Code. §§ 845.700–.770. However, SIPC ~~plans to continue using Ponds 3, 6, 4, and the South Fly Ash Pond~~requires the continued use of Pond 4 into the foreseeable future for ~~storm water~~stormwater management at Marion Station, particularly due to the location of the coal pile. Accordingly, SIPC must either close ~~those ponds~~the pond by removal ***and then rebuild ~~them~~ as storm water basins,it*** as a stormwater basin or retrofit ~~them~~it by cleaning ~~them~~it (i.e., removing materials within the Pond) and installing a liner. Due to the additional exorbitant costs of dredging and installing liners ~~in Ponds 3, 4, 6, and the Fly Ash~~

~~Pond~~, closure by removal is the least costly, technically feasible alternative. ~~As discussed below, that~~That "least costly" alternative would still cost SIPC ~~nearly $15 million~~a significant amount in capital costs (with ~~little to no~~no human health or environmental benefit). *See* Supp. Liss Dec., Ex. 30 at ¶ 6; Bittner Op., Ex. 38. This cost does not include the cost of constructing a new ~~storm water basins as~~stormwater basin, which would be needed to replace ~~the De Minimis Units. *Id.*~~Pond 4. Supp. Liss Dec., Ex. 30 at ¶ 6.

Significantly, this adjusted standard does not propose to put economic reasonableness considerations above protection of human health and the environment. While there are significant costs with closing or retrofitting Pond 4 (and in the event of closure building a new stormwater basin to replace Pond 4), SIPC is committing to closing or retrofitting Pond 4 earlier than at the end of Marion Station's life if Pond 4 is found to potentially impact human health or the environment (i.e. if it is contributing to Section 845.600 groundwater protection standard exceedances).

~~The costs inherent in Part 845 compliance are exacerbated by the fact that the De Minimis Units are not and have not been subject to Part 257. Accordingly, compliance with Part 845 deadlines would, in some cases, be infeasible and, in many cases, more costly on the aggressive timeline adopted in Part 845, which assumed prior Part 257 compliance activity.~~

~~Andrews Engineering has performed a preliminary analysis of the costs of compliance associated with major components of Part 845 and conservatively estimates that closing the De Minimis Units pursuant to Part 845 would cost SIPC at least $14.85 million in capital and other upfront costs and nearly $100,000 per year in annual O&M costs (not including inflation) for a minimum of three years.[32]Liss Dec., Ex. 9 at ¶ 18. In contrast, SIPC calculated the operating~~

~~[32] This does not include the cost of constructing new storm water basins as needed to replace the De Minimis Units. This also does not include the costs of expediting work to meet Part 845's stringent~~

and maintenance costs of compliance with Marion Station NPDES permit requirements and Part 620 for the De Minimis units to be approximately $286,750 per year for three years.[33] This annual cost covers electrical and mechanical maintenance, power to operate the on-site pump system, pond maintenance, and sampling both the outfalls and groundwater monitoring wells.

This significant cost differential is not reasonable on its face, considering the minimal (if any) benefit conferred by compliance with Part 845. Moreover, should SIPC be required to comply with Part 845 for the De Minimis Units, significant adverse consequences could occur for those who already live in low-income rural Illinois communities. SIPC is a not-for-profit electric cooperative owned directly by its members, serving customers and businesses in more than twenty southernmost counties of Illinois. SIPC is defined as a "Small Business" by the U.S. Small Business Administration, but it is the largest taxpayer in Williamson County.

SIPC is currently ineligible to borrow subsidized funds to pay the costs required to comply with Part 845. When the costs of running its business suddenly increase, for example, to comply with Part 845, SIPC's already stretched working capital (short-term commercial paper at National Rural Utility Cooperative Financing Corporation) must be stretched even further to cover the costs. If the new costs are greater than the available working capital, SIPC will be forced to borrow on a short-term line-of-credit and possibly from an unsecured borrowing source

Minimis Units. This also does not include the costs of expediting work to meet Part 845's stringent deadlines, or alternative Board-ordered deadline, whichever may apply. The De Minimis Units are not subject to Part 257 and, thus, no Part 257 compliance activities have been performed although Part 257 coverage and related compliance activities were assumed by the Board in setting the Part 845 compliance deadlines for covered units. This also does not include additional costs that may be incurred due to potential ambiguities in the rules and does not include all plant personnel time.

[33] SIPC will have to continue paying these operational costs even if the De Minimis Units are closed under Part 845 and then replaced with storm water basins. Accordingly, the Part 845-related O&M costs that would apply if SIPC were required to close the units under Part 845 would be on top of SIPC's routine operational O&M costs for storm water management.

at higher rates until such time as it can retire the borrowings from future member rates. SIPC will be forced to pass along all costs of meeting these new requirements to its member-owners. SIPC's member-owners have "full requirement" wholesale power requirements contracts, which means they must buy 100% of their energy needs from SIPC. They cannot go to an alternative supplier for lower cost energy. To leave SIPC, member-owners would have to pay prohibitively significant exit costs. For decades, SIPC's reliable, affordable electricity has been one of the key drivers of economic growth and prosperity in these communities. Increased costs of electric energy, particularly in rural areas served by cooperatives, will have negative impacts on rural economic development and jobs. In cases where small businesses like SIPC are affected, Section 27(a) requires the Board to consider and apply economically reasonable ways to minimize pollution and also mitigate impacts to facilities that can least afford them. 415 Ill. Comp. Stat. 5/27(a).

Not only are the capital and operating costs associated with Part 845 compliance significant, compliance with Part 845 would not provide any meaningful benefit to human health or the environment because, as discussed above, the *de minimis* units do not present the magnitude of risk that warranted regulation under Part 257 and Part 845. This is especially true given that the units would remain subject to applicable NPDES permit and Part 620 standard requirements. Accordingly, any minimal benefit from layering on another set of onerous requirements under Part 845 would be dwarfed by the extreme costs of compliance for SIPC and its members.

Finally, there is nothing in the Part 845 rulemaking record to combat the conclusion that Part 845 is not economically reasonable as applied to current and former ponds at issue in this

petition. IEPA did not perform its own economic reasonableness analysis of the Part 845 rulemaking but instead relied on U.S. EPA's technical feasibility and economic reasonableness determination in Part 257. IEPA simply concluded because "owners and operators of CCR surface impoundments are already subject to 40 CFR 257, many of the technical and economic requirements applicable to owners and operators in the proposed Part 845 are already required under federal law." IEPA Statement of Reasons, Ex. 18 at 33–34. Part 257, however, only applies to CCR surface impoundments that contained a significant (not *de minimis*) amount of CCR and liquids as of October 19, 2015. U.S. EPA did not consider units such as the De Minimis Units in promulgating Part 257, and therefore, neither did IEPA's proposal or the Board in promulgating Part 845.[34] Moreover, because they are not subject to Part 257, the De Minimis Units are **not** already subject to "many of the technical and economic requirements applicable to owners and operators in the proposed Part 845." IEPA Statement of Reasons, Ex. 18 at 33–34. In other words, neither IEPA nor the Board determined that Part 845 was economically reasonable as applied to the De Minimis Units (or, as discussed below, the Former Fly Ash Holding Units).

In short, the costs of Part 845 compliance are significant, and any additional benefits to human health and the environment are minimal, if any. Compliance with the requested relief, alternatively, would allow SIPC to continue to manage plant discharges and storm water in the De Minimis Units without causing adverse impacts to human health or the environment and without incurring additional O&M or capital cost that will have to be passed along to SIPC's

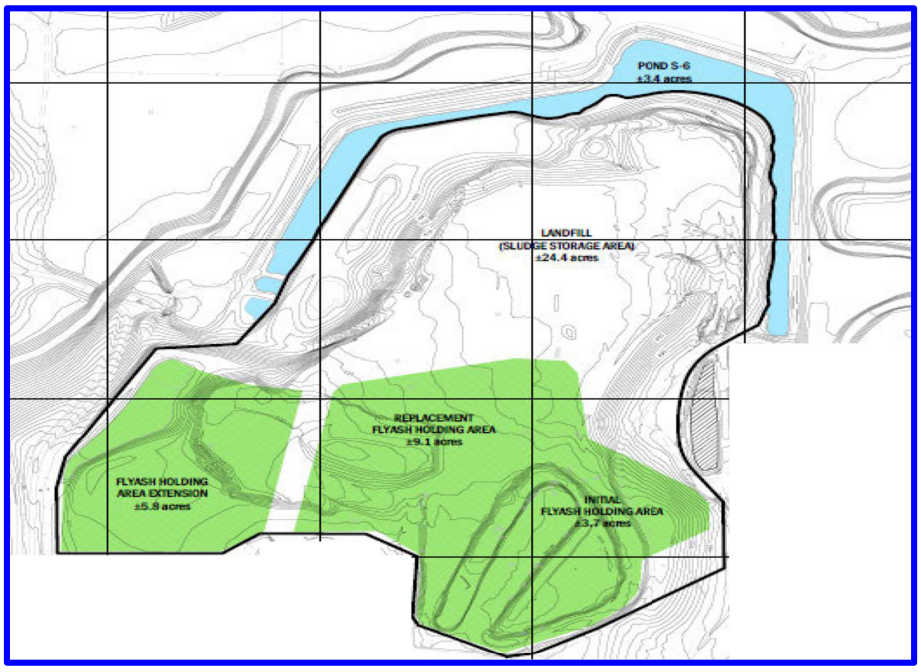
[34] The Board requested an analysis from the Department of Commerce and Economic Opportunity, but none was performed. Second Notice Opinion and Order at 8.

~~members. Compliance with Part 845 is economically unreasonable, and SIPC's request for an adjusted standard should be granted.~~

~~C~~E. The Former Fly Ash Holding Units and Pond 6

1. SIPC Requests an Adjusted Standard ~~Exempting~~For the Former Landfill Area (including the Former Fly Ash Holding Units) and Pond 6 ~~from all Provisions of Part 845~~.

~~To the extent the Board determines that~~SIPC proposes an adjusted standard that would apply to the Former Landfill Area (including the Former Fly Ash Holding Units) and Pond 6 ~~are "CCR Surface Impoundments" under Part 845, the Board should grant an adjusted standard from Section 845.100 exempting the~~ . Given the multiple units involved, below is a diagram (pulled from Ex. 3 of the initial Petition) depicting the area discussed in this Section for ease of reference.[32]



[32] As explained above, the Initial Fly Ash Holding Area, Replacement Fly Ash Holding Area, and Fly Ash Holding Extension make up the "Former Fly Ash Holding Units." The Former Landfill consists of the entire "Landfill" area outlined in bold. Pond 6, labeled as Pond S-6 on this diagram, is located to the north of the Former Landfill.

The Former Fly Ash Holding Units ~~and Pond 6[35] from the requirements of Part 845. The~~(which as explained above, consists of the Initial Fly Ash Holding Area, the Replacement Fly Ash Holding Area, and the Fly Ash Holding Area Extension) are within the footprint of the Former Landfill at Marion Station ~~and thus, are~~. The Former Landfill has been historically regulated as a permit-exempt landfill under Illinois landfill regulations and, thus, is required to be covered pursuant to the Part 811 ~~closure plan~~Closure Plan SIPC has already submitted to IEPA ~~for the~~. Former Landfill Closure Plan, Ex. 10. As discussed above, that ~~landfill closure plan~~Closure Plan was submitted to IEPA at IEPA's request in connection with IEPA's claims that the Former Landfill failed to have the permanent cover required by Part 811. ~~Pond 6 was built as, and under the~~That closure plan ~~will continue to operate as, a storm water~~involves closing the Former Landfill in place with a cover system (which would include the areas consisting of the Former Fly Ash Holding Units) while allowing De Minimis Unit Pond 6, located to the north of the Former Landfill, to serve as a stormwater pond to manage ~~landfill~~ runoff ~~and will be operated and maintained as part of SIPC's~~ .

~~Part 811 landfill closure and post-closure obligations. The Initial Fly Ash Holding Area, the Replacement Fly Ash Holding, the Fly Ash Holding Area Extension, and Pond 6 will continue also to be subject to all other applicable environmental laws and regulations, including the groundwater quality regulations set forth in 35 Ill. Admin. Code Part 620.~~The adjusted standard proposes to go beyond the Part 811 Closure Plan and close the entirety of the Former Landfill (including the Former Fly Ash Holding Units) and Pond 6 in accordance with Part 845

~~[35] An adjusted standard exempting Pond 6 from coverage under Part 845 is warranted both on the grounds that it is a *de minimis* unit and because it can and should be managed as part of the landfill closure pursuant to Part 811.~~

performance standards and subject to additional Part 845 requirements. Given the unique nature of this area (as further explained below), however, SIPC requests three categories of adjustment from Part 845 requirements for the Former Landfill (including the Former Fly Ash Holding Units) and Pond 6.

First, the adjusted standard provides deadlines for submittal of operating and closure construction permit applications. This adjustment is a necessity resulting from the fact that this area is not regulated under Part 257 and that Part 845 deadlines for permit applications have passed during the pendency of this adjusted standard proceeding. This adjustment also allows time to pursue the unique opportunity to close this area via removal while sending the CCR for beneficial use, as described below. The adjusted standard requests an 18-month period to submit a final operating permit application and closure construction permit application for this area.

Second, the adjusted standard provides an adjustment from the closure alternatives assessment requirements in Section 845.710. Rather than conduct a closure alternatives assessment, the adjusted standard would require this area to close via closure by removal with beneficial use of the CCR remaining in the area, if SIPC determines, with IEPA oversight, that this is a feasible closure option. If not, the Former Landfill (including the Former Fly Ash Holding Units) will be closed in accordance with 35 Ill. Admin. Code § 845.750's closure with final cover system requirements while Pond 6 will be closed in accordance with 35 Ill. Admin. Code § 845.740's closure by removal requirements.

Third, in the event closure by removal with beneficial use of CCR is a viable closure option for the Former Landfill area, the adjusted standard would allow Petitioner to request additional time, in two-year increments, from IEPA to complete closure, so long as CCR in the

area continues to be removed for beneficial use. The adjusted standard includes requirements for Petitioner to provide a narrative demonstration to IEPA explaining why the extension is needed, how it will allow for the continued "beneficial use of CCR," and the estimated date upon which "beneficial use of CCR" will be complete. No more than five two-year extensions will be allowed.

With the exception of these adjustments, the Former Landfill Area will be subject to any remaining applicable Part 845 requirements, including those related to permitting, location restrictions, design criteria, operating criteria, groundwater monitoring and corrective action, closure and post-closure care, and recordkeeping.

2. The Factors Relating to the Former Landfill, including the Former Fly Ash Holding Units, and Pond 6 Are Substantially and Significantly Different from the Factors and Circumstances the Board Relied on in Adopting Part 845.

The factors relating to the Former Landfill Area, including the Former Fly Ash Holding Units, and Pond 6 differ significantly from the factors that were considered and motivated the Board in adopting Part 845. As noted *supra* at Part IV.B.2, the legislature, IEPA, and the Board were all motivated to address the same risk that U.S. EPA sought to address in Part 257 for surface impoundments[~~36~~33]—the risk posed by CCR surface impoundments that contain large amounts of CCR managed with water under a hydraulic head. The Former Fly Ash Holding Units and the Former Landfill's ~~storm water~~stormwater pond, Pond 6, are different, in several important respects.

[~~36~~33] As mentioned above, the Former Landfill ceased receiving CCR prior to October 2015, and thus, it is not subject to Part 257's landfill requirements. Consistent with that assertion, in its Landfill VN, IEPA asserted that Illinois's landfill regulations, Part 811 *et seq.*, were applicable, not Part 257.

First, the Former Fly Ash Holding Units do not contain water and have not contained water for at least thirty years. Accordingly, any CCR remaining in the Fly Ash Holding Units is not under a hydraulic head and presents far less risk to groundwater than the units the Board sought to regulate in Part 845 (which the Board acknowledged when it declined to extend the Part 845 rulemaking to CCR landfills). *See* ~~Updated Bradley Op., Updated Ex. 28 at 21–22. As discussed above, Pond 6 contains *de minimis* amounts of CCR, and thus likewise does not present the risk targeted by Part 845.~~ Lewis Op., Ex. 36, at 11–14.

Second, the Former Fly Ash Holding Units are now covered by and a part of the Former Landfill, which operated and was regulated as a permit-exempt, on-site landfill for decades under Part 815~~, and which SIPC intends to close consistent with the Part 811 landfill regulations. As discussed below, current Illinois landfill regulations require that SIPC install a cover that is equally as protective as the cover that would be required by Part 845. *See* Updated Bradley Op., Updated Ex. 28 at 21; *see also* 35 Ill. Adm. Code §§ 314(a), (b), (c). The regulations also require post-closure care, maintenance, and monitoring for the entire landfill area which, in this case, includes Pond 6. *See* 35 Ill. Adm. Code § 811.302 (post-closure care), § 811.319 (groundwater monitoring), § 811.322 (final slope and stabilization). However, the~~. The Board clearly did not intend to regulate CCR landfills under the adopted Part 845 surface impoundment rules, and in fact, it opened a subdocket to address possible, future CCR landfill regulations. Second Notice Opinion and Order at 12; ~~IPCB Dkt.~~*see also* Illinois Pollution Control Board Docket No. R2020-19(A). ~~One would expect there to be many different requirements and considerations for landfills, which were never even addressed in the Part 845 rulemaking. *See, e.g.*, 40 C.F.R. §§ 257.70, .81, .84.~~Additionally, the Former Landfill, including the Former Fly

Ash Holding Units, make up one contiguous area, and Pond 6 is used to manage runoff from the Former Landfill. Thus, from a practical perspective, it makes sense to close the entire area together.

~~Third, there are significant legal, compliance, and fairness concerns inherent in suddenly and unexpectedly characterizing and regulating the Former Fly Ash Holding Units and Pond 6, and indeed the entire landfill area, as a CCR surface impoundment, when today and at the time Part 257 and Part 845 were adopted, the area was a landfill and had been managed and treated as a regulated landfill for decades. Indeed, as discussed above, under the same, key present tense definition language in both Part 257 and Part 845, the decision about whether a unit is a landfill or surface impoundment must be made at the time Part 257, or Part 845, respectively, was adopted. U.S. EPA had to address in Part 257 how to determine whether a unit should be considered a landfill or surface impoundment because Part 257 contains different requirements for landfills and surface impoundments. It did so based upon the status of the unit ***at the time Part 257 was adopted***. *See supra* at Part III.A.1. This made sense for multiple reasons, including for clarity of applicability and because the correct regulatory requirements should apply based upon the characteristics of the unit, and the related risks presented, at the time the rule went into effect. It makes no sense to apply landfill requirements wholesale to ponds to address landfill risks, or to apply pond requirements to landfills to address pond risks. But that is exactly what IEPA seems to be claiming here.~~

~~Worse~~Third, IEPA seems to be claiming that Part 845 surface impoundment requirements apply to the ~~whole~~entirety of the Former Landfill (not just the Former Fly Ash Holding Units) after having treated the ~~landfill~~Former Landfill as a landfill for years, including

by issuing the Landfill VN to SIPC in 2020. 2020 Landfill VN~~.~~, Ex. 16. SIPC operated the Former Landfill as a landfill, submitted landfill reports to IEPA, and ceased using the Former Landfill at a time that made Part 257 landfill requirements inapplicable. Unlike the other "CCR surface impoundments" regulated under Part 845, both SIPC and IEPA treated this area as a landfill under the Illinois regulations. IEPA continued to treat this area as a landfill after the promulgation of Part 257.

Having expected Part 257 to be inapplicable given the plain applicability language, reinforced by IEPA's prior view that the Former Landfill was subject to Illinois landfill requirements under Part 811, SIPC has not planned for Part 257 applicability, and it has not taken any Part 257 compliance actions. Indeed, if anyone had thought at the time it was adopted that Part 257 applied at all, it would have been anomalous, to say the least, for SIPC to have taken compliance action for its Former Landfill consistent with Part 257 surface impoundment requirements, but IEPA appears now to claim that Part 845's requirements, which are based on Part 257's surface impoundment requirements, apply to the Former Landfill.

~~This quixotic result, of course, was never contemplated by the Board in the Part 845 rulemaking. In fact, in~~In adopting Part 845, the Board included some very aggressive deadlines because, in its view, companies were already complying with Part 257 and ~~they~~ could use those actions to comply with Part 845. *See supra* Section IV.B.2. That is simply not true for the Former Landfill, including the Former Fly Ash Holding Units within the landfill footprint and related ~~storm water~~stormwater runoff Pond 6. No one could reasonably have expected that Part 257's (and later Part 845's) surface impoundment requirements would apply to the Former Landfill, especially when IEPA asserted as late as 2020 that the Former Landfill was a landfill

and regulated under Illinois landfill regulations. The Board did not consider or assess in its Part 845 rulemaking the application of Part 845's surface impoundment requirements to landfills, including the costs, feasibility, and necessity of compliance or the risks to be addressed. Applying Part 845 surface impoundment requirements to the Former Landfill area also would cause unfair surprise and retroactive change of regulatory status concerns.

Fourth, the Former Landfill, including the Former Fly Ash Holding Units, are unique because they contain CCR that is suitable for "beneficial use of CCR" as defined in 35 Ill. Admin. Code § 845.120. SIPC has been working with a third-party to evaluate additional uses of the CCR and to send samples to potential customers to gather additional data on demand and uses. SIPC will need some time to develop the market viability for third-party beneficial use of the landfill CCR, which this adjusted standard will allow. Potential end uses for the material include use as "green material" such as cement binder, sand, aggregate, and construction insulation.

Fifth, as discussed above, Pond 6 contains *de minimis* amounts of CCR and thus does not present the risk targeted by Part 845. *See* Section IV.B.2, *supra*. Pond 6 only ever accumulated small amounts of CCR compared to those CCR surface impoundments that were the subject of the risk assessment completed to justify promulgation of CCR surface impoundments in Part 257 and, correspondingly, Part 845. Pond 6 has only received incidental amounts of CCR through decanted overflow from other ponds or stormwater runoff from the Former Landfill. Additionally, Pond 6 serves the necessary operational function of capturing runoff from the Former Landfill. Thus, it makes sense for its closure to be tied to, and conducted with, the closure of the Former Landfill.

3. The Factors Relating to the Former Fly Ash Holding Units—which Differ from those Relied upon by the Board in Passing Part 845—Justify an Adjusted Standard.

The factors discussed above all justify granting the adjusted standard here, particularly where the units will be closed in accordance with Part 845 closure performance standards and in a manner that is protective of human health and the environment, as discussed below~~, the Former Fly Ash Holding Units will continue to be regulated and monitored as part of the Former Landfill closure and post-closure activities under Illinois landfill regulations and any exceedances of groundwater standards can be addressed pursuant to the landfill regulations and Part 620.~~.

4. The Requested Adjusted Standard Will Not Result in Adverse Environmental or Health Effects.

As an initial matter, the adjusted standard will require compliance with Part 845 closure performance standards and groundwater monitoring and corrective action requirements, so to the extent the units in this area are having an impact on groundwater, those impacts will be addressed in accordance with the Part 845 requirements.

~~As an initial matter~~Additionally, the Former Fly Ash Holding Units do not contain water and, therefore, do not pose the same risks to the environment as CCR surface impoundments that contain large quantities of CCR under a hydraulic head. *See* ~~Updated Bradley~~Lewis Op., ~~Updated~~ Ex. ~~28~~36 at ~~21–22~~14. Instead, they function as a landfill, which U.S. EPA, IEPA, and the Board have all recognized pose less of a threat to the environment than the units that the Board sought to regulate under Part 845. ~~Updated Bradley Op., Updated Ex. 28 at 20;~~ Final Rule, Second Amended Pet. Updated Ex. 17 at ~~21342~~21,342 ("As noted, EPA's risk assessment shows that the highest risks are associated with CCR surface impoundments due to the hydraulic head imposed by impounded water."); Lewis Op., Ex. 36 at 11–13. Further, Pond 6

is a landfill runoff, *de minimis* pond, and as discussed above, it too does not present a ~~risk that warrants~~human health or environmental risk warranting regulation under Part 845. Risk Assessment, Ex. 37; Lewis Op., Ex. 36.

Finally, there are significant environmental benefits to allowing the CCR to be removed for beneficial use. As U.S. EPA has explained

> The beneficial use of CCR is a primary alternative to current disposal methods. And as EPA has repeatedly concluded, it is a method that, when performed correctly, can offer significant environmental benefits, including greenhouse gas (GHG) reduction, energy conservation, reduction in land disposal (along with the corresponding avoidance of potential CCR disposal impacts), and reduction in the need to mine and process virgin materials and the associated environmental impacts. . . . Three of the most widely recognized beneficial applications of CCR are the use of coal fly ash as a substitute for Portland cement in the manufacture of concrete, the use of FGD gypsum as a substitute for mined gypsum in the manufacture of wallboard, and the use of CCR as a substitute for sand, gravel, and other materials in structural fill. Reducing the amount of cement, mined gypsum, and virgin fill produced by substituting CCR leads to large supply chain-wide reductions in energy use and GHG emissions. . . . CCR can be substituted for many virgin materials that would otherwise have to be mined and processed for use. These virgin materials include limestone to make cement, and Portland cement to make concrete; mined gypsum to make wallboard, and aggregate, such as stone and gravel for uses in concrete and road bed. Using virgin materials for these applications requires mining and processing, which can impair wildlife habitats and disturb otherwise undeveloped land. It is beneficial to use secondary materials— provided it is done in an environmentally sound manner—that would otherwise be disposed of, rather than to mine and process virgin materials, while simultaneously reducing waste and environmental footprints. . . . Beneficially using CCR instead of disposing of it in landfills and surface impoundments also reduces the need for additional landfill space and any risks associated with their disposal. . . . As discussed in the final rule RIA, the current beneficial use of CCR as a replacement for industrial raw materials (e.g., Portland cement, virgin stone aggregate, lime, gypsum) provides substantial annual life cycle environmental benefits for these industrial applications.

~~Moreover, SIPC intends the close and cover the Former Landfill consistent with the requirements of Part 811. SIPC's currently proposed landfill closure plan is consistent with Part~~

845 requirements for closure in place with a cover system. SIPC's plan, which has been submitted to IEPA, includes the following:

- Installation of a final cover system consisting of a 3.0 foot low permeability layer overlain by a 3.0 foot final protective layer or an alternate geosynthetic cap with a minimum thickness of 4.0 feet consisting from the bottom up: 1.0 foot thick low permeability layer, 40 mil linear low density polyethylene (LLDPE) geomembrane, a double-sided geocomposite drainage layer and a 3.0 foot final protective layer.[37] (*Compare* 35 Ill. Admin. Code § 811.314 *with id.* § 845.750.)

- Slopes that will be constructed to minimize wind and water erosion.
- Establishment of vegetation upon completion of the final cover placement and storm water and drainage features.
- Installation of additional monitoring wells, if needed, to meet the requirements of Part 811,[38] which requires, in part that "a network of monitoring points shall be established "at sufficient locations" downgradient with respect to groundwater flow and not excluding the downward direction, to detect any discharge of contaminants room from any part of a potential source of discharge. 35 Ill. Admin. Code § 811.318(b)(1).
- Post-closure monitoring and care consistent with SIPC's obligations under Part 811.

See Former Landfill Closure Plan, Final Rule, Second Amended Pet. Updated Ex. 10 17 at 3–8 21,329.

Compliance with these provisions will ensure that the Former Landfill (including the Former Fly Ash Holding Units) remains insulated from any water that could lead CCR to leach into nearby groundwater or runoff to Pond 6. In addition, ongoing groundwater monitoring under the landfill closure plan will ensure that any exceedances of groundwater standards attributable to the Former Landfill (of which the Former Fly Ash Holding Units are a part) or Pond 6 will be identified and corrected as necessary. As a result, there is no risk that the proposed adjusted

[37] Part 811 allows for such an "alternate" cover system design where "the performance of the low permeability layer is equal to or superior to the performance" to the default requirements set forth in Part 811.314 (b)(3)(A)(i) and (b)(3)(A)(ii). *See* 35 Ill. Adm. Code § 811.314 (b)(3)(A)(iii).

[38] SIPC has previously installed groundwater monitoring wells around the landfill and performed groundwater sampling and reported the results to IEPA.

~~standard will result in any harm to the environment, and Petitioner's requested adjusted standard "will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting" Part 845. 415 Ill. Comp. Stat. 5/28.1(c)(3); *see also* Updated Bradley Op., Updated Ex. 28 at 21–22.~~

Thus, the proposed adjusted standard will not have an adverse impact on human health or the environment, and in fact may result in environmental benefits.

5. The Requested Adjusted Standard is Consistent with Federal Law.

As discussed *supra*, the Former Fly Ash Holding Units and Pond 6 are not existing or inactive CCR surface impoundments under Part 257. Accordingly, excluding them from Part 845 is not inconsistent with federal law. *See* 35 Ill. Admin. Code § 104.406(i).

Further, Part 845 is not currently a federally designated program, thus Part 845 and Part 257 operate independently and concurrently. Owners and operators of CCR surface impoundments must comply with both sets of regulations and an adjustment from Part 845 has no impact on a requirement to comply with Part 257. Thus, the Board is free to grant an adjustment from Part 845 requirements without consideration of Part 257.

~~6. The Efforts Necessary to Require the Former Fly Ash Holding Units to Comply with Part 845 Are Not Economically Reasonable.~~

~~As is the case with the De Minimis Units, the costs of compliance with Part 845 are not reasonable when considered in conjunction with the minimal (if any) benefits to the environment. Andrews Engineering conservatively[39] estimates that the costs of closing and~~

~~[39] Mr. Liss's estimate is conservative, in part, because it assumes that IEPA will allow the landfill area to close as one impoundment, rather than requiring separate closure of each of the three Former Fly Ash Holding Units. It also assumes that IEPA will approve closure in place using a final cover system, rather than require SIPC to excavate the landfill and the Former Fly Ash Holding Units and dispose of the material offsite and in accordance with the comprehensive Part 845 transportation requirements. Supp. Liss Dec., Ex. 30 at ¶ 5.~~

managing the Former Landfill, including the Former Fly Ash Holding Units, pursuant to Part 845 is nearly $5.5 million in capital and other upfront costs, which includes the costs of permitting and documentation to support the necessary Part 845 permit applications. Supp. Liss Dec., Ex. 30 at ¶ 5. The O&M costs associated with managing the Former Landfill area, including the Former Fly Ash Holding Units, as a Part 845 surface impoundment would be at least $67,536 per year (without an inflation factor) for the first ten years of post-closure care, and $33,752 (without an inflation factor) for the remainder of the 30-year post closure care period required by Part 845.[40] *Id.* at ¶ 4. In contrast, the costs of closing and managing the Former Landfill pursuant to the Illinois landfill regulations is approximately $3.5 to $5.2 million in immediate capital costs with approximately $42,000 per year in O&M costs for a period of 5 years after the completion of closure activities, and $12,400 per year in annual O&M costs for the following 10-year period, assuming a 15-year post-closure care and monitoring period. *Id.* at ¶ 4. The Part 845 costs include costs to comply with requirements that were never intended to apply to landfills and were not enacted to address any risks actually presented by landfills.

As noted above, the Former Fly Ash Holding Units are not covered by Part 257. Therefore, neither U.S. EPA in promulgating Part 257 nor IEPA nor the Board in promulgating Part 845 found that it is economically reasonable to require former ponds like the Former Fly Ash Holding Units to comply with the requirements of Part 845. *See supra* Section IV.B.6. Further, as a not-for-profit cooperative, SIPC and its customers are uniquely sensitive to sudden, unexpected increases in capital and operating costs (and this cost is particularly unexpected

[40] This does not include the costs of expediting work to meet Part 845's stringent deadline, or alternate Board-approved compliance deadlines. This also does not include additional costs that may be incurred due to potential ambiguities in the rules, and does not include all plant personnel time.

~~given that, until earlier this year, SIPC and IEPA had been treating the Former Landfill as a landfill that was about to undergo closure under Part 811). Given that there will be no environmental benefit to managing the Former Fly Ash Holding Units pursuant to Part 845 rather than Part 811, the additional cost is not reasonable and the Petition should be granted.~~

~~D~~F. Proposed Language of Adjusted Standard.

See Appendix A.

~~SIPC proposes the following adjusted standard language (35 Ill. Admin. Code 104.406(a)):~~

~~1. Pursuant to Section 28.1 of the Environmental Protection Act, the Board grants Southern Illinois Power Cooperative ("SIPC") an adjusted standard from 35 Ill. Admin. Code § 845.100 for Ponds 3, including 3A, 4, 6, South Fly Ash Pond, Pond B-3, the Initial Fly Ash Holding Area, the Replacement Fly Ash Holding area, and the Fly Ash Holding Area Extension. 415 Ill. Comp. Stat. 5/28.1.~~

~~2. The adjusted standard applies to SIPC's Marion Station.~~

~~3. The Part 845 regulations do not apply to Ponds 3, including 3A, 4, 6, South Fly Ash Pond, Pond B-3, the Initial Fly Ash Holding Area, the Replacement Fly Ash Holding area, or the Fly Ash Holding Area Extension.~~

~~4. The adjusted standard is effective as of the date of this order.~~

~~E~~G. Part 845 Was Promulgated to Implement Section 22.59 of the Act and the Automatic Stay Applies.

Because SIPC filed its ~~original~~initial petition for an individual adjusted standard within 20 days after the effective date of Part 845 (April 21, 2021), the operation and application of Part 845 is automatically stayed as to the De Minimis Units and Former Fly Ash Holding Units pending the disposition of this petition. 415 Ill. Comp. Stat. 5/28.1(e).

The only exception to this automatic stay is for regulations "adopted by the Board to implement, in whole or in part, the requirements of the federal Clean Air Act, Safe Drinking Water Act or Comprehensive Environmental Response, Compensation and Liability Act, or the State RCRA, UIC or NPDES programs." 415 Ill. Comp. Stat. 5/28.1(e). Part 845 was promulgated to implement Section 22.59 of the Act and the federal Resources Conservation and Recovery Act, Section 4005. It was not promulgated to implement, in whole or in part, the requirements of the federal Clean Air Act, Clean Water Act Safe Drinking Water Act or Comprehensive Environmental Response, Compensation and Liability Act, or the State RCRA, UIC or NPDES programs. *See* 35 Ill. Adm. Code 104.406(b).

~~F~~H. Hearing Request.

SIPC requests a hearing for this adjusted standard pursuant to 35 Ill. Admin. Code § 104.406(j).

~~G~~I. Supporting Documentation.

Documents and legal authorities supporting the Petition are cited herein (and, where applicable, on the attached Index of Exhibits) when they are used as a basis for the Petitioner's proof. Relevant portions of updated or new documents and legal authorities, other than Board's final Order State regulations, statutes, and reported cases, are attached to this ~~amended petition~~Petition. *See* 35 Ill. Admin. Code § 104.406(k).

V. CONCLUSION.

SIPC respectfully requests that the Board grant its request for inapplicability or, in the alternative, an adjusted standard as set forth herein.

~~Respectfully Submitted,~~
~~Southern Illinois Power Cooperative~~

Respectfully Submitted,

SOUTHERN ILLINOIS POWER COORPERATION

/s/ *Bina Joshi*
~~By:~~ ~~*/s/ Katherine S. Walton*~~
One of its attorneys

Dated: ~~September 2, 2021~~December 20, 2024

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Exhibit 5	IEPA Water Pollution Control Permit, No. 1977-EN-5732 (Nov. 14, 1977)
Exhibit 6	Letter from SIPC to IEPA (July 27, 1982)
Exhibit 7	IEPA Water Pollution Control Permit, No. 1981-EN-2776-1 (Oct. 13, 1981)
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Exhibit 10	Andrews Engineering, SIPC's Proposed Closure Plan for IEPA Site No. 199055505 (Dec. 16, 2020)
Exhibit 11	Hanson, Emery Pond Corrective Action and Selected Remedy Plan, Including GMZ Petition (Mar. 29, 2019)
Exhibit 12	IEPA Water Pollution Control Permit, No. 1989-EN-3064 (May 17, 1989)
Exhibit 13	IEPA Reissued National Pollutant Discharge Elimination System Permit, No. IL0004316 (February 1, 2007)
Exhibit 14	IEPA Water Pollution Control Permit, No. 1973-ED-1343-OP (June 1973)
Exhibit 15	Initial Facility Report – for On-Site Facilities (Sept. 18, 1992)
Exhibit 16	IEPA Violation Notice L-2020-00035 (Mar. 20, 2020
~~Updated~~ Second Amended Petition Updated Exhibit 17	Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 80 Fed. Reg. 21,302 (April 17, 2015)~~ (excerpted) ("Final Rule")~~
Exhibit 18	R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA's Statement of

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Exhibit 23	R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, Hearing Transcript (Aug. 11, 2020)
Exhibit 24	R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, First Supplement to IEPA Pre-Filed Responses (Aug. 5, 2020)
~~**Updated**~~ Exhibit ~~**28**~~25	~~Updated Opinion of Lisa JN Bradley, Ph.D. (Sept. 1, 2021) ("Updated Bradley Op.")~~ U.S. EPA, Comment Summary and Response Document: Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities; Proposed Rule, Vol. 3 (Dec. 2014)
Exhibit 26	R2020-019, *In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845*, IEPA Post-Hearing Comments (Oct. 30, 2020)
Exhibit 27	*In the Matter of Objection to the Issuance of Partial Approval of Closure/Post Closure Plan Duke Gallagher Generating Station Ash Pond System*, No. 20-S-J-5096 (OEA May 4, 2021)
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Exhibit 30	The Supplemental Declaration of Kenneth W. Liss ("Supp. Liss Dec.")
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Exhibit 35	Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments, 88 Fed. Reg. 31,982, 32,018 (May 18, 2023)
Exhibit 36	Ari Lewis, M.S. *Support for the Petition of an Adjusted Standard for Pond 4, Ponds 3 and 3A, Pond S-6, Former Pond B-3, and South Fly Ash Pond* (Dec. 20, 2024)
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Exhibit 39	Second Amended Petition Redline

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EXHIBIT 40

Haley & Aldrich, Evaluation Report: Southern Illinois Power Company Marion Station (April 2025)

HALEY ALDRICH

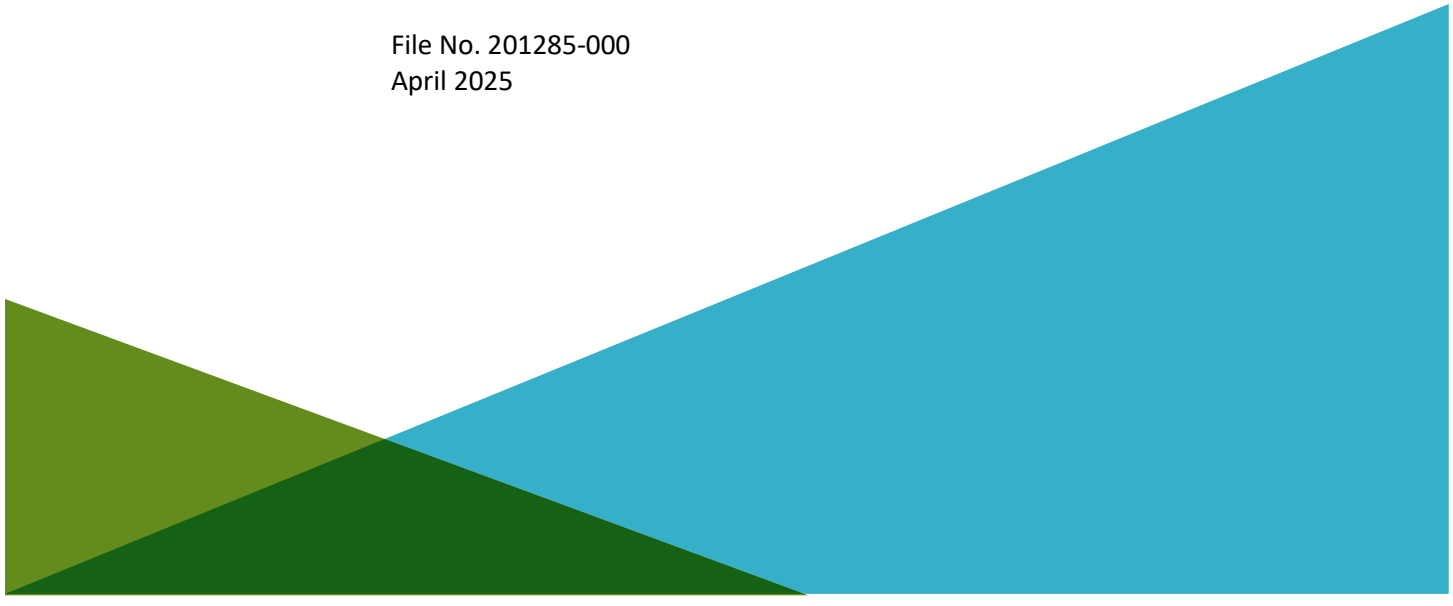
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EVALUATION REPORT
SOUTHERN ILLINOIS POWER COMPANY MARION STATION
MARION, WILLIAMSON COUNTY, ILLINOIS

by
Haley & Aldrich, Inc.
Phoenix, Arizona

for
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233 South Wacker Drive, Suite 7100,
Chicago, IL 60606

File No. 201285-000
April 2025



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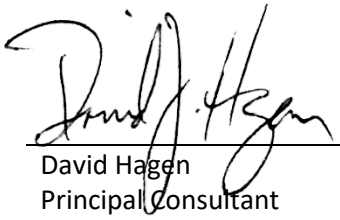
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SOUTHERN ILLINOIS POWER COMPANY MARION STATION
MARION, WILLIAMSON COUNTY, ILLINOIS

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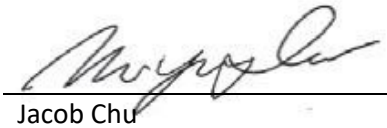
ARENTFOX SCHIFF, LLP
MARION, ILLINOIS

PREPARED BY:



David Hagen
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REVIEWED BY:



Jacob Chu
Senior Technical Expert
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B	Monitoring Well Construction Information

1. Introduction

1.1 BACKGROUND

Haley & Aldrich, Inc. has prepared this report that documents our evaluation of the recommendation and first set of interrogatories responses by the Illinois Environmental Protection agency ("IEPA" or "Agency") concerning the petition for an adjusted standard from 35 Ill. Admin. Code 845 or in the alternative a finding of inapplicability, by the Southern Illinois Power Cooperative's (SIPC) Marion Generating Station ("Marion Station") in Williamson County, Illinois.

Based on our review and analysis of IEPA's recommendation, we found that IEPA's recommendation was based on conclusions derived from inappropriate reasoning that contained:

- No clear definition of what conditions qualify as *de minimis* amounts of coal combustion residuals (CCR) material,
- Incorrect use of some evidence,
- Speculative estimates of the amount of CCR, and
- Factual arguments that are not logically consistent.

In this report, Section 2 is used to discuss the fundamental flaw of IEPA's method to determine the *de minimis* conditions. Sections 3, 4, 5, 6, and 7 provide our evaluation specific to IEPA's determination on Pond 4, Pond 3, Pond 3A, Pond B-3, and South Fly Ash Pond, respectively. Section 8 describes our combined assessment regarding flaws in IEPA's evaluation of Pond 6, the Replacement Fly Ash Pond, the Initial Fly Ash Pond, and the Fly Ash Holding Extension Area. Section 9 provides our evaluation of IEPA's comments on the current groundwater monitoring system at the Marion Station. Section 10 concludes the report.

2. IEPA Review of *de minimis* Amounts of CCR Material

2.1 IEPA'S CRITERIA TO DETERMINE DE MINIMIS AMOUNTS IS AMBIGUOUS

As described in its Recommendation, in the matter of determining whether a surface impoundment is not regulated under Part 845 because it contains *de minimis* amount of CCR, IEPA solely focused on the criteria based on 415 ILCS 5/3.143, 35 Ill. Adm. Code 845.120, and 40 CFR 257.2, which is:

> "CCR surface impoundment" means a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR.

If a unit meets the criteria above, IEPA considers that, the unit, by design, contains an amount of CCR that does not qualify as "*de minimis".* Therefore, IEPA did not establish a threshold quantity to determine what qualifies as a *de minimis* amount. Further, IEPA's interpretation turns any impoundment, receiving some amount of CCR, no matter how small, into a CCR surface impoundment.

The United States Environmental Protection Agency ("USEPA") also has not set a threshold for *de minimis* CCR surface impoundments, but it has recognized that the de minimis exemption is necessary and has clarified that secondary or tertiary ponds that do not receive "significant amounts of CCR from a preceding impoundment" would not fall within the definition of a regulated CCR surface impoundment. 80 Fed. Reg. at 21.357. The Illinois Pollution Control Board has also recognized the applicability of the *de minimis* exemption consistent with 40 C.F.R. Part 257 and Petitioners' ability to owners and operators to seek variance or adjusted standards as regulatory relief when the disagree with an IEPA determination concerning whether a unit is a CCR surface impoundment. R2020-019, In the Matter of Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed new 35 Ill. Adm. Code 845, Illinois Pollution Control Board's Second Notice Opinion and Order at 14 (Feb. 4, 2021)

3. Evaluation of IEPA's Pond 4 Determination

3.1 IEPA'S POND 4 DETERMINATION

IEPA asserts Pond 4 meets the definition of an inactive CCR surface impoundment primarily based on the following evidence:

I. Pond 4 received ash sluice water (Agency Recommendation, Paragraph 55; Agency Ex. YY).

II. There appears to have been a significant amount of CCR carry over into Pond 4 from other CCR surface impoundments and/or CCR from the other permitted CCR sources, since the formation of deltas of precipitated CCR can be seen in Agency Ex. 3 and Ex. 4. By March 2005, an internal berm, presumably constructed from the bottom ash and other CCR entering Pond 4 is visible. See Agency Ex. 5. (Paragraph 56).

III. NPDES permits issued in 1975, 1977, 1985, 1998, and 2007 all characterize Pond 4 as an ash pond. See Agency Ex. 51-55 (Paragraph 57).

IV. Pond 4 is an inactive CCR surface impoundment and likely contains about 38,387 cubic yards of CCR, which is more than *de minimis.* (Paragraphs 59, 60, and 62 through 68). IEPA determined the following CCR volumes: (1) approximately 5,460 cubic yards of exposed CCR in the exposed delta (Paragraph 65), (2) 5,316 cubic yard of CCR based on the average sediment thickness (1.67 feet) obtained from the bathymetric survey and the area of Pond 4, and (3) the difference between a permitted volume of 89,210 cubic yard, which is approximately 38,377 cubic yards more than the volume reported based on the bathymetric survey results.

3.2 IEPA'S INCORRECT REASONING

IEPA makes the following inaccurate or incorrect assumptions and deductions regarding Pond 4:

- Response to IEPA evidence I above: IEPA failed to recognize that Pond 4 was designed as a multi-purpose pond. Receiving effluent water from Pond 1 and Pond 2 is one of its original design purposes. Pond 1 and Pond 2 were designed to take only ash slurry from the power plant and provide the necessary retention time to settle or precipitate the CCR from the water. (Agency Ex WW and Ex. 50); therefore, Pond 4 did not directly receive ash sluice water. It received water that had been treated by Pond 1 and Pond 2. The role of Pond 4 to receive treated water makes it fit the definition of a secondary finishing pond, which has been recently reaffirmed by USEPA as a unit that *"would generally be expected to contain no more than a de minimis amount of CCR."* Federal Register, Vol. 89, Pages 38949 – 38950 (also explaining "the reference in the proposal to evaporation ponds, or secondary or tertiary finishing ponds that have not been properly cleaned up as examples of potential CCRMU was a mistake.")

- Response to IEPA evidence II above: IEPA speculated a significant amount of CCR carry over into Pond 4 from other CCR surface impoundments or other permitted CCR sources. However, Pond 4 was also permitted to receive yard drainage, coal yard drainage, and boiler blowdown. USEPA has indicated that *"Surface runoff, coal pile runoff, CCR landfill leachate, stormwater and evaporation ponds would not generally be expected to meet the definition of a CCR surface*

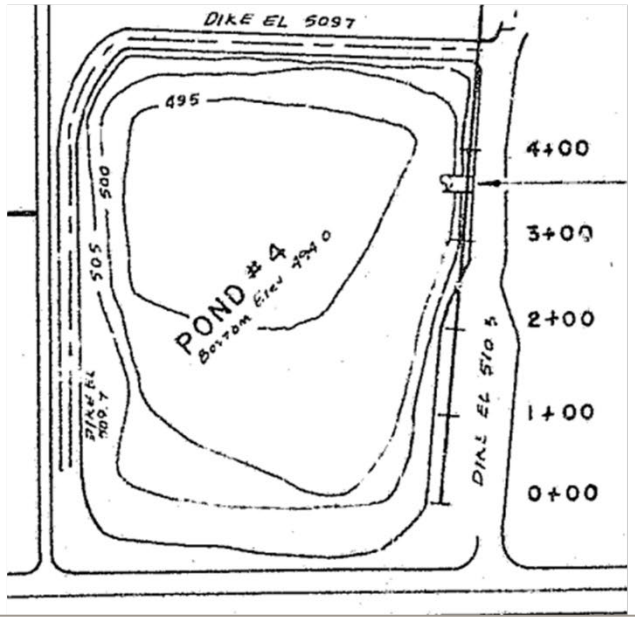
impoundment, because based on their typical design and function, such units are not usually designed primarily to hold an accumulation of CCR and liquid and would not be expected to treat, store, or dispose of CCR." [1] Due to the multi-purposed nature of Pond 4, sediment accumulation due to surface runoff (or surface drainage) collection is expected. The accumulation noted in IEPA's aerials (for example in IEPA Exhibits 3 and 4) are on the south side of Pond 4 and are likely due to coal pile runoff. Therefore, the observation of sediment buildup is not reliable evidence of CCR accumulation.

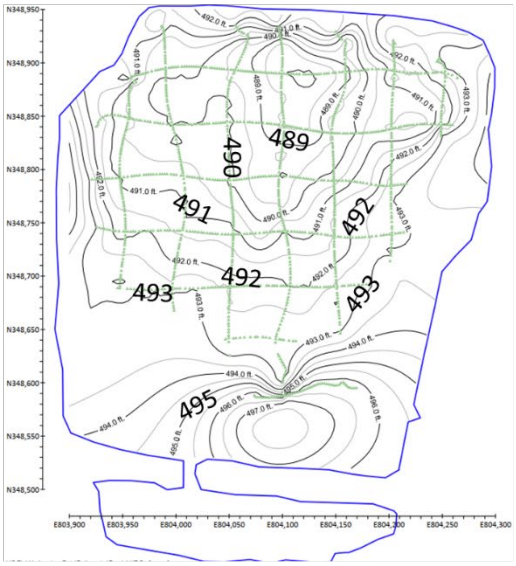
- Response to IEPA evidence III above: There is little doubt that Pond 4 is part of an overall pond management system that includes ash ponds. It is not uncommon for ponds in a management system to be casually referred as an ash pond. However, it is my experience that being called an ash pond in a historical document does not always mean that the unit meets the definition of a CCR surface impoundment.

  Evidence III provided by IEPA relies upon NPDES documents that predate the 2010 cleaning of Pond 4. During an outage in 2010 Pond 4 was cleaned down to the clay, removing plant debris, and any ash and coal fines that might have been collected in the pond. Figure 1 shows the comparison between the Pond 4 bottom elevations depicted in a historical drawing (Agency Ex. CC) and survey by Hanson in 2021 (Haley & Aldrich 2021). Because of the cleaning, Pond 4 bottom elevations in 2021 are noticeably lower than the bottom elevations in 1981.

  Since the cleaning in 2010, any CCR that has entered Pond 4 is de minimis, such as through storm water, or decanted water overflow from Pond 6 (which itself served the purpose of collecting CCR landfill leachate). After Unit 4's shutdown in 2020, Pond 4 was no longer used to treat or manage water from Ponds 1 and 2.

Panel (A): Pond 4 bottom elevations in 1981 document **Panel (B): Pond 4 bottom elevation survey in 2021**





[1] https://www.epa.gov/coalash/frequent-questions-about-definitions-and-implementing-final-rule-regulating-disposal-coal#q7

Figure 1: Comparison of Pond 4 bottom elevations between those shown in the 1981 document and those survey by Hansan in 2021.

- Response to IEPA evidence IV above: The first estimate of CCR volume using the exposed delta area is an incorrect approach to calculate CCR volume for the following reasons.
    - As discussed above, sediment accumulation is expected because Pond 4 receives surface runoff/drainage, including from the coal yard; the composition of sediments is complex and CCR is expected to be only a small fraction, and thus the assumption of all exposed sediment volume is CCR is erroneous. The color of sediment seen in IEPA Ex. 18 is not as dark as would be expected if it were all or even mostly CCR.
    - The use of the exposed delta area to estimate the sedimentation volume is also a flawed approach, since the exposed area can be affected by the pond water level.

  The second CCR volume estimate also falsely assumes that the sediment volume is exclusively composed of CCR. Materials dredged from Pond 4 in 2010 were burned as fuel at the Plant, further highlighting the low CCR content in sediment located in Pond 4.

  The third estimate of CCR volume using the difference between the permitted Pond 4 volume and the volume reported based on the bathymetric survey results infer that the missing volume is exclusively because of CCR accumulation. This inference is logically incorrect. The permitted pond volume was estimated based on the design assumed before the pond construction and the water level assumed for this estimate is unknown. In addition, the pond bottom elevations were uneven due to local bedrock topography in the area, and thus the accuracy of the permitted volume may differ significantly from the actual construction. Therefore, the comparison between the two pond volume estimates is not meaningful and these volume estimates cannot be used as evidence for determination of the de minimis conditions.

  Finally, IEPA's response to Interrogatory 5 indicates that *"the portion or percentage of CCR was not calculated separately from the sediment volume."* However, Pond 4 contains many different types of sediment, including coal yard runoff, indicating the estimated sediment volume cannot be used as the basis to determine the de minimis CCR condition of the unit.

4. Evaluation of IEPA's Pond B-3 Determination

4.1 IEPA'S POND B-3 DETERMINATION

IEPA asserts Pond B-3 meets the definition of an inactive CCR surface impoundment primarily based on the following evidence:

I. Pond B-3 was constructed for disposal and settling of fly ash and sludge from sulfur dioxide scrubbers based on the permit application (Paragraph 71; Agency Ex. 48). While Pond B-3 primarily operated as a secondary impoundment that received discharges from Pond A-1 and, at times, operated as a primary impoundment during Pond A-1 outage (Paragraphs 72 and 73). IEPA cited Fed. Reg. Vol. 80, No. 74 pg. 21357 to support that, even in the case of secondary or tertiary impoundments, when such impoundments receive wet CCR or liquid with significant amounts of CCR from a preceding impoundment (even if they are ultimately dredged from land disposal elsewhere) they are also considered CCR surface impoundments.

II. Deltas shown on historical aerial photos are indications of CCR accumulation (Paragraph 75).

III. Pond B-3 contains more than a de minimis amount of CCR based on the CCR content found in the B-3Aa sample collected from the berm of Pond 3A and the shake test results (Paragraphs 79).

4.2 IEPA'S INCORRECT REASONING

IEPA made the following inaccurate or incorrect assumptions and deductions regarding Pond B-3.

- Response to IEPA evidence I above: While Pond B-3 was originally proposed to be a fly ash disposal pond, the primary operations of Pond B-3 were to accept decanted effluent from the Fly Ash Pond A-1, as depicted in Figure 2. At times, Pond B-3 might also have received fly ash during a Pond A-1 outage (anticipated to have occurred only 3-4 times total historically during 2 week outages while the plant was operating at reduced capacity). In addition, the amount of CCR collected in Pond B-3 during Pond A-1 outages was likely a relatively small amount of CCR that qualifies the de minimis

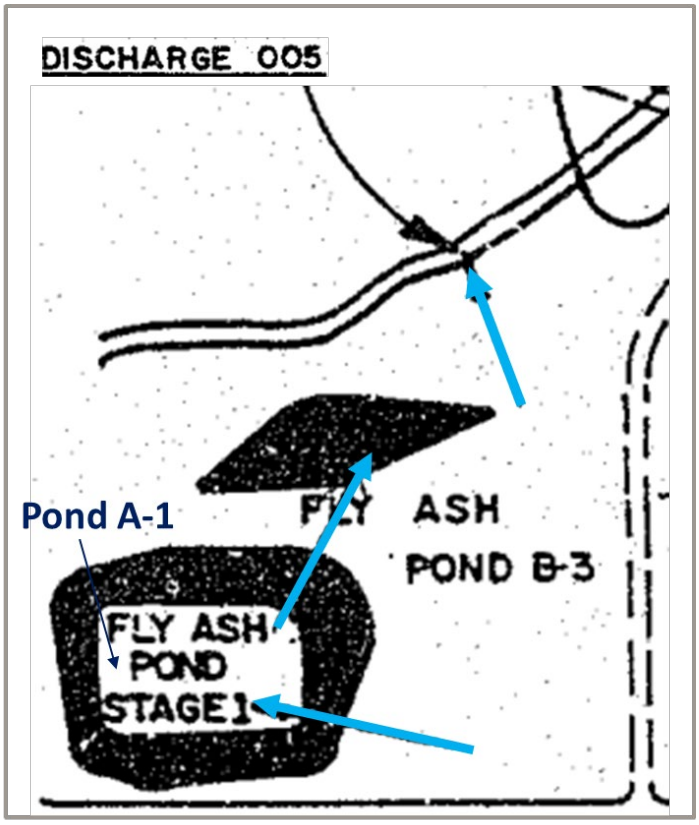


Figure 2: Flow diagram for Pond A-1, Pond B-3, and outfall 005 in a 1933 document (Agency Ex. AA)

condition. Evidence suggests Pond B-3 did not receive a significant quantity of CCR historically.

- Response to IEPA evidence II above: Based on the deltas seen from aerial photos, IEPA speculated that there was a significant amount of CCR carry over into Pond B-3 from Pond A-1. However, the exposed pond bottom areas or deltas seen in aerial photos are likely the result from variable water levels in Pond B-3. When less water is present in Pond B-3, it is expected that the wetted portion of the pond area would be smaller. The exposed areas or deltas in aerial photos may just reflect the pond bottom topography and cannot be used as positive evidence of CCR accumulation in Pond B-3.

  Additionally, it is worth noting that Pond B-3 also received coal pile runoff until 2002. Pond B-3 ceased operation at the same time as Pond A-1 in 2003. After 2003, Pond B-3 continued to receive stormwater. Sediments in stormwater and coal pile runoff would be expected to contribute non-CCR related sediment accumulation in Pond B-3 over time.

- Response to IEPA evidence III above: IEPA references samples B-3a and B-3b as evidence regarding CCR content in Pond B-3 determination (paragraph 79). However, samples B-3a and B-3b are samples collected from Pond 3, not from Pond B-3. Therefore, consideration of samples B-3a and B-3b to make a determination regarding Pond B-3 is inappropriate. The shake test samples from the berm of Pond B-3 are samples B-B3a and B-B3b. Both samples show low concentrations of sulfate (no more than 15 mg/L) and calcium (less than 0.7 mg/L), indicating there is likely little to no CCR present.

  IEPA states that SIPC declined to collect sample B-3c (Paragraph B-3c). This is an incorrect statement. SIPC planned to collect a sample at the proposed boring B-B3c location, but the location was inaccessible due to steep slopes and the presence of ponded water, as explained to IEPA through the technical memo by Haley & Aldrich (2021) included as SIPC Exhibit 29.

5. Evaluation of IEPA's Pond 3/3A Determination

5.1 IEPA'S POND 3/3A DETERMINATION

IEPA determined that Pond 3A meets the definition of an inactive CCR surface impoundment primarily based on the following evidence:

I. Aerial photos show that Pond 3A is a man-made, bermed area, designed to hold an accumulation of CCR and liquids and store an accumulation of CCR (Paragraph 45).

II. Pond 3A contains more than a de minimis amount of CCR based on (1) the berm samples for Pond 3A showing 90% and 91% fly ash from the berm area (which has a volume of at least 6,800 cubic yard), (2) approximately 4,765 cubic yards of CCR in the Pond 3A sediment, (3) the presence of 87% CCR in one pond sediment sample, and (4) the difference (5,684 cubic yards) between the pond volume estimated in a 1997 underground utility diagram (Figure 3) and the pond volume estimated using the bathymetric survey in 2021 (Paragraphs 49).

IEPA determined that Pond 3 meets the definition of an existing CCR surface impoundment primarily based on the following evidence:

III. The permit information (Paragraphs 24 - 27) indicates that Pond 3 was permitted to be an ash pond to receive both slag and fly ash directly sluiced to it and was also designed to supplement Ponds 1 and 2 (Agency Ex. OO). Pond 3 also received runoff from the ash storage area (Agency Ex. WW). Pond 3 was later permitted to receive water (treated by Pond 1 and Pond 2) from Pond 4 in case of an emergency and collects runoff from ash storage piles (Agency Ex. YY). By 1985, Pond 3 was described as a final settling pond receiving overflow from three on-site fly ash ponds and a scrubber sludge storage area, slag storage pile runoff and scrubber sludge storage area (Agency Ex. XX).

IV. Aerial photos in 1998, 2006, and 2007 show significant accumulation of CCR along the west side of Pond 3. By 2009, an internal berm had been constructed along the west side of Pond 3 (Paragraphs 27 and 28).

V. Pond 3 contains more than a de minimis amount of CCR based on (1) two sediment samples analyzed for CCR content from inside Pond 3 reported to be 93% and 96% CCR (Paragraph 35), (2) one berm sample reported to be 23% fly ash (Paragraph 36), (3) estimated CCR amounts, including approximately 4763 cubic yards in pond sediments, 16,000 cubic yards in the internal berm, and 18,327 cubic yards of unaccounted difference between the volume estimated by the bathymetric survey and the permitted volume (Paragraphs 35-39).

5.2 IEPA'S INCORRECT REASONING

IEPA made the following inaccurate or incorrect assumptions and deductions to reach their determinations regarding Pond 3/3A.

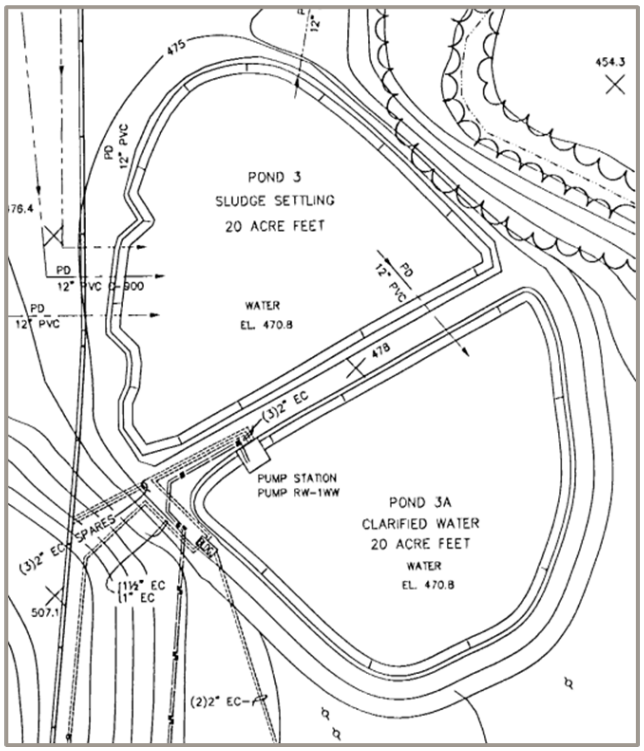


Figure 3: Pond 3A pipelines connection shown in a 1997 underground utilities drawing (Agency Ex. DD).

- Response to IEPA evidence I above: The aerial photos shown by IEPA only indicate that water has been present in Pond 3A since its construction. IEPA did not present evidence of historical documents that Pond 3A was designed to hold an accumulation of CCR and liquids. In the 1997 underground utilities drawing for the facility, Pond 3A was designated as a clarified water pond, not a settling pond as claimed by IEPA (Figure 3). Because the purpose of Pond 3A was to store clarified water, it was not designed to hold an accumulation of CCR and liquids and store an accumulation of CCR. In addition, a clarified water pond is much like a secondary or tertiary finishing pond, which is generally expected to contain no more than a *de minimis* amount of CCR, as indicated by USEPA (see Section 2.2).

- Response to IEPA evidence II above: While Pond 3A contains fly ash in the berm structure, it does not make the pond a CCR impoundment because Pond 3A was not designed to hold an accumulation of CCR and water. The word accumulation, denotes an increase in mass or volume over time. The content of CCR in the berm structure is not a result of CCR accumulation and the berm does not exist under a hydraulic head. In addition, the pond bottom sediment samples show the fly ash content of 1%, substantially different from the fly ash content of the berm samples (approximately 90%), indicating that the composition of pond bottom sediments is very different from the berm soil.

  IEPA also incorrectly used the pond sample data to identify that the pond sediment sample at the thinnest sediment accumulation location is reported to be 87% CCR. In fact, the total content of fly ash and bottom ash for this sample is only 9%. IEPA also incorrectly claims that their estimated volume of pond sediment (4,756 cubic yard) is all CCR, which is contradictory of the low contents of fly ash and bottom ash (< 10%) found in the pond sediment samples.

  Finally, IEPA's claim that the unaccounted sediment volume of 5,648 cubic yards between 1997 and 2021 estimates is all CCR is technically unfounded. The difference (5,684 cubic yards) between the pond volume estimated in a 1997 underground utility diagram (Figure 3) and the pond volume estimated using the bathymetric survey in 2021 is likely the result of using a different surface water elevation to estimate the pond volume. For the same reasons discussed

above, there is no justification or support to conclude more than a small portion of any sediment in the pond is CCR.

- Response to IEPA evidence III & IV above: IEPA assumes permitted uses were actual uses, which is not always the case. In practice, Pond 3 received runoff not only from an ash storage area, slag storage pile runoff, and a scrubber sludge storage area but also from storm water runoff historically. The accumulation of sediment buildup due to historical pond operations included the buildup of non-CCR solid input to the pond. Though the aerial photos show some deposition/buildup, it is incorrect to assume that all of this deposition is CCR material.

- Response to IEPA evidence V above: IEPA incorrectly interpreted the pond sediment and berm soil sample results using the polarized light microscopy (PLM). IEPA indicated that the pond sediment samples contain 93% and 96% CCR by assuming that only the fraction identified for coal is not CCR. IEPA appears to incorrectly assume "Other" category identified in the PLM test consists of CCR. In fact, the category of "Other" is a generalized category that can include constituent classifications such as: Quartz, Carbonates, Vermiculite, Perlite, isotropic/glass, organics, and opaque particles, as indicated in Appendix A. The positive fractions of identifiable CCR types (fly ash, bottom ash, and slag) for the pond bottom samples are only 23% and 34%.

  IEPA also incorrectly assumed that the entirety of its estimated pond sediment volume and berm volume consists of CCR. It is worth noting that IEPA's response to Interrogatory 5 indicates that "the portion or percentage of CCR was not calculated separately from the sediment volume," indicating the estimated IEPA's sediment volume does not represent the volume of CCR cannot be used as the basis to determine the de minimis condition.

  Finally, IEPA incorrectly assumes the existence of an "unaccounted" volume of 18,327 cubic yards of sediment in Pond 3, based on the difference between the volume estimated by the bathymetric survey (34,673 cubic yards) and the permitted volume (53,000 cubic yards) for the pond. IEPA did not and cannot know whether the permitted volume accurately reflects reality. In fact, historical documentation demonstrates that Pond 3 volume was considered to be 20 acre-feet (Figure 3) in size, which is 32,267 cubic yards, similar to the volume estimated by the bathometric survey.

6. Evaluation of IEPA's South Fly Ash Pond Determination

6.1 IEPA'S SOUTH FLY ASH POND DETERMINATION

IEPA made several claims regarding characterizations of the South Fly Ash Pond (SFAP) based upon the following evidence:

I. The construction permit indicates that the SFAP was permitted to be a fly ash settling pond (Paragraph 83).

II. Aerial photos from 2017 to 2021 demonstrate the SFAP meets the definition of an existing CCR surface impoundment (Agency Ex. 15-18). CCR formed a delta near the inlet from Emery Pond a CCR surface impoundment. Since these discharges continued until Fall 2020, the Agency believes this represents placement of CCR in the SFAP after October 19, 2015. (Paragraph 87).

III. Though the SIPC Pond Investigation report was supposed to include samples from this area and the southern berm of the SFAP (see Pet. Ex. 29, Figure 3 at 6), no explanation is provided as to why these samples were not evaluated for their component CCR content along with selected other berm samples. See Pet. Ex. 29 Table 8 at 15. What can be seen in Agency Ex. 9, is that the material in the berm being constructed in the SFAP is similar in color to the CCR material that was being disposed of wet and disposed of dry in Pond 6, the Initial Fly Ash Pond ("IFAP"), the Replacement Fly Ash Pond ("RFAP") and the Fly Ash Extension ("FAE") across the highway to the north. Given the Petitioner's economic concerns, Pet. at 50, it would be reasonable for SIPC to use CCR as fill material to expand the surface storage pad into the permitted area of the SFAP. None-the-less, use of CCR as fill material in this location is storage of CCR within an impoundment. Therefore, the Agency concludes there are approximately 79,030 cubic yards of CCR in total stored in the SFAP. (Paragraph 91).

IV. The pond sediment samples demonstrate that CCR is directly below the water in the SFAP, therefore, because of the historic use of this pond for treatment of water containing CCR, the volume beneath the surveyed CCR in the SFAP is most likely filled with CCR because the bottom of the new pond would have filled first. A volume of 79,702 cubic yards is not accounted for by the bathometric survey when compared with the permitted volume of 188,760 cubic yards. The estimated volume of 79,030 cubic yards based on the survey and the Agency's observations indicate there are approximately 158,730 cubic yards of CCR in the SFAP.

6.2 IEPA'S INCORRECT REASONING

IEPA makes the following inaccurate or incorrect assumptions and deductions regarding the SFAP.

- Response to IEPA evidence II above: Aerial photos in 2017 and 2018 (per Agency Ex 15 & 16) do not clearly establish the development of a delta as shown in the 2021 aerial photo (Agency Ex 18). Additionally, year-to-year water level variance in the pond at the time of aerial photography can mimic or exaggerate the development of a delta. Aerial photography of the SFAP in 2009 (Agency Ex 9) also appears to show a delta that is larger than the delta in Agency Exhibit 17

(2020), indicating that discharge into the pond after October 19, 2015 did not result in observable effects to the delta size.

- Response to IEPA evidence III above: IEPA's reliance on solely the color to soil to determine CCR content is speculative. Field boring logs at many other areas within the site indicate black soils and/or presence of recognizable CCR solids when encountered (Haley & Aldrich 2021). Boring logs associated with SFAP berm do not indicate the presence of fly ash in this manner. Sample results B-SFAb and B-SFAa both indicate that sulfate and boron concentrations obtained from shake tests were low, therefore PLM analysis was not performed at this location. Additionally, considering the entire volume of fill to be CCR is speculative, unfounded, and not supported by any evidence.

- Response to IEPA evidence IV above: These IEPA volume estimates are highly uncertain. Two pond volume estimates, 109,057 cubic yards and 195,400 cubic yards, were obtained using the bathymetric survey results and two different water level assumptions, as reported by Haley & Aldrich (2021) to IEPA. The higher estimate of 195,400 cubic yards is very similar to the permitted volume of 188,760 cubic yards. Given the changes in pond water level and geomorphology around the area of the berm over time, the unaccounted pond volume claimed by IEPA is incorrect. In addition, the assumption that the entirety of the sediment is CCR is incorrect and leads to an overestimation of the CCR volume in the pond given evidence that CCR makes up only a portion of the sediment. (Haley & Aldrich 2021). Finally, a portion of the sediment the Agency has included in its calculation appears to incorrectly include a coal pile located adjacent to the unit,

7. IEPA's Determination Flaws for Pond 6, Replacement Fly Ash Pond, Initial Fly Ash Pond

Pond 6: IEPA claimed that the reported sediment samples collected from Pond 6 (only 2 of 3 collected samples were reported) indicate the samples are almost 100% based on CCR Pet. Ex. 29, Table 7 at 14. IEPA appears to have incorrectly interpreted the pond sediment and berm soil sample results using the polarized light microscopy (PLM) discussed in SIPC Ex. 29. IEPA appears to have assumed that only the fraction of sediment identified as coal is not CCR. In fact, the category of "Other" is also not CCR. The positive fractions of identifiable CCR types (fly ash, bottom ash, and slag) using the PLM for the bottom sediment samples collected in Pond 6 are 30% and 53%. Thus, the claim that almost 100% of the sediment in samples for Pond 6 is CCR is incorrect.

Table 7: Summary of CCR material and coal fractions in Pond sediment samples.

Pond Name	Sample Name	Fly Ash	Bottom Ash	Slag	Slag + Fly Ash + Bottom Ash	Coal	Other	Total
Pond 3A	S-3An	1%	8%	11%	20%	13%	67%	100%
	S-3Ax	1%	6%	27%	34%	48%	18%	100%
Pond 3	S-3n	17%	5%	1%	23%	7%	70%	100%
	S-3x	22%	7%	5%	34%	4%	62%	100%
Pond S-6	S-S6n	27%	3%	0%	30%	2%	68%	100%
	S-S6x	32%	10%	11%	53%	0%	47%	100%
Pond 4	S-4n	1%	1%	23%	25%	23%	52%	100%
	S-4x	13%	19%	32%	64%	0%	36%	100%
	S-4gp	8%	22%	38%	68%	0%	32%	100%
	S-4gs	10%	16%	32%	58%	1%	41%	100%
South Fly Ash Pond	S-SFAn	18%	26%	20%	64%	2%	34%	100%
	S-SFAx	11%	4%	13%	28%	5%	67%	100%
	S-SFAgn	2%	6%	2%	10%	6%	84%	100%
	S-SFAgx	9%	32%	17%	58%	1%	41%	100%

Note: Table adapted from RJ Lee Group (Attachment D).

Figure 4 – Table 7 cited in Agency Paragraph 108. Pond 6 CCR content is highlighted.

IEPA also appears to conflate Pond 6 with the Former CCR Landfill located to the South of Pond 6. However, Pond 6 was located to the east, north and west sides of the Former CCR Landfill to collect runoff. Having a runoff collection pond for a landfill is consistent with good waste management practices. Pond 6 is necessarily located below the waste in the Former CCR Landfill so that runoff may be collected and controlled. Additionally, it appears that historically a Pond 6 was dredged for water retention to provide better capacity for hydraulic control of the runoff.



Figure 5 – Potential location of insinuated delta within Agency Exhibit 9

Replacement Fly Ash Pond (RFAP): IEPA used an aerial photo from 2009 (Agency Ex. 9) to attempt to show run-off from the area of the RFAP in the western most impoundment being redeposited as a delta in Pond 6 and to attempt to show that CCR was being managed in conjunction with water. The Agency did not clearly outline the delta's location in Exhibit 9. We infer the location of this delta as depicted in Figure 5, based on the Agency's statement in its Recommendation. The location of this "delta" suggests that if run-off was the cause, the source would likely be the former landfill and not the RFAP and the cited delta can be explained by an unstable slope and/or partial slope collapse. Thus, sediment accumulation due to CCR transport from the RFAP to the area of Pond 6 cannot be positively supported by the aerial photo and it is technically unsound to make that assumption from this aerial photo.

Initial Fly Ash Pond (IFAP): IEPA suggests there is a continued presence of CCR and water at the IFAP. However, aerials from the 1990s show the area to be clear of any water. Figure 6 shows the approximate bottom and top elevations for the IFAP. By 2007, data demonstrates a significant elevation gain above the top of the IFAP compared 1977, supporting closure of the unit and suggesting subsequent ponding on top of the unit in the 2000s was unrelated to CCR management in the IFAP (Figure 7).

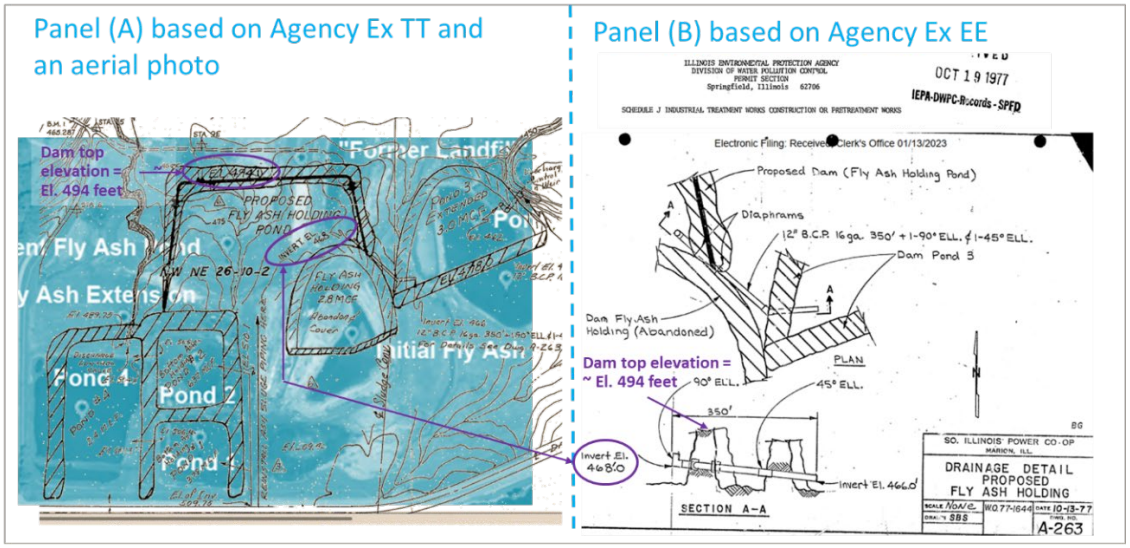


Figure 6 – Approximate bottom and top elevations of the Initial Fly Ash Pond in historical documents; Panel (A) shows the approximate top elevation of the dam (El. 494 feet) and the approximate bottom elevation inferred by the invert elevation (El. 468 feet); Panel (B) provides a cross-section view.

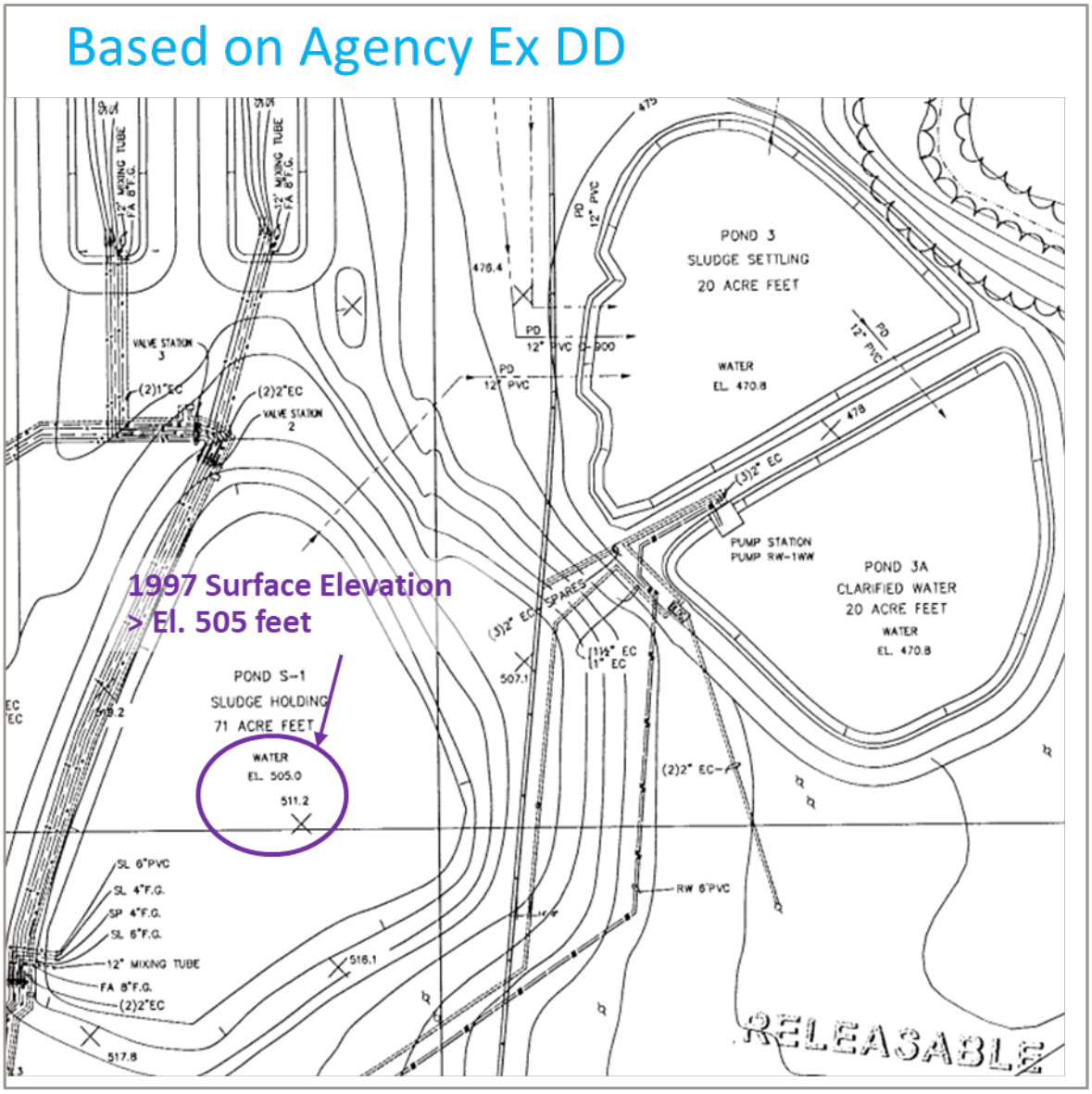


Figure 7 – Approximate surface elevations in the former Initial Fly Ash Area in 1997.

HALEY ALDRICH

8. IEPA's Comments on the Current Groundwater Monitoring System

IEPA expressed the concerns and observations regarding the current groundwater monitoring system. Under the assumption that shallow groundwater flow mimics the natural topography, IEPA also provides several observations about whether each of the current monitoring wells can adequately monitor the CCR impacts on groundwater quality. These concerns and observations were reviewed and evaluated; relevant information and rationales to address IEPA's opinions on the current groundwater monitoring system are provided below, as shown in *italic* text.

I. IEPA expressed the following opinion about the current monitoring system: "… the Agency does not believe the Petitioner has an adequate groundwater monitoring system. The Petitioner offers as evidence bivariate analysis of sulfate and calcium versus the partial shake test analyses for sulfate Pet. Ex. 29 at 20, to prove that the impoundments on-site do not pose an environmental risk. The conclusion appears to be that the sulfate in the shake tests does originate from the sediment. The Petitioner then points to low concentrations of sulfate in groundwater monitoring data as evidence that the numerous CCR surface impoundments are not impacting groundwater. Pet. Ex. 29 at 21. What the Petitioner fails to provide is any evidence that the listed groundwater monitoring wells are constructed in locations that would intercept leachate originating from the CCR surface impoundment. No potentiometric surface map was provided demonstrating that any of the wells are downgradient from any of the CCR surface impoundments. Petitioner's Ex. 29 provides no well logs that support the premise that the monitoring wells are properly constructed to intercept releases from the CCR surface impoundments."

   First, IEPA misunderstands the conclusion of the shake test using pond sediments, saying "the sulfate in the shake tests does not originate from the sediment." What the bivariate plots reveal is that high total dissolved solids observed in some shake test using pond sediments resulted from high calcium and sulfate concentrations in those samples. The main conclusion of the shake test is that "the sulfate concentrations observed in the shake test results for Pond 3, Pond S-6, and the South Fly Ash Pond do not translate to concentrations of sulfate and TDS in groundwater above Part 620 Class I standards." [2]

   Additionally, the current groundwater monitoring system does provide useful information regarding leachate originating from the impoundments at issue in this matter. Because the Marion Station has several water conveyance features at the site and is also close to other surface water bodies, such as Little Saline Creek and Lake of Egypt, the interpretation of the groundwater flow field is likely subject to significant uncertainty near individual water conveyance features. As described below, two monitoring wells of the current groundwater monitoring system have been designated as background wells. Other monitoring wells in the system have observed a higher boron and/or sulfate concentrations in comparison with the levels observed at the background or side-gradient monitoring wells, and some other wells have helped define the lateral extent of CCR-impacted groundwater. Therefore, while the current

[2] Illinois Environmental Protection Agency, 2024. Illinois Administrative Code. TITLE 35. Environmental Protection. Part 620. Groundwater Quality. Updated March 27, 2024.

monitoring well network can be enhanced for future monitoring, it has provided useful historical data to assess the general extent of CCR impacted groundwater.

The well depths of the current groundwater monitoring wells range from 12 feet to 25 feet below ground surface and the screen interval are from 10 feet above the well bottom to the well bottom. The well construction logs are provided in Appendix B.

II. IEPA observed that the SFAP was constructed near the upper end of a southwest to northeast trending natural valley that was reshaped, with a portion of the eastern SFAP berm cutting the valley perpendicularly. Monitoring wells C1 and C2 are located approximately on opposite sides of the natural valley where groundwater flow would trend into the valley not directly east towards those wells.

The rationale for the location of monitoring wells C1 and C2 is shown in Figure 8. The SFAP footprint is superimposed on the natural topography map by the USGS. The location of C1 is right in the natural valley and C2 is on the edge of the valley. The monitoring results of C1 and C2 also consistently shows boron and sulfate concentrations higher than the concentrations observed at the background wells, suggesting they are downgradient.

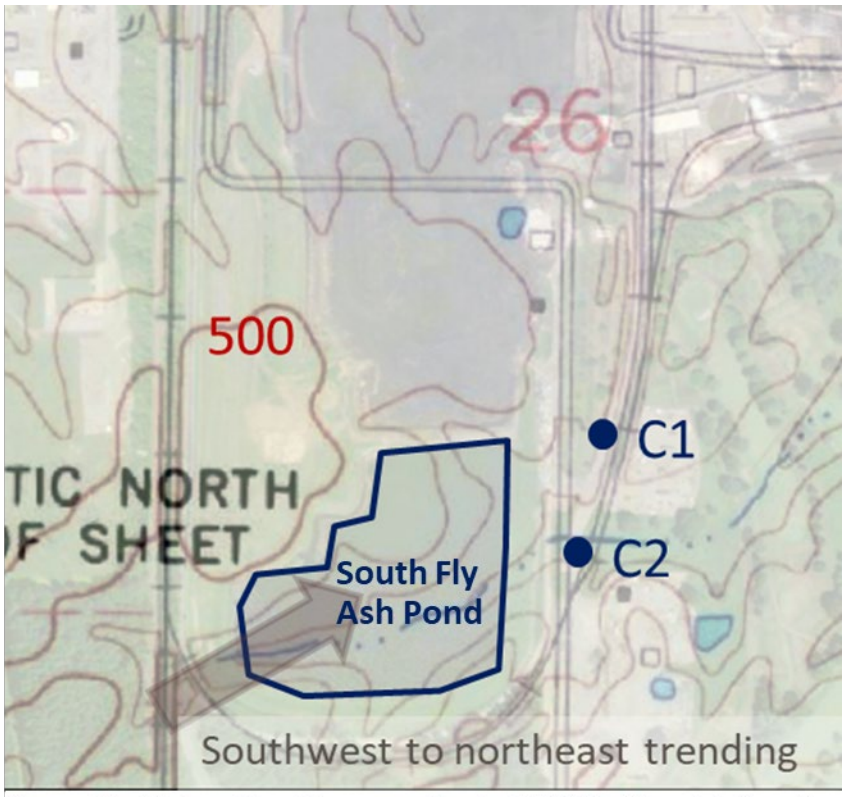


Figure 8 – Natural land topography by USGS in the vicinity of the South Fly Ash Pond.

III. IEPA observed that the monitoring well C3 is up gradient of the SFAP and the monitoring well S1 is clearly on the opposite side of Little Saline Creek, which likely serves as a hydrologic divide for

shallow groundwater. Therefore, S1 is not down gradient of any of the CCR surface impoundments.

The rationale for the locations of wells C3 and S1 is that they serve as background wells.

IV. Because of the map scale, it is not possible to tell which side of Little Saline Creek monitoring well S2 is located. Even if it is south of the creek, the lack of construction information puts its ability to detect releases in question.

The location of well S2 is south of the creek and downgradient of Pond 6. The historical concentration data obtained from S2 consistently shows higher boron and sulfate concentrations have been observed at S2, indicating that this well is monitoring downgradient groundwater. The S2 well construction diagram shows that it is a shallow groundwater well with a screen interval from 16 feet below ground surface (bgs) to 26 feet bgs.

V. Monitoring well S3 may be somewhat down gradient from Pond 6, but since the arrow pointing to the location, does not match the symbol location, S3 could be considerably side gradient and there is no construction information provided.

Well S3 is located at the symbol location and is a shallow monitoring well. S3 is relatively downgradient and side gradient of the sludge and historical ash storage areas. If the groundwater field has a more eastward component, the location of S3 may observe downgradient groundwater. At times, the boron concentrations observed at S3 are higher than those at the background wells.

VI. Monitoring well S5 is upgradient of all of the CCR surface impoundments.

Well S5 is upgradient of the historical fly ash storage area and may potentially hydraulically downgradient of the former Emery Pond. The groundwater quality at S5 generally has a very low boron concentration and a higher than the background sulfate concentration.

VII. Finally, monitoring well S6 is up gradient of Pond B-3 and at best cross gradient from Pond 4.

Well S6 is side gradient of Pond 4 and downgradient of the coal pile and SFAP. The groundwater quality observed at this well is comparable with the quality of background groundwater.

Thus, while the current monitoring well network can be enhanced for future monitoring, its current network has provided useful historical data to assess the general extent of CCR impacted groundwater.

References

1. Haley & Aldrich, 2021. Pond Investigation Report of Certain Ponds at Southern Illinois Power Company's ("SIPC") Marion Station ("Marion"), Technical Memorandum. 1 September (SIPC Ex. 29).

2. Illinois Environmental Protection Agency, 2023. Petition of Southern Illinois Power Cooperative for an Adjusted Standard from 35 Ill. ADA. CODE 845 Or, in the Alternative a Finding of Inapplicability, AS 2021-006 (Adjusted Standard), RECOMMENDATION. January 13.

3. Illinois Environmental Protection Agency, 2023. Petition of Southern Illinois Power Cooperative for an Adjusted Standard from 35 Ill. ADA. CODE 845 Or, in the Alternative a Finding of Inapplicability, AS 2021-006 (Adjusted Standard), RESPONSES to PETITIONER SOUTHERN ILLINOIS POWER COOPERATIVE'S FIRST SET OF INTERROGATORIESRECOMMENDATION. May 19.

4. Illinois Environmental Protection Agency, 2025. Petition of Southern Illinois Power Cooperative for an Adjusted Standard from 35 Ill. ADA. CODE 845 Or, in the Alternative a Finding of Inapplicability, AS 2021-006 (Adjusted Standard), AMENDED RECOMMENDATION, February 3.

5. Illinois Environmental Protection Agency, 2024. Illinois Administrative Code. TITLE 35. Environmental Protection. Part 620. Groundwater Quality. Updated March 27, 2024.

https://haleyaldrich-my.sharepoint.com/personal/jchu_haleyaldrich_com/Documents/Documents/00_Work/03_Projects/CCR_Cases/SIPC/IEPA Determination/Report/2025_0409_Evaluation Report_F.docx

FIGURES

APPENDIX A
Clarification of the “Other” Category listed in RJLG Reports

RJ Lee Group

April 4, 2025

David Hagen
Haley & Aldrich, Inc.
70 Blanchard Rd, Ste 204
Burlington, MA 01803

Re: Clarification of the "Other" Category listed in RJLG PLM Reports

Dear Mr. Hagen,

At the request of Bina Joshi, at the Law Firm ArentFox Schiff LLP, I have provided an explanation of the category identified as "Other" in the polarized light microscopy (PLM) reports previously generated in 2021 regarding the "Evaluation of Granular Samples for Coal Combustion By-Product Content." This category is a variable category that included constituents that were not of particular interest to the investigation in process but were necessary to provide stereological quantification of subject component populations. In these cases, the Other category generally included constituent classifications such as: Quartz, Carbonates, Vermiculite, Perlite, isotropic/glass, organics, and opaque particles.

This information is submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which this information is used or interpreted.

Should you have any questions or feel that I may be of further assistance, please do not hesitate to contact me.

Sincerely,

Keith E. Wagner
Principal Investigator/Senior Materials Scientist

APPENDIX B
Monitoring Well Construction Information

Electronic Filing: Received, Clerk's Office 04/10/2025

Holcomb Foundation Engineering Co., Inc.

SOILS • BITUMINOUS • CONCRETE • ENGINEERING AND TESTING

393 Wood Road
Carbondale, IL 62901

PHONE 618-529-5262
TOLL FREE 800-333-1740
FAX 618-457-8991

February 19, 2010

Southern Illinois Power Cooperative
11543 Lake of Egypt
Marion, Illinois 62959

Attention: Mr. Jason McLaurin

Re: Monitoring Well Installations and Abandonment
Southern Illinois Power Cooperative
Marion, Illinois
HFE File H-10037

Dear Sir:

On February 16, 2010, we abandoned one ground water monitoring well, installed two wells at this site. We also cut the existing metal covers off of seven wells, and installed J-plugs on the wells to seal the pipe. Enclosed are the Boring Logs, Well Completion Reports, and Water Well Sealing Form. We have submitted one copy of the Water Well Sealing Form to the Williamson County Health Department per Illinois Well Code.

If you should have any questions, or if we can be of further assistance, please feel free to contact us at your convenience.

Sincerely,

HOLCOMB FOUNDATION ENGINEERING CO.

_____
Timothy J. Holcomb, P.E.

Electronic Filing: Received, Clerk's Office 09/10/2025

Holcomb Foundation Engineering Co.
PO Box 88 Carbondale, Illinois

LOG of BORING C1

Unconfined Compressive Strength (Tons/Sq. Ft.)
1 2 3 4 5 6

Water Content (%)

Standard N Penetration, Blows/Ft.
10 20 30 40 50 60

Depth in Feet	Sample No.	Type Sample	Sample Distance	Description of Material
				Surface Elevation
				3" Topsoil
		au		Brown Sandy CLAY (CL)
5				
10				
				Brown SANDSTONE
15				End of Boring @ −15.0'
20				
25				
30				
35				

Ground Water Data
No Ground Water Encountered During Drilling.

Project: **SIPC Monitoring Well Installation**
Marion, Illinois

Date of Boring
February 16, 2010

Client: **Southern Illinois Power Cooperative Plant**
Marion, Illinois

Project No.
H−10037

Electronic Filing: Received, Clerk's Office 04/10/2025

Holcomb Foundation Engineering Company — **Monitoring Well Completion Report**

Site # H-10037 County Jackson Well # C1

Site Name Southern Illinois Power Cooperative Grid Coordinate Northing _____ Easting _____

Drilling Contractor Holcomb Foundation Engineering Date Drilled Start: 2/16/2010

Driller Dan Russell Geologist Tim Holcomb Date Completed: 2/16/2010

Drilling Method Hollow Stem Augers

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite Chips

Amount of Cement: # of bags _____ lbs. per bag _____

Amount of bentonite: # of bags _____ lbs. per bag _____

Type of Bentonite Seal (Granular, Pellet): Granular Chips

Amount of Bentonite: # of bags 1 lbs. per bag 50

Type of Sand Pack: FilterSil #1 10-20

Source of Sand: FilterSil Junction City, GA

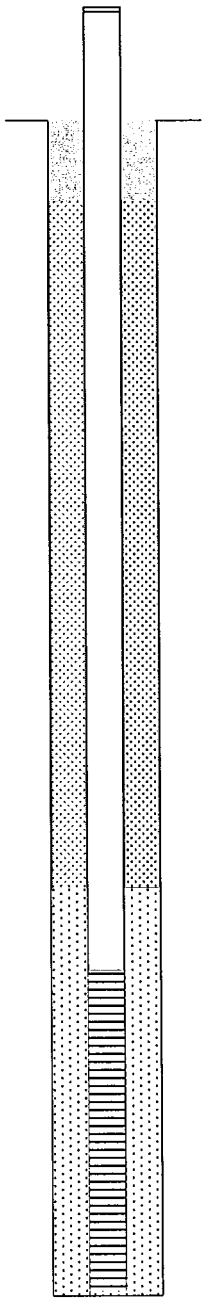
Amount of Sand: # of bags 4 lbs. per bag 50

Well Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint			Sch 40	
Riser pipe above wt			Sch 40	
Riser pipe below wt			Sch 40	
**Screen			Sch 40	
Coupling joint screen to riser			Sch 40	
Protective Casing				

Measurements to .1 ft. (where applicable)

Riser pipe length			8'	
Protective casing length				
Screen length			9.8'	
Bottom of screen to end cap			0.1'	
Top of screen to first joint			0.1'	
Total length of casing			---	
Screen slot size			0.010"	
% of openings in screen			---	
Diameter of borehole (in)			8.0"	
ID of riser pipe (in)			2.0"	



+3.0 MSL Top of Riser Pipe

0.0 MSL Ground Surface

1 ft. Concrete Seal

-1.0 ft. Top of Bentonite

2 ft. Bentonite Seal

-3.0 ft. Top of Sand

-5.0 ft. Top of Screen

10.0 ft. Total Screen Interval

15.0 ft. Bottom of Screen

-15.0 ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

Electronic Filing: Received, Clerk's Office 04/10/2025

Holcomb Foundation Engineering Co.
PO Box 88 Carbondale, Illinois

LOG of BORING C2

Unconfined Compressive Strength (Tons/Sq. Ft.)
1 2 3 4 5 6
Water Content (%)
Standard N Penetration, Blows/Ft.
10 20 30 40 50 60

Depth in Feet	Sample No.	Type Sample	Sample Distance	Description of Material
				Surface Elevation
				4" Crushed Stone
				Brown Silty CLAY (CL)
5		au		
10				Brown SANDSTONE Auger Refusal
15				End of Boring @ −12.0'
20				
25				
30				
35				

Ground Water Data
Ground Water Encountered @ −11.0' During Drilling and @ −5' Upon Completion.

Project: SIPC Monitoring Well Installation Marion, Illinois	Date of Boring February 16, 2010
Client: Southern Illinois Power Cooperative Plant Marion, Illinois	Project No. H−10037

Electronic Filing: Received, Clerk's Office 09/10/2025

Holcomb Foundation Engineering Company — **Monitoring Well Completion Report**

Site # H-10037 County Williamson Well # C2

Site Name Southern Illinois Power Cooperative Grid Coordinate Northing _____ Easting _____

Drilling Contractor Holcomb Foundation Engineering Date Drilled Start: 2/16/2010

Driller Dan Russell Geologist Tim Holcomb Date Completed: 2/16/2010

Drilling Method Hollow Stem Augers

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite Chips

Amount of Cement: # of bags _____ lbs. per bag _____

Amount of bentonite: # of bags _____ lbs. per bag _____

Type of Bentonite Seal (Granular, Pellet): Granular Chips

Amount of Bentonite: # of bags 1 lbs. per bag 50

Type of Sand Pack: FilterSil #1 10-20

Source of Sand: FilterSil Junction City, GA

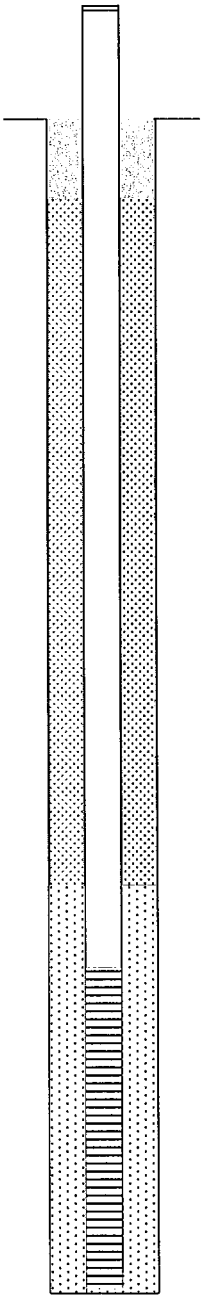
Amount of Sand: # of bags 4 lbs. per bag 50

Well Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint			Sch 40	
Riser pipe above wt			Sch 40	
Riser pipe below wt			Sch 40	
**Screen			Sch 40	
Coupling joint screen to riser			Sch 40	
Protective Casing				

Measurements to .1 ft. (where applicable)

Riser pipe length			5'	
Protective casing length				
Screen length			9.8'	
Bottom of screen to end cap			0.1'	
Top of screen to first joint			0.1'	
Total length of casing			---	
Screen slot size			0.010"	
% of openings in screen			---	
Diameter of borehole (in)			8.0"	
ID of riser pipe (in)			2.0"	



+3.0 MSL Top of Riser Pipe

0.0 MSL Ground Surface

0.5 ft. Concrete Seal

-0.5 ft. Top of Bentonite

0.5 ft. Bentonite Seal

-1.0 ft. Top of Sand

-2.0 ft. Top of Screen

10.0 ft. Total Screen Interval

12.0 ft. Bottom of Screen

-12.0 ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

Electronic Filing: Received, Clerk's Office 10/10/2025

HOLCOMB FOUNDATION ENGINEERING CO.

Geotechnical Engineering - Soil Borings - Monitoring Wells
Construction Materials Engineering and Testing

WOOD ROAD
P.O. BOX 68
CARBONDALE, ILLINOIS 62903-0068
618-529-5262
800-333-1740
FAX 618-457-8961

September 23, 1993

Southern Illinois Power Co-Operative
Rt. 4, Box 607
Marion, Illinois 62959

Attention: Mr. Leonard Hopkins

Re: Soil Borings and Monitoring Well Installations
SIPC Wells
Williamson County, Illinois
HFE File No. H-93196
SIPC Purchase Order #91-5041A

Dear Sir:

Enclosed are the Boring Logs and Well Completion Reports for the above referenced project drilled September 20 and 21, 1993.

If you should have any questions, please feel free to contact me at your convenience.

Sincerely,

HOLCOMB FOUNDATION ENGINEERING

Timothy J. Holcomb, P.E.

TJH/jar

Encls.

LOG OF BORING 1

UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²

1 2 3 4 5 6

PLASTIC LIMIT % □ — WATER CONTENT % ○ — LIQUID LIMIT % △

STANDARD "N" PENETRATION, BLOWS/FT

10 20 30 40 50 60

DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
				Brown Silty CLAY (CL)
5				
10	1	au		
				Gray Silty CLAY (CL) w/Sand
15				
20				
				Gray Sandstone
25				End of Boring @ -25'

GROUND WATER DATA: Ground water encountered @ -13' during drilling; @ -14' upon completion.

PROJECT: SIPC Wells Williamson County, Illinois	DATE OF BORING: 9-20-93
CLIENT: Southern Illinois Power Co-Operative Marion, Illinois	PROJECT NO.: H-93196

Illinois Environmental Protection Agency — **Well Completion Report**

Site #: _____ County Williamson Well # 1

Site Name: Southern Illinois Power Co-Op Grid Coordinate: Northing _____ Easting _____

Drilling Contractor: Holcomb Foundation Engineering Co., Inc. Date Drilled Start: 9/20/93

Driller: J. Carter Geologist: T. Holcomb Date Completed: 9/20/93

Drilling Method: Hollow Stem Augers Drilling Fluids (type): None

Annular Space Details

Type of Surface Seal: Quickrete

Type of Annular Sealant: Cement/Bentonite

Amount of cement: # of bags 2 lbs. per bag 94

Amount of bentonite: # of bags 1 lbs. per bag 9

Type of Bentonite Seal (Granular, Pellet): Granular

Amount of bentonite: # of Bags 1 lbs. per bag 50

Type of Sand Pack: Silica Sand

Source of Sand: Colorado Silica

Amount of Sand: # of bags 3 lbs. per bag 100

Well Construction Materials

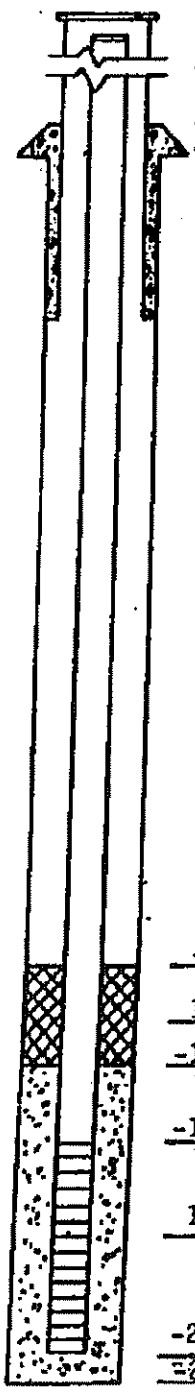
	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	SS304			
Riser pipe above w.t.	SS304			
Riser pipe below w.t.	SS304			
Screen	SS304			
Coupling joint screen to riser	SS304			
Protective casing				

Measurements

to .01 ft. (where applicable)

Riser pipe length	15
Protective casing length	-
Screen length	9.8
Bottom of screen to end cap	0.1
Top of screen to first joint	0.1
Total length of casing	-
Screen slot size	0.010"
# of openings in screen	-
Diameter of borehole (in)	8
ID of riser pipe (in)	2

Elevations — .01 ft.



3	MSL Top of Protective Casing
3	MSL Top of Riser Pipe
_____	ft. Casing Stickup
_____	MSL Ground Surface
-2	ft. Top of annular sealant
-2	ft. Top of Seal
11	ft. Total Seal Interval
-13	ft. Top of Sand
-15	ft. Top of Screen
10	ft. Total Screen Interval
-25	ft. Bottom of Screen
-25	ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

LOG OF BORING 3

UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²
1 2 3 4 5 6
PLASTIC LIMIT % □ — WATER CONTENT % ○ — LIQUID LIMIT % △
STANDARD "N" PENETRATION, BLOWS/FT
10 20 30 X 40 50 60

DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
				3" Topsoil
				Brown Silty CLAY (CL)
5				
10	1	au		Brown Silty CLAY (CL) w/Sand
15				Gray Silty CLAY (CL) w/Sand
20				
25				End of Boring @ -25'

GROUND WATER DATA
Ground water encountered @ -18' during drilling; @ -25' upon completion.

PROJECT
SIPC Wells
Williamson County, Illinois

DATE OF BORING
9-20-93

CLIENT
Southern Illinois Power Co-Operative
Marion, Illinois

PROJECT NO.
H-93196

Electronic Filing: Received, Clerk's Office 09/10/2025

Illinois Environmental Protection Agency — **Well Completion Report**

Site #: _____ County: Williamson Well #: 3

Site Name: Southern Illinois Power Co-Op Grid Coordinate: Northing _____ Easting _____

Drilling Contractor: Holcomb Foundation Engineering Co., Inc. Date Drilled Start: 9/20/93

Driller: J. Carter Geologist: T. Holcomb Date Completed: 9/20/93

Drilling Method: Hollow Stem Augers Drilling Fluids (type): None

Annular Space Details

Type of Surface Seal: Quickrete

Type of Annular Sealant: Cement/Bentonite

Amount of cement: # of bags 2 lbs. per bag 94

Amount of bentonite: # of bags 1 lbs. per bag 9

Type of Bentonite Seal (Granular, Pellet): Granular

Amount of bentonite: # of Bags 1 lbs. per bag 50

Type of Sand Pack: Silica Sand

Source of Sand: Colorado Silica

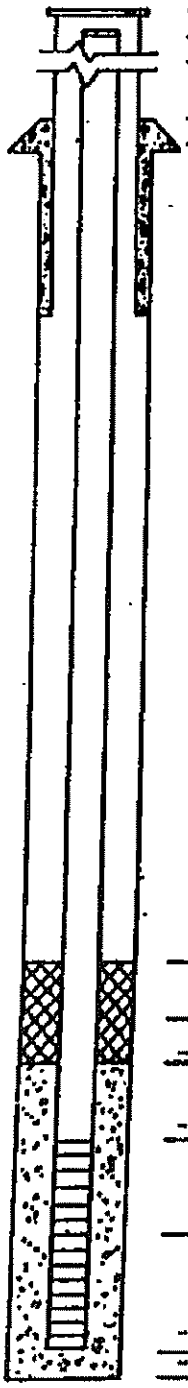
Amount of Sand: # of bags 3 lbs. per bag 100

Well Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	SS304			
Riser pipe above w.t.	SS304			
Riser pipe below w.t.	SS304			
Screen	SS304			
Coupling joint screen to riser	SS304			
Protective casing				

Measurements to .01 ft. (where applicable)

Riser pipe length	15
Protective casing length	-
Screen length	9.8
Bottom of screen to end cap	0.1
Top of screen to first joint	0.1
Total length of casing	-
Screen slot size	0.010"
% of openings in screen	-
Diameter of borehole (in)	8
ID of riser pipe (in)	2



Elevations — .01 ft.

3	MSL Top of Protective Casing
3	MSL Top of Riser Pipe
_____	ft. Casing Stickup
_____	MSL Ground Surface
-2	ft. Top of annular sealant
-2	ft. Top of Seal
11	ft. Total Seal Interval
-13	ft. Top of Sand
-15	ft. Top of Screen
10	ft. Total Screen Interval
-25	ft. Bottom of Screen
-25	ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

LOG OF BORING 4

UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²
1 2 3 4 5 6
PLASTIC LIMIT % □ WATER CONTENT % ○ LIQUID LIMIT % △
STANDARD "N" PENETRATION, BLOWS/FT
10 20 30 X 40 50 60

DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
				5" Topsoil
				Brown Silty CLAY (CL) w/Sand
5	1	au		
10				
15				Brown Sandstone
20				End of Boring @ -18'

GROUND WATER DATA: No ground water encountered during drilling.

PROJECT: SIPC Wells Williamson County, Illinois	DATE OF BORING: 9-21-93
CLIENT: Southern Illinois Power Co-Operative Marion, Illinois	PROJECT NO.: H-93196

Electronic Filing: Received, Clerk's Office 04/10/2025

Illinois Environmental Protection Agency

Well Completion Report

Site #: _____ County Williamson Well # 4

Site Name: Southern Illinois Power Co-Op Grid Coordinate: Northing _____ Easting _____

Drilling Contractor: Holcomb Foundation Engineering Co., Inc. Date Drilled Start: 9/21/93

Driller: J. Carter Geologist: T. Holcomb Date Completed: 9/21/93

Drilling Method: Hollow Stem Augers Drilling Fluids (type): None

Annular Space Details

Type of Surface Seal: Quickrete

Type of Annular Sealant: Cement/Bentonite

Amount of cement: # of bags 1 lbs. per bag 94

Amount of bentonite: # of bags 1 lbs. per bag 4.5

Type of Bentonite Seal (Granular, Pellet): Granular

Amount of bentonite: # of Bags 1 lbs. per bag 50

Type of Sand Pack: Silica Sand

Source of Sand: Colorado Silica

Amount of Sand: # of bags 3 lbs. per bag 100

Well Construction Materials

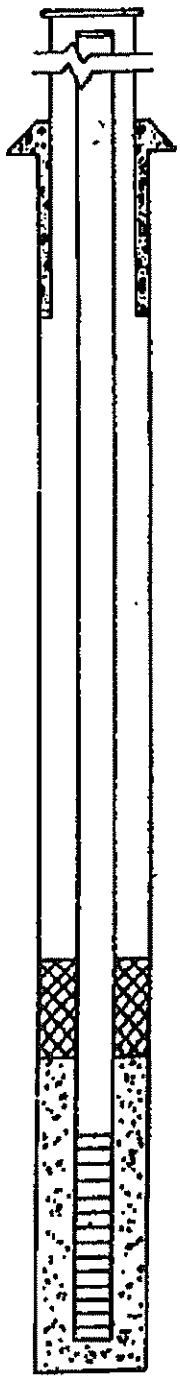
	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	SS304			
Riser pipe above w.t.	SS304			
Riser pipe below w.t.	SS304			
Screen	SS304			
Coupling joint screen to riser	SS304			
Protective casing				

Measurements

to .01 ft. (where applicable)

Riser pipe length	8
Protective casing length	-
Screen length	9.8
Bottom of screen to end cap	0.1
Top of screen to first joint	0.1
Total length of casing	-
Screen slot size	0.010"
% of openings in screen	-
Diameter of borehole (in)	8
ID of riser pipe (in)	2

Elevations — .01 ft.



3		MSL Top of Protective Casing
3		MSL Top of Riser Pipe
		ft. Casing Stickup
		MSL Ground Surface
-2		ft. Top of annular sealant
-2		ft. Top of Seal
4		ft. Total Seal Interval
-6		ft. Top of Sand
-8		ft. Top of Screen
10		ft. Total Screen Interval
-18		ft. Bottom of Screen
-18		ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

LOG OF BORING 5

UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²
1 2 3 4 5 6
PLASTIC LIMIT % □ | WATER CONTENT % ○ | LIQUID LIMIT % △
STANDARD "N" PENETRATION, BLOWS/FT
10 20 30 X 40 50 60

DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
				5" Topsoil
				Brown Silty CLAY (CL)
5				
10	1	au		
15				Brown Silty CLAY (CL) w/Sand
20				Brown Sandstone
25				End of Boring @ -22 1/2'

GROUND WATER DATA: Ground water encountered @ -16' during drilling.

PROJECT: SIPC Wells
Williamson County, Illinois

DATE OF BORING: 9-20-93

CLIENT: Southern Illinois Power Co-Operative
Marion, Illinois

PROJECT NO.: H-93196

Electronic Filing: Received, Clerk's Office 04/10/2025

Illinois Environmental Protection Agency

Well Completion Report

Site #: _____ County Williamson Well # 5

Site Name: SouthernIIIinois Power Co-Op Grid Coordinate: Northing _____ Easting _____

Drilling Contractor: Holcomb Foundation Engineering Co., Inc. Date Drilled Start: 9/20/93

Driller: J. Carter Geologist: T. Holcomb Date Completed: 9/20/93

Drilling Method: Hollow Stem Augers Drilling Fluids (type): None

Annular Space Details

Type of Surface Seal: Quickrete

Type of Annular Sealant: Cement/Bentonite

Amount of cement: # of bags 2 lbs. per bag 94

Amount of bentonite: # of bags 1 lbs. per bag 9

Type of Bentonite Seal (Granular, Pellet): Granular

Amount of bentonite: # of Bags 1 lbs. per bag 50

Type of Sand Pack: Silica Sand

Source of Sand: Colorado Silica

Amount of Sand: # of bags 3 lbs. per bag 100

Well Construction Materials

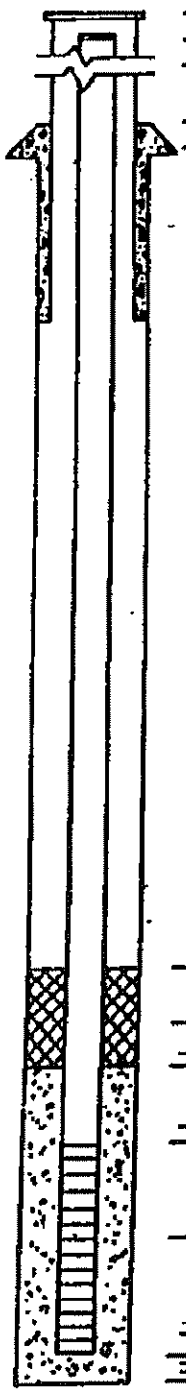
	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	SS304			
Riser pipe above w.t.	SS304			
Riser pipe below w.t.	SS304			
Screen	SS304			
Coupling joint screen to riser	SS304			
Protective casing				

Measurements

to .01 ft. (where applicable)

Riser pipe length	12
Protective casing length	-
Screen length	9.8
Bottom of screen to end cap	0.1
Top of screen to first joint	0.1
Total length of casing	-
Screen slot size	0.010"
# of openings in screen	-
Diameter of borehole (in)	8
ID of riser pipe (in)	2

Elevations -- .01 ft.



3	MSL Top of Protective Casing
3	MSL Top of Riser Pipe
_____	ft. Casing Stickup
_____	MSL Ground Surface
-2	ft. Top of annular sealant
-2	ft. Top of Seal
8	ft. Total Seal Interval
-10	ft. Top of Sand
-12	ft. Top of Screen
10	ft. Total Screen Interval
-22	ft. Bottom of Screen
-22	ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

LOG OF BORING 6

UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²
1 2 3 4 5 6
PLASTIC LIMIT % □ WATER CONTENT % ○ LIQUID LIMIT % △
STANDARD "N" PENETRATION, BLOWS/FT
10 20 30 X 40 50 60

DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION
				5" Topsoil
				Brown Silty CLAY (CL)
5				
				Brown Silty CLAY (CL) w/Sand
10	1	au		
15				
				Brown Sandstone
20				
				End of Boring @ -22 1/2'
25				

GROUND WATER DATA
Ground water encountered @ -7' during drilling.

PROJECT: SIPC Wells
Williamson County, Illinois

DATE OF BORING: 9-20-93

CLIENT: Southern Illinois Power Co-Operative
Marion, Illinois

PROJECT NO.: H-93196

Electronic Filing: Received, Clerk's Office 04/10/2025

Illinois Environmental Protection Agency — Well Completion Report

Site #: _____ County: Williamson Well #: 6

Site Name: Southern Illinois Power Co-Op Grid Coordinate: Northing _____ Easting _____

Drilling Contractor: Holcomb Foundation Engineering Co., Inc. Date Drilled Start: 9/20/93

Driller: J. Carter Geologist: T. Holcomb Date Completed: 9/20/93

Drilling Method: Hollow Stem Augers Drilling Fluids (type): None

Annular Space Details

Type of Surface Seal: Quickrete

Type of Annular Sealant: Cement/Bentonite

Amount of cement: # of bags 2 lbs. per bag 94

Amount of bentonite: # of bags 1 lbs. per bag 9

Type of Bentonite Seal (Granular, Pellet): Granular

Amount of bentonite: # of Bags 1 lbs. per bag 50

Type of Sand Pack: Silica Sand

Source of Sand: Colorado Silica

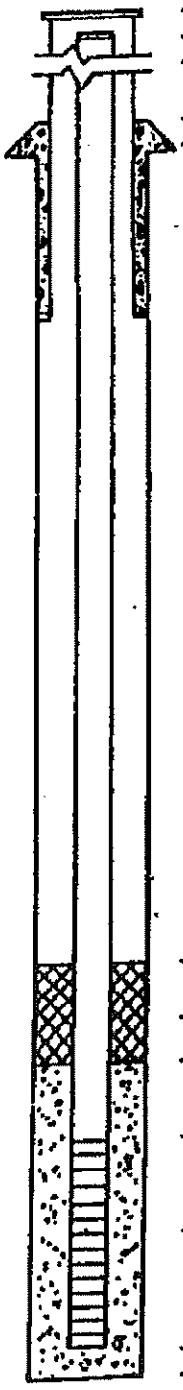
Amount of Sand: # of bags 3 lbs. per bag 100

Well Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint	SS304			
Riser pipe above w.t.	SS304			
Riser pipe below w.t.	SS304			
Screen	SS304			
Coupling joint screen to riser	SS304			
Protective casing				

Measurements to .01 ft. (where applicable)

Riser pipe length	12
Protective casing length	-
Screen length	9.8
Bottom of screen to end cap	0.1
Top of screen to first joint	0.1
Total length of casing	-
Screen slot size	0.010"
% of openings in screen	-
Diameter of borehole (in)	8
ID of riser pipe (in)	2



Elevations — .01 ft.

3	MSL Top of Protective Casing
3	MSL Top of Riser Pipe
	ft. Casing Stickup
	MSL Ground Surface
-2	ft. Top of annular sealant
-2	ft. Top of Seal
8	ft. Total Seal Interval
-10	ft. Top of Sand
12	ft. Top of Screen
10	ft. Total Screen Interval
-22	ft. Bottom of Screen
-22	ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

Electronic Filing: Received, Clerk's Office 08/19/2025

Holcomb Foundation Engineering Co., Inc.

SOILS • BITUMINOUS • CONCRETE • ENGINEERING AND TESTING

SHIPPING ADDRESS
393 Wood Road
Carbondale, IL 62901

MAILING ADDRESS
PO Box 88
Carbondale, IL 62903

PHONE 618-529-5262
TOLL FREE 800-333-1740
FAX 618-457-8991

February 21, 2011

Southern Illinois Power Cooperative
11543 Lake of Egypt
Marion, Illinois 62959

Attention: Mr. Jason McLaurin

Re: Monitoring Well Installation
Southern Illinois Power Cooperative
Marion, Illinois
HFE File H-10037

Dear Sir:

In response to your request, on February 18, 2011, we drilled and installed monitoring well # S2 at the above referenced site, and abandoned and grouted the old well #S2. Enclosed are the Boring Log and Monitoring Well Completion Diagram. If you should have any questions, please feel free to contact us at your convenience.

Sincerely,

HOLCOMB FOUNDATION ENGINEERING CO.

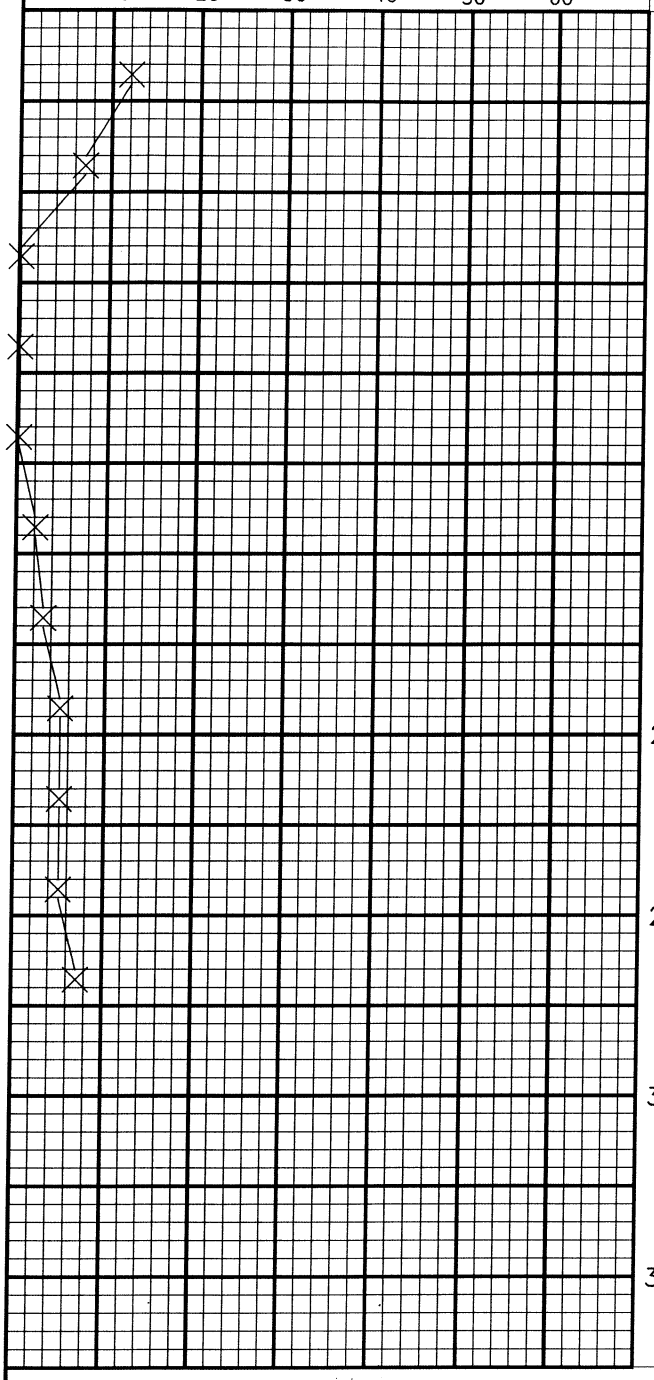
Timothy J. Holcomb, P.E.

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY J.
HOLCOMB
062-042149
Expires 11-30-11
ILLINOIS

Enclosures

Electronic Filing: Received, Clerk's Office 08/10/2025

Holcomb Foundation Engineering Co. LOG OF BORING
PO Box 88 Carbondale, Illinois



Depth in Feet	Sample No.	Type Sample	Sample Distance	Description of Material
				Surface Elevation
				Brown to Gray Silty CLAY (CL)
	1	ss		
	2	ss		
5	3	ss		
	4	ss		Gray Silty CLAY (CL) with sand
10	5	ss		
	6	ss		Brown Mottled Gray Clayey SAND(SC)
15	7	ss		Gray Clayey SAND (SC)
	8	ss		
20	9	ss		Gray Silty CLAY (CL) with sand
	10	ss		Gray Clayey SAND (SC)
25	11	ss		Gray Sandy CLAY (CL)
				End of Boring @ -27.5'
30				
35				

Ground Water Data
Ground Water Encountered @ -9.0' During Drilling.

Project: SIPC Monitoring Well Installation
Marion, Illinois

Date of Boring
February 18, 2011

Client: Southern Illinois Power Cooperative Plant
Marion, Illinois

Project No.
H-10037

Electronic Filing: Received, Clerk's Office 04/10/2025

Holcomb Foundation Engineering Company — Monitoring Well Completion Report

Site # H-10037 County Williamson Well # S2

Site Name Southern Illinois Power Cooperative Grid Coordinate Northing _____ Easting _____

Drilling Contractor Holcomb Foundation Engineering Date Drilled Start: 2/18/2010

Driller Dan Russell Geologist Tim Holcomb Date Completed: 2/18/2010

Drilling Method Hollow Stem Augers

Annular Space Details

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite Chips

Amount of Cement: # of bags _____ lbs. per bag _____

Amount of bentonite: # of bags _____ lbs. per bag _____

Type of Bentonite Seal (Granular, Pellet): Granular Chips

Amount of Bentonite: # of bags 5 lbs. per bag 50

Type of Sand Pack: FilterSil #1 10-20

Source of Sand: FilterSil Junction City, GA

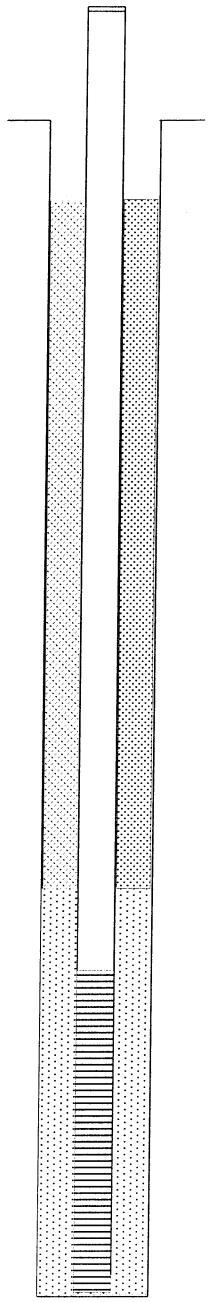
Amount of Sand: # of bags 2 lbs. per bag 50

Well Construction Materials

	Stainless Steel Specify Type	Teflon Specify Type	PVC Specify Type	Other Specify Type
Riser coupling joint			Sch 40	
Riser pipe above wt			Sch 40	
Riser pipe below wt			Sch 40	
**Screen			Sch 40	
Coupling joint screen to riser			Sch 40	
Protective Casing			5 ft	

Measurements to .1 ft. (where applicable)

Riser pipe length			19'	
Protective casing length				
Screen length			9.8'	
Bottom of screen to end cap			0.1'	
Top of screen to first joint			0.1'	
Total length of casing			---	
Screen slot size			0.010"	
% of openings in screen			---	
Diameter of borehole (in)			8.0"	
ID of riser pipe (in)			2.0"	



+3.0 MSL Top of Riser Pipe

0.0 MSL Ground Surface

1 ft. Concrete Seal

-1.0 ft. Top of Bentonite

13 ft. Bentonite Seal

-14.0 ft. Top of Sand

-16.0 ft. Top of Screen

10.0 ft. Total Screen Interval

26.0 ft. Bottom of Screen

-27.5 ft. Bottom of Borehole

Completed by: T. Holcomb Surveyed by: _____ Ill. registration # _____

Electronic Filing: Received, Clerk's Office 10/10/2025

EXHIBIT 41

The Second Declaration of Jason McLaurin

Second Declaration of Jason McLaurin On Behalf of Southern Illinois Cooperative

I, Jason McLaurin, affirm and declare as follows:

1. I am currently employed as Environmental Coordinator at Southern Illinois Power Cooperative, which operates an electric power generating facility, located south of Marion, Illinois, in Williamson County ("Marion Station"). My responsibilities include overseeing environmental compliance and related activities at the Marion Station. I have been employed at SIPC since July 9, 2007. I have a degree in Plant & Soil Science from Southern Illinois University Carbondale.

2. Based on my personal knowledge and belief, the following statements are true and correct.

   a. In or around 2007, the area at the north end of the South Fly Ash Pond was dewatered and used as a storage pad for overburden coal from Prairie State.

   b. CCR cannot be burned as fuel. Sediment that was removed from Former Pond B-3 and from Pond 4 that was then burned as fuel at the Marion Station could not, therefore, have contained any appreciable amount of CCR.

   c. Long narrow strips on top of the historic CCR landfill at Marion Station were used when emergency conditions existed due to sub-freezing temperatures. During such times, scrubber solids were temporarily pumped into these strips on top of the landfill. The scrubber solids were allowed to decant and the solids were then immediately removed from the strips and placed dry, onto the CCR landfill.

   d. Starting around 2000, a cavity on top of the closed Initial Fly Ash Holding Unit was used as a holding pond for coal yard runoff. It was also occasionally used during emergency conditions due to sub-freezing temperatures to receive scrubber solids, which were removed and then placed dry, onto the CCR landfill.

   e. After its closure, occasional ponding occurred in small areas on top of the Fly Ash

Holding Extension area due to rainfall.

Further the Declarant sayeth not.

Date: 4|10|2025

Jason A. McLaurin

Electronic Filing: Received, Clerk's Office 10/10/2025

EXHIBIT 42

IEPA's Response to SIPC's Second Set of Interrogatories, Interrogatory (June 9, 2023)
(excerpted)

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
PETITION OF SOUTHERN ILLINOIS POWER COOPERATIVE FOR AN ADJUSTED STANDARD FROM 35 ILL. ADM. CODE 845 OR, IN THE ALTERNATIVE A FINDING OF INAPPLICABILITY	)	**AS 2021-006 (Adjusted Standard)**

PETITIONER SOUTHERN ILLINOIS POWER COOPERATIVE'S SECOND SET OF INTERROGATORIES

Petitioners Southern Illinois Power Cooperative ("SIPC"), by and through its counsel, ArentFox Schiff, LLP, and in accordance with 35 Ill. Admin. Code 101.620 and the Hearing Officer's January 17, 2023 Order, requests that the Illinois Environmental Protection Agency answer under oath the following interrogatories.

INSTRUCTIONS and DEFINITIONS

1. The instructions and definitions from Southern Illinois Power Cooperative's First Set of Interrogatories are restated herein.

INTERROGATORIES

Interrogatory 18. Does IEPA agree that the area described in the Petition for Adjusted Standard as the Former Landfill would be regulated by 35 Ill. Admin. Code Part 815 and/or Part 811 and subject to closure under 35 Ill. Admin. Code Part 811 if 35 Ill Admin. Code part 845 had not been promulgated? If not, why?

RESPONSE: Objection. This question calls for speculation. Without waiving said objection, the Agency acknowledges the area at SIPC had been considered by the Bureau of Land to be a Part 815 on site landfill. Pursuant to the addition of CCR regulation under the Environmental Protection Act and the adoption of Part 845 by the Illinois Pollution Control Board, the Agency determined that the Former Landfill is subject to Part 845 since this area meets the definition of a CCR Surface Impoundment.

Interrogatory 19. Is it IEPA's position that but for the promulgation of 35 Ill Admin. Code Part 845, SIPC could close under 35 Ill Admin. Code Part 811 the area described in the Petition for Adjusted Standard as the Former Landfill? If not, please explain why.

RESPONSE: Objection. This question calls for speculation. This site has not been evaluated under Part 811 for closure. Also, the site meets the definition of a CCR Surface Impoundment under the Act and Part 845.

EXHIBIT 43

IEPA Bureau of Land, Response/Document Review at Marion Station (May 7, 2021)

08/10/2021 11:07AM L017362 1990555005 01 3,335,961 170000164658 05/03/2021 L SOUTHERN ILLINOIS POWER COOP B:48838 F:50497 I:00000374

Electronic Filing: Received, Clerk's Office 06/10/2025

Bureau of Land – Field Operations Section

Response/Document Review

General Facility Information			
BOL ID:	1990555005	**Region:**	Marion
USEPA ID:	ILD007813900	**County:**	Williamson
Site Name:	Southern Illinois Power Cooperative	**Phone:**	618-964-2268
Address:	11543 Lake of Egypt Road	**Latitude:**	37.61968
City/State/Zip:	Marion, IL 62959	**Longitude:**	-88.95308
Permit No(s):	None		
Regulated As:	Part 815 Landfill		
Operational Status:	Inactive, Not Closed		

Owner	Operator
Southern Illinois Power Cooperative Attn: Donald Gulley, Agent 11543 Lake of Egypt Road Marion, IL 62959	Southern Illinois Power Cooperative Attn: Donald Gulley, Agent 11543 Lake of Egypt Road Marion, IL 62959

Inspection Details	
In Response To	Response to VN
Inspection Type	Response/Document Review
Inspection Date	5/3/2021
Inspector(s)	Williams, Sheila
Person(s) Interviewed	None
Previous Inspection Date	9/27/2019

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MAY 07 2021
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Executive Summary

On May 3, 2021, the apparent violations addressed in the March 20, 2020 Violation Notice L-2020-00035 and March 24, 2020 Violation Notice L-2020-00042 were dropped by the Illinois EPA's (Illinois Environmental Protection Agency) Bureau of Land (BOL). This decision was made based on the contents of an April 21, 2021 email received from Lynn Dunaway with the Illinois EPA's Bureau of Water (BOW).

Inspection Narrative

The Illinois EPA's BOL was recently informed by the Illinois EPA's BOW that the area at Southern Illinois Power Cooperative which BOL has considered to be a Part 815 on site landfill meets the definition of a coal combustion residual (CCR) surface impoundment and should be addressed by BOW under Part 845. Mr. Dunaway's email states discussions were held between Kyle Rominger (BOL Bureau Chief), Sanjay Sofat (BOW Bureau Chief), and Director John Kim. The decision was made that BOW will oversee the closure, post-closure, and any corrective action per Part 845. As such, BOL has dropped the outstanding violations pertaining to the onsite landfill.

Summary of Apparent Violation(s)			
Status	Date	Violation	Narrative
Dropped	1/7/2020	21(e)	Dispose, treat, store, abandon any waste, or transport any waste into Illinois at or to sites not meeting requirements of the Act

IEPA-DIVISION OF RECORDS MANAGEMENT
RELEASABLE
JUN 16 2021
REVIEWER: SAB

Dropped	1/7/2020	620.115	Cause, threaten or allow a violation of the Act, the IGPA or regulations adopted by the Board
Dropped	1/7/2020	620.420(a)	Inorganic standards for Class II groundwater
Dropped	1/7/2020	620.420(b)	Organic chemical constituents for Class II groundwater
Dropped	1/7/2020	620.420(c)	Explosive constituents for Class II groundwater
Dropped	1/7/2020	811.318	811.318(c) Maximum Allowable Predicted Concentrations (MAPCs)
Dropped	1/7/2020	811.318(e)	Standards for Sample Collection and Analysis
Dropped	1/7/2020	811.319(a)(2)	Criteria for choosing constituents to be monitored
Dropped	1/7/2020	811.319(a)(3)	Organic chemicals monitoring
Dropped	1/7/2020	811.320(d)	Establishment of background concentrations
Dropped	9/27/2019	21(e)	Dispose, treat, store, abandon any waste, or transport any waste into Illinois at or to sites not meeting requirements of the Act
Dropped	9/27/2019	811.313(a)	All waste not to be covered within 60 days by another lift of waste or final cover must have cover equivalent to 0.30 m (1') compacted clean soil material
Dropped	9/27/2019	811.314(a)	Unit covered by final cover consisting of low permeability layer overlain by final protective layer constructed per §811.314 unless Agency RD&D permit allows use of innovative final cover technology per adjusted standard and permit is in effect
Dropped	9/27/2019	811.314(b)	Low permeability layer constructed within 60 days after final waste lift placement; low permeability layer covers entire unit and connects with liner system; consists of compacted earth layer constructed with minimum allowable thickness of 0.91 m (3') and compacted to minimize void spaces and achieve permeability of 1 x 10-7 cm/sec, geomembrane constructed to provide performance equal or superior to compacted earth layer of (b)(3)(A) with strength to withstand normal stresses imposed by waste stabilization and placed over prepared base free from sharp objects and other materials that may cause damage, or any other low permeability layer construction techniques or materials providing equivalent or superior performance to above; for MSWLFs, if bottom liner permeability is <1 x 10-7 cm/sec, permeability of final cover low permeability layer must be less than or equal to the permeability of bottom liner system
Dropped	9/27/2019	811.314(c)	Final protective layer must cover entire low permeability layer; thickness of final protective layer sufficient to protect low permeability layer from freezing and minimize root penetration, and at least 0.91 m (3') thick; final protective layer consists of soil material capable of supporting vegetation; final protective layer placed as soon as possible after placement of low permeability layer to prevent desiccation, cracking, freezing, or other damage to low permeability layer
Dropped	9/27/2019	811.322(a).	Final slopes designed and constructed to support vegetation and minimize erosion
Dropped	9/27/2019	811.322(c)	Vegetation promoted on all reconstructed surfaces to minimize erosion of final protective cover; vegetation compatible with climatic conditions; vegetation requires little maintenance; vegetation consists of diverse mix of native and introduced species consistent with postclosure land use; vegetation tolerant

			of landfill gas; root depth does not exceed depth of final protective cover; and temporary erosion control measures undertaken while vegetation is being established
Dropped	9/27/2019	815.203	Initial facility report contents

Summary of Apparent Violation(s)			
Status	Date	Violation	Narrative
None Observed			

Attachment Listing		
ID	Type	Description
No Attachments.		

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EXHIBIT 44

Examples of Onsite Permit Exempt "815" Facility Annual Reports (2009 and 2019)

10/10/2014 1:44AM L 170000164658 1990555005 SOUTHERN ILLINOIS POWER COOP 10D 02/08/2010 1,585,314
L013301 L16-02416 B:80224 F:50497 I:00000327 EPA4247 04/13/2010
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10D

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-2829
James R. Thompson Center, 100 West Randolph, Suite 11-300, Chicago, IL 60601 • (312) 814-6026
PAT QUINN, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

1990555005
Southern Illinois Power
10825 Lake of Egypt Rd.
Marion, IL 62959

On-Site Permit Exempt "815" Facility
2009 Annual Report

35 Ill. Adm. Code 815 requires all **landfills** exempt from permits pursuant to Section 21(d) of the Environmental Protection Act to submit **annual** reports to the Agency. These reports must be filed during the operation of the facility and for the entire post closure monitoring period.

This annual report is due **February 15, 2010** and covers the period of January 1, 2009 thru December 31, 2009.

The below information is required to be submitted to the Illinois Environmental Protection Agency under 35 Illinois Administrative Code 815.301. If you have any questions, please contact the Permit Section's Waste Reduction and Compliance Section at 217/524-3300.

A. LIST TYPE OF WASTE: Coal Combustion Byproducts.

If there is more than one type of waste, please attach a summary of each waste type and the amounts.

B. WASTE VOLUME SUMMARY

1. Total amount of solid waste disposed, stored or treated on-site to date:
   1,329,247 (in place cubic yards)
2. Remaining capacity in existing units at the facility:
   945,160 (in place cubic yards)

IL 532 2428
LPC 536 Rev. Oct. 03

The Illinois Environmental Protection Agency is authorized to require this information under 415 Illinois Compiled Statues 5/21/92. Disclosure of this information is required. Failure to do so may result in a civil penalty of up to $50,000 and an additional civil penalty up to $10,000 for each day during which the violation continues. This form has been approved by the Forms Management Center.

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Bureau of Land – Peoria • 7620 N. University St., Peoria, IL 61614 • (309) 693-5462
Collinsville • 2009 Mall Street, Collinsville, IL 62234 • (618) 346-5120
Des Plaines • 9511 W. Harrison St., Des Plaines, IL 60016 • (847) 294-4000
Peoria • 5415 N. University St., Peoria, IL 61614 • (309) 693-5463
Champaign • 2125 S. First St., Champaign, IL 61820 • (217) 278-5800
Marion • 2309 W. Main St., Suite 116, Marion, IL 62959 • (618) 993-7200

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Chemical, Biological, Physical, Molecular, and Toxicological Services

CERTIFICATE OF ANALYSIS

0910-00057

SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
11543 LAKE OF EGYPT ROAD
MARION, IL 62959

Date Reported	10/09/2009
Date Due	10/09/2009
Date Received	10/01/2009
Date Sampled	10/01/2009
Invoice No.	57572
Customer #	5660
Customer P.O.	

SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Analysis	Out of Spec	Qualif	Result	Unit	Min	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 002 C3 TRAIN TRACK									Date & Time Sampled: 10/01/2009 @ 10:27			
BORON			<0.5	MG/L			EPA 200.7		0.5	10/05/09	15:00	MSR
CADMIUM		UJ	<0.0010	MG/L			EPA 200.7	0.001	0.001	10/05/09	17:46	EML
IRON			3.3	MG/L			EPA 200.7		0.01	10/05/09	17:46	EML
SULFATE			57	MG/L			EPA 300.0		2.5	10/08/09	2:30	JPM
Sample: 003 S1 SWAMP									Date & Time Sampled: 10/01/2009 @ 11:28			
BORON			<0.5	MG/L			EPA 200.7		0.5	10/05/09	15:00	MSR
CADMIUM			0.0042	MG/L			EPA 200.7	0.001	0.001	10/05/09	17:51	EML
IRON			27	MG/L			EPA 200.7		0.01	10/05/09	17:51	EML
SULFATE			26	MG/L			EPA 300.0		2.5	10/08/09	2:44	JPM
Sample: 004 S2 POLE LOW LAND									Date & Time Sampled: 10/01/2009 @ 11:07			
BORON			1.8	MG/L			EPA 200.7		0.5	10/05/09	15:00	MSR
CADMIUM			0.020	MG/L			EPA 200.7	0.001	0.001	10/05/09	17:56	EML
IRON			26	MG/L			EPA 200.7		0.01	10/05/09	17:56	EML
SULFATE			100	MG/L			EPA 300.0		5	10/08/09	2:58	JPM
Sample: 005 S3 LOW LAND									Date & Time Sampled: 10/01/2009 @ 10:57			
BORON			<0.5	MG/L			EPA 200.7		0.5	10/05/09	15:00	MSR
CADMIUM			0.0038	MG/L			EPA 200.7	0.001	0.001	10/05/09	18:00	EML
IRON			0.25	MG/L			EPA 200.7		0.1	10/06/09	23:36	EML
SULFATE			<0.50	MG/L			EPA 300.0		0.5	10/08/09	20:14	JPM
Sample: 006 S4 FIELD BY ROAD									Date & Time Sampled: 10/01/2009 @ 10:44			
BORON			<0.5	MG/L			EPA 200.7		0.5	10/05/09	15:00	MSR
CADMIUM		UJ	<0.0010	MG/L			EPA 200.7	0.001	0.001	10/05/09	18:14	EML
IRON			2.2	MG/L			EPA 200.7		0.01	10/05/09	18:14	EML
SULFATE			41	MG/L			EPA 300.0		2.5	10/08/09	3:26	JPM

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CERTIFICATE OF ANALYSIS

0910-00057

SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Date Reported 10/09/2009
Date Received 10/01/2009
Date Sampled 10/01/2009

Analysis	Out of Spec	Qualif	Result	Unit	Min	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 007 S5 OLD MAIN ENTRANCE							Date & Time Sampled: 10/01/2009 @ 10:11					
BORON			<0.5	MG/L			EPA 200.7		0.5	10/05/09	15:00	MSR
CADMIUM		J1	0.0011	MG/L			EPA 200.7	0.001	0.001	10/05/09	18:18	EML
IRON			1.6	MG/L			EPA 200.7		0.01	10/05/09	18:18	EML
SULFATE			180	MG/L			EPA 300.0		5	10/08/09	3:40	JPM
Sample: 008 S6 PARKING LOT							Date & Time Sampled: 10/01/2009 @ 11:40					
BORON			<0.5	MG/L			EPA 200.7		0.5	10/05/09	15:00	MSR
CADMIUM		UJ	<0.0010	MG/L			EPA 200.7	0.001	0.001	10/05/09	18:23	EML
IRON			1.5	MG/L			EPA 200.7		0.01	10/05/09	18:23	EML
SULFATE			66	MG/L			EPA 300.0		2.5	10/08/09	3:54	JPM

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE: R. Clayton

MICROBAC LABORATORIES, INC.

As regulatory limits change frequently, Microbac advises the recipient of this report to confirm such limits with the appropriate Federal, state, or local authorities before acting in reliance on the regulatory limits provided.

For any feedback concerning our services, please contact Sean Hyde, the Managing Director at 502.962.6400. You may also contact both Trevor Boyce, President and Robert Morgan, Chief Operating Officer at president@microbac.com.

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SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
11543 LAKE OF EGYPT ROAD
MARION, IL 62959

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SEP 21 2009
So. Ill. Power Coop.

Date Reported	09/16/2009
Date Due	09/12/2009
Date Received	09/03/2009
Date Sampled	09/03/2009
Invoice No.	56133
Customer #	5660
Customer P.O.	

SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Analysis	Out of Spec	Qualif	Result	Unit	Dilution	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 002 C3 TRAIN TRACK									Date & Time Sampled: 09/03/2009 @ 11:35			
BORON			<0.5	MG/L			EPA 200.7		0.5	09/15/09	14:00	MSR
CADMIUM		UJ	<0.0010	MG/L			EPA 200.7	0.001	0.001	09/10/09	14:32	EML
IRON			1.8	MG/L			EPA 200.7		0.01	09/10/09	14:32	EML
SULFATE			63	MG/L			EPA 300.0		2.5	09/12/09	11:46	JPM
Sample: 003 S1 SWAMP									Date & Time Sampled: 09/03/2009 @ 12:21			
BORON			<0.5	MG/L			EPA 200.7		0.5	09/15/09	14:00	MSR
CADMIUM			0.011	MG/L			EPA 200.7	0.001	0.001	09/10/09	14:37	EML
IRON			40	MG/L			EPA 200.7		0.01	09/10/09	14:37	EML
SULFATE			16	MG/L			EPA 300.0		0.5	09/12/09	12:00	JPM
Sample: 004 S2 POLE LOW LAND									Date & Time Sampled: 09/03/2009 @ 12:02			
BORON			0.88	MG/L			EPA 200.7		0.5	09/15/09	14:00	MSR
CADMIUM			0.0081	MG/L			EPA 200.7	0.001	0.001	09/10/09	14:41	EML
IRON			42	MG/L			EPA 200.7		0.01	09/10/09	14:41	EML
SULFATE			72	MG/L			EPA 300.0		2.5	09/12/09	12:14	JPM
Sample: 005 S3 LOW LAND									Date & Time Sampled: 09/03/2009 @ 11:50			
BORON			<0.5	MG/L			EPA 200.7		0.5	09/15/09	14:00	MSR
CADMIUM			0.0031	MG/L			EPA 200.7	0.001	0.001	09/10/09	14:46	EML
IRON			56	MG/L			EPA 200.7		0.1	09/14/09	10:28	EML
SULFATE			2.6	MG/L			EPA 300.0		2.5	09/12/09	12:28	JPM
Sample: 006 S4 FIELD BY ROAD									Date & Time Sampled: 09/03/2009 @ 11:38			
BORON			<0.5	MG/L			EPA 200.7		0.5	09/15/09	14:00	MSR
CADMIUM		UJ	<0.0010	MG/L			EPA 200.7	0.001	0.001	09/10/09	14:51	EML
IRON			1.6	MG/L			EPA 200.7		0.01	09/10/09	14:51	EML
SULFATE			41	MG/L			EPA 300.0		2.5	09/12/09	12:43	JPM

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Chemical, Biological, Physical, Molecular, and Toxicological Services

CERTIFICATE OF ANALYSIS

0909-00294

SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Date Reported 09/16/2009
Date Received 09/03/2009
Date Sampled 09/03/2009

Analysis	Out of Spec	Qualif	Result	Unit	Min	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 007 S5 OLD MAIN ENTRANCE							Date & Time Sampled: 09/03/2009 @ 11:02					
BORON			<0.5	MG/L			EPA 200.7		0.5	09/15/09	14:00	MSR
CADMIUM		UJ	<0.0010	MG/L			EPA 200.7	0.001	0.001	09/10/09	14:55	EML
IRON		M3	7.0	MG/L			EPA 200.7		0.01	09/10/09	14:55	EML
SULFATE			190	MG/L			EPA 300.0		5	09/12/09	12:57	JPM
Sample: 008 S6 PARKING LOT							Date & Time Sampled: 09/03/2009 @ 12:35					
BORON			<0.5	MG/L			EPA 200.7		0.5	09/15/09	14:00	MSR
CADMIUM		J1	0.0013	MG/L			EPA 200.7	0.001	0.001	09/10/09	15:18	EML
IRON			26	MG/L			EPA 200.7		0.01	09/10/09	15:18	EML
SULFATE			71	MG/L			EPA 300.0		2.5	09/12/09	13:11	JPM

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE: _____

MICROBAC LABORATORIES, INC.

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For any feedback concerning our services, please contact Sean Hyde, the Managing Director at 502.962.6400. You may also contact both Trevor Boyce, President and Robert Morgan, Chief Operating Officer at president@microbac.com.

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SL

Chemical, Biological, Physical, Molecular, and Toxicological Services

CERTIFICATE OF ANALYSIS

0905-01457

SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
11543 LAKE OF EGYPT ROAD
MARION, IL 62959

Date Reported	06/02/2009
Date Due	05/30/2009
Date Received	05/21/2009
Date Sampled	05/21/2009
Invoice No.	49250
Customer #	5660
Customer P.O.	

SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Analysis	Out of Spec	Qualif	Result	Unit	Min	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 002 C3 TRAIN TRACK							Date & Time Sampled: 05/21/2009 @ 11:00					
BORON			<0.5	MG/L			EPA 200.7		0.5	06/01/09	9:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	05/29/09	6:00	MSR
IRON			1.25	MG/L			EPA 200.7		0.05	05/29/09	6:00	MSR
SULFATE			68	MG/L			EPA 300.0		50	05/27/09	20:15	LER
Sample: 003 S1 SWAMP							Date & Time Sampled: 05/21/2009 @ 17:10					
BORON			<0.5	MG/L			EPA 200.7		0.5	06/01/09	9:00	MSR
CADMIUM			0.013	MG/L			EPA 200.7	0.001	0.001	05/29/09	6:00	MSR
IRON			69	MG/L			EPA 200.7		0.05	05/31/09	16:00	MSR
SULFATE			24	MG/L			EPA 300.0		2.5	05/28/09	22:51	LER
Sample: 004 S2 POLE LOW LAND							Date & Time Sampled: 05/21/2009 @ 11:41					
BORON			1.9	MG/L			EPA 200.7		0.5	06/01/09	9:00	MSR
CADMIUM			0.017	MG/L			EPA 200.7	0.001	0.001	05/29/09	6:00	MSR
IRON			29.9	MG/L			EPA 200.7		0.05	05/29/09	6:00	MSR
SULFATE			99	MG/L			EPA 300.0		50	05/27/09	20:43	LER
Sample: 005 S3 LOW LAND							Date & Time Sampled: 05/21/2009 @ 11:25					
BORON			<0.5	MG/L			EPA 200.7		0.5	06/01/09	9:00	MSR
CADMIUM		J1	0.002	MG/L			EPA 200.7	0.001	0.001	05/29/09	6:00	MSR
IRON			37.3	MG/L			EPA 200.7		0.05	05/29/09	6:00	MSR
SULFATE			20	MG/L			EPA 300.0		2.5	05/28/09	23:05	LER
Sample: 006 S4 FIELD BY ROAD							Date & Time Sampled: 05/21/2009 @ 11:14					
BORON			<0.5	MG/L			EPA 200.7		0.5	06/01/09	9:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	05/29/09	7:00	MSR

RECEIVED
JUN - 5 2009
So. IL. Power Co-Op

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Chemical, Biological, Physical, Molecular, and Toxicological Services

CERTIFICATE OF ANALYSIS

0905-01457

SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Date Reported 06/02/2009
Date Received 05/21/2009
Date Sampled 05/21/2009

Analysis	Out of Spec	Qualif	Result	Unit	Min	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 006 S4 FIELD BY ROAD									Date & Time Sampled: 05/21/2009 @ 11:14			
continued												
IRON			0.43	MG/L			EPA 200.7		0.05	05/29/09	7:00	MSR
SULFATE			42	MG/L			EPA 300.0		2.5	05/28/09	23:19	LER
Sample: 007 S5 OLD MAIN ENTRANCE									Date & Time Sampled: 05/21/2009 @ 10:43			
BORON			<0.5	MG/L			EPA 200.7		0.5	06/01/09	9:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	05/29/09	7:00	MSR
IRON			4.00	MG/L			EPA 200.7		0.05	05/29/09	7:00	MSR
SULFATE			180	MG/L			EPA 300.0		50	05/27/09	21:25	LER
Sample: 008 S6 PARKING LOT									Date & Time Sampled: 05/21/2009 @ 12:21			
BORON			<0.5	MG/L			EPA 200.7		0.5	06/01/09	9:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	05/29/09	7:00	MSR
IRON			3.60	MG/L			EPA 200.7		0.05	05/29/09	7:00	MSR
SULFATE			73	MG/L			EPA 300.0		50	05/27/09	21:39	LER

UNLESS OTHERWISE NOTED, SAMPLES RESULTS ARE REPORTED ON AN AS RECEIVED BASIS

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE: R. Clayton

MICROBAC LABORATORIES, INC.

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Electronic Filing: Received, Clerk's Office 04/10/2025

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3323 Gilmore Industrial Blvd. Louisville, KY 40213 502.962.6400 Fax: 502.962.6411
Lexington 859.276.3506 • Paducah 270.898.3637 • Evansville 812.464.9000

Chemical, Biological, Physical, Molecular, and Toxicological Services

CERTIFICATE OF ANALYSIS

0903-01260

SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
11543 LAKE OF EGYPT ROAD
MARION, IL 62959

SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Date Reported	03/30/2009
Date Due	03/29/2009
Date Received	03/19/2009
Date Sampled	03/19/2009
Invoice No.	45119
Customer #	5660
Customer P.O.	

Analysis	Out of Spec	Qualif	Result	Unit	Min	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 002 C3 TRAIN TRACK									Date & Time Sampled: 03/19/2009 @ 10:35			
BORON			<0.5	MG/L			EPA 200.7		0.5	03/27/09	11:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	03/24/09	16:40	MSR
IRON			1.81	MG/L			EPA 200.7		0.05	03/24/09	16:00	MSR
SULFATE			36	MG/L			EPA 300.0		2.5	03/27/09	18:54	JPM
Sample: 003 S1 SWAMP									Date & Time Sampled: 03/19/2009 @ 11:05			
BORON			<0.5	MG/L			EPA 200.7		0.5	03/27/09	11:00	MSR
CADMIUM			0.02	MG/L			EPA 200.7	0.001	0.001	03/24/09	16:40	MSR
IRON			14.1	MG/L			EPA 200.7		0.05	03/24/09	16:00	MSR
SULFATE			24	MG/L			EPA 300.0		2.5	03/27/09	19:09	JPM
Sample: 004 S2 POLE LOW LAND									Date & Time Sampled: 03/19/2009 @ 11:21			
BORON			2.4	MG/L			EPA 200.7		0.5	03/27/09	11:00	MSR
CADMIUM			0.01	MG/L			EPA 200.7	0.001	0.001	03/24/09	16:40	MSR
IRON			80	MG/L			EPA 200.7		0.05	03/26/09	9:00	MSR
SULFATE			96	MG/L			EPA 300.0		2.5	03/27/09	19:23	JPM
Sample: 005 S3 LOW LAND									Date & Time Sampled: 03/19/2009 @ 11:05			
BORON			<0.5	MG/L			EPA 200.7		0.5	03/27/09	11:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	03/24/09	16:40	MSR
IRON			130	MG/L			EPA 200.7		0.05	03/26/09	9:00	MSR
SULFATE			<2.5	MG/L			EPA 300.0		2.5	03/27/09	19:37	JPM
Sample: 006 S4 FIELD BY ROAD									Date & Time Sampled: 03/19/2009 @ 10:51			
BORON			<0.5	MG/L			EPA 200.7		0.5	03/27/09	11:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	03/24/09	16:40	MSR
IRON			3.53	MG/L			EPA 200.7		0.05	03/24/09	16:00	MSR
SULFATE			42	MG/L			EPA 300.0		2.5	03/27/09	19:51	JPM
Sample: 007 S5 OLD MAIN ENTRANCE									Date & Time Sampled: 03/19/2009 @ 10:17			
BORON			<0.5	MG/L			EPA 200.7		0.5	03/27/09	11:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	03/24/09	16:40	MSR
IRON			11.5	MG/L			EPA 200.7		0.05	03/24/09	16:00	MSR
SULFATE			200	MG/L			EPA 300.0		5	03/27/09	20:05	JPM

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Chemical, Biological, Physical, Molecular, and Toxicological Services

CERTIFICATE OF ANALYSIS

0903-01260

SOUTHERN ILLINOIS POWER COOP.
STEVE ROBINSON/LEONARD HOPKINS
SOUTHERN ILLINOIS POWER / QUARTERLY MONITORING WELLS

Date Reported 03/30/2009
Date Received 03/19/2009
Date Sampled 03/19/2009

Analysis	Out of Spec	Qualif	Result	Unit	Min	Max	Method	Cus Limit	Std Limit	Date	Time	Tech
Sample: 007 S5 OLD MAIN ENTRANCE continued										Date & Time Sampled: 03/19/2009 @ 10:17		
Sample: 008 S6 PARKING LOT										Date & Time Sampled: 03/19/2009 @ 11:48		
BORON			<0.5	MG/L			EPA 200.7		0.5	03/27/09	11:00	MSR
CADMIUM		UJ	<0.001	MG/L			EPA 200.7	0.001	0.001	03/24/09	16:40	MSR
IRON			1.02	MG/L			EPA 200.7		0.05	03/24/09	17:00	MSR
SULFATE			62	MG/L			EPA 300.0		2.5	03/27/09	20:19	JPM

UNLESS OTHERWISE NOTED, SAMPLES RESULTS ARE REPORTED ON AN AS RECEIVED BASIS

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE: R. Clifton

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08/26/2022 10:39AM L017337 1990555005 10D 3,324,175 170000164658 02/18/2020 L SOUTHERN ILLINOIS POWER COOP B:48287 F:50497 I:00000710 L16-04249
Electronic Filing: Received, Clerk's Office 09/10/2025

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

10D

10D

1990555005
Southern Illinois Power
10825 Lake of Egypt Rd.
Marion, IL 62959

On-Site Permit Exempt "815" Facility
2019 Annual Report

35 Ill. Adm. Code 815 requires all **landfills** exempt from permits pursuant to Section 21(d) of the Environmental Protection Act to submit **annual** reports to the Agency. These reports must be filed during the operation of the facility and for the entire post closure monitoring period.

This annual report is due **February 15, 2020** and covers the period of January 1, 2019 thru December 31, 2019.

The below information is required to be submitted to the Illinois Environmental Protection Agency under 35 Illinois Administrative Code 815.301. If you have any questions, please contact the Permit Section's at 217/524-3300.

A. LIST TYPE OF WASTE: Coal Combustion By Products

If there is more than one type of waste, please attach a summary of each waste type and the amounts.

B. WASTE VOLUME SUMMARY

1. Total amount of solid waste disposed, stored or treated on-site to date: 1,344,247 (in place cubic yards)
2. Remaining capacity in existing units at the facility: 930,160 (in place cubic yards)

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FEB 18 2020
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IEPA-DIVISION OF RECORDS MANAGEMENT RELEASABLE
FEB 28 2020
REVIEWER: SAB

The Illinois Environmental Protection Agency is authorized to require this information under 415 Illinois Compiled Statues 5/21/92. Disclosure of this information is required. Failure to do so may result in a civil penalty of up to $50,000 and an additional civil penalty up to $10,000 for each day during which the violation continues. This form has been approved by the Forms Management Center.

IL 532 2428
LPC 536 Rev. Oct. 03

* THIS LANDFILL HASN'T RECIEVED MATERIAL FOR A NUMBER OF YEARS.

C. PROPOSED ACTIVITIES

1. Expected amount of waste to be disposed on-site **January 1, 2019** thru **December 31, 2019**:

   0 (in place cubic yards)

D. OTHER INFORMATION TO BE SUBMITTED

Please attach the following required information. Please indicate attachment number or letter in the blank provided.

Attachments

1. _____ Copies of all identification reports required under 35 Ill. Adm. Code 811.404.
2. X All raw monitoring data collected at the facility from the leachate collection system, groundwater monitoring network, and gas monitoring system.
3. _____ Graphical results of monitoring efforts.
4. _____ Statistical summaries and analysis of trends in the collected data.
5. _____ Changes to the monitoring program.
6. _____ Discussion of error analysis, detection limits, and observed trends.
7. _____ Description of structures to be built within the next year.
8. _____ Description of new monitoring stations to be installed within the next year.
9. _____ A summary of all modifications including significant modifications made to the operations during the course of the year.

E. SIGNATURE OF THE OPERATOR OR DULY AUTHORIZED AGENT

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))

Jason A. McLaurin
Name (print/type)

Jason A Mc
Signature

Phone: (618) 964 2446 Email: Jmclaurin@sipower.org

Please mail this form and attachments to the following address:

Illinois Environmental Protection Agency
Bureau of Land (#24)
Attn: Annual Reports and Data Collection Unit
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

IEPA-DIVISION OF RECORDS MANAGEMENT RELEASABLE
FEB 28 2020
REVIEWER: SAB

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CERTIFICATE OF ANALYSIS

L9L0923

Southern Illinois Power Coop.
Jason McLaurin
11543 Lake of Egypt Road
Marion, IL 62959

Date Reported	01/02/2020
Date Due	01/09/2020
Date Received	12/19/2019
Customer #	E5660

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 01 **Well C-1**												Sampled 12/14/2019 @ 10:12	
Sampled By Ted Meriwether													
Chloride			380	mg/L	5			EPA 300.0	2.5			12/24/2019 14:32	LJC
Sulfate			300	mg/L	5			EPA 300.0	2.5			12/24/2019 14:32	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 4:18	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 4:18	JSW
Iron			0.38	mg/L	1			EPA 200.7	0.020			12/31/2019 4:18	JSW
Sample: 02 **Well C-2**												Sampled 12/14/2019 @ 9:57	
Sampled By Ted Meriwether													
Chloride			3.9	mg/L	5			EPA 300.0	2.5			12/24/2019 14:46	LJC
Sulfate			220	mg/L	5			EPA 300.0	2.5			12/24/2019 14:46	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 4:24	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 4:24	JSW
Iron			17	mg/L	1			EPA 200.7	0.020			12/31/2019 4:24	JSW
Sample: 03 **Well C-3**												Sampled 12/14/2019 @ 12:29	
Sampled By Ted Meriwether													
Chloride			570	mg/L	5			EPA 300.0	2.5			12/24/2019 15:00	LJC
Sulfate			66	mg/L	5			EPA 300.0	2.5			12/24/2019 15:00	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 4:31	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 4:31	JSW
Iron			0.60	mg/L	1			EPA 200.7	0.020			12/31/2019 4:31	JSW
Sample: 04 **Well S-2**												Sampled 12/14/2019 @ 11:20	
Sampled By Ted Meriwether													
Chloride			440	mg/L	5			EPA 300.0	2.5			12/24/2019 15:13	LJC
Sulfate			150	mg/L	5			EPA 300.0	2.5			12/24/2019 15:13	LJC
Boron			2.2	mg/L	1			EPA 200.7	0.50			12/31/2019 4:50	JSW
Cadmium			0.0078	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 4:50	JSW
Iron			210	mg/L	50			EPA 200.7	1.0			12/31/2019 17:09	JSW

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L9L0923

Southern Illinois Power Coop.
Jason McLaurin

Date Due 01/09/2020
Date Received 12/19/2019

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 05	**Well S-3**											**Sampled** 12/14/2019 @ 10:57	
Sampled By	Ted Meriwether												
Chloride			110	mg/L	5			EPA 300.0	2.5			12/24/2019 15:27	LJC
Sulfate			18	mg/L	5			EPA 300.0	2.5			12/24/2019 15:27	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 4:57	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 4:57	JSW
Iron			36	mg/L	1			EPA 200.7	0.020			12/31/2019 4:57	JSW
Sample: 06	**Well S-4**											**Sampled** 12/14/2019 @ 10:30	
Sampled By	Ted Meriwether												
Chloride			20	mg/L	5			EPA 300.0	2.5			12/24/2019 15:41	LJC
Sulfate			45	mg/L	5			EPA 300.0	2.5			12/24/2019 15:41	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 5:03	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 5:03	JSW
Iron			2.2	mg/L	1			EPA 200.7	0.020			12/31/2019 5:03	JSW
Sample: 07	**Well S-5**											**Sampled** 12/14/2019 @ 9:43	
Sampled By	Ted Meriwether												
Chloride			31	mg/L	5			EPA 300.0	2.5			12/24/2019 15:54	LJC
Sulfate			230	mg/L	5			EPA 300.0	2.5			12/24/2019 15:54	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 5:09	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 5:09	JSW
Iron			0.69	mg/L	1			EPA 200.7	0.020			12/31/2019 5:09	JSW
Sample: 08	**Well S-6**											**Sampled** 12/14/2019 @ 12:47	
Sampled By	Ted Meriwether												
Chloride			25	mg/L	5			EPA 300.0	2.5			12/24/2019 16:08	LJC
Sulfate			64	mg/L	5			EPA 300.0	2.5			12/24/2019 16:08	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 5:15	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 5:15	JSW
Iron			9.2	mg/L	1			EPA 200.7	0.020			12/31/2019 5:15	JSW
Sample: 09	**Well S-1 Swamp**											**Sampled** 12/14/2019 @ 11:54	
Sampled By	Ted Meriwether												

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L9L0923

Southern Illinois Power Coop.
Jason McLaurin

Date Due 01/09/2020
Date Received 12/19/2019

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 09 **Well S-1 Swamp**												Sampled 12/14/2019 @ 11:54	
Sampled By Ted Meriwether													
Chloride			7.0	mg/L	5			EPA 300.0	2.5			12/24/2019 17:02	LJC
Sulfate			26	mg/L	5			EPA 300.0	2.5			12/24/2019 17:02	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			12/31/2019 5:22	JSW
Cadmium			0.0089	mg/L	1			EPA 200.7	0.010	0.002	0.00050	12/31/2019 5:22	JSW
Iron			16	mg/L	1			EPA 200.7	0.020			12/31/2019 5:22	JSW

Qualifier Definitions

Report Comments

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Reviewed and Approved By:

AL MOORE
Field Manager
Reported: 01/02/2020 16:39

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CERTIFICATE OF ANALYSIS

L9I0556

Southern Illinois Power Coop.
Jason McLaurin
11543 Lake of Egypt Road
Marion, IL 62959

Date Reported	09/19/2019
Date Due	10/02/2019
Date Received	09/12/2019
Customer #	E5660

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 01 Well C-1												**Sampled 09/12/2019@ 13:00**	
Sampled By Ted Meriwether													
Chloride			300	mg/L	5			EPA 300.0	2.5			09/17/2019 2:30	LJC
Sulfate			300	mg/L	5			EPA 300.0	2.5			09/17/2019 2:30	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 18:57	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 18:57	JSW
Iron			0.86	mg/L	1			EPA 200.7	0.020			09/16/2019 18:57	JSW
Sample: 02 Well C-2												**Sampled 09/12/2019@ 13:20**	
Sampled By Ted Meriwether													
Chloride			23	mg/L	5			EPA 300.0	2.5			09/17/2019 2:44	LJC
Sulfate			120	mg/L	5			EPA 300.0	2.5			09/17/2019 2:44	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 19:04	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 19:04	JSW
Iron			12	mg/L	1			EPA 200.7	0.020			09/16/2019 19:04	JSW
Sample: 03 Well C-3												**Sampled 09/12/2019@ 12:15**	
Sampled By Ted Meriwether													
Chloride			460	mg/L	5			EPA 300.0	2.5			09/17/2019 2:57	LJC
Sulfate			82	mg/L	5			EPA 300.0	2.5			09/17/2019 2:57	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 19:10	JSW
Cadmium			0.0028	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 19:10	JSW
Iron			1.3	mg/L	1			EPA 200.7	0.020			09/16/2019 19:10	JSW
Sample: 04 Well S-2												**Sampled 09/12/2019@ 11:25**	
Sampled By Ted Meriwether													
Chloride			350	mg/L	5			EPA 300.0	2.5			09/17/2019 3:11	LJC
Sulfate			88	mg/L	5			EPA 300.0	2.5			09/17/2019 3:11	LJC
Boron			0.94	mg/L	1			EPA 200.7	0.50			09/16/2019 19:16	JSW
Cadmium			0.0045	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 19:16	JSW
Iron			200	mg/L	50			EPA 200.7	1.0			09/17/2019 17:33	JSW

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Southern Illinois Power Coop.
Jason McLaurin

Date Due 10/02/2019
Date Received 09/12/2019

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 05 Well S-3												**Sampled** 09/12/2019 @ 11:07	
Sampled By Ted Meriwether													
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 22:26	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 22:26	JSW
Iron			64	mg/L	10			EPA 200.7	0.20			09/17/2019 18:10	JSW
Sample: 06 Well S-4												**Sampled** 09/12/2019 @ 10:55	
Sampled By Ted Meriwether													
Chloride			22	mg/L	5			EPA 300.0	2.5			09/17/2019 3:25	LJC
Sulfate			43	mg/L	5			EPA 300.0	2.5			09/17/2019 3:25	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 22:44	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 22:44	JSW
Iron			19	mg/L	1			EPA 200.7	0.020			09/16/2019 22:44	JSW
Sample: 07 Well S-5												**Sampled** 09/12/2019 @ 13:35	
Sampled By Ted Meriwether													
Chloride			34	mg/L	5			EPA 300.0	2.5			09/17/2019 3:38	LJC
Sulfate			230	mg/L	5			EPA 300.0	2.5			09/17/2019 3:38	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 22:50	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 22:50	JSW
Iron			3.0	mg/L	1			EPA 200.7	0.020			09/16/2019 22:50	JSW
Sample: 08 Well S-6												**Sampled** 09/12/2019 @ 12:45	
Sampled By Ted Meriwether													
Chloride			24	mg/L	5			EPA 300.0	2.5			09/17/2019 3:52	LJC
Sulfate			65	mg/L	5			EPA 300.0	2.5			09/17/2019 3:52	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 22:56	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 22:56	JSW
Iron			9.1	mg/L	1			EPA 200.7	0.020			09/16/2019 22:56	JSW
Sample: 09 Well S-1 Swamp												**Sampled** 09/12/2019 @ 11:50	
Sampled By Ted Meriwether													
Chloride			6.1	mg/L	5			EPA 300.0	2.5			09/17/2019 4:06	LJC
Sulfate			21	mg/L	5			EPA 300.0	2.5			09/17/2019 4:06	LJC

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Southern Illinois Power Coop.
Jason McLaurin

Date Due 10/02/2019
Date Received 09/12/2019

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 09 **Well S-1 Swamp**												Sampled 09/12/2019 @ 11:50	
Sampled By Ted Meriwether													
Boron			<0.50	mg/L	1			EPA 200.7	0.50			09/16/2019 23:03	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	09/16/2019 23:03	JSW
Iron			33	mg/L	1			EPA 200.7	0.020			09/16/2019 23:03	JSW
Sample: 10 **Well S-3 Repull due to sample being broke in lab.**												Sampled 09/17/2019 @ 12:30	
Sampled By Ted Meriwether													
Chloride			140	mg/L	5			EPA 300.0	2.5			09/18/2019 16:07	LJC
Sulfate			17	mg/L	5			EPA 300.0	2.5			09/18/2019 16:07	LJC

Qualifier Definitions

Report Comments

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Reviewed and Approved By:

David Richardson

David Richardson
Field Services Tech Paducah
Reported: 09/19/2019 16:34

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Southern Illinois Power Coop.
Jason McLaurin

Date Due 07/21/2019
Date Received 06/13/2019

Special Quarterly Sampling Jun 2019

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	MDL	Analysis Date	Tech
Sample: 04 S-1											Sampled 06/13/2019 @ 11:22	
Sampled By Ted Meriwether/Mike Gribbin												
Lead			6.2	ug/L	2			EPA 200.8	6.2		06/14/2019 22:52	JGF
Manganese			390	ug/L	2			EPA 200.8	100	0.21	06/14/2019 22:52	JGF
Nickel			<100	ug/L	2			EPA 200.8	100		06/14/2019 22:52	JGF
Selenium			<1.0	ug/L	2			EPA 200.8	1.0		06/14/2019 22:52	JGF
Silver		L3	<7.6	ug/L	2			EPA 200.8	7.6		06/14/2019 22:52	JGF
Thallium			<0.94	ug/L	2			EPA 200.8	0.94		06/14/2019 22:52	JGF
Vanadium			13	ug/L	2			EPA 200.8	10		06/14/2019 22:52	JGF
Zinc		L3	<220	ug/L	2			EPA 200.8	220		06/14/2019 22:52	JGF
Total Mercury by CVAA								EPA 245.1 Rev 3.0				
Mercury			<0.00020	mg/L	1				0.00020		06/20/2019 13:10	CGL
Total Cyanide			<0.0050	mg/L	1			SM 4500-CN C/E-1999	0.0050		06/18/2019 12:21	CGL
Radium 228			<1	pCi/L	1			SM 7500 RA-D	1		07/09/2019 0:00	GEL
Sample: 05 S-2											Sampled 06/13/2019 @ 11:49	
Sampled By Ted Meriwether/Mike Gribbin												
pH - Field			6.06	SU	1			SM 4500 H+ B	1.00		06/13/2019 11:49	TWM
Temperature at pH - Field			16.8	deg C	1			SM 2550B			06/13/2019 11:49	TWM
Solids, Dissolved			190	mg/L	1			SM 2540C	10		06/17/2019 17:00	MGM
Chloride			380	mg/L	7			EPA 300.0	3.5		06/15/2019 1:35	LJC
Fluoride			<0.50	mg/L	1			EPA 300.0	0.50		06/14/2019 16:47	LJC
Nitrogen, Nitrate			<0.11	mg/L	1			EPA 300.0	0.11		06/14/2019 16:47	LJC
Sulfate			130	mg/L	7			EPA 300.0	3.5		06/15/2019 1:35	LJC
Antimony			<1.6	ug/L	2			EPA 200.8	12	1.6	06/14/2019 22:58	JGF
Arsenic			<2.0	ug/L	2			EPA 200.8	300	2.0	06/14/2019 22:58	JGF
Barium			970	ug/L	2			EPA 200.8	200		06/14/2019 22:58	JGF
Beryllium			<0.15	ug/L	2			EPA 200.8	8.0	0.15	06/14/2019 22:58	JGF
Boron			2.2	mg/L	1			EPA 200.7	0.50		06/18/2019 7:25	JSW
Cadmium			<0.54	ug/L	2			EPA 200.8	0.54		06/14/2019 22:58	JGF
Chromium			<14	ug/L	2			EPA 200.8	14		06/14/2019 22:58	JGF

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Southern Illinois Power Coop.
Jason McLaurin

Date Due 07/21/2019
Date Received 06/13/2019

Special Quarterly Sampling Jun 2019

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	MDL	Analysis Date	Tech
Sample: 05 S-2											**Sampled 06/13/2019 @ 11:49**	
Sampled By Ted Meriwether/Mike Gribbin												
Cobalt			<10	ug/L	2			EPA 200.8	10		06/14/2019 22:56	JGF
Copper			<8.6	ug/L	2			EPA 200.8	8.6		06/14/2019 22:58	JGF
Iron			140000	ug/L	2			EPA 200.8	2000		06/14/2019 22:58	JGF
Lead			<6.2	ug/L	2			EPA 200.8	6.2		06/14/2019 22:58	JGF
Manganese			18000	ug/L	2			EPA 200.8	100	0.21	06/14/2019 22:58	JGF
Nickel			<100	ug/L	2			EPA 200.8	100		06/14/2019 22:58	JGF
Selenium			17	ug/L	2			EPA 200.8	1.0		06/14/2019 22:58	JGF
Silver		L3	<7.6	ug/L	2			EPA 200.8	7.6		06/14/2019 22:58	JGF
Thallium			<0.94	ug/L	2			EPA 200.8	0.94		06/14/2019 22:58	JGF
Vanadium			<10	ug/L	2			EPA 200.8	10		06/14/2019 22:58	JGF
Zinc		L3	<220	ug/L	2			EPA 200.8	220		06/14/2019 22:58	JGF
Total Mercury by CVAA								EPA 245.1 Rev 3.0				
Mercury			<0.00020	mg/L	1				0.00020		06/20/2019 13:11	CGL
Total Cyanide			<0.0050	mg/L	1			SM 4500-CN C/E-1999	0.0050		06/18/2019 12:23	CGL
Radium 228			<1	pCi/L	1			SM 7500 RA-D	1		07/09/2019 0:00	GEL
Sample: 06 S-3											**Sampled 06/13/2019 @ 12:07**	
Sampled By Ted Meriwether/Mike Gribbin												
pH - Field			6.28	SU	1			SM 4500 H+ B	1.00		06/13/2019 12:07	TWM
Temperature at pH - Field			16.9	deg C	1			SM 2550B			06/13/2019 12:07	TWM
Solids, Dissolved			290	mg/L	1			SM 2540C	10		06/17/2019 17:00	MGM/I
Chloride			170	mg/L	3			EPA 300.0	1.5		06/15/2019 1:51	LJC
Fluoride			<0.50	mg/L	1			EPA 300.0	0.50		06/14/2019 17:02	LJC
Nitrogen, Nitrate			<0.11	mg/L	1			EPA 300.0	0.11		06/14/2019 17:02	LJC
Sulfate			4.7	mg/L	1			EPA 300.0	0.50		06/14/2019 17:02	LJC
Antimony			<1.6	ug/L	2			EPA 200.8	12	1.6	06/14/2019 23:05	JGF
Arsenic		J	8.9	ug/L	2			EPA 200.8	300	2.0	06/14/2019 23:05	JGF
Barium			330	ug/L	2			EPA 200.8	200		06/14/2019 23:05	JGF
Beryllium			<0.15	ug/L	2			EPA 200.8	8.0	0.15	06/14/2019 23:05	JGF

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CERTIFICATE OF ANALYSIS

L9F0808

Southern Illinois Power Coop.
Jason McLaurin

Date Due 07/21/2019
Date Received 06/13/2019

Special Quarterly Sampling Jun 2019

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	MDL	Analysis Date	Tech
Sample: 06 **S-3**											Sampled 06/13/2019 @ 12:07	
Sampled By Ted Meriwether/Mike Gribbin												
Boron			<0.50	mg/L	1			EPA 200.7	0.50		06/18/2019 7:32	JSW
Cadmium			<0.54	ug/L	2			EPA 200.8	0.54		06/14/2019 23:05	JGF
Chromium			<14	ug/L	2			EPA 200.8	14		06/14/2019 23:05	JGF
Cobalt			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:05	JGF
Copper			<8.6	ug/L	2			EPA 200.8	8.6		06/14/2019 23:05	JGF
Iron			57000	ug/L	2			EPA 200.8	2000		06/14/2019 23:05	JGF
Lead			<6.2	ug/L	2			EPA 200.8	6.2		06/14/2019 23:05	JGF
Manganese			3500	ug/L	2			EPA 200.8	100	0.21	06/14/2019 23:05	JGF
Nickel			<100	ug/L	2			EPA 200.8	100		06/14/2019 23:05	JGF
Selenium			3.0	ug/L	2			EPA 200.8	1.0		06/14/2019 23:05	JGF
Silver		L3	<7.6	ug/L	2			EPA 200.8	7.6		06/14/2019 23:05	JGF
Thallium			<0.94	ug/L	2			EPA 200.8	0.94		06/14/2019 23:05	JGF
Vanadium			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:05	JGF
Zinc		L3	<220	ug/L	2			EPA 200.8	220		06/14/2019 23:05	JGF
Total Mercury by CVAA								EPA 245.1 Rev 3.0				
Mercury			<0.00020	mg/L	1				0.00020		06/20/2019 13:17	CGL
Total Cyanide			<0.0050	mg/L	1			SM 4500-CN C/E-1999	0.0050		06/18/2019 12:24	CGL
Radium 228			<1	pCi/L	1			SM 7500 RA-D	1		07/09/2019 0:00	GEL
Sample: 07 **S-4**											Sampled 06/13/2019 @ 10:55	
Sampled By Ted Meriwether/Mike Gribbin												
pH - Field			6.72	SU	1			SM 4500 H+ B	1.00		06/13/2019 10:55	TWM
Temperature at pH - Field			16.4	deg C	1			SM 2550B			06/13/2019 10:55	TWM
Solids, Dissolved			160	mg/L	1			SM 2540C	10		06/17/2019 17:00	MGM/I
Chloride			23	mg/L	1			EPA 300.0	0.50		06/14/2019 18:17	LJC
Fluoride			<0.50	mg/L	1			EPA 300.0	0.50		06/14/2019 18:17	LJC
Nitrogen, Nitrate			0.19	mg/L	1			EPA 300.0	0.11		06/14/2019 18:17	LJC
Sulfate			47	mg/L	1			EPA 300.0	0.50		06/14/2019 18:17	LJC
Antimony			<1.6	ug/L	2			EPA 200.8	12	1.6	06/14/2019 23:11	JGF

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MICROBAC®

CERTIFICATE OF ANALYSIS

L9F0808

Southern Illinois Power Coop.
Jason McLaurin

Date Due 07/21/2019
Date Received 06/13/2019

Special Quarterly Sampling Jun 2019

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	MDL	Analysis Date	Tech
Sample: 07 **S-4**											Sampled 06/13/2019 @ 10:55	
Sampled By Ted Meriwether/Mike Gribbin												
Arsenic			<2.0	ug/L	2			EPA 200.8	300	2.0	06/14/2019 23:11	JGF
Barium			<200	ug/L	2			EPA 200.8	200		06/14/2019 23:11	JGF
Beryllium			<0.15	ug/L	2			EPA 200.8	8.0	0.15	06/14/2019 23:11	JGF
Boron			<0.50	mg/L	1			EPA 200.7	0.50		06/18/2019 7:50	JSW
Cadmium			<0.54	ug/L	2			EPA 200.8	0.54		06/14/2019 23:11	JGF
Chromium			<14	ug/L	2			EPA 200.8	14		06/14/2019 23:11	JGF
Cobalt			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:11	JGF
Copper			<8.6	ug/L	2			EPA 200.8	8.6		06/14/2019 23:11	JGF
Iron			10000	ug/L	2			EPA 200.8	2000		06/14/2019 23:11	JGF
Lead			<6.2	ug/L	2			EPA 200.8	6.2		06/14/2019 23:11	JGF
Manganese		J	44	ug/L	2			EPA 200.8	100	0.21	06/14/2019 23:11	JGF
Nickel			<100	ug/L	2			EPA 200.8	100		06/14/2019 23:11	JGF
Selenium			2.1	ug/L	2			EPA 200.8	1.0		06/14/2019 23:11	JGF
Silver		L3	<7.6	ug/L	2			EPA 200.8	7.6		06/14/2019 23:11	JGF
Thallium			<0.94	ug/L	2			EPA 200.8	0.94		06/14/2019 23:11	JGF
Vanadium			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:11	JGF
Zinc		L3	<220	ug/L	2			EPA 200.8	220		06/14/2019 23:11	JGF
Total Mercury by CVAA								EPA 245.1 Rev 3.0				
Mercury			<0.00020	mg/L	1				0.00020		06/20/2019 13:19	CGL
Total Cyanide			<0.0050	mg/L	1			SM 4500-CN C/E-1999	0.0050		06/18/2019 12:26	CGL
Radium 228			<1	pCi/L	1			SM 7500 RA-D	1		07/09/2019 0:00	GEL
Sample: 08 **S-5**											Sampled 06/13/2019 @ 13:13	
Sampled By Ted Meriwether/Mike Gribbin												
pH - Field			6.22	SU	1			SM 4500 H+ B	1.00		06/13/2019 13:13	TWM
Temperature at pH - Field			17.5	deg C	1			SM 2550B			06/13/2019 13:13	TWM
Solids, Dissolved			76	mg/L	1			SM 2540C	10		06/17/2019 17:00	MGM/I
Chloride			33	mg/L	1			EPA 300.0	0.50		06/14/2019 18:32	LJC
Fluoride			<0.50	mg/L	1			EPA 300.0	0.50		06/14/2019 18:32	LJC

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CERTIFICATE OF ANALYSIS

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Southern Illinois Power Coop.
Jason McLaurin

Date Due 07/21/2019
Date Received 06/13/2019

Special Quarterly Sampling Jun 2019

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	MDL	Analysis Date	Tech
Sample: 08 **S-5**											Sampled 06/13/2019 @ 13:13	
Sampled By Ted Meriwether/Mike Gribbin												
Nitrogen, Nitrate			0.62	mg/L	1			EPA 300.0	0.11		06/14/2019 18:32	LJC
Sulfate			230	mg/L	5			EPA 300.0	2.5		06/15/2019 2:06	LJC
Antimony			<1.6	ug/L	2			EPA 200.8	12	1.6	06/14/2019 23:17	JGF
Arsenic			<2.0	ug/L	2			EPA 200.8	300	2.0	06/14/2019 23:17	JGF
Barium			<200	ug/L	2			EPA 200.8	200		06/14/2019 23:17	JGF
Beryllium			<0.15	ug/L	2			EPA 200.8	8.0	0.15	06/14/2019 23:17	JGF
Boron			<0.50	mg/L	1			EPA 200.7	0.50		06/18/2019 7:56	JSW
Cadmium			<0.54	ug/L	2			EPA 200.8	0.54		06/14/2019 23:17	JGF
Chromium			<14	ug/L	2			EPA 200.8	14		06/14/2019 23:17	JGF
Cobalt			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:17	JGF
Copper			<8.6	ug/L	2			EPA 200.8	8.6		06/14/2019 23:17	JGF
Iron			<2000	ug/L	2			EPA 200.8	2000		06/14/2019 23:17	JGF
Lead			<6.2	ug/L	2			EPA 200.8	6.2		06/14/2019 23:17	JGF
Manganese		J	33	ug/L	2			EPA 200.8	100	0.21	06/14/2019 23:17	JGF
Nickel			<100	ug/L	2			EPA 200.8	100		06/14/2019 23:17	JGF
Selenium			<1.0	ug/L	2			EPA 200.8	1.0		06/14/2019 23:17	JGF
Silver		L3	<7.6	ug/L	2			EPA 200.8	7.6		06/14/2019 23:17	JGF
Thallium			<0.94	ug/L	2			EPA 200.8	0.94		06/14/2019 23:17	JGF
Vanadium			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:17	JGF
Zinc		L3	<220	ug/L	2			EPA 200.8	220		06/14/2019 23:17	JGF
Total Mercury by CVAA								EPA 245.1 Rev 3.0				
Mercury			<0.00020	mg/L	1				0.00020		06/20/2019 13:20	CGL
Total Cyanide			<0.0050	mg/L	1			SM 4500-CN C/E-1999	0.0050		06/17/2019 14:34	CGL
Radium 228			<1	pCi/L	1			SM 7500 RA-D	1		07/09/2019 0:00	GEL
Sample: 09 **S-6**											Sampled 06/13/2019 @ 12:57	
Sampled By Ted Meriwether/Mike Gribbin												
pH - Field			6.04	SU	1			SM 4500 H+ B	1.00		06/13/2019 12:57	TWM
Temperature at pH - Field			18.5	deg C	1			SM 2550B			06/13/2019 12:57	TWM

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L9F0808

Southern Illinois Power Coop.
Jason McLaurin

Date Due 07/21/2019
Date Received 06/13/2019

Special Quarterly Sampling Jun 2019

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	MDL	Analysis Date	Tech
Sample: 09 S-6											Sampled 06/13/2019 @ 12:57	
Sampled By Ted Meriwether/Mike Gribbin												
Solids, Dissolved			220	mg/L	1			SM 2540C	10		06/17/2019 17:00	MGM/
Chloride			25	mg/L	1			EPA 300.0	0.50		06/14/2019 18:47	LJC
Fluoride			<0.50	mg/L	1			EPA 300.0	0.50		06/14/2019 18:47	LJC
Nitrogen, Nitrate			3.4	mg/L	1			EPA 300.0	0.11		06/14/2019 18:47	LJC
Sulfate			67	mg/L	1			EPA 300.0	0.50		06/14/2019 18:47	LJC
Antimony			<1.6	ug/L	2			EPA 200.8	12	1.6	06/14/2019 23:36	JGF
Arsenic			<2.0	ug/L	2			EPA 200.8	300	2.0	06/14/2019 23:36	JGF
Barium			<200	ug/L	2			EPA 200.8	200		06/14/2019 23:36	JGF
Beryllium			<0.15	ug/L	2			EPA 200.8	8.0	0.15	06/14/2019 23:36	JGF
Boron			<0.50	mg/L	1			EPA 200.7	0.50		06/18/2019 6:03	JSW
Cadmium			<0.54	ug/L	2			EPA 200.8	0.54		06/14/2019 23:36	JGF
Chromium			<14	ug/L	2			EPA 200.8	14		06/14/2019 23:36	JGF
Cobalt			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:36	JGF
Copper			<8.6	ug/L	2			EPA 200.8	8.6		06/14/2019 23:36	JGF
Iron			<2000	ug/L	2			EPA 200.8	2000		06/14/2019 23:36	JGF
Lead			<6.2	ug/L	2			EPA 200.8	6.2		06/14/2019 23:36	JGF
Manganese		J	25	ug/L	2			EPA 200.8	100	0.21	06/14/2019 23:36	JGF
Nickel			<100	ug/L	2			EPA 200.8	100		06/14/2019 23:36	JGF
Selenium			<1.0	ug/L	2			EPA 200.8	1.0		06/14/2019 23:36	JGF
Silver		L3	<7.6	ug/L	2			EPA 200.8	7.6		06/14/2019 23:36	JGF
Thallium			<0.94	ug/L	2			EPA 200.8	0.94		06/14/2019 23:36	JGF
Vanadium			<10	ug/L	2			EPA 200.8	10		06/14/2019 23:36	JGF
Zinc		L3	<220	ug/L	2			EPA 200.8	220		06/14/2019 23:36	JGF
Total Mercury by CVAA								EPA 245.1 Rev 3.0				
Mercury			<0.00020	mg/L	1				0.00020		06/20/2019 13:21	CGL
Total Cyanide			<0.0050	mg/L	1			SM 4500-CN C/E-1999	0.0050		06/17/2019 14:39	CGL
Radium 228			<1	pCi/L	1			SM 7500 RA-D	1		07/09/2019 0:00	GEL

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L9F0808

Southern Illinois Power Coop.
Jason McLaurin

Date Due 07/21/2019
Date Received 06/13/2019

Special Quarterly Sampling Jun 2019

Qualifier Definitions
J Estimated value
L3 Lab control sample (LCS) recovery above upper Control Limit, analyte not detected.

The following analyses were subcontracted to a qualified laboratory:

Laboratory	Analysis	Method
GEL Laboratories, LLC	Radium 228	SM 7500 RA-D
Merrillville	Total Cyanide	SM 4500-CN C/E-1999
	Total Mercury by CVAA	EPA 245.1 Rev 3.0
Paducah	pH - Field	SM 4500 H+ B
	Temperature at pH - Field	SM 2550B

Project Requested Certification(s):

Certificate ID	Agency
108202	Kentucky Wastewater Laboratory Certification Program (j)

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE: *Al Moore A.M.*

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

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MICROBAC®

CERTIFICATE OF ANALYSIS

L9C0364

Southern Illinois Power Coop.
Jason McLaurin
11543 Lake of Egypt Road
Marion, IL 62959

Date Reported	03/20/2019
Date Due	03/28/2019
Date Received	03/08/2019
Customer #	E5660

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 01 **Well C-1**												Sampled 03/08/2019 @ 10:10	
Sampled By David Richardson													
Sulfate			300	mg/L	5			EPA 300.0	2.5			03/12/2019 19:41	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 6:24	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 6:24	JSW
Iron			8.2	mg/L	1			EPA 200.7	0.020			03/16/2019 6:24	JSW
Sample: 02 **Well C-2**												Sampled 03/08/2019 @ 10:25	
Sampled By David Richardson													
Sulfate			270	mg/L	5			EPA 300.0	2.5			03/12/2019 19:56	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 6:31	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 6:31	JSW
Iron			15	mg/L	1			EPA 200.7	0.020			03/16/2019 6:31	JSW
Sample: 03 **Well C-3**												Sampled 03/08/2019 @ 10:40	
Sampled By David Richardson													
Sulfate			72	mg/L	5			EPA 300.0	2.5			03/12/2019 20:11	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 6:37	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 6:37	JSW
Iron			1.1	mg/L	1			EPA 200.7	0.020			03/16/2019 6:37	JSW
Sample: 04 **Well S-2**												Sampled 03/08/2019 @ 11:45	
Sampled By David Richardson													
Sulfate			110	mg/L	5			EPA 300.0	2.5			03/12/2019 20:26	LJC
Boron			1.9	mg/L	1			EPA 200.7	0.50			03/16/2019 9:44	JSW
Cadmium			0.0059	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 9:44	JSW
Iron			200	mg/L	50			EPA 200.7	1.0			03/19/2019 21:37	JSW
Sample: 05 **Well S-3**												Sampled 03/08/2019 @ 11:24	
Sampled By David Richardson													
Sulfate			7.0	mg/L	5			EPA 300.0	2.5			03/12/2019 20:41	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 9:51	JSW

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Southern Illinois Power Coop.
Jason McLaurin

Date Due 03/28/2019
Date Received 03/08/2019

Quarterly Well Sampling

Analysis	OOC	Qualifier	Result	Units	DF	Min	Max	Method	Rpt Limit	Cus Limit	MDL	Analysis Date	Tech
Sample: 05 Well S-3												**Sampled** 03/08/2019@ 11:24	
Sampled By David Richardson													
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 9:51	JSW
Iron			49	mg/L	10			EPA 200.7	0.20			03/19/2019 21:43	JSW
Sample: 06 Well S-4												**Sampled** 03/08/2019@ 11:03	
Sampled By David Richardson													
Sulfate			41	mg/L	5			EPA 300.0	2.5			03/12/2019 20:56	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 9:07	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 9:07	JSW
Iron		M3	6.2	mg/L	1			EPA 200.7	0.020			03/16/2019 9:07	JSW
Sample: 07 Well S-5												**Sampled** 03/08/2019@ 9:55	
Sampled By David Richardson													
Sulfate			230	mg/L	5			EPA 300.0	2.5			03/12/2019 21:56	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 9:57	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 9:57	JSW
Iron			2.2	mg/L	1			EPA 200.7	0.020			03/16/2019 9:57	JSW
Sample: 08 Well S-6												**Sampled** 03/08/2019@ 12:45	
Sampled By David Richardson													
Sulfate			61	mg/L	5			EPA 300.0	2.5			03/12/2019 22:11	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 10:03	JSW
Cadmium			0.0037	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 10:03	JSW
Iron			1.0	mg/L	1			EPA 200.7	0.020			03/16/2019 10:03	JSW
Sample: 09 Well S-1 Swamp												**Sampled** 03/08/2019@ 12:15	
Sampled By David Richardson													
Sulfate			21	mg/L	5			EPA 300.0	2.5			03/12/2019 22:26	LJC
Boron			<0.50	mg/L	1			EPA 200.7	0.50			03/16/2019 10:09	JSW
Cadmium			<0.002	mg/L	1			EPA 200.7	0.010	0.002	0.00050	03/16/2019 10:09	JSW
Iron			14	mg/L	1			EPA 200.7	0.020			03/16/2019 10:09	JSW

Qualifier Definitions

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Southern Illinois Power Coop.
Jason McLaurin

Date Due	03/28/2019
Date Received	03/08/2019

Quarterly Well Sampling

M3 Analyte in the parent sample for the Matrix Spike was >4x the concentration of the spike solution which renders the spike amount insignificant. Matrix spike recoveries do not impact the quality of the parent sample data for this analyte.

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE: *Al Moore A.M.*

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

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Electronic Filing: Received, Clerk's Office 10/10/2025

EXHIBIT 45

September 13, 1993 and August 27, 2009, RCRA Inspection Reports

04/26/2010 2:43PM L 170000164658 1990555005 SOUTHERN ILLINOIS POWER COOP 01 08/24/2009 1,504,532
L012960 L16-02321 B:77991 F:50497 I:00000471 EPA4247 10/07/2009 EPA4267 04/26/2010
Electronic Filing: Received, Clerk's Office 04/10/2025

COMPLETED DATE: 8-27-09

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

BUREAU OF LAND / FIELD OPERATIONS SECTION

RCRA INSPECTION REPORT

GENERAL FACILITY INFORMATION

USEPA ID #:	ILD007813900			**BOL ID #:**	1990555005
Facility Name:	Southern Illinois Power CO-OP			**Phone #:**	618-964-1448
Location	11543 Lake Egypt Rd			**County:**	Williamson
City:	Marion	**State:**	Illinois	**Zip Code:**	62959
Region:	Marion	**Inspection Date:**	8-24-09	**Time:**	1:15 pm.
Weather:	Sunny .80s				

RECEIVED
AUG 28 2009
IEPA/BOL

FACILITY TYPE

Notified As:	SQG	**Regulated As:**	SQG

INSPECTION TYPE

CEI: ☒ **GME:** ☐ **OAM:** ☐ **NRR:** ☐ **CSE:** ☐ **CAO:** ☐ **FUI to:**

FCI (Other): **CCI:** ☐ **CSI:** ☐

NOTIFICATION DATES (EPA 8700-12)

Initial:	5-27-1997	**Subsequent:**	3-01-07

PART A PERMIT DATES (EPA 3510-3 OR EPA 8700-23)

Initial:	**Amended:**	**Withdrawn:**

PART B PERMIT

(Check one if applicable) Application Submitted? ☐ **Permit Issued?** ☐ **Date:**

ACTIVE ENFORCEMENT

Date facility referred to:	**USEPA:**	**IAGO:**	**County State's Attorney:**

ACTIVE ENFORCEMENT ORDERS

CACO:	**CAFO:**	**Federal Court Order:**
Consent Decree:	**IPCB Order:**	**State Court Order:**

RELEASABLE
SEP 22 2009
REVIEWER MD

TSD Facility Activity Summary

Activity by Process Code	On Part A?	On Part B?	Activity ever done?	Closed?	Being done during inspection?	Exempt per 35 IAC Sec:
	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	

Owner				Operator			
Name:	Southern Illinois Power Co-op			**Name:**	same		
Address:	11543 Lake Of Egypt Rd			**Address:**			
City:	Marion			**City:**			
State:	IL.	**Zip Code:**	62959	**State:**		**Zip Code:**	
Phone #:	618-964-1448			**Phone #:**			

Person(s) Interviewed	Title	Phone #
Jason McLaurin	Environmental Coordinator	618-964-1448

Inspection Participants	Agency/Bureau	Phone #
Tom Edmondson *	IEPA	618-993-7200

***Report prepared by this person.**

Summary of Apparent Violations

Section	X	Section	X	Section	X
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐

X = Continuing Violations

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LD
9-17-2025

RCRA Violations Checklist for CESQGs, SQGs, and Transporters

IEPA #: 1990555005 *Inspection Date: 8/24/2009*

Section	V	C	R
CESQG Requirements	***NA***		
Part 721			
721.102(f)	☐	☐	☐
CESQG Requirements for Exclusion from Regulation – Mark the checkboxes of any unmet exclusion criteria, but cite the resulting violations under the SQG Requirements.			
Part 721			
☐ 721.105(a)			
☐ 721.105(e)			
☐ 721.105(f)			
☐ 721.105(g)			
Part 722			
☐ 722.111			
Part 808 – Special Waste Determination			
808.121(a)	☐	☐	☐
SQG Requirements			
Part 722			
722.111	☐	☐	☐
722.112(a)	☐	☐	☐
722.112(c)	☐	☐	☐
722.120(a)	☐	☐	☐
722.120(b)	☐	☐	☐
722.120(d)	☐	☐	☐
722.120(e)	☐	☐	☐
722.121(g)	☐	☐	☐
722.122	☐	☐	☐
722.123(a)	☐	☐	☐
722.123(b)	☐	☐	☐
722.123(c)	☐	☐	☐
722.134(m)	☐	☐	☐
722.140(a)	☐	☐	☐
722.140(c)	☐	☐	☐
722.140(d)	☐	☐	☐
722.142(b)	☐	☐	☐
722.143	☐	☐	☐
Part 728			
728.107(a)(10)	☐	☐	☐
Part 808 – Special Waste Determination			
808.121(a)	☐	☐	☐

Section	V	C	R
SQG Permit Exemption Criteria			
The generator must comply with certain sections of Parts 722, 725, and 728. Mark the checkboxes of any unmet criteria, but cite the violation as 703.121(a) and (b), not as the unmet criteria.			
703.121(a)	☐	☐	☐
703.121(b)	☐	☐	☐
Part 722			
☐ 722.134(a)(2)			
☐ 722.134(a)(3)			
☐ 722.134(c)			
☐ 722.134(d)			
☐ 722.134(d)(5)			
Part 725			
☐ 725.131			
☐ 725.132			
☐ 725.133			
☐ 725.134			
☐ 725.135			
☐ 725.137			
☐ 725.271			
☐ 725.272			
☐ 725.273(a)			
☐ 725.273(b)			
☐ 725.274			
☐ 725.277			
☐ 725.301(b)(1)			
☐ 725.301(b)(2)			
☐ 725.301(b)(3)			
☐ 725.301(b)(4)			
☐ 725.301(c)			
☐ 725.301(d)			
☐ 725.301(e)			
☐ 725.301(f)			
Part 728			
☐ 728.107(a)(5)			

Section	V	C	R
Transporter Requirements	***NA***		
Part 723			
723.111	☐	☐	☐
723.112	☐	☐	☐
723.120(a)	☐	☐	☐
723.120(b)	☐	☐	☐
723.120(c)	☐	☐	☐
723.120(d)	☐	☐	☐
723.120(e)	☐	☐	☐
723.120(f)	☐	☐	☐
723.120(g)	☐	☐	☐
723.120(h)	☐	☐	☐
723.121(a)	☐	☐	☐
723.121(b)	☐	☐	☐
723.122(a)	☐	☐	☐
723.122(b)	☐	☐	☐
723.122(c)	☐	☐	☐
723.122(d)	☐	☐	☐
723.122(e)	☐	☐	☐
723.130	☐	☐	☐
723.131	☐	☐	☐
Additional Requirements for CESQGs, SQGs and Transporters			
	☐	☐	☐
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V = Violation Observed; C = Continuing; R = Resolved | **NA = Not Applicable; NE = Not Evaluated**

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY **Memorandum**

DATE: August 27, 2009

TO: Land Division File

FROM: Tom Edmondson, DLPC/FOS Marion

SUBJECT: #1990555005 – Williamson County
Southern Illinois Power Co-Op
ILD 007813900

RECEIVED
AUG 28 2009
IEPA/BOL

A Compliance Evaluation Inspection (CEI) was conducted by this author on August 24, 2009, at 1:15 p.m. at the Southern Illinois Power Co-Op power plant. I met with Jason McLaurin the Environmental Coordinator at the power plant. This inspection consisted of a review of paper work and a tour of the areas where wastes were generated and kept. A photo was taken during the tour.

The only time hazardous wastes are generated at the plant is when they have line breakage or for some reason they have an emergency shut down for an extended time and the last time that happened was in 2006. They do have one parts washer and it is a citric based material and mineral spirits with a flash point of 201°F. There have been no shipments from this parts washing in over four years. The only manifest waste that they have is used oil that is generated in the spring and fall of each year from changing the machine oil out. This oil is sold to First American Recovery in Paducah, Kentucky.

No violations were noted at this time and the plant seems to be in compliance and is regulated as a SQG.

TDE:jkb/4104l/08-26-09

RELEASABLE
SEP 22 2009
REVIEWER MD

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Regulation	RCRA SMALL QUANTITY GENERATOR INSPECTION CHECKLIST (PART 722)	Violation
	PART 722: STANDARDS APPLICABLE TO SMALL-QUANTITY GENERATORS OF HAZARDOUS WASTE (100 - 1000 KG/MO.)	
	SUBPART A: GENERAL	
	Section 722.111 Hazardous Waste Determination	
722.111	Has the generator correctly determined if the solid waste(s) it generates is a hazardous waste? Yes X No N/A	
	Have hazardous wastes been identified for purposes of compliance with Part 728? Yes X No N/A	722.111
808.121(a)	Has the generator correctly determined if the solid waste it generates is a special waste? Yes X No N/A	808.121(a)
	Section 722.112 USEPA Identification Numbers	
722.112(a)	Has the generator obtained a USEPA identification number? Yes X No N/A	722.112(a)
722.112(c)	Has the generator offered its hazardous waste only to transporters or to treatment, storage or disposal facilities that have a USEPA identification number? Yes X No N/A	722.112(c)
	SUBPART B: THE MANIFEST	
	Section 722.120 General Requirements	
722.120(a)	Does the facility manifest its waste off-site? Yes X No N/A	
	If "No", proceed to Section 722.120(e).	722.120(a)
722.120(b)	Does the manifest designate a facility permitted to handle the waste? Yes X No N/A	722.120(b)
722.120(d)	Has the generator shipped any waste that could not be delivered to the designated facility? Yes No X N/A	722.120(d)
722.120(e)	Does the generator reclaim waste through a contractual agreement with a recycling facility in which: - the type of waste and frequency of shipments are specified in the agreement? Yes No X N/A - the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer of the waste? Yes No N/A X - the generator has maintained a copy of the agreement for 3 years after termination or expiration of the agreement? Yes No N/A X	722.120(e)
728.107(a)(10)	Has a small-quantity generator with a tolling (contractual) agreement pursuant to Section 722.120(e) retained on site a copy of the notification and certification of the initial waste shipment together with the tolling agreement for at least 3 **years** after the termination or expiration of the agreement? Yes No N/A X	728.107(a)(10)
	Section 722.121 Acquisition of Manifests	
722.121(a)	Has the generator used: - an Illinois manifest for wastes designated to a facility within Illinois? Yes X No N/A	722.121(a)
722.121(b)	- a manifest from the State to which the manifest is designated? Yes X No N/A - an Illinois manifest if the State to which the waste is designated has no manifest of its own? Yes X No N/A	722.121(b)
	Section 722.122 Number of Copies	
722.122	Does the manifest consist of at least 6 copies? Yes X No N/A	722.122

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AUG 28 2009
IEPA/BOL

Regulation	RCRA SMALL QUANTITY GENERATOR INSPECTION CHECKLIST (PART 722)	Violation
	Section 722.123 Use of the Manifest	
722.123(a)	For each manifest reviewed, has the generator: - signed the certificate by hand? Yes X No N/A	
	- obtained the handwritten signature and the date of acceptance by the initial transporter? Yes X No N/A	722.123(a)
	- retained one copy as required by Section 722.140(a)? Yes X No N/A	
	- apparently sent a copy (part 5 for the Illinois manifest) to the Agency within 2 working days? Yes X No N/A	
722.123(b)	- has the generator apparently given the remaining copies to the transporter? Yes X No N/A	722.123(b)
722.123(c)	- has the generator followed the procedures prescribed in Section 722.123 for manifesting bulk shipments of hazardous waste by rail or water? Yes No N/A X	722.123(c)
	SUBPART C: PRE-TRANSPORT REQUIREMENTS	
	Is there any hazardous waste ready for transport off-site? Yes No X N/A	
	If so, is the generator complying with the pre-transport requirements in Subpart C? Yes No N/A X	
	Section 722.134 Accumulation Time	
(722.134(c))	Is the generator who accumulates hazardous waste at or near any point of generation where wastes initially accumulate and which is under the control of the operator of the process generating the waste, limiting such accumulation to 55 gallons of hazardous waste or 1 quart of **acutely** hazardous waste, complying with Sections 725.271, 725.272 and 725.273(a), and marking the containers with the words "Hazardous Waste" or other words to identify the contents? Yes No N/A X	
	Has the generator who accumulates more than 55 gallons of hazardous waste or 1 quart of **acutely** hazardous waste complied with the requirements of Section 722.134(a) within 3 working days? Yes No N/A X	
	If there are more than 55 gallons of hazardous waste or 1 quart of **acutely** hazardous waste in the satellite accumulation area, are the containers marked with the date accumulation began? Yes No N/A X	
	During the 3 day period, is the generator continuing to comply with the requirements of Section 722.134(c)(1) with respect to the excess waste? Yes No N/A Y	
(722.134(d))	Has the generator complied with the following requirements: Yes No N/A X	
	Note: If the quantity of hazardous waste on-site ever exceeds 6000 kg, the facility is also a storage facility subject to full regulation under Parts 724 and 725 and the permit requirements under Part 703.	
	Does the facility accumulate hazardous waste in containers? Yes No N/A X	
	If "No", go to Subpart J.	
	SUBPART I: USE AND MANAGEMENT OF CONTAINERS	
(722.134(a)(2))	Is the accumulation start date marked on each container? Yes No N/A	
(722.134(a)(3))	Is each container marked with the words "Hazardous Waste"? Yes No N/A	
(725.271)	If the containers have leaked or are in poor condition, has the owner/operator transferred the hazardous waste to a suitable container? Yes No N/A	

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Regulation	RCRA SMALL QUANTITY GENERATOR INSPECTION CHECKLIST (PART 722)	Violation
(725.272)	Is the waste compatible with the container and/or liner? Yes_____ No_____ N/A_____	
(725.273(a))	Are containers of hazardous waste always closed except to remove or add waste during accumulation? Yes_____ No_____ N/A_____	
(725.273(b))	Are containers of hazardous waste being opened, handled, or stored in a manner which will prevent the rupture of the container or prevent it from leaking? Yes_____ No_____ N/A_____	
(725.274)	Is the owner/operator inspecting the accumulation area(s) at least weekly, looking for leaks or deterioration? Yes_____ No_____ N/A_____ Is the accumulation area free from any evidence of leaking or deteriorating containers? (See also Section 725.131) Yes_____ No_____ N/A_____	
(725.277)	Is the owner/operator complying with the requirements concerning incompatible wastes? Yes_____ No_____ N/A_____ Does the generator accumulate and/or treat hazardous waste in tanks? Yes_____ No_____ N/A_____	
	Note: If "No", go to Subpart C.	
	COMMENTS:	
	SUBPART J: TANK SYSTEMS	
	Section 725.301 Generators of 100 to 1000 kg/mo.	
(722.134(a)(2))	Is each tank marked with the words "Hazardous Waste"? Yes_____ No_____ N/A_____	
(725.301(b)(1))	Is the generator in compliance with the treatment or storage of hazardous waste in tanks as referenced in Section 725.117(b)? Yes_____ No_____ N/A_____	
(725.301(b)(2))	Have hazardous wastes or treatment reagents been placed in a tank causing the tank or its inner liner to rupture, leak, corrode or otherwise fail before the end of its intended life? Yes_____ No_____ N/A_____	
(725.301(b)(3))	Unless a tank is equipped with drainage control or a diversion structure, do any uncovered tanks have at least 2 feet of freeboard? Yes_____ No_____ N/A_____	
(725.301(b)(4))	If waste is continuously fed into a tank, is the tank equipped with a means to stop the inflow (i.e. waste feed cutoff system or by-pass system to a stand-by tank)? Yes_____ No_____ N/A_____	

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Regulation	RCRA SMALL QUANTITY GENERATOR INSPECTION CHECKLIST (PART 722)	Violation
(725.301(c))	Is the generator inspecting, where present, the following: 1) discharge control equipment at least once each operating day? Yes_____ No_____ N/A_____ 2) data from monitoring equipment at least once each operating day? Yes_____ No_____ N/A_____ 3) the level of the waste in the tank at least once each operating day? Yes_____ No_____ N/A_____ 4) physical evidence of corrosion at least weekly? Yes_____ No_____ N/A_____ 5) discharge confinement structures to detect erosion or leaking at least weekly? Yes_____ No_____ N/A_____	
(725.301(d))	Has the generator removed all hazardous waste from tanks and associated equipment and structures upon closure of the facility? Yes_____ No_____ N/A_____	
(725.301(e))	If ignitable or reactive wastes are stored in tanks, is the generator in compliance with Section 725.301(e)? Yes_____ No_____ N/A_____	
(725.301(f))	Is the generator in compliance with the regulations concerning incompatible wastes in Section 725.301(f)? Yes_____ No_____ N/A_____	
	COMMENTS:	
	SUBPART C: PREPAREDNESS AND PREVENTION	
(725.131)	Is the facility being operated and maintained to minimize the possibility of a fire, explosion or any release of hazardous waste or hazardous waste constituents which could threaten human health or the environment? Yes_____ No_____ N/A_____	
(725.132)	Is the facility equipped with the following if necessary: a) an internal communication or alarm system(s)? Yes_____ No_____ N/A_____ b) a telephone or other device to summon emergency assistance from local authorities? Yes_____ No_____ N/A_____ c) portable fire extinguishers, fire control equipment, spill control equipment and decontamination equipment? Yes_____ No_____ N/A_____ d) water at adequate volume and pressure for fire control? Yes_____ No_____ N/A_____	
(725.133)	Is the facility testing and maintaining communication/alarm systems, fire protection equipment, spill control equipment and decontamination equipment? Yes_____ No_____ N/A_____	
(725.134)	a) Where hazardous waste is being handled, do all employees have immediate access to an internal alarm or other emergency communication device? Yes_____ No_____ N/A_____ b) If there is ever just one employee on the premises when the facility is operating, does he/she have immediate access to a device capable of summoning external emergency assistance? Yes_____ No_____ N/A_____	
(725.135)	Is the facility maintaining adequate aisle space? Yes_____ No_____ N/A_____	

Regulation	RCRA SMALL-QUANTITY GENERATOR INSPECTION CHECKLIST (PART 722)	Violation
(725.137)	Has the facility attempted to make the following arrangements, as appropriate, for the type of facility and waste: - arrangements with local emergency authorities (i.e. police and fire departments, other emergency response agencies) to familiarize them with the layout of the facility, properties of hazardous waste handled, places where facility personnel would be working, entrances to roads inside the facility and evacuation routes? Yes X No____ N/A____ - agreements designating the primary authority where more than one police or fire department might respond? Yes X No____ N/A____ - agreements with State emergency response teams, contractors and equipment suppliers? Yes____ No____ N/A X - arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the type of injuries or illnesses which could result from fires, explosions or releases at the facility? Yes X No____ N/A____	
	Section 728.107 Waste Analysis and Recordkeeping	
(728.107(a)(5))	Has the generator who treats a prohibited waste in tanks or containers in order to meet the treatment standards developed and followed a waste analysis plan? Yes____ No____ N/A____ Is the plan on-site? Yes____ No____ N/A____ Does the plan include a detailed physical and chemical analysis? Yes____ No____ N/A____ Has the plan been filed with the Agency at least 30 days prior to commencement of treatment activity? Yes____ No____ N/A____ Has the generator submitted the required notification and certification that the waste meets treatment standards when the waste is shipped off-site? Yes____ No____ N/A____	
(722.134(d)(5))	A) Is there at least one employee on site or on call with the responsibility to coordinate all emergency response measures? Yes____ No____ N/A____ B) Is the following information posted next to the telephone: - the name and telephone number of the emergency coordinator? Yes____ No____ N/A____ - the location of fire extinguishers and spill control equipment and, if present, fire alarms? Yes____ No____ N/A____ - the number of the fire department unless the facility has a direct alarm? Yes____ No____ N/A____ C) Have employees received the proper waste handling and emergency procedures training relevant to their positions? Yes____ No____ N/A____ D) If there have been any emergencies that required a response, did the emergency coordinator comply with the requirements of Section 722.134(d)(5)(D)? Yes____ No____ N/A____	
	Note: A small-quantity generator who must transport the waste over a distance of 200 miles or more for treatment, storage or disposal may accumulate waste on-site for up to 270 days without a permit provided that the generator complies with the requirements of subsection (d).	
	SUBPART D: RECORDKEEPING AND REPORTING	
	Section 722.140 Recordkeeping	
722.140(a)	Has the generator retained for a period of 3 years: - a copy of each signed manifest? Yes X No____ N/A____	722.140(a)
722.140(c)	Has the generator retained for a period of 3 years: - copies of test results, waste analyses or other determinations made in accordance with Section 722.111? Yes X No____ N/A____	722.140(c)

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Regulation	RCRA SMALL QUANTITY GENERATOR INSPECTION CHECKLIST (PART 722)	Violation
722.140(d)	Does a generator who is involved in any unresolved enforcement action or as requested by the Director continue to maintain the records required in subsections a) and c)? Yes_____ No_____ N/A X	722.140(d)
722.142(b)	**Section 722.142 Exception Reporting** Has the generator filed an exception report if a signed copy of the manifest has not been received within 60 days of the date of delivery to the transporter? Yes_____ No_____ N/A X	722.142(b)
722.143	**Section 722.143 Additional Reporting** Has the generator furnished additional reports as required by the Director? Yes_____ No_____ N/A X	722.143
	SUBPART E: EXPORTS OF HAZARDOUS WASTE	
722.150	Is the generator an exporter of hazardous waste? Yes_____ No X N/A_____ If "Yes", has the generator complied with the requirements of Subpart E? Yes_____ No_____ N/A_____	722.150
	SUBPART F: IMPORTS OF HAZARDOUS WASTE	
722.160	Is the generator an importer of hazardous waste? Yes_____ No X N/A_____ If "Yes", has the generator complied with the requirements of Subpart F? Yes_____ No_____ N/A_____	722.160
	SUBPART G: FARMERS	
722.170	Is the generator a farmer? Yes_____ No X N/A_____ If "Yes", has the generator complied with the requirements of Subpart G? Yes_____ No_____ N/A_____	722.170
	COMMENTS:	

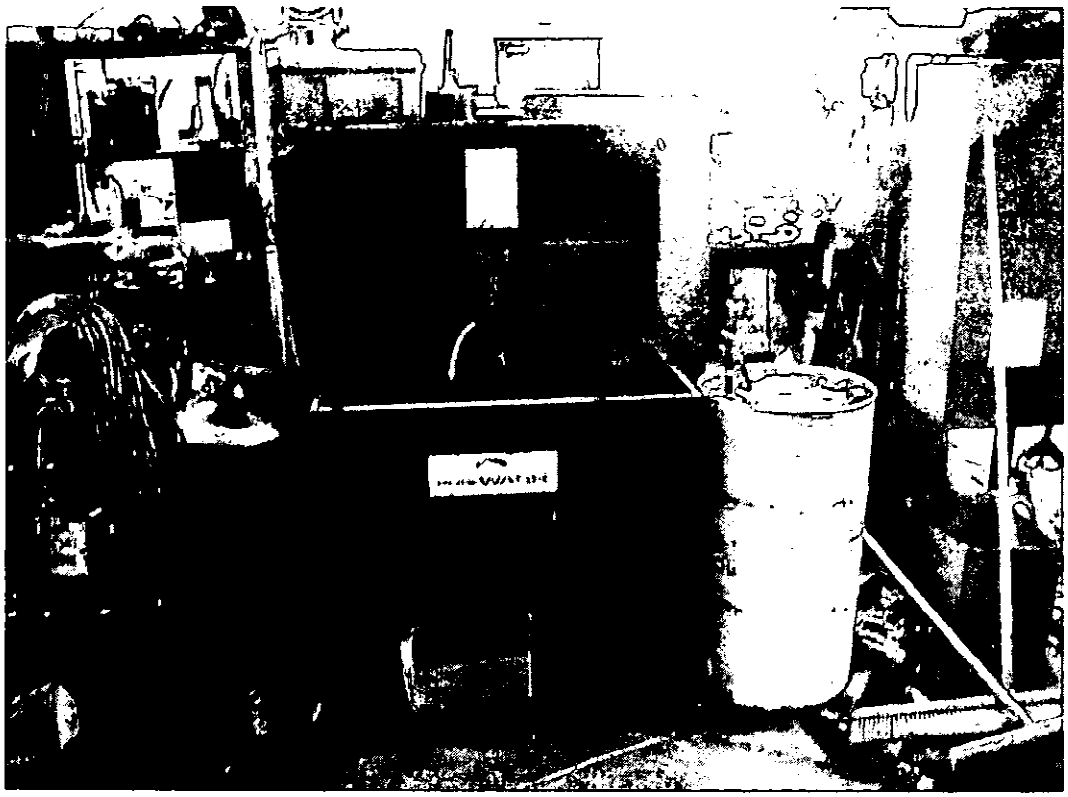
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SPECIAL WASTE DISPOSITION FORM

Facility Name:	Southern Illinois Power CO-OP	**USEPA ID #:**	ILD007813900
Inspection Date:	8-24-09	**IEPA ID #:**	1990555005
Wastestream Name:	Waste Oil	Amount On-site:	10 gal
Generation Rate:	1200 to 2200 gal every six months	Last Manifest Date:	5-22-09
Last Analysis Date:	Knowledge of product	Disposition:	sold to First American Recovery
Generating Process:			
Wastestream Name:		Amount On-site:	
Generation Rate:		Last Manifest Date:	
Last Analysis Date:		Disposition:	
Generating Process:			
Wastestream Name:		Amount On-site:	
Generation Rate:		Last Manifest Date:	
Last Analysis Date:		Disposition:	
Generating Process:			
Wastestream Name:		Amount On-site:	
Generation Rate:		Last Manifest Date:	
Last Analysis Date:		Disposition:	
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Generation Rate:		Last Manifest Date:	
Last Analysis Date:		Disposition:	
Generating Process:			
Wastestream Name:		Amount On-site:	
Generation Rate:		Last Manifest Date:	
Last Analysis Date:		Disposition:	
Generating Process:			
Wastestream Name:		Amount On-site:	
Generation Rate:		Last Manifest Date:	
Last Analysis Date:		Disposition:	
Generating Process:			

Electronic Filing: Received, Clerk's Office 09/10/2025

DIGITAL PHOTOGRAPHS



Date: 08-24-2009
Time: 1405
Direction: East
Photo by: TDE
Exposure #: 001
Comments: parts washer

Date:
Time:
Direction:
Photo by:
Exposure #:
Comments:

File Names: ~-[Exp. #].jpg

Electronic Filing: Received, Clerk's Office 09/10/2025

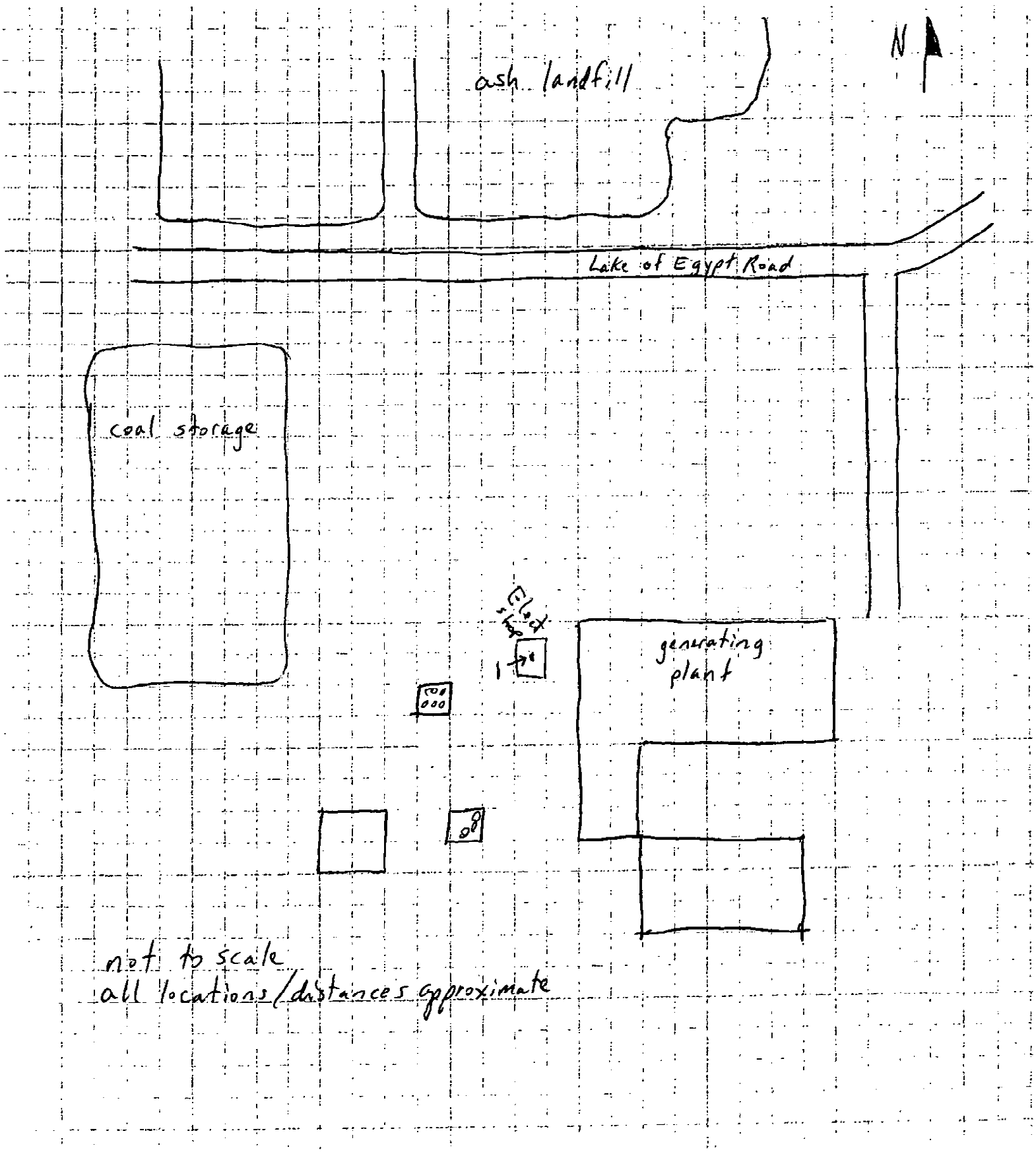
STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39
054-002

Subject 1990555005 - Williamson County

Data Marion / Southern Illinois Power Co-op

Reviewed by ILD001662816 Date Aug 24 2009



11/20/2006 3:31AM L 17000016458 1000555005 SOUTHERN ILLINOIS POWER COOP 01 09/13/1993 689,935
L010959 L16-01292 B:51002 F:50497 I:00000416 EPA4247 11/20/2006
Electronic Filing: Received, Clerk's Office 09/10/2025

Illinois Environmental Protection Agency
Division of Land Pollution Control

RCRA INSPECTION REPORT

USEPA #: IL D001662816 IEPA #: 1990555005

Facility Name: Southern Illinois Power Co-Op Phone #: (618) 964-1448

Street Address: Rt. 4, Box 607 County: Williamson

City: Marion, I State: Illinois Zip: 62959

Region: 7 Inspection Date: 09/13/93 From: 9:30Am To: 2:30Pm

Weather: Cloudy, 75°F

TYPE OF FACILITY

Notified As: Gen-1 Regulated As: Gen-1

LDF? NW (Was or Not) HPV? no 90-Day F/U Required?: YES X NO ____

TYPE OF INSPECTION

CEI: X Sampling: ____ Citizen Complaint: ____ Closed: ____ Other: ____

CME/O&M: ____ Record Review: ____ Follow-Up to Inspection of: ____ Withdrawal: ____

NON-REGULATED STATUS

SQG: ____ Claimed Nonhandler: ____ Other (Specify in Narrative): ____

PART A

Notification Date: ___/___/___, from (initial) or (subsequent) Notification.

Initial Part A Date: ___/___/___ Amended: ___/___/___

Part A Withdrawal requested: ___/___/___ Approved by (US)(IL) EPA: ___/___/___

PART B PERMIT APPLICATION

Part B Permit Submitted: Y or (N) ___/___/___ Final Permit Issued: ___/___/___

ENFORCEMENT

Has the firm been referred to -- USEPA: Y or N ___/___/___

Illinois Attorney General: Y or N ___/___/___ County State's Attorney: Y or N ___/___/___

ORDERS ISSUED

CACO: ___/___/___ CAFO: ___/___/___ Consent Decree: ___/___/___

Federal Court Order: ___/___/___ State Court Order: ___/___/___ IPCB Order: ___/___/___

TSD FACILITY ACTIVITY SUMMARY

Activity by Process Code	On Part A?	Activity Conducted Prior to 1980?	Was Activity Ever Done?	Closed	Being done at Time of Insp.?	Exempt per 35 IAC, Sec.	On Annual Report 19	19	19

RECEIVED
OCT 18 1993
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OWNER		OPERATOR	
Name	Southern Illinois Power Co-Op	Name	Southern Illinois Power Co-op
Address	Rt. 4, Box 607	Address	Rt. 4, Box 607
City	Marion, Illinois 62959	City	Marion
State	Illinois Zip 62959	State	Illinois Zip 62959
Phone #	618-964-1448	Phone #	618-964-1448

PERSON(S) INTERVIEWED	TITLE	PHONE #
Richard Myott	Electrical Systems Manager	618-964-1448
Leonard Hopkins	Environmental and Safety Coordinator	618-964-1448
Howard McDannel	Production Manager	618-964-1448

INSPECTION PARTICIPANT(S)	AGENCY/TITLE	PHONE #
George Glass	IEPA / EPS	618-993-7200
Gerald Steele	IEPA / EPS	618-993-7200

PREPARED BY	AGENCY/TITLE	PHONE #
George Glass	IEPA / EPS	618-993-7200

SUMMARY OF APPARENT VIOLATIONS

Area	Class	Section
GGR	1	722.111
GRR	2	722.141(b)
DGS	2	726.144(d)(1)
DGS	1	725.116(a)
DGS	2	725.116(b)
DPP	2	725.137
DCP	1	725.151(a)
GPT	2	722.134(a)
DMC	2	725.214
		809.301

Area	Class	Section

Area	Class	Section

Facility Name: Southern Illinois Power Co-Op

USEPA #: IL _____

IEPA #: 1 9 9 0 5 5 5 0 0 5

WASTE DISPOSITION FORM

Waste Name (include haz & waste for which no determination has been made)	Generating Process (For waste gen. on site. N/A for TSD)	Date of Last Analysis	USEPA Haz Waste #	* On 8700-12 Unavailable	* On 3510-3	On Annual Report for: (Circle if present; cross out if not present) * 19 90	* 19 91	* 19 92	Amount on Site	Rate of Generation	Last Manifested Shipment	Disposition
boiler acid treatment	boiler cleaning	July 2, 1990	D001			G F	G F	G F	0	15,000 gal per/clean	N.A.	incinerated in on-site boiler
bottom ash	coal combustion	exempt	NH			G F	G F	G F	440 Tons	80,000 Ton/ year	N.A.	recycled by GroundGrit New Orleans, Louisiana
fly ash	coal combustion	exempt	NH			G F	G F	G F	199,614 yd³	20,000 Tons per year	N.A.	land filled on site
scrubber ash	coal combustion	exempt	NH			G F	G F	G F	1,064,776 yd³	107,000 Tons per year	N.A.	land filled on site
waste oils	electric motor lubrication	6-15-86	N.Y.D			G F	G F	G F	385 gallons	400 gallons/ 6 months	N.A.	burned as fuel in on-site boiler
parts cleaner	maintenance	K.O.P.	D001			G F	G F	G F	44 gallons	44 gallons/ 6 weeks	9-7-93	recycled by Safety Kleen
sandblast residue	equipment maintenance	9-7-93	NH			G F	G F	G F	two 55 gal. drums	one time generated	—	stored on site
vehicle waste oils	heavy equipment maintenance	none	NYD			G F	G F	G F	0	200 gallons per year		maintenance contractor removes from site, Roland Machinery, mount
Waste capacitors	equipment changeout	K.O.P.	N.H			G F	G F	G F	0	variable	5-4-93	Heavi-Duty Electric mt. Vernon, IL
						G F	G F	G F				

* All "NO" responses must be explained in narrative.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: September 20, 1993

TO: Land Division File

FROM: George GG Glass, DLPC/FOS, Region 7

SUBJECT: 1990555005 - Williamson County
Marion/Southern Illinois Power Co-Op
ILD001662816 FOS

A Compliance Evaluation Inspection of the Southern Illinois Power Co-Op (SIPC) was conducted on September 13, 1993 by George Glass and Gerald Steele. We met with Electrical Systems Manager Richard Myott and Environmental and Safety Coordinator Leonard Hopkins. We met briefly with Production Manager Howard McDannel. This site is an electrical power generating station utilizing four coal-fired boilers.

One identified hazardous waste has been generated at SIPC. Boiler cleaning generated a waste liquid that contained chromium at 12.26 mg/l. A component of the boiler wash is EDTA. There are four boilers at SIPC. The boilers are shut down on a rotating basis for cleaning. Boiler #4 was last cleaned in 1991. Boilers #1, #2, and #3 are used less so are shut down less often than #4 for cleaning. Prior to 1991 the last previous shut down was in 1987. Whenever a boiler is cleaned, the washdown waste is collected and pumped to one of the operating boilers for incineration. This process is accomplished within a totally enclosed treatment system which pipes waste from the boiler being cleaned to a pumper tank truck and then to an operating boiler. The generation of this hazardous waste was not listed in annual reports (722.141b). SIPC stated that all employees involved in handling the hazardous wastes are employees of the cleaning contractor.

SIPC generates several other wastes. The process of coal combustion generates bottom ash, fly ash, and scrubber ash. The bottom ash is used by Ground Grit of New Orleans, Louisiana, in the manufacture of roofing products. The fly ash and scrubber ash are landfilled on-site. Lubrication oils from electric motors on heaters, boosters and fans generate approximately 800 gallons a year of waste oils. These oils are burned as fuel in the on-site boilers. The last date of analysis for this oil was June 15, 1986(722.111)(726.144d)1)). The parts cleaner in the maintenance department is a commercial Safety Kleen unit. The solvent, petroleum naptha, is changed at approximate six week intervals. Approximately 44 gallons of parts cleaner is taken each service cycle by Safety Kleen. The sandblasting of a transformer prior to repainting produced a one time waste of sandblasting residue which was contained in two drums. SIPC utilizes five pieces of heavy equipment. Roland Machinery performs regular maintenance such as changing oil. These heavy equipment oil changes generate approximately 200 gallons of waste oil per year. Mr. Myott said SIPC has no manifests or analyses for this oil (809.301). This was because Roland Machinery takes the oil back to their facility and combines it with other waste oils. SIPC showed us a ticket from Safety Kleen showing 450 gallons of used oil had been received from Roland. Mr. Myott said this oil was not all theirs.

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A review of records and files was conducted. The contingency plan as first presented did not list emergency contact people and their phone numbers. Later in the inspection, a call-out schedule was produced listing names, phone numbers, and pager numbers. SIPC is located within a rural fire protection district which has a local fire station located within one half mile of the site. Mr. Myott said SIPC preferred to use the Marion Fire Department because, in his opinion, it had superior training. The Marion Fire Department is located approximately ten miles from the site. The Contingency Plan did not have a written agreement designating primary emergency authority to a specific fire department (725.137 a)2)). The Contingency Plan did not identify the boiler cleaning wastes or the equipment involved. It did not include actions to take in response to a release of corrosive or hazardous materials (725.152). Records of training included safety meetings. The listing of the meetings did not include the names of the participants. These meetings do not cover hazardous waste generator training or the Contingency Plan. SIPC contends that their employees are not involved in hazardous waste management. However, RCRA personnel training has not been provided for the Emergency Coordinators (725.116a)(725.116d).

A tour of SIPC waste generation and accumulation locations was conducted and photos were taken. A metal building west of the electric generating plant is used to hold drums of product lubricating oils. Buckets are used to catch drips from the bung taps. There is a sump in this building. Spills drain into this sump. The buckets are also emptied into this sump. The sump drains to a 150 gallon underground storage tank which acts as an oil-water separator according to Mr. Myott (photo 1, roll M-676). Waste oil has been accumulated in seven drums awaiting use as a fuel (photo 2, roll M-676). There were no labels on these drums (722.134). There were no records of weekly inspections for these drums (725.274). The area where equipment and tank trucks are staged during the boiler cleaning operation was observed and photographed (photo 3, roll M-676). The tanks were not there during the inspection but record reviews and conversations indicated non-compliance with tank systems requirements.

GG:cs/1886L/10-06-93

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INSPECTION PHOTOS

DATE: 9 / 13 / 93

SITE #: 1 9 9 0 5 5 5 0 0 5 _ _ CO.: Williamson

TIME: 1:50 p.m.

SITE NAME: Marion/Southern Illinois Power Co-op

PHOTOGRAPH TAKEN BY: George Glass

COMMENTS: Pictures taken toward: West

ROLL #: M-676 PHOTO #: 1



DATE: 9 / 13 / 93

TIME: 1:55 p.m.

PHOTOGRAPH TAKEN BY: George Glass

COMMENTS: Pictures taken toward: West

ROLL #: M-676 PHOTO #: 2



FOS

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INSPECTION PHOTOS

DATE: 9 / 13 / 93

SITE #: 1 9 9 0 5 5 5 0 0 5 _ _ CO.: Williamson

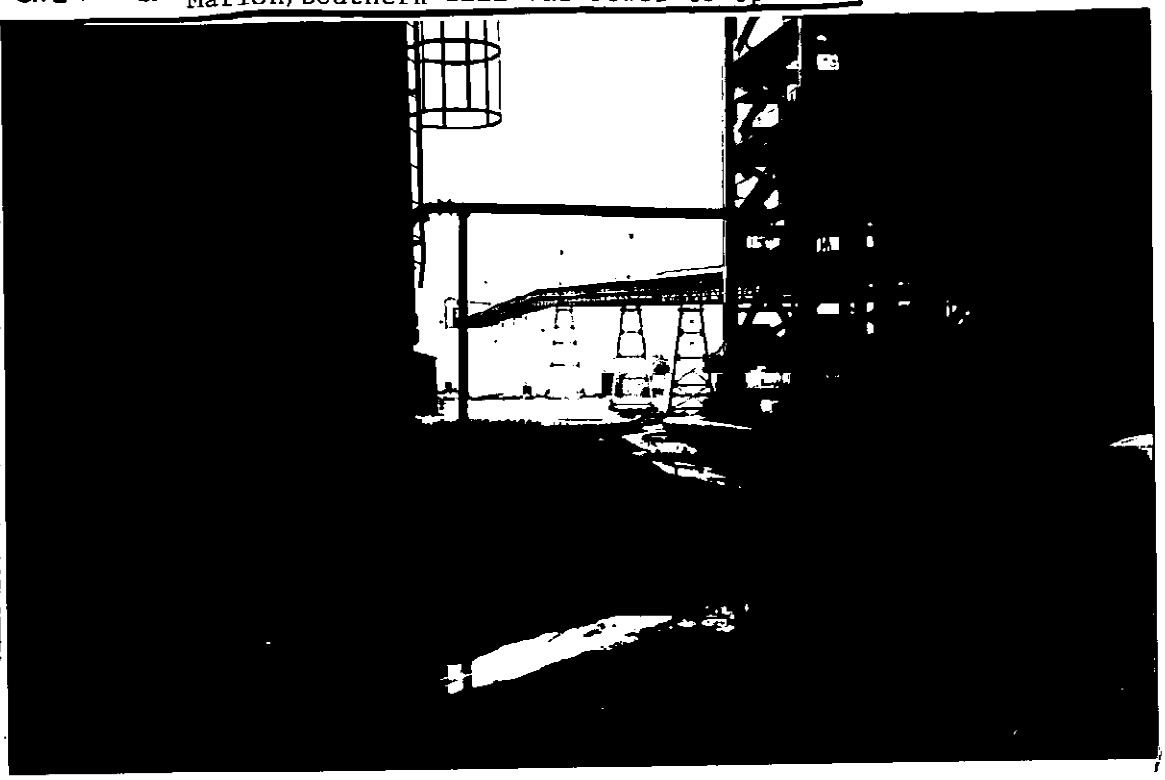
TIME: 2:05 p.m.

SITE NAME: Marion/Southern Illinois Power Co-Op

PHOTOGRAPH TAKEN BY: George Glass

COMMENTS: Pictures taken toward: East

ROLL #: M-676 PHOTO #: 3



DATE: __ / __ / __

TIME:

PHOTOGRAPH TAKEN BY:

COMMENTS: Pictures taken toward:

ROLL #: PHOTO #:

NO PHOTO

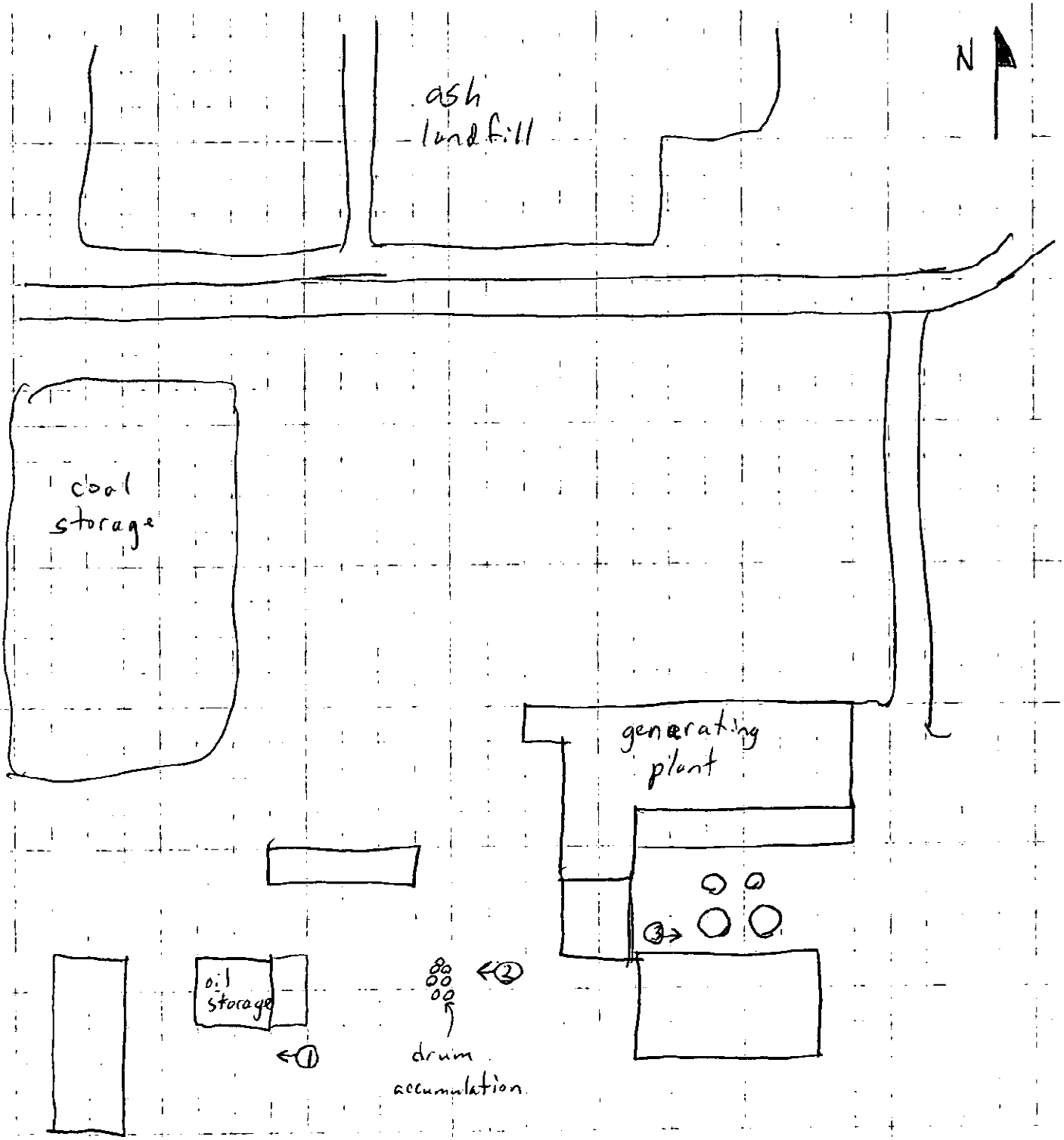
FOS

532 1910

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39
054-002

Subject 1990555005 - Williamson County
Data Marion / Southern Ill. Power Co-Op
~~Reviewed by~~ ILD001662816 Inspection Date 9-13-93



Southern Illinois Power Coop
Marion, IL
storage area began operation in 1979.

BASELINE
3+00
2+80
2+00
1+00
0+00
0+60

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REVISION 1 (8/15/88)

Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				PART 722 **GENERATOR STANDARDS** **Subpart A: General**				Not available for waste oil
OTH	1			**Section 722.111: Hazardous Waste Determination**		X		
				Has the generator determined if the solid waste it generates is a hazardous waste? Yes ___ No X				
				Did the generator follow the procedures specified in this section in making its determination? Yes ___ No X				
OTH	1			**Section 722.112: USEPA Identification Number**	X			
			a	Has the generator obtained a USEPA identification number? Yes X No ___				
			c	Has the generator offered his hazardous waste only to transporters or to treatment, storage or disposal facilities that have received a USEPA identification number? Yes X No ___				

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LPC 256 0787

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No
				PART 722 **GENERATOR STANDARDS** **Subpart B: The Manifest**				
MAN	2			**Section 722.120: General Requirements**	X			
			a	Has the generator who transports, or who offers its hazardous waste for transportation off-site for treatment, storage or disposal prepared a uniform hazardous waste manifest? Yes X No ___ **Note: If the generator has not used a manifest, check "No" in the Apparent Compliance Column and skip to 722.130.**				
			b	Did the generator designate on the manifest one facility which is permitted to handle the hazardous waste therein described? Yes X No ___ **Note: The generator may also designate an alternate facility permitted to handle the hazardous waste in the event an emergency prevents delivery of the hazardous waste to the primary designated facility.**				
			d	In any instances where the transporter was unable to deliver the hazardous waste to the designated or alternate permitted facility, has the generator designated another permitted facility or instructed the transporter to return the waste? Yes ___ No ___ NA X				This has not occurred

IL 532-1592
LPC 256 8/87

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No
MAN	2			**Section 722.121: Acquisition of Manifests**	X			
			a	Did the generator use the manifest supplied by the Agency for hazardous waste going for treatment, storage or disposal in Illinois? Yes ___ No ___ N/A X				
			b	For hazardous waste going outside Illinois for treatment, storage or disposal, has the generator used the manifest supplied by the Agency if the State to which the hazardous waste is being shipped does not supply and require the completion of its own State manifest? **or** For hazardous waste going outside Illinois for treatment, storage or disposal, has the generator used the manifest required by the State to which the hazardous waste is being shipped? Yes X No ___ N/A ~~X~~ GCC				
MAN	2			**Section 722.122: Number of Copies** Does the manifest the generator is using consist of at least six copies (plus one copy for each additional transporter)?	X			
MAN	2			**Section 722.123: Use of the Manifest** For each manifest received, has the generator: 1) Signed the certificate by hand? Yes X No ___ 2) Obtained the handwritten signature and the date of acceptance by the initial transporter? Yes X No ___	X			

IL 532-1592
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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				3) Retained one copy as required by Section 722.140(a), Recordkeeping? Yes X No ___				
				4) Apparently sent a copy (Part 5 for Illinois manifests) to the Agency within two working days? Yes X No ___				
				NOTE: Obtain a copy of any manifest which is not in compliance with the requirements of this subsection. If copies are unobtainable, log manifest #s.				
			b	Has the generator apparently given the remaining copies of the manifest to the transporter? Yes X No ___				
			c	Has the generator followed the procedures prescribed in Section 722.123(c) for manifesting bulk shipments of hazardous waste by water? Yes ___ No ___ N/A X				
			d	Has the generator followed the procedures prescribed in Section 722.123(d) for manifesting bulk shipments of hazardous waste by rail? Yes ___ No ___ N/A X				

IL 532-1502
LPC 256 8/87

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				PART 722 **GENERATOR STANDARDS** **Subpart C: Pre-Transport Requirements**				
OTH	1	X		**Section 722.130: Packaging** Is waste which is ready for transportation off-site packaged in accordance with 49 CFR, Parts 173, 178 and 179?			X	none observed ready for transport
OTH	1	X		**Section 722.131: Labeling** Is each package of hazardous waste which is ready for transportation off-site labeled in accordance with 49 CFR Part 172?			X	see above
OTH	1	X		**Section 722.132: Marking**			X	see above
			a	Is each package of hazardous waste which is ready for transportation off-site marked in accordance with 49 CFR Part 172? Yes ___ No ___				
			b	Is each package of hazardous waste which is ready for transportation off-site marked with: - The generator's name and address? Yes ___ No ___ - The manifest document number associated with the container? Yes ___ No ___ - The words "Hazardous Waste - Federal Law Prohibits Improper Disposal. If found contact the nearest police, or public safety authority or the U.S. Environmental Protection Agency"? Yes ___ No ___				

IL 532-1502
LPC 256 8/87

Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
OTH	1			**Section 722.133: Placarding** Does the generator have, for the waste it generates, the proper placards to: - Placard the transport vehicle, or - Offer to the first transporter, according to 49 CFR, Part 172, Subpart F? **NOTE: If the placards are provided by the transporter, then mark the N/A Column and use Comment field to explain.**			X	placards provided by transporter.
OTH	1	X		**Section 722.134: Accumulation Time** **NOTE: If the TSD checklist will be completed and the facility only accumulates wastes for 90 days or less for Section 722.134 complete page GEN-C-2(a) then skip to TSD checklist.** **NOTE: A generator who is also a TSD would be subject to this section for any waste which is not identified for storage on the facility's Part A, or which is being accumulated outside a "permitted" storage area.**			X	
			a	For waste in containers, has the generator complied with the requirements of 35 Ill. Adm. Code 725, Subpart I: Use and Management of Containers listed below: **NOTE: If no wastes in containers, mark "N/A" and skip to Section 725.291 of the Generator checklist.**				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
OTH	1	X		**Section 722.134: Accumulation Time**		X		Seven portable tanks are brought in during Boiler cleaning jobs. They are removed after the job is completed. They were not on-site at the time of the inspection. The tank segment has not been completed.
				NOTE: A generator who is also a TSD would be subject to this section for any waste which is not identified for storage on the facility's Part A, or which is being accumulated outside a "permitted" storage area.				
			a1	For waste in containers, has the generator complied with the requirements of 35 Ill. Adm. Code 725, Subpart I? **and/or** For waste in tanks, has the generator complied with the requirements of 35 Ill. Adm. Code 725, Subpart J except Section 725.297(c) and 725.300? Yes ___ No X				
			a2	For waste in containers, has the generator marked and made visible for inspection on each container, the date upon which accumulation began? Yes ___ No X N/A ___				
			a3	For waste in containers and tanks, has the generator marked or labeled each with the words "Hazardous Waste"? Yes ___ No X				
			a4	Has the generator complied with the requirements of 35 Ill. Adm. Code 725, Subparts C and D, and Section 725.116? Yes ___ No X				

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Area	Class	90 Day F U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Condition of Containers (Section 725.271) Has the owner or operator transferred the hazardous waste in leaking container or containers which are not in good condition or managing the waste in some other way that complies with the requirements of this Part? Yes X No ___ N/A ___ **Compatibility of Waste with Container (Section 725.272)** Is the owner or operator using containers made of or lined with materials which will not react with and are otherwise compatible with the hazardous waste to be stored so that the ability of the container to contain the waste is not impaired? Yes X No ___ **Management of Containers (Section 725.273)** Are containers of hazardous waste always closed during storage? Yes X No ___ Are containers of hazardous waste being opened, handled or stored in manner which will prevent the rupture of the container or prevent it from leaking? Yes X No ___ **Inspections (Section 725.274)** Is the owner or operator inspecting areas where the containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors? Yes ___ No X **NOTE: Any evidence of leakage may be a reason to answer "No" to the above question, even if there are inspection records that indicate that inspections are being done.**				There were not any records of weekly inspections in the drum accumulation area

IL 532-1592
LPC 258 8/87

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Area	Class	90 Day F U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				Special Requirements for Ignitable or Reactive Wastes (Section 725.276) Are containers holding ignitable or reactive waste located at least 50 feet from the property line? Yes ____ No ____ N/A X **Special Requirements for Incompatible Wastes (Section 725.277)** Is the owner complying with the requirements concerning the management of incompatible wastes or incompatible wastes and materials contained in this Section? Yes ____ No ____ N/A X				

IL 532-1502
LPC 256 0787

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				FOR WASTE IN TANKS, has the generator complied with the requirements of 35 Ill. Adm. Code 725, Subpart J: Tank Systems listed below: **NOTE: If the facility has discontinued accumulation of waste in tanks, they are subject to 725.211 and 725.214.** **NOTE: If no waste in tanks, mark N/A and skip to "For waste in containers ...", Subsection a)2) page GEN-C-14.** **Assessment of Existing Tank Systems (Section 725.291)** For tanks not protected by a secondary containment system, is an independent, certified written assessment available? Yes ____ No ____ **NOTE: Except as provided in Subsection (c) of 725.291, certified assessment must be available by 1/12/88.** Does this assessment consider at least the following: 1) available standards for the tank and ancillary equipment; 2) hazardous characteristics of the wastes; 3) existing corrosion protection measures; 4) age of the tank system; and 5) results of a leak test, internal inspection, or other tank integrity examination? Yes ____ No ____				

IL 532-1592
LPC 256 6/87

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Design and Installation of New Tank Systems or Components (Section 725.292) Is secondary containment provided for any new tank system (constructed after July 14, 1986) before being put into service? Yes ____ No ____ N/A ____ For new tanks (built after July 14, 1986) was an independent, certified written assessment prepared? Yes ____ No ____ Does the assessment include, at a minimum, the following: 1) design standard for tanks and ancillary equipment; **NOTE: These standards should include protection from damage from vehicular traffic, adequate foundations, anchoring to prevent flotation or dislodgement, and withstanding the effects of frost heave.** 2) hazardous characteristics of the waste; and 3) evaluation of potential for corrosion and corrosion protection measures? Yes ____ No ____ Has the owner obtained and kept on file at the facility the certifications of the design and installation requirements of Subsections (b) through (f)? Yes ____ No ____ **Containment and Detection of Releases (Section 725.293)** Does an existing tank, which stores F020, F021, F022, F023, F026 or F027 waste(s) have secondary containment (secondary containment is required by January 12, 1989)? Yes ____ No ____ N/A ____				

IL 532-1592
LPC 256 0787

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				For an existing tank, of known age, which stores any hazardous waste, is secondary containment provided (secondary containment is required by January 12, 1989 or when the tank is 15 years old, whichever is later)? Yes ____ No ____ N/A ____ For an existing tank of unknown age, has secondary containment been provided by January 12, 1995? Yes ____ No ____ N/A ____ or If the facility is older than 7 years, by the time the facility reaches 15 years of age or January 12, 1989, whichever is later? Yes ____ No ____ N/A ____ For tanks that store wastes that are listed as hazardous after 1/12/87, has secondary containment been provided on the same basis as required in Subsections (a)(1) through (a)(4) of 725.293 substituting the date that a material becomes a hazardous waste for 1/12/87? Yes ____ No ____ N/A ____ Is the secondary containment system designed, installed and operated to prevent migration of wastes out of the system, and capable of detecting and collecting releases? Yes ____ No ____ N/A ____ NOTE: **To meet the requirements of Subsection (b) secondary containment must comply with the physical requirements given in Subsection (c)(1) through (4) (compatible liner, foundation, leak detection system).** Are spilled or leaked wastes and accumulated precipitation removed from the secondary containment within 24 hours? Yes ____ No ____ N/A ____				

IL 532-1592
LPC 256 6/87

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				NOTE: A RCRA permit may allow for removal of liquids less frequently than 24 hours after accumulation. Does the secondary containment have one or more of the following: 1) a liner (external to the tank); or 2) a vault; or 3) a double-walled tank; or 4) an equivalent device (approved by the Board)? Yes ___ No ___ N/A ___ **NOTE: Liners, vaults or double-walled tanks must also comply with the requirements of Section 725.293, Subsection (e) or "No" should be marked and explained in the comment.** Is ancillary equipment protected by secondary containment that meets the requirement of Subsections (h) and (c) except for: 1) above ground piping (exclusive of flanges, joints, valves and connections) that are inspected daily; 2) welded flanges, joints and connections that are inspected daily; 3) sealless or magnetic coupling pumps that are inspected daily; and 4) pressurized above ground piping systems with automatic shut-off devices that are inspected daily? Yes ___ No ___ N/A ___ Until such time as secondary containment is provided, are the following requirements being met for all tank systems:				

IL 532-1592
LPC 256 6/87

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				1) For non-enterable underground tanks, has a yearly leak test that meets the requirements of 725.291(b) been conducted? Yes ___ No ___ N/A ___ 2) For enterable underground tanks and ancillary equipment, has a yearly leak test or an internal inspection or other tank integrity examination by an independent registered professional engineer been conducted? Yes ___ No ___ N/A ___ 3) Are written records maintained at the facility to document the assessments required under Subsections (i)(1) and (2)? Yes ___ No ___ N/A ___ **General Operating Requirements (Section 725.294)** Are tanks equipped with spill prevention controls (e.g., check valves, dry disconnect couplings) and overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff or bypass to a standby tank)? Yes ___ No ___ Is a sufficient freeboard being maintained in uncovered tanks to prevent overtopping by wave or wind action or by precipitation? Yes ___ No ___ N/A ___ If a leak or spill has occurred in the tank system, has the owner or operator complied with the requirements of 725.296? Yes ___ No ___ N/A ___				

IL 532-1502
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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				Inspections (Section 725.295) Is the facility operator inspecting and documenting, in an operating record, the results of tank inspection as required in 725.295, Subsections (a) and (b)? Yes ____ No ____ **Response to Leaks or Spills and Disposition of Tank Systems (Section 725.296)** Does the facility have a tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use? Yes ____ No ____ **NOTE: If "No", skip to Closure and Post Closure Care (Section 725.297). If "Yes", answer the following questions.** If a tank or secondary containment system has leaked, has the owner done the following: 1) Ceased using, stopped inflow of wastes? Yes ____ No ____ 2) Removed the waste from the tank system within 24 hours and/or from the secondary containment system within 24 hours? Yes ____ No ____ 3) Taken actions to prevent waste migration and removed and properly disposed of visibly contaminated soil or subsurface water? Yes ____ No ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				4) Reported to the Agency within 24 hours of detection? Yes ___ No ___ **NOTE: Reporting to the Agency is not necessary if less than one pound of material which was immediately contained and cleaned up was spilled.** 5) Within 30 days of detection of a release, submitted a report to the Agency that complies with Section 725.296(d)(3)(A) through (E)? Yes ___ No ___ If the source of the release was from a component of a tank system without secondary containment, has the owner provided secondary containment (that satisfies 725.293) to the component of the system before it is returned to service? Yes ___ No ___ N/A ___ **NOTE: If the component is above ground and can be visually inspected then secondary containment is not needed.** Certification of major repairs. If an extensive repair has been done, then is a certification by an independent, registered professional engineer, that the repaired system is capable of handling hazardous waste available before the tank is returned to service? Yes ___ No ___ N/A ___ Has the certification been submitted within 7 days after returning the tank system to use? Yes ___ No ___ N/A ___				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Closure and Post Closure Care (Section 725.297) **NOTE: The requirements of this section apply to closure of tank systems. If no closure is being performed, then skip to Special Requirements for Ignitable or Reactive Wastes (Section 725.298).** At the time of closure, has the owner removed or decontaminated all waste residues, contaminated components, contaminated soils and structures and equipment and managed them as hazardous waste (unless 721.103(d) applies)? Yes ____ No ____ Has the closure plan, closure activities, cost estimates for closure and financial responsiblity for tank systems met all requirements specified in Subparts G and H? Yes ____ No ____ If contaminated soils are not removed, then has the tank system performed closure and post closure care in accordance with requirements applicable to landfills (Section 725.410)? Yes ____ No ____ **NOTE: Such a tank system is considered a "Landfill" and shall meet all of the requirements of landfills specified in Subparts G and H.** **Special Requirements for Ignitable or Reactive Wastes (Section 725.298)** Are ignitable or reactive wastes stored in tanks? Yes ____ No ____ **NOTE: If "No", skip to Special Requirements for Incompatible Wastes (Section 725.299).**				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				If ignitable or reactive wastes are stored or treated in tanks, then is it in such a way that the waste is protected from material or conditions that may cause it to ignite or react? Yes ____ No ____ **NOTE: Tank systems used solely for emergencies may store ignitable/reactive wastes.** Are there proper protective distances between the waste management area and the facility boundary line? Yes ____ No ____ **Special Requirements for Incompatible Wastes (Section 725.299)** Is Section 725.117 being complied with whenever incompatible wastes are stored in the same tank system or in a tank system which has not been decontaminated? Yes ____ No ____ N/A ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
			a2	**For waste in containers**, has the generator marked and made visisble for inspection on each container, the date upon which accumulation began? Yes ___ No X N/A ___				The drums in the drum accumulation area were not marked or labeled with the either the date accumulation began or with the words "Hazardous Waste".
			a3	**For waste in containers and tanks**, has the generator marked or labeled each with the words "Hazardous Waste"? Yes ___ No X				
			a4	Has the generator complied with the requirements of 35 Ill. Adm. Code 725, Subpart C: Preparedness and Prevention listed below: **Maintenance and Operation of Facility (Section 725.131)** Is the facility being maintained and operated to minimize the possibility of a fire, explosion or any unplanned and sudden or non-sudden release of hazardous waste or hazardous waste constituents to: - Air; - Soil; or - Surface Water, which would threaten human health or the environment? Yes X No ___				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Required Equipment (Section 725.132) Is the facility equipped with the following, unless none of the hazards posed by waste handled at the facility could require a particular kind of equipment: - An internal communications or alarm system capable of providing immediate emergency instructions? Yes X No ___ N/A ___ - A device such as a telephone (immediately available at the scene of operations) capable of summoning emergency assistance from local police or fire departments or State or local emergency response teams? Yes X No ___ N/A ___ - Portable fire extinguishers, fire control equipment, spill control equipment and decontamination equipment? Yes X No ___ N/A ___ - Water at adequate volume and pressure to supply water hose streams or foam producing equipment or automatic sprinklers or water spray systems? Yes X No ___ N/A ___ **NOTE: Any "N/A" answers must be explained in the Remarks column.**				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Testing and Maintenance of Equipment (Section 725.133) Where required, is the facility testing and maintaining, as necessary, to assure proper operation in time of emergency: - Communications/alarm systems? Yes X No ___ N/A ___ - Fire protection equipment? Yes X No ___ N/A ___ - Spill control equipment? Yes X No ___ N/A ___ - Decontamination equipment? Yes X No ___ N/A ___ **NOTE: Any "N/A" answer must be explained in the Comments.** **Access to Communications or Alarm Systems (Section 725.134)** Do all personnel involved in handling hazardous waste have immediate access to an internal alarm or emergency communication device, either directly or thru visual or voice contact with another employee, unless not required under Section 735.132? Yes X No ___ N/A ___ If there is ever just one employee on the premises while the facility is operating, does he have immediate access to a device, such as a telephone, capable of summoning external emergency assistance, unless such a device is not required under Section 725.132? Yes X No ___ N/A ___				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				Required Aisle Space (Section 725.135) Is the owner or operator maintaining sufficient aisle space to allow the unobstructed movement of personnel, fire equipment and decontamination equipment to any area of the facility? Yes X No ___ N/A ___ **NOTE: Document non-compliance with photograph.** **Arrangements with Local Authorities (Section 725.137)** Has the owner or operator made or attempted to make the following arrangements, as appropriate for the type of waste handled at this facility and the potential need for the services of these organizations: 1) Arrangements to familiarize police and fire departments and emergency response teams with the layout of the facility, properties of hazardous wastes handled at the facility and associated hazards, places where personnel would normally be working, entrances to roads inside the facility and possible evacuation routes? Yes ___ No X N/A ___ 2) Where more than one police or fire department might respond to an emergency, has one been designated as the primary emergency authority with the others agreeing to provide support to the primary emergency authority? Yes ___ No X N/A ___				There were no records to document arrangements, The facility has requested that Marion Fire Dept. respond from 10 miles away. A local fire district is ½ mile away. There are no documents to designate primary and support arrangements

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				3) Agreements with State emergency response teams, emergency response contractors and equipment suppliers? Yes ___ No X NA ___				There are no documents to support any such arrangements.
				4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions or releases at the facility? Yes ___ No X N/A ___				There are no records to document such arrangements.
				NOTE: Any "N/A" answer must be explained in the Comments.				
				Has the owner or operator documented, in the operating record, refusal of State or local authorities to enter into any or all of the above arrangements? Yes ___ No ___ N/A X				none have refused
				Has the generator complied with the requirements of 35 Ill. Adm. Code 725, Subpart D: Contingency Plan and Emergency Procedures listed below:				
				Purpose and Implementation of Contingency Plan (Section 725.151)				
				Is a plan available? Yes ___ No X				
				NOTE: If answer is "No", skip to Emergency Coordinator (Section 725.155).				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Is the plan designed to minimize hazards to human health or the environment from fires, explosions or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water? Yes ___ No ___ Have the provisions of the plan been carried out immediately whenever there was a fire, explosion or release of hazardous waste constituents which could threaten human health or the environment? Yes ___ No ___ N/A ___ **Content of Contingency Plan (Section 725.152)** Does the plan describe the actions facility personnel must take to comply with Sections 725.151 and 725.156 in response to: 1) Fires? Yes ___ No ___ 2) Explosions? Yes ___ No ___ 3) Unplanned sudden or non-sudden releases of hazardous waste or hazardous waste constituents to air, soil, or surface water? Yes ___ No ___ Does the plan describe the arrangements agreed to by: 1) Local police and fire departments? Yes ___ No ___ 2) Hospitals? Yes ___ No ___ 3) Contractors? Yes ___ No ___ 4) State and local emergency response teams? Yes ___ No ___				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No
				Does the plan list the names, addresses and phone numbers (office and home) of all personnel qualified to act as emergency coordinators? Yes ____ No ____ Is the list of emergency coordinators up-to-date? Yes ____ No ____ If more than one person is designated as an emergency coordinator, is a primary coordinator identifed? Yes ____ No ____ Does the plan identify: 1) A list and physical description of all emergency equipment at the facility? Yes ____ No ____ 2) A brief outline of the capability of each piece of emergency equipment? Yes ____ No ____ 3) The location of each piece of emergency equipment? Yes ____ No ____ Is the list of emergency equipment up-to-date? Yes ____ No ____ Does the plan include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary? Yes ____ No ____ N/A ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Does the plan identify the signal to be used to begin evacuation? Yes ____ No ____ Are alternate evacuation routes identifed? Yes ____ No ____ **Copies of Contingency Plan (Section 725.153)** Has a copy (and all revisions) of the contingency plan: a) Been maintained at the facility? Yes ____ No ____ b) Been submitted to all local police and fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency service? Yes ____ No ____ **Amendment of Contingency Plan (Section 725.154)** Has the contingency plan been reviewed and, if necessary, amended whenever: 1) Applicable regulations are revised? Yes ____ No ____ 2) The plan fails in an emergency? Yes ____ No ____ N/A ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				3) The facility changes - in its design, construction, operation, maintenance or other circumstances - in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents or changes in the response necessary in an emergency? Yes ____ No ____ N/A ____ 4) The list of emergency coordinators changes? Yes ____ No ____ 5) The list of emergency equipment changes? Yes ____ No ____ **Emergency Coordinator (Section 725.155)** Is there an emergency coordinator on-site or on call at all times? Yes X No ____ Is there an emergency coordinator familiar with all aspects of the contingency plan, all operations and activities at the facility, the location and characteristics of the wastes handled, the location of all records in the facility and the facility layout? Yes X No ____ Does the coordinator have the authority to commit the resources to carry out the contingency plan? Yes X No ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				Emergency Procedures (Section 725.156) Has the facility had a release, fire or explosion? Yes ____ No X **NOTE: If the answer is "Yes", explain in detail the incident and how the facility did or did not follow the procedures prescribed in this section. Review the requirements while completing the explanation. If the company failed to meet one or more of the requirements, check "No" in the Apparent Compliance column of 722.134.**				
			a4	Has the generator complied with the requirements of 35 Ill. Adm. Code 725.116: Personnel Training listed below: **Personnel Training (Section 725.116)** Does the facility have a training program? Yes ____ No X **NOTE: If "No", skip to Subsection (c)1 page GEN-C-26.** Have facility personnel who are involved with hazardous waste management successfully completed a program of classroom or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this Part? Yes ___ No ___ Is the training program formalized, i.e., written down? Yes ___ No ___ Is the program directed by a person who has been trained in hazardous waste management procedures? Yes ___ No ___				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				Does the program cover, at a minimum: 1) Procedures for using, inspecting, repairing and replacing facility emergency and monitoring equipment? Yes ___ No ___ N/A ___ 2) Key parameters for automatic waste feed cut-off systems? Yes ___ No ___ N/A ___ 3) Communications or alarm systems? Yes ___ No ___ 4) Response to fire or explosion? Yes ___ No ___ 5) Response to groundwater contamination incidents? Yes ___ No ___ N/A ___ Does the program cover the implementation of the contingency plan? Yes ___ No ___ Have new employees completed the program within six months of the date of employment or assignment to a position requiring them to manage hazardous waste? Yes ___ No ___ N/A ___ Has the facility conducted an annual review of the initial training? Yes ___ No ___ N/A ___				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				Are the following documents and records being maintained at the facility: 1) The job title for each position related to the management of hazardous waste and the name(s) of the employee(s) filling each job? Yes ____ No ____ 2) A written job description for each job position above, to include the requisite skill, education or other qualifications and duties of personnel assigned to each position? Yes ____ No ____ 3) A written description of the type and amount of both initial and continuing training that will be given to each person holding a position dealing with hazardous waste management? Yes ____ No ____ 4) Records to document that the training or job experience have been given to and completed by personnel dealing with hazardous waste management? Yes ____ No ____ Is the facility maintaining training records of former employees who were involved in hazardous waste management for a period of at least three years? Yes ____ No ____ N/A ___				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
				SATELLITE ACCUMULATION			X	no satellite accumulation
			c1	Is the generator who accumulates hazardous waste in containers at or near any point of generation where wastes initially accumulate and which is under the control of the operator of the process generating the waste:				
				- Limiting such accumulation to 55 gallons (one quart of acutely hazardous waste listed in 35 Ill. Adm. Code 721.133)? Yes ____ No ____ N/A ____				
				- Complying with the requirements of:				
				1) 35 Ill. Adm. Code 725.271, Condition of Containers? Yes ____ No ____				
				2) 35 Ill. Adm. Code 725.272, Compatibility of Waste with Containers? Yes ____ No ____				
				3) 35 Ill. Adm. Code 725.273(a), Management of Containers - requiring that the containers be stored closed except when waste is being added or removed? Yes ____ No ____				
				- Marking the containers with the words "Hazardous Waste" or with words that identify the contents of the containers? Yes ____ No ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
			c2	Has the generator who accumulates more than 55 gallons (one quart of acutely hazardous waste listed in 35 Ill. Adm. Code 721.133(e)) with respect to the amount of excess waste, complied with the requirements in Section 722.134(a) within three days? Yes ____ No ____ Are the containers with the excess amounts marked with the date accumulation began? Yes ____ No ____ During the three day period, is the generator continuing to comply with the requirements of Section 722.134(c)(1)? Yes ____ No ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				PART 722 **GENERATOR STANDARDS** **Subpart D: Recordkeeping and Reporting**				
OTH	2			**Section 722.140: Recordkeeping**		X		
				Has the generator retained for a period of three years:				
			a	- A copy of each signed manifest? Yes X No ___				
			b	- A copy of each annual report? Yes ___ No X				Annual reports not filed.
			b	- A copy of each exception report? Yes ___ No ___ N/A X				
			c	- Copies of test results, waste analyses or other determinations made in accordance with Section 722.111? Yes X No ___ N/A ~~X~~ GRG				
			d	Does a generator who is involved in any unresolved enforcement action continue to maintain the records required in 722.140(a) thru (c)? Yes ___ No ___ N/A X				none have occured
			d	If the Director has requested that the records required in 722.140(a) thru (c) be maintained for a period longer than three years, has the generator continued to maintain them? Yes ___ No ___ N/A X				none have occured

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
OTH	2			**Section 722.141: Annual Reporting** Has the generator who ships waste off-site to a treatment, storage or disposal facility within the United States prepared and submittted a copy of an annual report, as supplied by the Agency, to the Agency by March 1 for the preceeding calendar year? **NOTE: A generator who treats, stores or disposes of hazardous waste on-site must also submit an annual report as a TSD in accordance with the requirements of 35 Ill. Adm. Code 702, 703, 724, 725 and 40 CFR 266.**		X		annual reports not filed.
MAN	1			**Section 722.142: Exception Reporting**			X	
			a	Has the generator who has not received a signed copy of the manifest from the designated TSD within 35 days of the date the waste was accepted by the initial transporter determined the status of its hazardous waste? Yes ___ No ___ NA X				none have occured
			b	Has the generator who has not received a signed copy of the manifest from the designated TSD within 45 days of the date the waste was accepted by the original transporter submitted an exception report to the Director? Yes ___ No ___ NA X				
			b	Does any exception report submitted to the Director contain the following: - A legible copy of the manifest for which the generator does not have confirmation of delivery; and				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
				- A cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the hazardous waste and the results of those efforts? Yes ___ No ___ N/A X				
OTH	1			**Section 722.143: Additional Reporting** Has the generator submitted all additional reports concerning quantities and disposition of wastes as required by the Director?			X	none have occured

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No.
OTH	1/2			**PART 722** **GENERATOR STANDARDS** **Subpart E: Exports of Hazardous Waste** **Section 722.152: General Requirements** Has the facility made any shipments of hazardous waste outside the United States? Yes ___ No X **NOTE: If "No", skip Subpart E. If "Yes", answer the next question.** Has the generator complied with the requirements in Sections 722.152 through 722.157? Yes ___ No ___ **NOTE: If the answer is "No", explain in detail why the firm did not meet the requirements. Review the requirements prior to answering this question. When citing a violation of this Subpart, identify the specific section violated in the Narrative as well as in the Comments.**		X	X	no exports

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	In Apparent Compliance? No	Not Applicable	Remarks or Comment No
				PART 722 **GENERATOR STANDARDS** **Subpart F: Imports of Hazardous Waste**				
MAN	1			**Section 722.160: Imports of Hazardous Waste**			X	no imports
			b1	Has the person importing hazardous waste met the manifest requirements of Section 722.120 except that: In place of the generator's name, address and USEPA identification number, the name and address of the foreign generator and the importer's name, address and USEPA identification number are used; **and**				
			b2	Has the importer or his agent signed the manifest in place of the generator; **and**				
			b2	Has the importer or his agent obtained the signature of the initial transporter? Yes ____ No ____ N/A X				
			c	Is the person importing hazardous waste using manifests obtained from the Agency? Yes ____ No ____				

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Area	Class	90 Day F/U Req	Key Ltr / Sub Sec	Requirement	In Apparent Compliance? Yes	No	Not Applicable	Remarks or Comment No.
OTH	2	X		**PART 722** **GENERATOR STANDARDS** **Subpart G: Farmers** **Section 722.170: Farmers** Is a farmer who is disposing of waste pesticides from his own use which are hazardous wastes: - Triple rinsing each emptied pesticide container in accordance with 35 Ill. Adm. Code 727.107(b)(3), Residues of Hazardous Waste in Empty Containers? Yes ___ No ___ N/A X - Disposing of pesticide residue on his own farm in a manner consistent with the disposal instructions on the pesticide label? Yes ___ No ___ N/A X **NOTE: If the answer to either of the preceeding questions is "No", the farmer is subject to the requirements of this Part (722) and to the applicable portions of 35 Ill. Adm. Code 702, 703 and 725 (724). Complete the applicable inspection form(s).**			X	non "farmer"

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Calculations for Landfill Contents

~~Bottom~~ scrubber ash and fly ash in landfill per Oct. 1993 (estimated)

$$\frac{12\ mo}{yr} \times \frac{3.16\ acre\ ft.}{month} \times \frac{43{,}560\ ft^2}{acre} = 1{,}651{,}795\ ft^3/yr$$

$$\frac{ft^3}{27} = 61{,}177\ yd^3/yr = 122{,}000\ Tons/yr$$

(given amount by SIPC)

roughly equals 1 yd = 2 tons

fly ash approximately = 15.75% of amount in landfill

scrubber ash " = 84.25% " " " "

1,080,859 cubic yards in landfill at October 1990 (permit file)

Total in landfill October 1990 = 1,080,859

3 years @ 61,177 yd³/yr = 183,531

Total October 1993 = 1,264,390 yd³

fly ash 15.75% x total = 199,614 yd³

scrubber ash 84.25% x total = 1064776 yd³

Electronic Filing: Received, Clerk's Office 10/10/2025

SOUTHERN ILLINOIS POWER COOPERATIVE
CALL-OUT SCHEDULE
SEPTEMBER 3, 1993

Time is in effect from 4:00 P.M. Friday to 4:00 P.M. the following Friday:			Pager
September 3 – September 10	Ed Bowles	997-1576	457-0768
September 10 – September 17	Clark Madden	995-2331	457-0769
September 17 – September 24	Jerry Jones	995-2959	457-0783
September 24 – October 1	Todd Gallenbach	997-5093	457-0783
	Howard McDannel	996-2062	457-0767

Electronic Filing: Received, Clerk's Office 10/10/2025

EXHIBIT 46

USEPA, Human and Ecological Risk Assessment of Coal Combustion Residuals (Dec. 2014)
(excerpted)

HUMAN AND ECOLOGICAL RISK ASSESSMENT OF COAL COMBUSTION RESIDUALS

Final

December 2014

U.S. Environmental Protection Agency
Office of Solid Waste and Emergency Response
Office of Resource Conservation and Recovery

Regulation Identifier Number: 2050-AE81

2 Problem Formulation

This purpose of this section is to describe the development of the conceptual models that form the basis for the analysis of surface impoundments and landfills. This section also provides a summary of the data sources used to characterize coal-fired facilities, waste management practices, constituent releases and receptor behavior. Finally, this section includes a preliminary hazard identification to identify the COPCs to be carried forward for further analysis. This section is divided into the following subsections:

- **Section 2.1** provides an overview of the source and properties of each major type of CCR.
- **Section 2.2** provides the conceptual models developed for surface impoundments and landfills that identify each relevant release route, transport pathway, and receptor.
- **Section 2.3** summarizes the data sources incorporated into the risk analysis.
- **Section 2.4** provides the risk criteria used to evaluate risks throughout the assessment.
- **Section 2.5** identifies the potential hazards that warrant further evaluation.

2.1 Overview of Coal Combustion and Residuals

CCR is a broad term used to refer to the byproducts that are generated either directly by coal combustion or as a result of applying certain pollution control devices to emissions from coal-fired combustion units, with the resulting wastes destined for disposal. CCRs may be generated wet or dry; however, this composition may change after generation. Some CCRs are dewatered, while others are mixed with water to facilitate transport (i.e., sluiced). When multiple types of CCRs are generated at the same facility, mixing and codisposal may occur. The distinct CCR categories identified in the 2010 Proposed Rulemaking include fly ash, bottom ash, boiler slag, and flue gas desulfurization (FGD) materials:

- **Fly ash** is the fraction of combusted coal that becomes suspended in plant flue gases. It is a very fine, powdery material composed primarily of silica. Fly ash is removed from the plant exhaust gases primarily by electrostatic precipitators (ESPs) or baghouses that contain fabric filters. In facilities that use activated carbon injection (ACI) before fly ash collection, the fly ash waste stream will also contain the carbon, along with other mercury control wastes. However, where ACI occurs after fly ash collection, a separate waste stream may result.
- **Bottom ash** consists of ash particles that are too large to become entrained in the flue gas during combustion. It is coarse, with grain sizes that range from fine sand to fine gravel, and quite angular, with a porous surface structure. Bottom ash is collected from the furnace after it collides with and agglomerates to furnace walls or falls through open grates to an ash hopper beneath the furnace.
- **Boiler slag** is molten bottom ash that has been quenched with water. When the molten ash comes in contact with the water, it crystallizes, fractures and forms pellets that are hard with

a smooth, glassy appearance. Boiler slag is collected from the base of either slag tap or cyclone type furnaces.

- **FGD materials** are produced through a process used to reduce sulfur dioxide (SO_2) emissions from the exhaust gas system of a coal-fired boiler. The physical nature of these materials varies from a wet sludge to a dry powdered material, depending on the pollution control technology, and the composition consists of sulfites, sulfates or a mixture thereof.

These different CCR wastes may be generated separately or mixed together. Even when generated separately, facilities often codispose of multiple waste types in a single WMU. **Figure 2-1** provides the layout of a hypothetical coal-fired plant. This simplified layout is intended to demonstrate some of the major pollution control technologies, waste streams and collection points associated with coal combustion. It is intended to be illustrative and does not capture all possible control technologies or plant layouts.

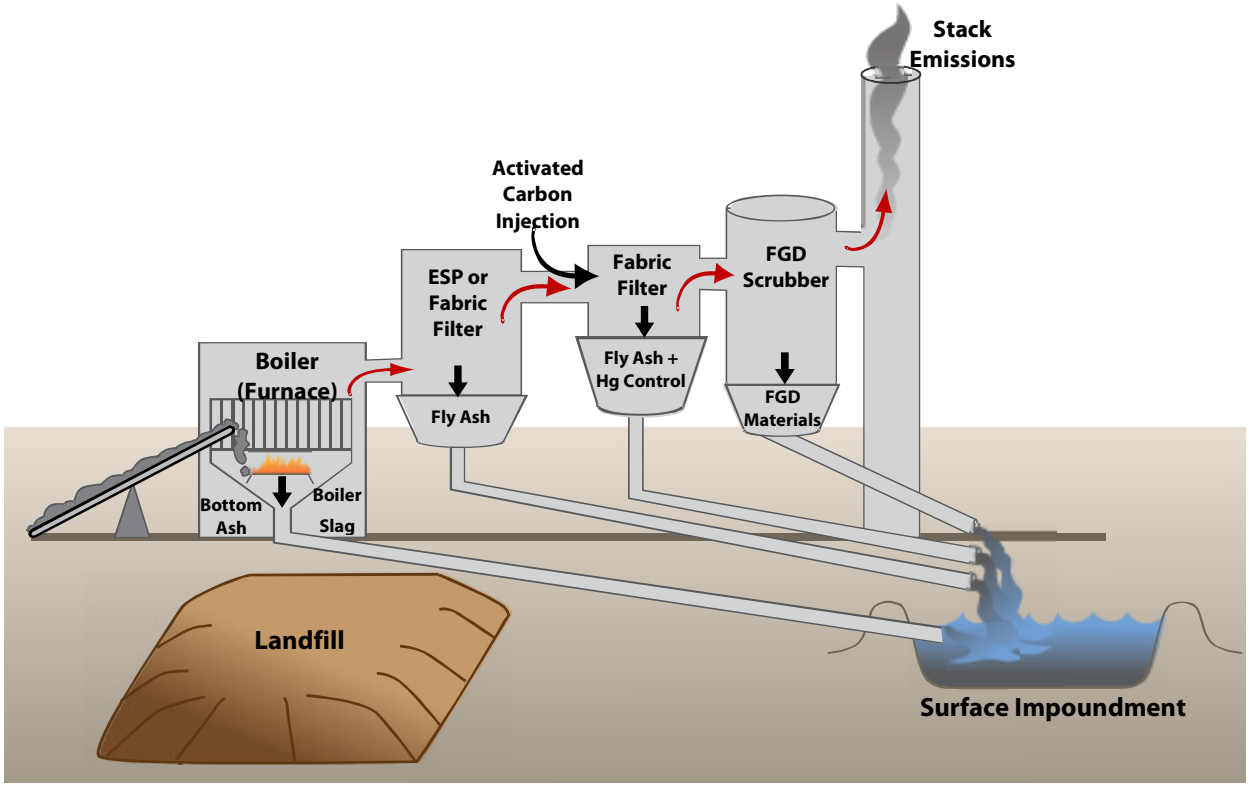


Figure 2-1. Generalized coal-fired power plant layout.

2.2 Conceptual Models

Once disposed in WMUs, the chemical constituents present in CCRs may be released to the surrounding environment. To evaluate the risks to human health and the environment that may result from these releases, EPA first developed conceptual models to specify the layout of surface impoundments and landfills, the types of releases that may occur from these WMUs, and the types of exposures that may result. These conceptual models were developed to represent generic WMU layouts and are not intended to reflect any specific facility or WMU. These conceptual models were used to form the basis for data collection and modeling efforts.

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Neither conceptual model includes direct, point source discharges to surface water. These types of releases are permitted under the National Pollutant Discharge Elimination System of the Clean Water Act and have been evaluated separately in the *Environmental Assessment for the Proposed Effluent Limitation Guidelines and Standards for the Steam Electric Power Generating Point Source Category* (U.S. EPA, 2013). The risk assessment for direct discharges was conducted in support of proposed effluent limitation guidelines (ELG) for the steam electric power generating point source category.[6] That assessment is under revision by EPA in response to the public comments received on the proposal and will be released in conjunction with the final ELG rule.

Surface water used as a source of potable water is not included in either conceptual model. Surface water is assumed to be routed through a municipal water treatment facility prior to consumption, reducing constituent levels present. Furthermore, neither conceptual model includes incidental ingestion of, inhalation of, or dermal contact with COPCs in surface water that may occur during swimming or other activities near a water body. For human receptors, it is assumed that these exposures are infrequent and small in comparison to similar exposures from ground water.

2.2.1 Surface Impoundment Conceptual Model

Surface impoundments are conceptualized as square units that are constructed anywhere from entirely above grade to entirely below ground surface. During operation, a surface impoundment receives waste sluiced from the facility. Over time, impoundment water may be lost to some combination of infiltration, evaporation, and controlled discharges to other impoundments and nearby water bodies, while the CCR solids either accumulate until the surface impoundment's capacity is reached or are periodically dredged for final disposition elsewhere. To reflect that the majority of impoundments are periodically dredged, the conceptual model assumes that dredging losses are balanced out by continued loading from the facility, resulting in a constant ponding depth over the operational life. It is assumed that all waste is removed from most units prior to closure (i.e., clean closure). However, in some instances, waste is left in place and the unit is closed and capped. Closed surface impoundments are assumed to behave the same as a closed landfill. **Figure 2-2** depicts a cross-section of the conceptual layout for operating impoundments.

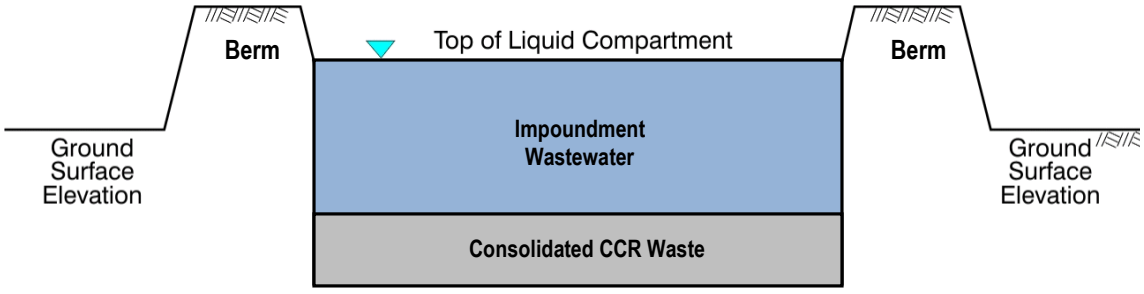


Figure 2-2. Cross-sectional view of generic surface impoundment site model.

Chemical constituents can be released from surface impoundments through the leaching of soluble constituents into the water that comes in contact with the CCRs and percolation of the resulting

[6] Available online in docket number EPA-HQ-OW-2009-0819 at: www.regulations.gov.

Attachment A-2.
WMU Information

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6137	A. B. Brown Generating Station	88	SI	Lower Ash Pond	37.90488889	-101.8346944	53	930	17.54716981	Ash & Coal Refuse	None	--
6137	A. B. Brown Generating Station	1163	LF	FGD Lanfill	37.91361111	-87.70916667	176	6421.487603	36.48572502	Combined Ash	Yes	--
6137	A. B. Brown Generating Station	89	SI	Upper Ash Pond	37.9	-87.7	103	2417	23.46601942	Combined Ash	None	--
2535	AES Cayuga, LLC	1102	LF	Ash Site Landfill	42.60871111	-76.61863056	--	--	--	Combined Ash	Yes	--
2527	AES Greenidge	1286	SI	Lookwood Sedimentation/naturalization Basin	42.67595833	-76.96069167	1.75151515	5.919421488	3.379600503	Combined Ash	Clay	--
2527	AES Greenidge	1101	LF	AES Lockwood	42.6813	-76.948687	--	--	--	Combined Ash	Yes	--
2527	AES Greenidge	1285	SI	Bottom Ash Pond C-Pond	42.68086667	-76.94438056	2.61707989	13.08539945	5	Combined Ash	None	--
994	AES Petersburg	431	SI	Pond A - Discharge	38.53353611	-87.24662778	5	108	21.6	Combined Ash	None	--
994	AES Petersburg	432	SI	Pond B	38.53639722	-87.24515833	35	1240	35.42857143	Combined Ash	None	Excluded
994	AES Petersburg	430	SI	Pond A - Active	38.53194444	-87.24491944	67	930	13.88059701	Combined Ash	None	--
994	AES Petersburg	433	SI	Pond C	38.53921667	-87.24106944	30	1054	35.13333333	Combined Ash	None	Excluded
994	AES Petersburg	989	LF	RWS Type III	38.53035278	-87.23888056	118.5	10103.30579	85.25996443	Combined Ash	Yes	--
6082	AES Somerset LLC	1287	SI	Sludge Basin	43.352783	-78.605356	2.181	--	--	FGD Waste	Yes	--
6082	AES Somerset LLC	1106	LF	SWDA 1	43.359	-78.58375	84	227.2727273	2.705627706	Combined Ash	Clay	Excluded
6082	AES Somerset LLC	1105	LF	SWDA 2	43.35161111	-78.58358333	82	202.020202	2.463661	Combined Ash	Composite	--
3942	Albright Power Station	1385	SI	North Lagoon	39.49	-79.64083333	1.02846648	9.794811754	9.523705357	Combined Ash	Clay	--
3942	Albright Power Station	1386	SI	South Lagoon	39.486978	-79.635108	1.13406795	9.821297062	8.660236842	Combined Ash	Clay	--
3942	Albright Power Station	931	LF	Active CCB Landfill	39.48676944	-79.60292778	45	3006.198347	66.80440771	Combined Ash	None	--
3942	Albright Power Station	930	LF	Closed CCB Landfill	39.49138889	-79.60263333	70	1797.520661	25.67886659	Combined Ash	None	Excluded
1915	Allen S King	927	LF	AS King Ash Disposal Facility	45.03444444	-92.79916667	--	--	--	Combined Ash	Yes	--
3393	Allen Steam Plant	119	SI	East Ash Stilling Pond	--	--	23	180	7.826086957	Combined Ash	--	--
3393	Allen Steam Plant	120	SI	East Ash Disposal	--	--	70	1100	15.71428571	Combined Ash	--	--
4140	Alma	993	LF	--	--	--	85	1239.669422	14.58434614	Combined Ash	--	--
4140	Alma	994	LF	--	--	--	--	--	--	Combined Ash	--	Excluded
1122	Ames Electric Services Power Plant	1202	SI	Ash Pond	42.028175	-93.59932778	4.14	--	--	Ash & Coal Refuse	Yes	--
6469	Antelope Valley Station	212	SI	Spray Drier Ash Water Make-Up Pond	47.373	-101.8346944	3.1	28	9.032258065	Combined Ash	Composite	Excluded
6469	Antelope Valley Station	923	LF	SP-025	47.38347	-101.82575	63.8	3099.173554	48.57638799	Combined Ash	Clay	--
6469	Antelope Valley Station	922	LF	SP-160	47.38922222	-101.81725	102.7	9917.355372	96.56626458	Combined Ash	Clay	--
6469	Antelope Valley Station	213	SI	Decant Pond (Temporary Pond)	--	--	3	19	6.333333333	Combined Ash	Clay	Excluded
160	Apache Station	299	SI	Scrubber Sludge Pond 1	32.07277778	-109.9127778	41.7	314	7.529976019	Combined Ash	Composite	--
160	Apache Station	297	SI	Scrubber Sludge Pond 2	32.07666667	-109.9127778	42	446	10.61904762	Combined Ash	Composite	--
160	Apache Station	295	SI	Evaporation Pond	32.07416667	-109.9083333	80	--	--	Combined Ash	Composite	--
160	Apache Station	296	SI	Ash Pond 3	32.07611111	-109.905	32.6	720	22.08588957	Combined Ash	Composite	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
160	Apache Station	294	SI	Ash Pond 2	32.07222222	-109.9044444	32.6	720	22.08588957	Combined Ash	Composite	--
160	Apache Station	298	SI	Ash Pond 4	32.07589722	-109.9019528	32.6	693	21.25766871	Combined Ash	Composite	--
160	Apache Station	293	SI	Ash Pond 1	32.07222222	-109.9011111	32.6	717	21.99386503	Combined Ash	Composite	--
160	Apache Station	287	SI	Low Volume Wastewater Pond	--	--	42	618	14.71428571	Combined Ash	--	--
160	Apache Station	288	SI	Evaporation 1	--	--	--	823	--	Combined Ash	Composite	--
160	Apache Station	292	SI	Cooling Tower Blowdown Pond	--	--	--	7	--	Combined Ash	--	--
465	Arapahoe	310	SI	Ash Pump Pond	--	--	--	4	--	Combined Ash	--	--
465	Arapahoe	311	SI	Discharge Pond	--	--	1	7	7	Combined Ash	--	Excluded
465	Arapahoe	312	SI	North Storm Water/Process Water Pond	--	--	1	8	8	Combined Ash	--	Excluded
465	Arapahoe	313	SI	South Storm Water/Process Water Pond	--	--	1	14	14	Combined Ash	--	Excluded
465	Arapahoe	314	SI	South Ash Pond	--	--	1	14	14	Combined Ash	--	--
465	Arapahoe	315	SI	Emergency Pond	--	--	2	12	6	Combined Ash	--	Excluded
3178	Armstrong Power Station	926	LF	Closed Ash Site	40.915954	-79.47162	--	--	--	Combined Ash	None	Excluded
3178	Armstrong Power Station	921	LF	Active Ash Site	40.92222222	-79.47083333	--	--	--	Combined Ash	Yes	--
2076	Asbury	598	SI	Upper Pond	37.35972222	-94.58555556	17.6	--	--	--	None	--
2076	Asbury	597	SI	Lower Pond	37.36055556	-94.58166667	63	--	--	Combined Ash	None	--
2076	Asbury	596	SI	Ash Impoundment	--	--	92	--	--	Combined Ash	--	--
2706	Asheville Steam Electric Plant	649	SI	1964 Pond	35.4675	-82.54805556	45	1380	30.66666667	Combined Ash	Composite	--
2706	Asheville Steam Electric Plant	650	SI	1982 Pond	35.46472222	-82.54416667	46	1400	30.43478261	Combined Ash	None	--
2835	Ashtabula	1263	SI	Combined Treatment Basin	41.90833333	-80.7625	0.40174472	2.0087236	5	Combined Ash	None	--
1961	Austin Northeast	958	LF	Coal Ash Monofill	43.69878611	-92.96217222	--	--	--	Combined Ash	None	Excluded
2836	Avon Lake	1175	SI	Primary Ash Settling Basin	41.50531111	-82.05285	0.09022039	1.082644628	12	Combined Ash	None	--
2836	Avon Lake	1176	SI	Secondary Ash Settling Basin	41.50551667	-82.05202778	0.09022039	1.082644628	12	Combined Ash	None	--
2836	Avon Lake	975	LF	--	--	--	--	--	--	Combined Ash	--	--
995	Bailly	434	SI	Forebay	41.644381	-87.125098	0.14	2	14.28571429	Combined Ash	--	Excluded
995	Bailly	439	SI	Bottom Ash Pond	41.638356	-87.121326	1	2	2	Combined Ash	--	--
995	Bailly	436	SI	Primary 1	41.638387	-87.118974	6	41	6.833333333	Combined Ash	--	--
995	Bailly	437	SI	Primary 2	41.638357	-87.115771	6	47	7.833333333	Combined Ash	--	--
995	Bailly	438	SI	Secondary 2	41.638375	-87.11335	3	30	10	Combined Ash	--	--
995	Bailly	435	SI	Secondary 1	41.637988	-87.111999	2	18	9	Combined Ash	--	--
995	Bailly	939	LF	BGS South Landfill	41.63619167	-87.102575	--	--	--	Combined Ash	None	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
995	Bailly	952	LF	BGS North Landfill	41.63854167	-87.102575	--	--	--	Combined Ash	None	Excluded
889	Baldwin Energy Complex	391	SI	Ash Pond System	38.19286	-89.867555	492	3957	8.042682927	Combined Ash	--	--
3	Barry	252	SI	Barry Ash Pond	--	--	597	5965	9.991624791	Combined Ash	None	--
3982	Bay Front	946	LF	Woodfield	46.52152778	-90.93394444	10	216.9421489	21.69421489	Combined Ash	Yes	--
3982	Bay Front	945	LF	Deer Creek	46.47444444	-90.92805556	--	--	--	Combined Ash	None	Excluded
3982	Bay Front	162	SI	Polishing Pond	46.585243	-90.902906	0.41	3	7.317073171	Combined Ash	--	--
3982	Bay Front	163	SI	Surge Basin	46.585471	-90.902568	0.15	1	6.666666667	Combined Ash	--	--
2878	Bay Shore	1326	SI	Bottom Ash Pond	41.69611111	-83.43833333	0.99862259	5.492424242	5.5	Combined Ash	None	--
2878	Bay Shore	977	LF	--	--	--	85	--	--	Combined Ash	--	--
8042	Belews Creek Steam Station	1009	LF	Closed Pine Hall Road Landfill	36.28277778	-80.07861111	68	--	--	Combined Ash	None	Excluded
8042	Belews Creek Steam Station	243	SI	Active Ash Pond	36.296519	-80.075439	342	12654	37	Combined Ash	None	--
8042	Belews Creek Steam Station	1079	LF	Craig Road Ash Landfill	36.26888889	-80.0675	31	1190.96281	38.41815516	Combined Ash	Composite	--
8042	Belews Creek Steam Station	1010	LF	FGD Residual Landfill	36.27444444	-80.05666667	24	991.7355372	41.32231405	Combined Ash	Composite	--
6034	Belle River	1035	LF	Range Road	42.792242	-82.506315	--	--	--	Combined Ash	Yes	--
6034	Belle River	33	SI	Pond	--	--	--	--	--	Combined Ash	--	--
3325	Ben French	1379	SI	Ash Pond	44.08916667	-103.2641667	0.31955923	0.764876033	2.393534483	Combined Ash	Clay	--
645	Big Bend	347	SI	South Bottom Ash Pond	27.79111111	-82.39888889	6	--	--	Combined Ash	Composite	--
645	Big Bend	345	SI	North Bottom Ash	27.79166667	-82.39888889	5.7	--	--	Combined Ash	Composite	--
645	Big Bend	1164	LF	FGD Storage Area	27.78388889	-82.39638889	--	--	--	Combined Ash	None	--
645	Big Bend	343	SI	South Economizer Ash Pond	27.79083333	-82.395	6	--	--	Ash & Coal Refuse	Composite	--
645	Big Bend	344	SI	North Economizer Ash Pond	27.79166667	-82.395	5.5	--	--	Ash & Coal Refuse	Composite	--
645	Big Bend	342	SI	North Recycle Pond	--	--	3	--	--	FGD Waste	--	--
645	Big Bend	346	SI	Longterm Flyash Pond	--	--	12	--	--	Combined Ash	--	--
645	Big Bend	348	SI	Settling Pond	--	--	1	--	--	FGD Waste	--	--
645	Big Bend	349	SI	South Recycle Pond	--	--	9	--	--	FGD Waste	--	--
3497	Big Brown	784	LF	Class 3 bottom ash landfill Area B	31.81666667	-96.0725	1.96	19.6	10	Combined Ash	None	Excluded
3497	Big Brown	1179	SI	Bottom Ash Pond(s)	31.82	-96.06472222	19.2837466	227.3428834	11.78935238	Combined Ash	Clay	--
3497	Big Brown	1178	SI	Operating Pond	31.82805556	-96.05972222	14.6923783	229.135124	15.59550938	Combined Ash	Clay	Excluded
3497	Big Brown	776	LF	Class 3 bottom ash landfill Area A	31.829465	-96.054781	10.029	100.2899908	9.999999084	Combined Ash	None	Excluded
3497	Big Brown	790	LF	Ash Disposal Area 1	31.82944444	-96.05472222	128.595	3499.999587	27.21722918	Combined Ash	Clay	Excluded
3497	Big Brown	1177	SI	Lignite Retention Pond	31.82416667	-96.04972222	15.5	66.22651515	4.272678397	Combined Ash	Yes	Excluded
3497	Big Brown	1180	SI	Settling Pond	31.82444444	-96.04527778	0.51652893	5.155716253	9.981466667	Combined Ash	Yes	--
3497	Big Brown	791	LF	Ash Disposal Area 2	31.83555556	-96.04166667	331.993	4183.8843	12.60232686	Combined Ash	Clay	--
6055	Big Cajun 2	815	LF	Fly Ash	30.725	-91.38972222	175	2417.355372	13.81345927	Combined Ash	Clay	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6055	Big Cajun 2	36	SI	Bottom Ash Unit	--	--	66	1188	18	Combined Ash	Clay	--
6055	Big Cajun 2	37	SI	Fly Ash Unit	--	--	175	1750	10	Combined Ash	Clay	--
6055	Big Cajun 2	38	SI	Water Treatment Unit	--	--	32	585	18.28125	Combined Ash	Clay	--
1353	Big Sandy	521	SI	Horseford Run Dam	38.18666667	-82.6325	176	--	--	Combined Ash	Clay	--
1353	Big Sandy	523	SI	Fly Ash	38.186667	-82.6325	97	8302	85.58762887	Combined Ash	--	--
1353	Big Sandy	522	SI	Bottom Ash Complex	38.17111111	-82.62194444	6	40	6.666666667	Combined Ash	None	--
6098	Big Stone	1261	SI	Ash Pond	45.30001389	-96.51001944	2.1	21	10	Combined Ash	None	--
6098	Big Stone	814	LF	Ash Disposal Site	45.30443889	-96.49121667	109.4	5008.264463	45.77938266	Combined Ash	None	--
1904	Black Dog	799	LF	Ash Storage Area	44.82048056	-93.23732778	96	5539.026446	57.69819215	Combined Ash	None	Excluded
1904	Black Dog	593	SI	Settling Ponds 1-4	--	--	17	218	12.82352941	Combined Ash	None	--
6106	Boardman	1339	SI	Carty	45.701206	-119.809153	1450	38000	26.20689655	Combined Ash	None	Excluded
6106	Boardman	1341	SI	-999	45.701206	-119.809153	10.28	--	--	Combined Ash	Yes	Excluded
6106	Boardman	1340	SI	Settling Pond	45.691617	-119.806178	1.26262626	17.21763085	13.63636364	Combined Ash	None	Excluded
6106	Boardman	746	LF	Ash Pit	45.67916667	-119.7816667	240	--	--	Combined Ash	None	--
7790	Bonanza Power Plant	1207	SI	Emergency Holding Pond 1 (EHP-1)	40.08825	-109.513461	0.91827365	11.01928375	12	FGD Waste	Clay	--
7790	Bonanza Power Plant	735	LF	Bottom Ash	40.30555556	-109.45	50	977.0431589	19.54086318	Combined Ash	None	--
7790	Bonanza Power Plant	1208	SI	Emergency Holding Pond 2 (EHP-2)	40.08222222	-109.2802778	6.50505051	65.05050505	10	FGD Waste	None	--
7790	Bonanza Power Plant	1209	SI	Emergency Holding Pond 3 (EHP-3)	40.08361111	-109.28	4.93572084	68.87052342	13.95348837	FGD Waste	None	--
7790	Bonanza Power Plant	737	LF	Fly ash/Scrubber sludge	40.21138889	-109.2725	25	1709.825528	68.39302112	Combined Ash	None	--
1893	Boswell Energy Center	862	LF	SE Units 1,2 and 3 Dry Fly Ash Landfill	47.27277778	-93.67916667	110	4648.760331	42.26145755	Combined Ash	None	--
1893	Boswell Energy Center	591	SI	Inactive Bottom Ash Pond	47.26361111	-93.67083333	200	3413	17.065	Combined Ash	Clay	Excluded
1893	Boswell Energy Center	590	SI	Complex: Pond 3, 4, and Bottom Ash Pond	47.26972222	-93.66777778	645	11236	17.42015504	Combined Ash	Clay	--
1893	Boswell Energy Center	853	LF	Industrial Solid Waste Landfill	47.26194444	-93.66722222	336	--	--	Combined Ash	None	--
1893	Boswell Energy Center	796	LF	Hibbing Ash Cell	47.26305556	-93.66694444	20	--	--	Combined Ash	None	Excluded
1893	Boswell Energy Center	592	SI	Wastewater Treatment Plant Pond	47.25944444	-93.64972222	1.6	9	5.625	Combined Ash	Clay	--
703	Bowen	1103	LF	CCB Disposal Facility	34.13722222	-84.90222222	51.01	556.8415289	10.9163209	Combined Ash	Yes	--
703	Bowen	350	SI	Ash Pond	--	--	245	3676	15.00408163	Combined Ash	Clay	--
602	Brandon Shores	1289	SI	01 Lagoon	39.18444444	-76.53666667	0.66574839	4.017447199	6.034482759	Combined Ash	Composite	--
602	Brandon Shores	1290	SI	02 Lagoon	39.18444444	-76.53666667	0.66574839	4.017447199	6.034482759	Combined Ash	Composite	--
1619	Brayton Point	731	LF	Cells 1 - 8	41.71835083	-71.193638	--	--	--	Combined Ash	Yes	Excluded
1619	Brayton Point	1191	SI	EQ Basin	41.71312889	-71.19279833	0.40495868	3.682667585	9.09393424	Combined Ash	None	Excluded
1619	Brayton Point	1187	SI	Recycle	41.71313283	-71.19277083	1.81	--	--	Combined Ash	None	Excluded
1619	Brayton Point	1188	SI	Basin 1	41.716621	-71.191151	1.81	--	--	Combined Ash	Yes	Excluded
1619	Brayton Point	1189	SI	Basin 2	41.718367	-71.190972	1.81	--	--	Combined Ash	Yes	Excluded
1619	Brayton Point	824	LF	Cell 9	41.720545	-71.19089083	--	--	--	Combined Ash	Yes	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
1619	Brayton Point	800	LF	Cell 1A	41.717322	-71.19035483	--	--	--	Combined Ash	Yes	Excluded
1619	Brayton Point	1190	SI	Basin 3	41.71997783	-71.189987	1.81	--	--	Combined Ash	None	Excluded
1619	Brayton Point	1194	SI	Basin A	41.712899	-71.18957183	0.48209366	2.838751148	5.888380952	Combined Ash	Composite	--
1619	Brayton Point	1193	SI	52 Basin	41.717186	-71.188797	1.68044077	14.35009183	8.539480874	Combined Ash	Composite	Excluded
1619	Brayton Point	1192	SI	51 Basin	41.71805556	-71.18833333	1.65748393	14.35009183	8.657756233	Combined Ash	Composite	Excluded
1619	Brayton Point	1195	SI	Basin B	41.712879	-71.18825983	0.73461892	6.137764004	8.35503125	Combined Ash	Composite	--
1619	Brayton Point	1196	SI	Basin C	41.71323683	-71.18783383	0.73461892	6.137764004	8.35503125	Combined Ash	Composite	--
1619	Brayton Point	761	LF	Cell 10	41.71899483	-71.18704483	--	--	--	Combined Ash	Yes	--
1619	Brayton Point	760	LF	Cell 10A	41.718431	-71.18656183	--	--	--	Combined Ash	Yes	Excluded
3796	Bremo Bluff	148	SI	West Ash Pond	37.71111111	-78.29222222	17	290	17.05882353	Combined Ash	None	--
3796	Bremo Bluff	149	SI	North Ash Pond	37.70805556	-78.27833333	62	4300	69.35483871	Combined Ash	None	--
6094	Bruce Mansfield	79	SI	Little Blue Run Dam	40.62781667	-80.51291667	770	65000	84.41558442	Combined Ash	None	--
6094	Bruce Mansfield	75	SI	North LDS Pond (N-LDS)	40.63643333	-80.41331111	3.2	38.5	12.03125	Combined Ash	None	--
6094	Bruce Mansfield	78	SI	South LDS Pond (S-LDS)	40.63603611	-80.41256667	3.1	35.3	11.38709677	Combined Ash	None	--
6094	Bruce Mansfield	76	SI	West HDS Pond (W-HPDS)	40.63459444	-80.41128333	2.9	39.5	13.62068966	Combined Ash	None	--
6094	Bruce Mansfield	77	SI	East HDS (Decommissioned in 2003) (Add this unit to DB)	--	--	--	--	--	--	None	--
2720	Buck	672	SI	Additional Primary Cell Basin	35.70431667	-80.37264167	73.5	2645	35.98639456	Combined Ash	None	--
2720	Buck	671	SI	Old Primary Cell	35.70537778	-80.36640833	46	1610	35	Combined Ash	None	--
2720	Buck	673	SI	Secondary Pond	35.70982222	-80.36273611	14.5	510	35.17241379	Combined Ash	None	--
3396	Bull Run	889	LF	East/West Dredge Cell	36.006672	-84.14839	--	--	--	Combined Ash	None	Excluded
3396	Bull Run	890	LF	Fly Ash Stack	36.02506667	-84.14698889	--	--	--	Combined Ash	None	--
3396	Bull Run	121	SI	Bottom Ash Disposal Area 1	--	--	32	543	16.96875	Combined Ash	--	--
3396	Bull Run	122	SI	Fly Ash Pond & Stilling Basin Area 2	--	--	49	1674	34.16326531	Combined Ash	--	--
3396	Bull Run	123	SI	Gypsum Disposal Area 2A	--	--	42	1700	40.47619048	Combined Ash	--	--
3396	Bull Run	124	SI	Dry Fly Ash Disposal Area	--	--	50	2975	59.5	Combined Ash	--	--
1104	Burlington	507	SI	Ash Seal & Storm Water Pond	--	--	4	68	17	Combined Ash	None	Excluded
1104	Burlington	508	SI	Upper Ash Pond	--	--	13	133	10.23076923	Combined Ash	None	--
1104	Burlington	509	SI	Economizer Ash Pond	--	--	11	166	15.09090909	Combined Ash	None	--
1104	Burlington	510	SI	Lower Ash Pond	--	--	23	114	4.956521739	Combined Ash	None	--
1104	Burlington	511	SI	Main Ash Pond	--	--	17	85	5	Combined Ash	None	--
676	C D McIntosh Jr	885	LF	Northeast Landfill	28.08472222	-81.91722222	17.3	1106.97888	63.98721848	Combined Ash	None	Excluded
676	C D McIntosh Jr	888	LF	Landfill (active)	28.08333333	-81.91666667	48.3	5311.753903	109.9742009	Combined Ash	None	--
468	Cameo	316	SI	Process Water Retention Pond	--	--	--	2	--	Combined Ash	--	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
468	Cameo	317	SI	Ash Silo Storm Water Retention Pond	--	--	--	1	--	Combined Ash	--	Excluded
3280	Canadys Steam	107	SI	Inactive Ash Pond	33.07416667	-80.62194444	80	1000	12.5	Combined Ash	None	--
3280	Canadys Steam	108	SI	Polishing Pond	33.075	-80.61722222	3.5	--	--	--	None	--
3280	Canadys Steam	109	SI	Ash Pond	33.07083333	-80.61527778	95	1407	14.81052632	Combined Ash	None	--
1363	Cane Run	869	LF	Cane Run Special Waste Landfill	38.175	-85.89444444	--	--	--	Combined Ash	None	--
1363	Cane Run	538	SI	Main Ash Pond/E-Pond	38.1775	-85.8875	40	868	21.7	Combined Ash	None	--
1363	Cane Run	541	SI	Dead Storage Pond	38.18345556	-85.88604167	5	--	--	FGD Waste	None	--
1363	Cane Run	540	SI	Basin Pond	38.18305556	-85.88472222	5	--	--	FGD Waste	None	--
1363	Cane Run	539	SI	Clearwell Pond	--	--	1	--	--	FGD Waste	--	--
1363	Cane Run	542	SI	Emergency Pond	--	--	2	--	--	FGD Waste	--	--
2708	Cape Fear Steam Electric Plant	654	SI	1956 Ash Pond	35.59709167	-79.05053333	--	--	--	Combined Ash	None	Excluded
2708	Cape Fear Steam Electric Plant	652	SI	1963 Ash Pond	35.58801667	-79.05015	--	--	--	Combined Ash	None	Excluded
2708	Cape Fear Steam Electric Plant	655	SI	1970 Ash Pond	35.582975	-79.04858333	50	--	--	Combined Ash	None	Excluded
2708	Cape Fear Steam Electric Plant	651	SI	1978 Ash Pond	35.58784167	-79.04622222	43	1161	27	Combined Ash	None	--
2708	Cape Fear Steam Electric Plant	653	SI	1985 Ash Pond	35.59012778	-79.04109444	65	1764	27.13846154	Combined Ash	None	--
3644	Carbon Plant	905	LF	Original Landfill	39.71293056	-110.8653556	--	--	--	Combined Ash	None	Excluded
3644	Carbon Plant	1387	SI	South Settling Pond	39.72472222	-110.8638889	1.12759412	14.40082645	12.77128548	Combined Ash	None	--
3644	Carbon Plant	1388	SI	North Settling Pond	39.72472222	-110.8638889	0.55151515	2.829017447	5.12953713	Combined Ash	None	--
3644	Carbon Plant	876	LF	Ash Landfill	39.708785	-110.861003	11.7739066	--	--	Combined Ash	None	--
2828	Cardinal	694	SI	Bottom Ash Complex	40.237992	-80.659561	19	350	18.42105263	Combined Ash	None	--
2828	Cardinal	899	LF	FAR 1 Residual Waste Landfill	40.27202634	-80.65446374	--	--	--	Combined Ash	Yes	--
2828	Cardinal	693	SI	Fly Ash Reservoir 2	40.266333	-80.646583	139	11350	81.65467626	Combined Ash	None	--
1001	Cayuga	838	LF	Cayuga RWS 1 Landfill	39.91472222	-87.43388889	80	7376.28942	92.20361775	Combined Ash	Composite	--
1001	Cayuga	454	SI	Lined Ash Disposal Pond - Cell #1	39.91916667	-87.42388889	40	1400	35	Combined Ash	Composite	--
1001	Cayuga	457	SI	Ash Disposal Area #1	39.91472222	-87.42083333	26	260	10	Combined Ash	None	--
1001	Cayuga	455	SI	Primary Ash Settling Basin	39.91416667	-87.41666667	15	225	15	Combined Ash	None	--
1001	Cayuga	456	SI	Secondary Ash Settling Basin	39.91361111	-87.41416667	3	36	12	Combined Ash	None	--
1571	Chalk Point LLC	836	LF	brandywine	38.70583333	-76.80277778	596	2872.31405	4.819318875	Combined Ash	Yes	--
1571	Chalk Point LLC	1104	LF	controlled storage area	38.559166	-76.688333	--	--	--	Combined Ash	Yes	--
2169	Chamois Power Plant	1288	SI	Ash Pond #002	38.68194444	-91.75861111	2.75482094	24.79338843	9	Combined Ash	None	--
56	Charles R. Lowman	273	SI	Units 2-3 Pond	31.48694444	-87.91611111	29	629	21.68965517	Combined Ash	None	--
56	Charles R. Lowman	270	SI	Scrubber Waste Pond	31.48972222	-87.91416667	36	760	21.11111111	FGD Waste	None	--
56	Charles R. Lowman	272	SI	#1 Bottom Ash Pond	31.485	-87.91305556	16.5	330	20	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
56	Charles R. Lowman	271	SI	Process Waste Pond	31.49166667	-87.91222222	6	--	--	Combined Ash	None	--
56	Charles R. Lowman	900	LF	--	--	--	--	--	--	Combined Ash	--	--
469	Cherokee	318	SI	Center Ash Pond	--	--	1	10	10	Combined Ash	--	--
469	Cherokee	319	SI	West Polishing Pond	--	--	1	16	16	Combined Ash	--	--
469	Cherokee	320	SI	West Ash Pond	--	--	--	8	--	Combined Ash	--	--
469	Cherokee	321	SI	Emergency Spill Pond	--	--	--	5	--	--	--	--
469	Cherokee	322	SI	East Ash Pond	--	--	--	8	--	Combined Ash	--	--
469	Cherokee	323	SI	East Polishing Pond	--	--	1	16	16	Combined Ash	--	--
3803	Chesapeake Energy Center	152	SI	Bottom Ash/Sedimentation Pond	36.76205833	-76.30375	9.7	77	7.93814433	Combined Ash	None	--
3803	Chesapeake Energy Center	865	LF	ash landfill	36.76444444	-76.3025	--	--	--	Combined Ash	Yes	--
3797	Chesterfield	150	SI	Lower (Old) Ash Pond	37.37277778	-77.38055556	49	740	15.10204082	Combined Ash	None	--
3797	Chesterfield	151	SI	Upper (New) Ash Pond	37.37277778	-77.36472222	112	10240	91.42857143	Combined Ash	None	--
8226	Cheswick Power Plant	1099	LF	Lefever	40.581433	-79.832236	--	--	--	Combined Ash	Yes	--
8226	Cheswick Power Plant	1165	SI	Bottom Ash Emergency Pond	40.54361111	-79.79416667	0.57392103	4.965794307	8.6524	Combined Ash	Clay	--
8226	Cheswick Power Plant	1166	SI	Bottom Ash Recycle Pond	40.54444444	-79.79416667	0.65206612	3.208425161	4.920398535	Combined Ash	Clay	--
113	Cholla	280	SI	Bottom Ash Pond	34.955225	-110.2884306	80	2300	28.75	Combined Ash	None	--
113	Cholla	863	LF	Bottom Ash Monofill	34.96388889	-110.2861111	--	--	--	Combined Ash	None	--
113	Cholla	279	SI	Fly Ash Pond	34.93276389	-110.2648361	420	18000	42.85714286	Combined Ash	None	--
2721	Cliffside	675	SI	Active Ash Pond	35.21333333	-81.74972222	84	5025	59.82142857	Combined Ash	None	--
2721	Cliffside	674	SI	Retired Unit 1-4 Basin	--	--	14	--	--	Combined Ash	--	Excluded
2721	Cliffside	676	SI	Retired Unit 5 Basin	--	--	46	--	--	Combined Ash	--	Excluded
983	Clifty Creek	848	LF	Type I Fly Ash Landfill	38.733774	-85.437397	--	--	--	Combined Ash	Yes	--
983	Clifty Creek	847	LF	Type III Fly Ash Landfill	38.73565	-85.434455	--	--	--	Combined Ash	None	--
983	Clifty Creek	414	SI	South Fly Ash Runoff Pond Site 16	38.73379722	-85.43019722	40	--	--	Combined Ash	None	--
983	Clifty Creek	413	SI	West Bottom Ash Pond Site 16 (Regn 5)	38.74023611	-85.41523611	58	3600	62.06896552	Combined Ash	None	--
3775	Clinch River	849	LF	Clinch River Industrial Waste Landfill, Permit 223	36.924744	-82.203874	--	--	--	Combined Ash	Yes	--
3775	Clinch River	144	SI	Bottom Ash Pond 1A/1B	36.93722222	-82.19752778	12.8	1240	96.875	Combined Ash	None	--
3775	Clinch River	145	SI	Bottom Ash Pond 2	36.9385	-82.19083333	--	1332	--	Combined Ash	None	Excluded
7213	Clover	851	LF	Stage 1&2	36.87027778	-78.72083333	33	1441.115702	43.6701728	Combined Ash	Composite	Excluded
7213	Clover	850	LF	Stage 3	36.869618	-78.720416	80.5	4958.677686	61.59848057	Combined Ash	Composite	--
7213	Clover	1280	SI	North Sludge	36.87	-78.70166667	1.80153811	4.304132231	2.389143039	FGD Waste	Composite	--
7213	Clover	1281	SI	South Sludge	36.87	-78.70166667	1.80153811	10.76033058	5.972857598	FGD Waste	Composite	--
7213	Clover	1283	SI	Leachate 1	36.87194444	-78.69777778	38.22	--	--	Combined Ash	Yes	Excluded
7213	Clover	1284	SI	Leachate 2	36.87194444	-78.69777778	38.22	--	--	Combined Ash	Yes	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
7213	Clover	1282	SI	Coal/Limestone	36.86861111	-78.69444444	38.22	--	--	Ash & Coal Refuse	Yes	Excluded
6030	Coal Creek	854	LF	Section 26	47.44116472	-101.2160697	--	--	--	Combined Ash	Yes	--
6030	Coal Creek	868	LF	Section 31	47.42348333	-101.1640528	--	--	--	Combined Ash	Yes	Excluded
6030	Coal Creek	855	LF	Section 5	47.41005833	-101.1603578	--	--	--	Combined Ash	None	Excluded
6030	Coal Creek	1119	LF	Section 32	47.42028056	-101.1581611	220	14256.1983	64.80090136	Combined Ash	Yes	--
6030	Coal Creek	29	SI	Ash Pond 91	47.37609	-101.143559	72	249	3.458333333	Combined Ash	--	--
6030	Coal Creek	857	LF	SW Section 16	47.37834778	-101.1317489	--	--	--	Combined Ash	Yes	Excluded
6030	Coal Creek	30	SI	Upstream Raise/Ash Pond 92/SW Section 16	47.380215	-101.129303	90	769	8.544444444	Combined Ash	--	--
6030	Coal Creek	852	LF	SE Section 16	47.37575556	-101.1258111	70	2913.22314	41.61747343	Combined Ash	Yes	--
861	Coffeen	846	LF	Landfill	39.06930556	-89.40025	--	--	--	Combined Ash	Yes	--
861	Coffeen	380	SI	Gypsum Management Facility Recycle Pond	39.06624722	-89.39559722	17	243	14.29411765	FGD Waste	Composite	--
861	Coffeen	379	SI	Recycle Pond	39.05831667	-89.39442222	23	500	21.73913043	Combined Ash	None	Excluded
47	Colbert	859	LF	#5 Dry Stack (fly ash)	34.73305556	-87.83408333	--	--	--	Combined Ash	None	--
47	Colbert	258	SI	Disposal Area 5 Basin	--	--	12	372	31	Combined Ash	--	--
47	Colbert	259	SI	Disposal Area 5	--	--	75	5455	72.73333333	Combined Ash	--	--
47	Colbert	260	SI	Ash Pond 4	--	--	52	1364	26.23076923	Combined Ash	--	--
6178	Coleto Creek	182	SI	Primary Ash Pond	28.72472222	-97.20916667	190	2700	14.21052632	Combined Ash	Clay	--
6178	Coleto Creek	181	SI	Secondary Settling Pond	28.72861111	-97.20638889	10	300	30	Combined Ash	Clay	--
6076	Colstrip	49	SI	Units 1 & 2 Stage Two Evaporation Ponds (STEP)	45.9055	-106.6442222	176	4370	24.82954545	Combined Ash	Composite	--
6076	Colstrip	50	SI	Units 1 & 2 A Pond	45.87916667	-106.6188889	14	245	17.5	Combined Ash	None	--
6076	Colstrip	52	SI	Units 1 & 2 Bottom Ash Pond	45.88138889	-106.61875	7	73	10.42857143	Combined Ash	Composite	--
6076	Colstrip	51	SI	Units 3 & 4 Effluent Holding Pond (EHP)	45.87027778	-106.5482222	367	17000	46.32152589	Combined Ash	None	--
6076	Colstrip	46	SI	Units 3 & 4 Scrubber Drain Collection Pond	--	--	6	72	12	Combined Ash	--	Excluded
6076	Colstrip	47	SI	Units 3 & 4 Bottom Ash Pond	--	--	8	38	4.75	Combined Ash	--	--
6076	Colstrip	48	SI	Units 1 & 2 B Fly Ash Pond	--	--	10	196	19.6	Combined Ash	--	--
6076	Colstrip	53	SI	Units 3 & 4 Scrubber Wash Tray Pond	--	--	8	85	10.625	Combined Ash	--	Excluded
10784	Colstrip Energy LP	860	LF	CELP	45.97886111	-106.6635	--	--	--	Combined Ash	None	--
10784	Colstrip Energy LP	861	LF	CELP	45.97533333	-106.6594444	--	--	--	Combined Ash	None	Excluded
2123	Columbia	1213	SI	Ash Settling Pond	38.96584333	-92.31849028	8.5	45	5.294117647	Combined Ash	None	--
8023	Columbia	1136	LF	Ash Pond Disposal Facility	43.48969444	-89.42175	--	--	--	Combined Ash	None	Excluded
8023	Columbia	1135	LF	Dry Ash Disposal Facility	43.48727778	-89.41205556	--	--	--	Combined Ash	Yes	--
8023	Columbia	239	SI	Landfill Storm Water Pond	--	--	11	11	1	Combined Ash	Composite	Excluded
8023	Columbia	240	SI	Secondary Ash Pond	--	--	16	204	12.75	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
8023	Columbia	241	SI	Polishing Pond	--	--	1	5	5	Combined Ash	None	--
8023	Columbia	242	SI	Primary Ash Pond	--	--	9	72	8	Combined Ash	None	--
470	Comanche	1137	LF	Comanche ADF	38.20170556	-104.5825083	280	18882.02479	67.43580283	Combined Ash	None	--
470	Comanche	324	SI	Ash Pond #2	--	--	2	12	6	FGD Waste	--	--
470	Comanche	325	SI	Polishing Pond (#4)	--	--	2	12	6	Combined Ash	--	--
470	Comanche	326	SI	Ash Pond #3	--	--	2	12	6	Combined Ash	--	--
470	Comanche	327	SI	Ash Pond #1	--	--	2	12	6	FGD Waste	--	--
470	Comanche	328	SI	Ash Disposal Facility (ADF) Stormwater Retention Pond	--	--	1	8	8	Combined Ash	--	--
3118	Conemaugh	1138	LF	Stage I	40.41111111	-79.07166667	--	--	--	Combined Ash	None	Excluded
3118	Conemaugh	864	LF	Stage II	40.40666667	-79.07027778	434	50826.44628	117.1116274	Combined Ash	Yes	--
3118	Conemaugh	1338	SI	Bottom Ash Final Settling Pond - D	40.38277778	-79.06333333	0.83677686	6.198347107	7.407407407	Combined Ash	Clay	--
3118	Conemaugh	1337	SI	Bottom Ash Final Settling Pond - C	40.38305556	-79.06333333	0.83677686	6.198347107	7.407407407	Combined Ash	Clay	--
3118	Conemaugh	1336	SI	Bottom Ash Final Settling Pond - B	40.38361111	-79.06333333	0.83677686	6.198347107	7.407407407	Combined Ash	Clay	--
3118	Conemaugh	1335	SI	Bottom Ash Sluice Recycle Pond - A	40.38388889	-79.06333333	0.83677686	6.198347107	7.407407407	Combined Ash	Clay	--
3118	Conemaugh	1334	SI	Cooling Tower Desilting Basin	40.38555556	-79.05777778	9.524	--	--	Combined Ash	Yes	Excluded
2840	Conesville	701	SI	Ash Pond Complex	40.18833333	-81.86972222	82	865	10.54878049	Combined Ash	None	--
2840	Conesville	1005	LF	--	--	--	52	2252.066116	43.30896376	Combined Ash	Composite	--
2840	Conesville	1006	LF	--	--	--	50	2835.743802	56.71487603	Combined Ash	--	Excluded
1710	Consumers Energy - J.H. Campbell	572	SI	EPRI 4	--	--	267	4276.859504	16.01820039	Ash & Coal Refuse	--	Excluded
1710	Consumers Energy - J.H. Campbell	967	LF	--	--	--	17.96	620.298967	34.5378044	Combined Ash	Composite	--
1710	Consumers Energy - J.H. Campbell	985	LF	--	--	--	18	657.1338843	36.50743802	Combined Ash	Composite	--
1710	Consumers Energy - J.H. Campbell	998	LF	--	--	--	17.4	783.1828512	45.01050869	Combined Ash	Composite	--
1710	Consumers Energy - J.H. Campbell	999	LF	--	--	--	17	1266.432645	74.49603792	Combined Ash	Composite	--
1384	Cooper Station.	973	LF	--	--	--	--	--	--	Combined Ash	--	--
7210	Cope	866	LF	Cope Landfill	33.37005556	-81.04075	340	14876.03306	43.75303841	Combined Ash	None	--
6177	Coronado Generating Station	180	SI	Evaporation Pond/Dam	34.55833333	-109.2952778	290	5900	20.34482759	Combined Ash	None	--
6177	Coronado Generating Station	867	LF	Ash Disposal	34.54766667	-109.28325	230	34435.26171	149.7185292	Combined Ash	None	--
6177	Coronado Generating Station	835	LF	N/A	--	--	--	--	--	Combined Ash	--	Excluded
8222	Coyote	250	SI	Ash Pond	47.218595	-101.814109	4	40	10	Combined Ash	--	--
8222	Coyote	248	SI	Nelson Pond	47.217021	-101.80979	5	92	18.4	Combined Ash	--	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
8222	Coyote	249	SI	Sluice Pond	47.217006	-101.805935	1	5	5	Combined Ash	--	--
8222	Coyote	826	LF	Black Pit	47.22230278	-101.7959417	43	1285.53719	29.89621372	Combined Ash	Clay	Excluded
8222	Coyote	833	LF	Blue Pit	47.21148889	-101.7883222	224	5224.416322	23.32328715	Combined Ash	Clay	--
8222	Coyote	825	LF	Green Pit	47.22711667	-101.7874778	98.3	607.4380165	6.179430484	Combined Ash	Clay	Excluded
8222	Coyote	856	LF	Purple Pit	47.22349722	-101.7578444	155.7	1548.370064	9.944573309	Combined Ash	None	--
2549	CR Huntley Generating Station	1100	LF	Huntley Ash Landfill	42.98833333	-78.92805556	--	--	--	Combined Ash	Yes	--
2549	CR Huntley Generating Station	645	SI	North Equalization Basin	42.96678611	-78.92686111	2	9	4.5	Combined Ash	--	--
2549	CR Huntley Generating Station	644	SI	South Equalization Basin	42.966509	-78.926638	2	6	3	Combined Ash	--	--
2549	CR Huntley Generating Station	643	SI	South Settling Pond System	42.96695	-78.925467	7	48	6.857142857	Combined Ash	--	--
6021	Craig	27	SI	Concentrator Decant Basin #1	--	--	--	1	--	Combined Ash	--	Excluded
6021	Craig	28	SI	Concentrator Decant Basin #2	--	--	--	1	--	FGD Waste	--	Excluded
6021	Craig	974	LF	--	--	--	18	--	--	Combined Ash	Clay	Excluded
867	Crawford	387	SI	EPRI 2	--	--	--	--	--	--	--	Excluded
753	Crisp Plant	1265	SI	Crisp Plant	31.84490556	-83.94425	6.82	--	--	Combined Ash	None	--
641	Crist	1276	SI	Interim Landfill Pond	30.568	-87.23752778	2.24517906	8.980716253	4	Combined Ash	None	--
641	Crist	1139	LF	Ash Landfill	30.56383333	-87.23536111	68	2364.554637	34.77286231	Combined Ash	Yes	--
641	Crist	1275	SI	Ash Landfill Pond	30.568	-87.23527778	2.68365473	40.25482094	15	Combined Ash	None	Excluded
641	Crist	1278	SI	Gypsum Area 1 SedimentationPond	30.57	-87.2325	4.75206612	95.04132231	20	FGD Waste	Composite	Excluded
641	Crist	1277	SI	Gypsum Area 1 Cell 2	30.56833333	-87.232	15.610652	402.5799128	25.78879559	FGD Waste	Composite	--
641	Crist	1279	SI	Gypsum Area 1 Return Water Pond	30.56888889	-87.23055556	3.52157943	52.82369146	15	FGD Waste	Composite	Excluded
641	Crist	1273	SI	Governor's Island Ash Pond	30.56413056	-87.22170556	13.51	--	--	Ash & Coal Refuse	None	Excluded
641	Crist	1274	SI	Ash Pond	30.56216667	-87.22011111	16.3	240.9142562	14.78001572	Ash & Coal Refuse	None	--
130	Cross	827	LF	Poz-O-Tec	33.38416667	-80.1175	91	2727.272727	29.97002997	Combined Ash	None	--
130	Cross	285	SI	Gypsum Pond	33.36791667	-80.10877778	1	6	6	FGD Waste	Clay	--
130	Cross	284	SI	Bottom Ash 1	33.37088889	-80.10466667	12.8	230	17.96875	Combined Ash	Clay	--
130	Cross	286	SI	Bottom Ash 2	33.37361111	-80.10072222	79	1158	14.65822785	Combined Ash	Clay	--
130	Cross	828	LF	-999	--	--	--	--	--	Combined Ash	--	--
130	Cross	829	LF	-999	--	--	--	--	--	Combined Ash	--	--
130	Cross	830	LF	-999	--	--	--	--	--	Combined Ash	--	--
628	Crystal River Power Plant	831	LF	Landfill-1	28.96666667	-82.68722222	--	--	--	Combined Ash	None	--
3399	Cumberland	125	SI	Gypsum Storage Area (North/South)	--	--	170	12397	72.92352941	FGD Waste	--	--
3399	Cumberland	126	SI	Dry Ash Stack	--	--	110	7810	71	Combined Ash	--	--
3399	Cumberland	127	SI	Ash Pond	--	--	50	1240	24.8	Combined Ash	--	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
3399	Cumberland	978	LF	--	--	--	--	--	--	Combined Ash	--	--
6823	D B Wilson	845	LF	Phase II Landfill	37.46083333	-87.08888889	--	--	--	Combined Ash	None	--
6823	D B Wilson	832	LF	Phase I Landfill	37.46027778	-87.085	--	--	--	Combined Ash	None	--
1702	D.E. Karn	571	SI	DE Karn 1 and 2 Solid Waste Disposal Area	43.64583333	-83.8325	--	--	--	--	None	--
1702	D.E. Karn	570	SI	Pond A	--	--	174	4423	25.41954023	Combined Ash	None	--
1702	D.E. Karn	1004	LF	--	--	--	40	1022.727273	25.56818182	Combined Ash	--	--
1385	Dale Station	558	SI	Dale Ash Pond #3	37.885	-84.26333333	1.6	--	--	Combined Ash	--	--
1385	Dale Station	560	SI	Dale Ash Pond #2	37.88388889	-84.26222222	8	112	14	Combined Ash	None	--
1385	Dale Station	559	SI	Dale Ash Pond #4	37.87777778	-84.26166667	10.7	143	13.36448598	Combined Ash	None	--
963	Dallman	399	SI	Dallman Ash Pond	39.76722222	-89.6	34	682	20.05882353	Combined Ash	None	--
963	Dallman	834	LF	Unit 2	39.769459	-89.597701	22	1115.702479	50.71374906	Combined Ash	Yes	--
963	Dallman	823	LF	Unit 1	39.766279	-89.596662	--	--	--	Combined Ash	None	Excluded
2723	Dan River	678	SI	Primary Pond	36.489167	-79.716111	27	477	17.66666667	Combined Ash	None	Excluded
2723	Dan River	679	SI	Dry Storage Basin, Dredge Pond Dike	36.48946389	-79.71566944	--	--	--	--	--	Excluded
2723	Dan River	677	SI	Secondary Pond	36.491944	-79.713056	12	187	15.58333333	Combined Ash	None	Excluded
2480	Danskammer Generating Station	1140	LF	Danskammer Solid Waste Management Facility	41.57666667	-73.96944444	21.8	1167.84045	53.57066284	Combined Ash	Composite	Excluded
4158	Dave Johnston Plant	4	SI	Blowdown Canal	42.84222222	-105.7805556	1	3	3	Combined Ash	None	Excluded
4158	Dave Johnston Plant	5	SI	4B Ash Pond	42.84222222	-105.7805556	20	145	7.25	Combined Ash	Composite	--
4158	Dave Johnston Plant	6	SI	4A Ash Pond	42.84222222	-105.7805556	20	145	7.25	Combined Ash	Composite	--
4158	Dave Johnston Plant	7	SI	1A Ash Pond	42.84222222	-105.7805556	13	115	8.846153846	Combined Ash	Composite	Excluded
4158	Dave Johnston Plant	8	SI	4 Clear Pond	42.84222222	-105.7805556	6.4	50	7.8125	Combined Ash	None	--
4158	Dave Johnston Plant	9	SI	1B Clear Pond	42.84222222	-105.7805556	2	20	10	Combined Ash	None	--
4158	Dave Johnston Plant	10	SI	1B Ash Pond	42.84222222	-105.7805556	13	112	8.615384615	Combined Ash	Composite	--
4158	Dave Johnston Plant	11	SI	1A Clear Pond	42.84222222	-105.7805556	2	16	8	Combined Ash	None	--
4158	Dave Johnston Plant	837	LF	Dave Johnston Plant Industrial Landfill	42.84611111	-105.7630556	555	20661.15702	37.22730995	Combined Ash	None	--
996	Dean H Mitchell	446	SI	Secondary 2	41.638407	-87.410366	0.48	2	4.166666667	Combined Ash	--	Excluded
996	Dean H Mitchell	445	SI	Secondary 1	41.64043	-87.406511	0.52	3	5.769230769	Combined Ash	--	Excluded
996	Dean H Mitchell	443	SI	Primary 2	41.639964	-87.406162	1.7	31	18.23529412	Combined Ash	--	Excluded
996	Dean H Mitchell	444	SI	Primary 3	41.639408	-87.405385	1.9	31	16.31578947	Combined Ash	--	Excluded
996	Dean H Mitchell	447	SI	Primary 4	41.638818	-87.403168	2.3	34	14.7826087	Combined Ash	--	Excluded
996	Dean H Mitchell	442	SI	Primary 1	41.634588	-87.395399	1.4	22	15.71428571	Combined Ash	--	Excluded
996	Dean H Mitchell	440	SI	Bottom Ash Complex	--	--	--	--	--	Combined Ash	None	Excluded
996	Dean H Mitchell	441	SI	Fly Ash Pond	--	--	--	--	--	Combined Ash	None	Excluded
663	Deerhaven Generating Station	1141	LF	Fly Ash Landfill	29.764712	-82.397978	--	--	--	Combined Ash	Yes	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
663	Deerhaven Generating Station	1331	SI	CoolingTowerBlowdown&BottomAshPond	29.76472222	-82.39222222	2.81221304	52.8953168	18.80914286	Combined Ash	None	--
1572	Dickerson	839	LF	Westland Ash Storage Site	39.19222222	-77.4575	206	7809.917355	37.91222017	Combined Ash	Yes	--
51	Dolet Hills	265	SI	Surge Pond No. 1	32.02997222	-93.57208333	2.25	29	12.88888889	Combined Ash	Clay	--
51	Dolet Hills	840	LF	Flyash/FGD Landfill	32.0125	-93.57083333	109	5268.595041	48.33573432	Combined Ash	Yes	--
51	Dolet Hills	269	SI	Auxiliary Surge Pond	32.02963889	-93.57052778	1.54	2	1.298701299	Combined Ash	Clay	--
51	Dolet Hills	267	SI	Surge Pond No. 2	32.02875	-93.56772222	4.8	18	3.75	Combined Ash	Clay	--
51	Dolet Hills	263	SI	Landfill Storm Water/Leachate	32.02041667	-93.56661111	1.32	--	--	Combined Ash	Clay	--
51	Dolet Hills	264	SI	Ash Basin No. 1	32.03044444	-93.56211111	30	578	19.26666667	Combined Ash	Clay	--
51	Dolet Hills	266	SI	Secondary Basin	32.03277778	-93.56208333	6.5	75	11.53846154	Combined Ash	None	--
51	Dolet Hills	268	SI	Ash Basin No. 2	32.0355	-93.56080556	31	501	16.16129032	Combined Ash	Clay	--
3317	Dolphus M Grainger	116	SI	Ash Pond 1	33.82709722	-79.04948889	42.5	298	7.011764706	Combined Ash	None	Excluded
3317	Dolphus M Grainger	115	SI	Ash Pond 2	33.82227778	-79.04708611	39	429	11	Combined Ash	None	Excluded
1046	Dubuque	476	SI	Ash Channel	--	--	--	10	--	Combined Ash	--	--
6016	Duck Creek	842	LF	Landfill	40.52027778	-89.98833333	169	--	--	Combined Ash	Composite	--
6016	Duck Creek	18	SI	Recycle Pond	--	--	--	--	--	--	Clay	--
6016	Duck Creek	19	SI	Ash Pond 1	--	--	58	1900	32.75862069	Combined Ash	None	Excluded
6016	Duck Creek	20	SI	Ash Pond 2	--	--	85	1000	11.76470588	Combined Ash	None	Excluded
2554	Dunkirk Generating Plant	843	LF	SWMF	42.497091	-79.305372	55.96	1660	29.66404575	Combined Ash	Composite	--
2554	Dunkirk Generating Plant	646	SI	Northwest Pump House	--	--	--	--	--	Combined Ash	--	Excluded
2554	Dunkirk Generating Plant	647	SI	Equalization Basin	--	--	--	2	--	Combined Ash	--	--
2554	Dunkirk Generating Plant	648	SI	Settling Pond System	--	--	2	12	6	Combined Ash	--	--
26	E. C. Gaston	257	SI	Ash Pond Dam	--	--	339	18888	55.71681416	Combined Ash	None	--
1355	E.W. Brown	524	SI	Ash Pond	37.7875	-84.71888889	75.12	--	--	Combined Ash	Composite	--
1355	E.W. Brown	525	SI	Auxiliary Pond	37.78109167	-84.71879167	25.7	515	20.03891051	Combined Ash	Composite	--
991	Eagle Valley	426	SI	C Pond	39.48408611	-86.42719444	8	102	12.75	Combined Ash	None	--
991	Eagle Valley	428	SI	B Pond	39.48254167	-86.42694444	13	177	13.61538462	Combined Ash	None	--
991	Eagle Valley	427	SI	A Pond	39.48098611	-86.42684444	19	400	21.05263158	Combined Ash	None	--
991	Eagle Valley	425	SI	E Pond	39.48441944	-86.4231	4	45	11.25	Combined Ash	None	Excluded
991	Eagle Valley	429	SI	D Pond	39.48308889	-86.42246389	16	370	23.125	Combined Ash	None	--
1217	Earl F Wisdom	844	LF	Ash Landfill	43.16133333	-95.25288889	--	--	--	Combined Ash	None	--
6018	East Bend Station	24	SI	East Bend Station Unit 1	38.90194444	-84.84111111	53.4	1277	23.91385768	Combined Ash	None	--
6018	East Bend Station	879	LF	East Landfill	38.90916667	-84.84027778	--	--	--	Combined Ash	Yes	--
6018	East Bend Station	23	SI	FGD Pond East	--	--	4	51	12.75	FGD Waste	--	--
6018	East Bend Station	25	SI	FGD Pond West	--	--	4	45	11.25	FGD Waste	--	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
2837	Eastlake	1262	SI	Combined Treatment Basin	41.67305556	-81.44305556	0.58539945	2.869605142	4.901960784	Combined Ash	None	--
2837	Eastlake	914	LF	North Park	--	--	--	--	--	Combined Ash	Yes	--
856	ED Edwards	378	SI	Pond 2 - Ash Pond Settling	40.59277778	-89.66722222	32	--	--	Combined Ash	None	--
856	ED Edwards	377	SI	Pond 3 - Clarification Pond	40.58972222	-89.66527778	23	--	--	Combined Ash	None	--
856	ED Edwards	376	SI	Ash Pond	--	--	89	1800	20.2247191	Combined Ash	None	--
4050	Edgewater	858	LF	I-43 ADF	43.69333333	-87.76416667	25	1026.260331	41.05041322	Combined Ash	Yes	--
4050	Edgewater	894	LF	Edgewater 1-4 Closed ADF	43.71138889	-87.71305556	--	--	--	Combined Ash	None	Excluded
4050	Edgewater	168	SI	B Pond	43.710917	-87.711869	1.93	19	9.844559585	Combined Ash	--	--
4050	Edgewater	165	SI	A Ponds (Two)	43.712168	-87.711684	4.4	44	10	Combined Ash	--	--
4050	Edgewater	164	SI	C Pond	43.71111	-87.711003	0.65	3	4.615384615	Combined Ash	--	--
4050	Edgewater	166	SI	I43 Coal Combustion landfill Contact Pond	43.717171	-87.710875	1.11	8	7.207207207	Combined Ash	--	Excluded
4050	Edgewater	169	SI	F Pond	43.710195	-87.704069	0.9	9	10	Combined Ash	--	--
4050	Edgewater	167	SI	Slag Pond	43.709357	-87.703924	1.8	10	5.555555556	Combined Ash	--	--
1004	Edwardsport	459	SI	Primary Ash Pond	38.80080556	-87.24330556	8	170	21.25	Combined Ash	None	--
1004	Edwardsport	458	SI	Secondary Ash Pond	38.80072222	-87.24302778	1	7	7	Combined Ash	None	--
1004	Edwardsport	971	LF	--	--	--	--	--	--	Combined Ash	--	--
1374	Elmer Smith Station	1234	SI	Pond #1	37.79491667	-87.06419444	1.60697888	24.1046832	15	Combined Ash	None	--
1374	Elmer Smith Station	1235	SI	Pond #2	37.79344444	-87.06313889	13.7741047	24.79338843	1.8	Combined Ash	None	--
1374	Elmer Smith Station	1237	SI	FGD Scrubber Purge basin	37.79722222	-87.06145	0.13774105	0.20661157	1.5	FGD Waste	None	--
1374	Elmer Smith Station	1236	SI	FGD Emergency Pond	37.79572222	-87.05869444	0.68870523	8.26446281	12	FGD Waste	Composite	--
3098	Elrama Power Plant	1342	SI	Ash Settling Pond 1	40.25333333	-79.92027778	2.13269054	29.34421488	13.7592465	Combined Ash	Yes	--
3098	Elrama Power Plant	1343	SI	Ash Settling Pond 2	40.25388889	-79.92027778	2.224	--	--	Combined Ash	Yes	--
3098	Elrama Power Plant	1344	SI	Ash Polishing Pond 4	40.25472222	-79.92027778	0.3902663	6.634527089	17	Combined Ash	Yes	--
3098	Elrama Power Plant	1345	SI	Scrubber Emergency Pond 5	40.25527778	-79.91972222	0.20661157	3.512396694	17	FGD Waste	Yes	Excluded
3098	Elrama Power Plant	895	LF	Fern Valley	40.28111111	-79.88972222	--	--	--	Combined Ash	Yes	Excluded
1832	Erickson Station	587	SI	Unit 1	42.687523	-84.653971	33	198	6	Combined Ash	--	--
87	Escalante	274	SI	Management Units 3 & 4 Bottom Ash	--	--	13	96	7.384615385	Combined Ash	--	--
87	Escalante	276	SI	Evaporation Pond 1a + 1b	--	--	2.3	14	6.086956522	FGD Waste	--	--
87	Escalante	277	SI	Emergency Scrubber Pond	--	--	0.8	3	3.75	FGD Waste	--	--
87	Escalante	278	SI	Evaporation Ponds 2-5	--	--	--	--	--	--	--	--
87	Escalante	275	SI	N/A	--	--	--	--	--	--	--	Excluded
87	Escalante	992	LF	--	--	--	97	573.9210285	5.916711634	Combined Ash	Clay	--
1012	F. B. Culley	466	SI	West Ash Pond	37.91198222	-87.32948472	18	620	34.44444444	Combined Ash	None	Excluded
1012	F. B. Culley	467	SI	East Pond	37.90922778	-87.32296111	7	372	53.14285714	Combined Ash	None	--
1218	Fair Station	896	LF	CIPCO landfill	41.46194444	-90.85888889	--	--	--	Combined Ash	Yes	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
1218	Fair Station	1184	SI	#2 ash pond	41.45833333	-90.825	1.20523416	13.25757576	11	Combined Ash	Clay	Excluded
1218	Fair Station	1183	SI	#1 ash pond	41.45833333	-90.82444444	2.26280992	24.89090909	11	Combined Ash	Clay	Excluded
6179	Fayette Power Project	183	SI	Management Unit 009	29.90944444	-96.75111111	30	600	20	Combined Ash	Clay	--
6179	Fayette Power Project	184	SI	Management Unit 002	29.91472222	-96.74055556	84	2293	27.29761905	Combined Ash	Clay	--
6179	Fayette Power Project	897	LF	CCB Landfill	--	--	23	552	24	Combined Ash	Yes	--
886	Fisk	1238	SI	Dewatering Pad	41.84916667	-87.65666667	0.25482094	0.126262626	0.495495495	Ash & Coal Refuse	None	Excluded
886	Fisk	1239	SI	Dewatering Bin Sump	41.84888889	-87.65638889	0.09182736	0.183654729	2	Ash & Coal Refuse	None	Excluded
886	Fisk	1240	SI	Equalization Basin (Flume)	41.84861111	-87.65472222	0.04820937	0.482093664	10	Ash & Coal Refuse	None	Excluded
6138	Flint Creek	898	LF	Ash landfill	36.259077	-94.514209	40	934.8657025	23.37164256	Combined Ash	Yes	--
6138	Flint Creek	173	SI	Secondary Bottom Ash Pond	--	--	4	24	6	Ash & Coal Refuse	--	--
6138	Flint Creek	174	SI	Primary Bottom Ash Pond	--	--	43	484	11.25581395	Ash & Coal Refuse	--	--
3943	Fort Martin Power Station	1143	LF	Gypsum Phase I Landfill	39.717275	-79.95	99.5	2169.421489	21.80323104	Combined Ash	Yes	--
3943	Fort Martin Power Station	1142	LF	Ash Landfill	39.71277778	-79.9425	99.5	2169.421489	21.80323104	Combined Ash	None	--
3943	Fort Martin Power Station	1181	SI	Wastewater Treatment Lagoon 1	39.709222	-79.930731	1.26262626	10.19283747	8.072727273	Combined Ash	None	Excluded
3943	Fort Martin Power Station	1182	SI	Wastewater Treatment Lagoon 2	39.709222	-79.930731	1.26262626	10.19283747	8.072727273	Combined Ash	None	Excluded
10343	Foster Wheeler Mt Carmel Cogen	901	LF	-999	--	--	--	--	--	Combined Ash	--	--
2442	Four Corners	638	SI	Low Volume Waste Water System Decant Cells	36.6831	-108.5124	45.1	435	9.645232816	Combined Ash	--	--
2442	Four Corners	915	LF	Dry Flyash Disposal Area	36.68583333	-108.5080556	--	--	--	Combined Ash	Yes	--
2442	Four Corners	639	SI	Lined Ash Impoundment	36.6849	-108.5066	75	2399	31.98666667	Combined Ash	Composite	--
2442	Four Corners	903	LF	Plant Disposal (Gridded)	36.68833333	-108.5063889	--	--	--	Combined Ash	None	--
2442	Four Corners	640	SI	Lined Water Impoundment	--	--	45	435	9.666666667	FGD Waste	Composite	--
2442	Four Corners	641	SI	Low Volume Waste Water Pond	--	--	14	137	9.785714286	Combined Ash	--	--
2442	Four Corners	642	SI	Upper Retention Sump	--	--	1	11	11	FGD Waste	--	--
1043	Frank E. Ratts	469	SI	Pond 4	38.51630556	-87.27	25	--	--	Combined Ash	--	--
1043	Frank E. Ratts	470	SI	Pond 3	38.51636111	-87.26682778	10	--	--	Combined Ash	--	--
1043	Frank E. Ratts	475	SI	Pond 2	38.51716667	-87.26455556	10	--	--	Combined Ash	--	--
1043	Frank E. Ratts	472	SI	Pond 1	38.51955556	-87.26347222	6	--	--	Combined Ash	None	--
1043	Frank E. Ratts	468	SI	Fly Ash Pond 3	--	--	25	--	--	Combined Ash	None	--
1043	Frank E. Ratts	471	SI	Bottom Ash Pond	--	--	6	40	6.666666667	Combined Ash	None	--
1043	Frank E. Ratts	473	SI	Fly Ash Pond 2	--	--	16	--	--	Combined Ash	None	--
1043	Frank E. Ratts	474	SI	Fly Ash Pond 1	--	--	10	--	--	Combined Ash	None	--
2718	G G Allen	670	SI	Active Ash Basin	35.17741389	-81.01114722	160	5915	36.96875	Combined Ash	None	--
2718	G G Allen	668	SI	North Dike - Active Ash Basin	35.18098611	-81.01024722	--	--	--	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
2718	G G Allen	892	LF	Ash/Gypsum Landfill	35.18388889	-81.01	--	--	--	Combined Ash	Yes	--
2718	G G Allen	669	SI	East Dike - Active Ash Basin	35.17736944	-81.00711944	--	--	--	Combined Ash	None	--
7	Gadsden	253	SI	Ash Pond (NID #1428)	--	--	68	753	11.07352941	Combined Ash	--	--
3403	Gallatin	128	SI	Bottom Ash Pond A	--	--	269	4390	16.3197026	Combined Ash	--	--
3403	Gallatin	129	SI	Fly Ash Pond E	--	--	157	4401	28.03184713	Combined Ash	--	--
3403	Gallatin	130	SI	Stilling Pond B, C, D	--	--	55	372	6.763636364	Combined Ash	--	--
8102	General James M. Gavin	246	SI	Stingy Run Ash Disposal Pond	38.96430833	-82.14427222	324.5	23365	72.00308166	Ash & Coal Refuse	None	--
8102	General James M. Gavin	1144	LF	FGD Landfill	38.95555556	-82.14111111	225	1118.204775	4.969799	Combined Ash	Composite	--
8102	General James M. Gavin	247	SI	Bottom Ash Pond	38.93055556	-82.12083333	85	1530	18	Ash & Coal Refuse	None	--
4143	Genoa	1007	LF	--	--	--	--	--	--	Combined Ash	--	Excluded
4143	Genoa	1131	LF	--	--	--	100	--	--	Combined Ash	--	--
1091	George Neal North	909	LF	Neal North Landfill West	42.31888889	-96.37055556	--	--	--	Combined Ash	None	Excluded
1091	George Neal North	910	LF	Neal North Landfill East	42.31944444	-96.36638889	--	--	--	Combined Ash	None	Excluded
1091	George Neal North	906	LF	Neal North Landfill Active	42.31555556	-96.36611111	200	--	--	Combined Ash	Yes	--
1091	George Neal North	907	LF	--	--	--	--	--	--	Combined Ash	--	--
1091	George Neal North	908	LF	--	--	--	--	--	--	Combined Ash	--	--
1091	George Neal North	504	SI	Surface Impoundment 1	--	--	12	137	11.41666667	Combined Ash	None	--
1091	George Neal North	505	SI	Surface Impoundment 3	--	--	76	837	11.01315789	Combined Ash	None	--
1091	George Neal North	506	SI	Surface Impoundment 2	--	--	27	296	10.96296296	Combined Ash	None	--
7343	George Neal South	1332	SI	Air Heater Wash Pond	42.29722222	-96.35888889	2.8238292	16.94297521	6	Combined Ash	Composite	Excluded
7343	George Neal South	911	LF	Neal 4 Landfill	42.29916667	-96.34722222	32	521.546281	16.29832128	Combined Ash	None	--
6077	Gerald Gentleman	912	LF	Fossil Fuels Combustion Ash Landfill	41.07222222	-101.1497222	--	--	--	Combined Ash	Yes	--
1356	Ghent	528	SI	Gypsum Stacking Facility	38.75166667	-85.02777778	46	2758	59.95652174	FGD Waste	None	--
1356	Ghent	527	SI	Ash Treatment Basin #1	38.74861111	-85.02722222	120	4339	36.15833333	Combined Ash	None	--
1356	Ghent	529	SI	Ash Treatment Basin #2	38.73972222	-85.02305556	146	7190	49.24657534	Combined Ash	None	--
1356	Ghent	526	SI	Secondary Ash Treatment Basin	--	--	4	--	--	Combined Ash	--	--
1356	Ghent	530	SI	Gypsum Stack Surge/Reclaim Pond	--	--	8	--	--	FGD Waste	Clay	--
6136	Gibbons Creek Steam Electric Station	913	LF	Site A	30.63444444	-96.09305556	--	--	--	Combined Ash	Yes	--
6136	Gibbons Creek Steam Electric Station	1244	SI	Scrubber Sludge Pond	30.61136111	-96.07977778	7.64038108	122.0256198	15.97114313	FGD Waste	Composite	--
6136	Gibbons Creek Steam Electric Station	1241	SI	Ash Pond A	30.61680556	-96.07602778	10.617539	212.3507805	20	Combined Ash	Clay	--
6136	Gibbons Creek Steam Electric Station	1242	SI	Ash Pond B	30.61680556	-96.07602778	10.617539	212.3507805	20	Combined Ash	Clay	--
6136	Gibbons Creek Steam Electric Station	1243	SI	Ash Pond C	30.61680556	-96.07602778	10.617539	212.3507805	20	Combined Ash	Clay	--
6136	Gibbons Creek Steam Electric Station	881	LF	Site F	30.63833333	-96.06666667	--	--	--	Combined Ash	Yes	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6113	Gibson	902	LF	S Aggregate Landfill (26-06)	38.33638889	-87.78444444	378	52189.51871	138.0675098	Combined Ash	Composite	--
6113	Gibson	86	SI	North Settling Basin	38.37916667	-87.76333333	15	150	10	--	None	--
6113	Gibson	84	SI	North Ash Pond	38.37722222	-87.75805556	25	350	14	Combined Ash	None	--
6113	Gibson	904	LF	Aggregate Landfill (26-02)	38.37222222	-87.75194444	131.3	11968.00413	91.15006955	Combined Ash	Composite	--
6113	Gibson	83	SI	East Pond #2	38.37666667	-87.74277778	105	1733	16.5047619	Combined Ash	None	--
6113	Gibson	82	SI	East Settling Basin	38.37166667	-87.74083333	45	743	16.51111111	--	None	--
6113	Gibson	85	SI	East Pond #3	38.3825	-87.73972222	133	3325	25	Combined Ash	None	--
6113	Gibson	81	SI	East Pond #1	38.37666667	-87.73722222	105	1733	16.5047619	Combined Ash	None	--
3776	Glen Lyn	146	SI	Auxiliary Fly Ash Pond	37.37855556	-80.87558333	44.3	185	4.176072235	Combined Ash	None	--
3776	Glen Lyn	870	LF	Glen Lyn Industrial Waste Landfill, Permit 222	37.37805556	-80.875	--	--	--	Combined Ash	Yes	--
3776	Glen Lyn	147	SI	Bottom Ash Pond	37.37261111	-80.86544444	1.44	90	62.5	Combined Ash	None	--
8	Gorgas	254	SI	Gypsum Storage Facility	33.655278	-87.217222	21	983	46.80952381	FGD Waste	Composite	--
8	Gorgas	255	SI	Ash Pond (NID #1198) Rattlesnake Dam	33.639722	-87.185556	420	10750	25.5952381	Combined Ash	None	--
8	Gorgas	963	LF	--	--	--	--	--	--	Combined Ash	--	--
1825	Grand Haven City of J.B. Sims	1309	SI	West Ash Pond	43.07180556	-86.23280556	0.29660239	2.076216713	7	Combined Ash	Clay	--
1825	Grand Haven City of J.B. Sims	1310	SI	East Ash Pond	43.07180556	-86.23280556	0.29660239	2.076216713	7	Combined Ash	Clay	--
10151	Grant Town Power Plant	873	LF	Farmington	39.50555556	-80.25111111	--	--	--	Combined Ash	None	--
10151	Grant Town Power Plant	872	LF	Barrackville	39.501641	-80.179709	--	--	--	Combined Ash	None	--
10151	Grant Town Power Plant	871	LF	Grant Town	39.5575	-80.16972222	--	--	--	Combined Ash	None	--
10151	Grant Town Power Plant	1168	SI	Pond 3	39.5584	-80.16638889	1.83654729	14.69237833	8	Combined Ash	None	--
10151	Grant Town Power Plant	1167	SI	Pond 10	39.55972222	-80.16611111	0.12626263	1.01010101	8	Combined Ash	None	--
10151	Grant Town Power Plant	1170	SI	Sedimentation Pond 5	39.56305556	-80.16583333	0.17217631	1.377410468	8	Combined Ash	None	--
10151	Grant Town Power Plant	1169	SI	Sedimentation Pond 9	39.56	-80.16555556	0.54407713	4.35261708	8	Combined Ash	None	--
10151	Grant Town Power Plant	1171	SI	Sedimentation Pond 6	39.5625	-80.16527778	0.03673095	0.293847567	8	Combined Ash	None	--
165	GRDA	1210	SI	SS1	36.18555556	-95.29194444	0.05034435	0.528673095	10.50113999	FGD Waste	None	--
165	GRDA	874	LF	ash landfill	36.18555556	-95.28833333	--	--	--	Combined Ash	Yes	--
1357	Green River	531	SI	Main Ash Pond	37.36974722	-87.12181667	32	775	24.21875	Combined Ash	None	--
1357	Green River	532	SI	Former Ash Pond	37.36556944	-87.11969444	6	--	--	Combined Ash	None	--
1357	Green River	533	SI	Ash Pond Number 2	37.36809444	-87.11804167	23	--	--	Combined Ash	None	--
1357	Green River	534	SI	Finishing Pond Number 3	37.04961944	-87.11576667	2	--	--	Combined Ash	None	--
1357	Green River	535	SI	Scrubber Pond	37.36812778	-87.11523056	10	150	15	FGD Waste	None	--
10	Greene County	256	SI	Ash Pond	--	--	474	5331	11.24683544	Combined Ash	None	--
6041	H L Spurlock Station	34	SI	Spurlock Ash Pond	38.70044883	-83.80169383	61.4	1085	17.67100977	Combined Ash	Clay	--
6041	H L Spurlock Station	972	LF	--	--	--	33.42	1907.73905	57.08375373	Combined Ash	Clay	--
2709	H.F. Lee Plant	658	SI	Ash Pond 1	35.38168333	-78.10723611	33	--	--	Combined Ash	None	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
2709	H.F. Lee Plant	656	SI	Ash Pond 3	35.37596944	-78.10719722	85	--	--	Combined Ash	None	Excluded
2709	H.F. Lee Plant	657	SI	Ash Pond 2	35.38053056	-78.1038	53	--	--	Combined Ash	None	Excluded
2709	H.F. Lee Plant	659	SI	Active Ash Pond	35.3791	-78.069	143	1980	13.84615385	Combined Ash	None	--
2709	H.F. Lee Plant	660	SI	1980 Pond	--	--	--	--	--	Combined Ash	--	--
708	Hammond	1145	LF	Huffaker CCB	34.296139	-85.30457	--	--	--	Combined Ash	Yes	--
708	Hammond	351	SI	Ash Pond 2	--	--	21	509	24.23809524	Combined Ash	None	--
708	Hammond	352	SI	Ash Pond 1	--	--	35	800	22.85714286	Combined Ash	None	--
708	Hammond	353	SI	Ash Pond 4	--	--	54	1242	23	Combined Ash	None	--
708	Hammond	354	SI	Ash Pond 3	--	--	25	687	27.48	Combined Ash	None	Excluded
1731	Harbor Beach Power Plant	581	SI	Pond	--	--	--	--	--	Combined Ash	--	--
990	Harding Street	420	SI	Pond 2	39.706656	-86.202417	30	505	16.83333333	Combined Ash	None	--
990	Harding Street	423	SI	Pond 1	39.708192	-86.199089	7	92	13.14285714	Combined Ash	None	--
990	Harding Street	422	SI	Ponds 2A/2B	39.70665	-86.197319	4	43	10.75	Combined Ash	None	--
990	Harding Street	424	SI	Pond 3	39.707464	-86.196203	9.5	8	0.842105263	Combined Ash	None	--
990	Harding Street	421	SI	Pond 4	39.7042	-86.194464	26	304	11.69230769	Combined Ash	None	--
709	Harllee Branch	355	SI	Ash Pond E	33.204167	-83.326389	311	4665	15	Ash & Coal Refuse	None	--
709	Harllee Branch	358	SI	Ash Pond D	33.1869	-83.3055	45	675	15	Ash & Coal Refuse	None	--
709	Harllee Branch	359	SI	Ash Pond C	33.1869	-83.3055	70	1050	15	Ash & Coal Refuse	None	--
709	Harllee Branch	357	SI	Ash Pond B	33.1915	-83.3033	75	750	10	Ash & Coal Refuse	None	--
709	Harllee Branch	356	SI	A	--	--	1	14	14	Ash & Coal Refuse	--	Excluded
6193	Harrington	878	LF	001	35.305659	-101.754015	--	--	--	Combined Ash	Yes	--
6193	Harrington	877	LF	117	35.30305556	-101.7508333	--	--	--	Combined Ash	Yes	--
3944	Harrison Power Station	891	LF	CCB Landfill	39.40444444	-80.33222222	200	45862.80992	229.3140496	Combined Ash	Clay	--
3944	Harrison Power Station	158	SI	EPRI 6	--	--	300	17355.3719	57.85123967	Combined Ash	--	Excluded
3179	Hatfield's Ferry Power Station	880	LF	Ash Disposal Site	39.851828	-79.945337	32	1542.235537	48.19486054	Combined Ash	None	--
3179	Hatfield's Ferry Power Station	1217	SI	Limestone Runoff Basin	39.86000556	-79.93233611	1.464	--	--	FGD Waste	Yes	Excluded
3179	Hatfield's Ferry Power Station	1218	SI	Gypsum Runoff Basin	39.86061667	-79.9311	1.464	--	--	FGD Waste	Yes	Excluded
3179	Hatfield's Ferry Power Station	1216	SI	West Lagoon	39.86256111	-79.93094444	1.51515152	15.3454775	10.12801515	Combined Ash	None	--
3179	Hatfield's Ferry Power Station	1215	SI	East Lagoon	39.86278333	-79.93034722	1.51515152	15.3454775	10.12801515	Combined Ash	None	--
3179	Hatfield's Ferry Power Station	1219	SI	Gypsum Storage Area Basin	39.86116111	-79.93009444	1.464	--	--	FGD Waste	Yes	Excluded
891	Havana	392	SI	North Ash Pond System	40.27676389	-90.07905278	6	25	4.166666667	Combined Ash	--	--
891	Havana	393	SI	East Ash Pond	40.2801	-90.07119722	90	2625	29.16666667	Combined Ash	Composite	--
2079	Hawthorn	599	SI	Scrubber Waste Settling Pond	--	--	1	2	2	FGD Waste	--	--
2079	Hawthorn	962	LF	--	--	--	--	--	--	Combined Ash	--	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
525	Hayden	1146	LF	Hayden Coal Ash Disposal Facility	40.47387222	-107.1611361	--	--	--	Combined Ash	None	--
525	Hayden	882	LF	Ash Disposal Facility	40.45109722	-107.1319972	--	--	--	Combined Ash	None	Excluded
525	Hayden	332	SI	Intermediate Quality Pond	--	--	20	274	13.7	Combined Ash	--	--
525	Hayden	333	SI	High Quality Skimmer Pond	--	--	1	6	6	Combined Ash	--	Excluded
525	Hayden	334	SI	High Quality Pond	--	--	4	40	10	Combined Ash	--	Excluded
525	Hayden	335	SI	Fly Ash Decant Basin	--	--	--	--	--	Combined Ash	--	--
525	Hayden	336	SI	Common Wet Ash Settling Basin	--	--	--	--	--	Combined Ash	--	--
525	Hayden	337	SI	Ash Disposal Facility (ADF) Contact Storm Water Pond	--	--	1	4	4	Combined Ash	--	--
3251	HB Robinson / Darlington Electric Power Plant	104	SI	Pond	34.41411111	-80.16222222	55	410	7.454545455	Combined Ash	None	--
892	Hennepin Power Station	394	SI	Ash Pond System (2 cells)	41.300222	-89.323988	21	563	26.80952381	Combined Ash	--	--
892	Hennepin Power Station	883	LF	-999	--	--	--	--	--	Combined Ash	Yes	--
1382	HMP&L Station Two Henderson	556	SI	Ash Pond No. 0855	37.647739	-87.505317	12.4	--	--	Combined Ash	None	--
1382	HMP&L Station Two Henderson	557	SI	Green Ash Pond	37.64612	-87.501376	21.3	--	--	Combined Ash	None	--
1382	HMP&L Station Two Henderson	984	LF	--	--	--	--	--	--	Combined Ash	--	--
108	HOLCOMB	1147	LF	HCF	37.945852	-100.965669	8	--	--	Combined Ash	None	--
3122	Homer City Station	725	SI	Coal Refuse Disposal Site - Leachate Pump Pond	40.518625	-79.212578	0.26	1	3.846153846	Combined Ash	--	Excluded
3122	Homer City Station	719	SI	Ash Disposal Site - Polishing Pond	40.518299	-79.212487	0.13	--	--	Combined Ash	--	--
3122	Homer City Station	92	SI	Coal Refuse Disposal Site - Small Sediment Trap	40.518566	-79.212215	0.18	1	5.555555556	Combined Ash	--	Excluded
3122	Homer City Station	884	LF	Ash Disposal Site	40.52638889	-79.21194444	145	3629.209711	25.02903249	Combined Ash	None	--
3122	Homer City Station	721	SI	Ash Disposal Site - Stormwater Surge Pond	40.526794	-79.20486	1.22	17	13.93442623	Combined Ash	--	Excluded
3122	Homer City Station	723	SI	Ash Disposal Site - Treatment Pond #2	40.516075	-79.199559	0.28	1	3.571428571	Combined Ash	--	--
3122	Homer City Station	90	SI	Coal Refuse Disposal Site - Stage I & II Pond	40.520906	-79.19929	1	13	13	Combined Ash	--	--
3122	Homer City Station	724	SI	Ash Disposal Site - Treatment Pond #1	40.515623	-79.199137	0.25	1	4	Combined Ash	--	--
3122	Homer City Station	726	SI	Ash Recycle Pond #2	40.514744	-79.198884	0.59	5	8.474576271	Combined Ash	--	--
3122	Homer City Station	722	SI	Ash Recycle Pond #1	40.514863	-79.198504	0.58	4	6.896551724	Combined Ash	--	--
3122	Homer City Station	91	SI	Ash Recycle Pond #4	40.513697	-79.198352	0.56	5	8.928571429	Combined Ash	--	--

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Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
3122	Homer City Station	727	SI	Ash Recycle Pond #3	40.51378	-79.197979	0.57	5	8.771929825	Combined Ash	--	--
3122	Homer City Station	720	SI	Coal Refuse Disposal Site - Storage Pond #2	40.509042	-79.197338	0.84	11	13.0952381	Combined Ash	--	--
3122	Homer City Station	886	LF	Emergency Strike Landfill	40.5175	-79.18888889	27	--	--	Combined Ash	None	Excluded
3122	Homer City Station	1134	LF	Coal Refuse Disposal Site	40.52777778	-79.18888889	165	16178.12213	98.04922503	Combined Ash	Composite	--
3122	Homer City Station	729	SI	Coal Refuse Disposal Site - Storage Pond #1	40.521757	-79.188655	1.26	2	1.587301587	Combined Ash	--	--
3122	Homer City Station	728	SI	Coal Refuse Disposal Site - Stage III & IV Pond	40.522143	-79.186773	1.54	26	16.88311688	Combined Ash	--	--
1943	Hoot Lake	1148	LF	Area 4	46.289375	-96.0384	--	--	--	Combined Ash	None	Excluded
1943	Hoot Lake	1158	LF	Area 1	46.28971389	-96.03636944	--	--	--	Combined Ash	None	Excluded
1943	Hoot Lake	1157	LF	Area 2	46.29038333	-96.0339	--	--	--	Combined Ash	None	Excluded
1943	Hoot Lake	1159	LF	IL002-Phase 1	46.28746667	-96.03198056	--	--	--	Combined Ash	Yes	--
1943	Hoot Lake	1160	LF	IL001-II	46.28780278	-96.03071667	--	--	--	Combined Ash	None	--
1943	Hoot Lake	887	LF	IL001-I	46.28873611	-96.030075	72	495.8677686	6.887052342	Combined Ash	None	--
1943	Hoot Lake	1156	LF	Area 3	46.29062	-96.013039	--	--	--	Combined Ash	None	Excluded
10771	Hopewell	1362	SI	Coal Pile Runoff Pond	37.298131	-77.284872	0.78739669	9.448760331	12	Ash & Coal Refuse	Composite	--
6772	Hugo	755	LF	Fly Ash Landfill	34.008487	-95.32962872	35.3	675.3991736	19.13312106	Combined Ash	Clay	--
6772	Hugo	230	SI	South Bottom Ash	34.00915278	-95.316675	34	344	10.11764706	Combined Ash	Clay	--
6772	Hugo	229	SI	North Bottom Ash Unit	34.01064722	-95.31594444	34	344	10.11764706	Combined Ash	Clay	--
6772	Hugo	231	SI	North Fly Ash	--	--	18	332	18.44444444	Combined Ash	Clay	--
6772	Hugo	232	SI	South Fly Ash Unit	--	--	18	332	18.44444444	Combined Ash	Clay	--
3176	Hunlock Power Station	103	SI	West Basin (005)	41.200563	-76.072583	5	90	18	Combined Ash	--	Excluded
3176	Hunlock Power Station	102	SI	East Basin (003)	41.199839	-76.072148	5	90	18	Combined Ash	--	Excluded
6165	Hunter Plant	756	LF	FGD Cell	39.00262778	-111.0102056	280	7438.016529	26.56434475	Combined Ash	None	--
6165	Hunter Plant	1258	SI	Landfill FGD Cell	39.15262778	-111.0102056	104.1	--	--	Combined Ash	Yes	Excluded
8069	Huntington Plant	757	LF	class III-b Industrial Waste Landfill	39.36940833	-111.0823778	70	7066.115703	100.94451	Combined Ash	None	--
8069	Huntington Plant	1364	SI	Scrubber Pond	39.37793333	-111.0813056	1.03305785	4	3.872	FGD Waste	Composite	--
8069	Huntington Plant	759	LF	Old Landfill	39.36836111	-111.0802111	--	--	--	Combined Ash	None	Excluded
8069	Huntington Plant	1363	SI	Lacey's lake	39.37630833	-111.0784278	1	4	4	Combined Ash	None	Excluded
8069	Huntington Plant	758	LF	Conditionally Exempt Combustion Waste Landfill	39.36466389	-111.0718639	--	--	--	Combined Ash	None	--
863	Hutsonville	383	SI	Ash Pond B	39.129551	-87.659345	4	70	17.5	Combined Ash	--	Excluded
863	Hutsonville	381	SI	Bottom Ash Pond	39.133223	-87.658424	1	6	6	Combined Ash	--	Excluded
863	Hutsonville	382	SI	Ash Pond C	39.131165	-87.658387	2	20	10	Combined Ash	--	Excluded
863	Hutsonville	384	SI	Ash Pond A	39.130078	-87.656369	14	250	17.85714286	Combined Ash	--	Excluded
6065	Iatan	1154	LF	Utility Waste Landfill	39.44972222	-94.96388889	--	--	--	Combined Ash	Yes	--
6065	Iatan	40	SI	Ash Pond	--	--	89	2328	26.15730337	Combined Ash	--	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6641	Independence	1153	LF	ISES Landfill	35.679507	-91.391202	221	8069.008264	36.51134961	Combined Ash	Clay	--
2132	Independence Power & Light - Blue Valley Station	618	SI	Bottom Ash Pond	39.09584722	-94.32355278	9.3	133	14.30107527	Combined Ash	None	--
2132	Independence Power & Light - Blue Valley Station	617	SI	South Fly Ash Pond	39.09617222	-94.322075	15.1	271	17.94701987	Combined Ash	None	Excluded
2132	Independence Power & Light - Blue Valley Station	616	SI	North Fly Ash Pond	39.09873056	-94.32163611	16.8	252	15	Combined Ash	None	--
594	Indian River Generating Station	775	LF	Burton Island Landfill	38.585207	-75.241928	--	--	--	Combined Ash	None	Excluded
594	Indian River Generating Station	762	LF	Solid Waste Landfill	38.579359	-75.232033	--	--	--	Combined Ash	Yes	--
594	Indian River Generating Station	339	SI	Sedimentation Pond	--	--	--	--	--	Combined Ash	--	--
594	Indian River Generating Station	340	SI	Ash Silo Area Sump System	--	--	--	--	--	Combined Ash	--	Excluded
6481	Intermountain Power Project	214	SI	Settling Basin	--	--	14	145	10.35714286	FGD Waste	Composite	--
6481	Intermountain Power Project	215	SI	Ash Water Recycle	--	--	27	590	21.85185185	Combined Ash	Composite	--
6481	Intermountain Power Project	216	SI	Land Fill Run-Off	--	--	5	30	6	--	Composite	--
6481	Intermountain Power Project	217	SI	Evaporation Ponds (6 Ponds)	--	--	180	3225	17.91666667	FGD Waste	Composite	--
6481	Intermountain Power Project	218	SI	Bottom Ash Basin	--	--	105	3000	28.57142857	Combined Ash	Composite	--
6481	Intermountain Power Project	219	SI	Wastewater Holding Basin	--	--	53	650	12.26415094	FGD Waste	Composite	--
7097	J K Spruce	1369	SI	NOR 001a	29.32041667	-98.31666667	2.006	--	--	Combined Ash	Yes	Excluded
7097	J K Spruce	1368	SI	NOR 001	29.31905556	-98.31597222	2.006	--	--	Combined Ash	Yes	Excluded
7097	J K Spruce	1372	SI	SRH	29.323975	-98.31481944	1.60697888	9.400826446	5.85	FGD Waste	Composite	--
7097	J K Spruce	1373	SI	NOR (021)	29.33138889	-98.31477778	4.98852158	47.28191001	9.478140819	Combined Ash	Composite	--
7097	J K Spruce	1370	SI	NOR 002	29.32005556	-98.31452778	2.006	--	--	Combined Ash	Yes	Excluded
7097	J K Spruce	1371	SI	NOR 008	29.31813889	-98.31416667	2.006	--	--	Combined Ash	Yes	Excluded
7097	J K Spruce	753	LF	Landfill (NOR 010)	29.32397222	-98.31369444	--	--	--	Combined Ash	Yes	--
2850	J M Stuart	706	SI	Ash Pond No. 5	38.64138889	-83.70388889	34	1426	41.94117647	Combined Ash	None	Excluded
2850	J M Stuart	711	SI	Ash Pond No. 10	38.63944444	-83.685	29	930	32.06896552	Combined Ash	Clay	--
2850	J M Stuart	710	SI	Ash Pond No. 3A	38.63416667	-83.68361111	50	1302	26.04	Combined Ash	Clay	--
2850	J M Stuart	767	LF	Landfill 11	38.637	-83.67811111	--	--	--	Combined Ash	Yes	--
2850	J M Stuart	708	SI	Pond #7A	38.631111	-83.678056	3	38	12.66666667	--	--	Excluded
2850	J M Stuart	709	SI	Ash Pond No. 7	38.63111111	-83.67805556	37	1550	41.89189189	Combined Ash	Clay	Excluded
2850	J M Stuart	707	SI	Ash Pond No. 6	38.63277778	-83.67611111	37	1550	41.89189189	Combined Ash	Clay	Excluded
2850	J M Stuart	766	LF	Landfill 9	38.63433333	-83.66205556	--	--	--	Combined Ash	Yes	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6181	J T Deely	1295	SI	bottom ash	29.30684444	-98.32140278	6.68503214	54.19306703	8.106627747	Combined Ash	None	--
6181	J T Deely	1296	SI	bottom ash	29.30891667	-98.31782222	6.28099174	50.27892562	8.004934211	Combined Ash	None	--
6181	J T Deely	1292	SI	NOR 001a	29.32041667	-98.31666667	2.006	--	--	Combined Ash	Yes	Excluded
6181	J T Deely	1291	SI	NOR 001	29.31905556	-98.31597222	2.006	--	--	Combined Ash	Yes	Excluded
6181	J T Deely	768	LF	JTD / Evaporation Pond #021	29.323972	-98.3148	--	--	--	Combined Ash	Yes	--
6181	J T Deely	1293	SI	NOR 002	29.32005556	-98.31452778	2.006	--	--	Combined Ash	Yes	Excluded
6181	J T Deely	1294	SI	NOR 008	29.31813889	-98.31416667	2.006	--	--	Combined Ash	Yes	Excluded
6181	J T Deely	1002	LF	--	--	--	--	--	--	Combined Ash	--	--
1720	J.C. Weadock	573	SI	J.C. Weadock Fly Ash Dam	--	--	--	--	--	--	Clay	--
1720	J.C. Weadock	574	SI	East 7 & 8 Ponds	--	--	136	--	--	Combined Ash	--	--
1720	J.C. Weadock	575	SI	West A - E Ponds	--	--	156	--	--	Combined Ash	--	--
1720	J.C. Weadock	576	SI	Weadock Landfill Embankment	--	--	--	--	--	--	Clay	--
1720	J.C. Weadock	1003	LF	--	--	--	--	--	--	Combined Ash	--	--
1723	J.R Whiting	577	SI	Ponds 3-5	--	--	82	1489	18.15853659	Combined Ash	--	--
1723	J.R Whiting	578	SI	Pond 1	--	--	8	148	18.5	Combined Ash	None	--
1723	J.R Whiting	579	SI	Pond 2	--	--	7	135	19.28571429	Combined Ash	None	--
1723	J.R Whiting	580	SI	Pond 6	--	--	32	1054	32.9375	Combined Ash	None	--
1723	J.R Whiting	965	LF	--	--	--	11.87	--	--	Combined Ash	--	Excluded
1723	J.R Whiting	1000	LF	--	--	--	5.44	--	--	Combined Ash	--	Excluded
710	Jack McDonough	360	SI	Ash Pond 4	--	--	41	1996	48.68292683	Combined Ash	None	--
710	Jack McDonough	361	SI	Ash Pond 3	--	--	23	642	27.91304348	Combined Ash	None	--
710	Jack McDonough	362	SI	Ash Pond 1	--	--	25	546	21.84	Combined Ash	None	Excluded
710	Jack McDonough	363	SI	Ash Pond 2	--	--	6	118	19.66666667	Combined Ash	None	--
710	Jack McDonough	968	LF	--	--	--	--	--	--	Combined Ash	--	--
2049	Jack Watson	769	LF	Dry Ash Monofill	30.43333333	-89.02611111	--	--	--	Combined Ash	Yes	--
2049	Jack Watson	595	SI	Ash Pond	--	--	102	317	3.107843137	Combined Ash	None	--
1830	James De Young	1333	SI	Ash Settling Ponds	42.79388889	-86.11361111	1.49219467	6.014692378	4.030769231	Combined Ash	None	--
1830	James De Young	770	LF	Zeeland Township Landfill	42.78944444	-85.91888889	--	--	--	Combined Ash	None	--
6002	James H. Miller Jr.	16	SI	Ash Pond (NID #1101)	--	--	341	13606	39.90029326	Combined Ash	--	--
2161	James River Power Station	771	LF	Ash Landfill	37.10277778	-93.26805556	17	163.0165289	9.589207584	Combined Ash	Composite	--
2161	James River Power Station	619	SI	Pond	--	--	--	--	--	Combined Ash	--	--
2187	JE Corette Plant	764	LF	Fly Ash Landfill	45.78	-108.4825	--	--	--	Combined Ash	None	Excluded
2187	JE Corette Plant	1249	SI	Bottom Ash Pond #1	45.78194444	-108.4811111	2.48	--	--	Combined Ash	None	--
2187	JE Corette Plant	1250	SI	Bottom Ash Pond #2	45.78305556	-108.4808333	2.48	--	--	Combined Ash	None	--
3319	Jefferies	117	SI	Ash Pond B	33.31872222	-79.35136111	63	245	3.888888889	Combined Ash	None	--
3319	Jefferies	118	SI	Ash Pond A	33.325525	-79.34736111	88	982	11.15909091	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6068	Jeffrey Energy Center	41	SI	Bottom Ash Pond Dam	39.28223333	-96.14759167	72	550	7.638888889	Combined Ash	None	--
6068	Jeffrey Energy Center	42	SI	Bottom Ash Lake Dam	39.24375	-96.14678611	120	3000	25	Combined Ash	None	--
6068	Jeffrey Energy Center	772	LF	Fly Ash Landfill	39.28722222	-96.14333333	--	--	--	Combined Ash	None	--
6068	Jeffrey Energy Center	773	LF	Gypsum Landfill	39.27916667	-96.13916667	--	--	--	Combined Ash	None	--
6068	Jeffrey Energy Center	43	SI	Bottom Ash Settling Pond	39.2667	-96.13587778	53	988	18.64150943	Combined Ash	--	--
8066	Jim Bridger Plant Units 1-4	244	SI	FGD Pond #1	41.75380556	-108.8074444	93	1340	14.40860215	Combined Ash	Clay	Excluded
8066	Jim Bridger Plant Units 1-4	774	LF	Landfill	41.77012778	-108.7938111	180.5	9899.051963	54.84239315	Combined Ash	None	--
8066	Jim Bridger Plant Units 1-4	245	SI	FGD Pond #2	41.75688889	-108.7879167	392	11534	29.42346939	Combined Ash	None	--
3935	John E. Amos	742	LF	Quarrier Landfill	38.509045	-81.868582	200	8677.68595	43.38842975	Combined Ash	Yes	--
3935	John E. Amos	740	LF	John E Amos FGD Landfill	38.485988	-81.856277	--	--	--	Combined Ash	Yes	--
3935	John E. Amos	153	SI	Fly Ash Pond	--	--	175	2687	15.35428571	Combined Ash	None	--
3935	John E. Amos	154	SI	Bottom Ash Complex	--	--	30	220	7.333333333	Combined Ash	None	--
4271	John P. Madgett	990	LF	--	--	--	--	--	--	Combined Ash	--	--
4271	John P. Madgett	991	LF	--	--	--	--	--	--	Combined Ash	--	Excluded
3405	John Sevier	763	LF	Dry Fly Ash Stack	36.372825	-82.974115	90	1206.148804	13.40165338	Combined Ash	Composite	--
3405	John Sevier	131	SI	Dry Ash Stack	--	--	84	2355	28.03571429	Combined Ash	--	--
3405	John Sevier	132	SI	Bottom Ash Pond	--	--	41	744	18.14634146	Combined Ash	--	--
3406	Johnsonville	732	LF	DuPont Dredge Cell	36.03440278	-87.97888889	20.2	514.4628099	25.46845594	Combined Ash	None	--
3406	Johnsonville	733	LF	South Rail Loop	36.02591667	-87.9775	22	814	37	Combined Ash	Clay	Excluded
3406	Johnsonville	133	SI	Ash Disposal Area 2	--	--	87	2702	31.05747126	Combined Ash	--	--
3406	Johnsonville	291	SI	DuPont Road Dredge Cell	--	--	22	--	--	--	None	--
384	Joliet 29	309	SI	EPRI 1	--	--	63.1	627.2727273	9.940930702	Ash & Coal Refuse	--	Excluded
384	Joliet 29	1098	LF	--	--	--	--	--	--	Combined Ash	--	--
874	Joliet 9	1328	SI	Lower Quarry	41.49416667	-88.10694444	1.60491276	27.28351699	17	Combined Ash	None	--
874	Joliet 9	1327	SI	Upper Quarry	41.49472222	-88.10638889	42.2038567	2887.066116	68.40763708	Combined Ash	None	--
887	Joppa Steam	390	SI	Ash Pond	37.21527778	-88.85	103	3833	37.21359223	Ash & Coal Refuse	None	--
887	Joppa Steam	734	LF	-999	--	--	--	--	--	Combined Ash	Yes	--
3947	Kammer	159	SI	Boiler Slag Pond	--	--	2	22	11	Combined Ash	--	--
3936	Kanawha River	155	SI	Bottom Ash Complex	--	--	6	116	19.33333333	Combined Ash	--	--
1381	Kenneth C Coleman	553	SI	Active Ash Pond A	37.96666667	-86.79580556	23	1180	51.30434783	Combined Ash	None	--
1381	Kenneth C Coleman	555	SI	Inactive Ash Pond C	37.95661111	-86.79488889	19.5	--	--	Combined Ash	None	--
1381	Kenneth C Coleman	554	SI	New Ash Pond	--	--	64	2417	37.765625	Combined Ash	--	--
3136	Keystone	1307	SI	Bottom Ash Settling Pond (C)	40.864258	-79.499139	0.73415978	4.296740129	5.852595372	Combined Ash	Clay	--
3136	Keystone	1306	SI	Bottom Ash Settling Pond (B)	40.864847	-79.497442	0.73415978	4.296740129	5.852595372	Combined Ash	Clay	--
3136	Keystone	1305	SI	Bottom Ash Settling Pond (A)	40.864306	-79.495056	0.73415978	3.837603306	5.227204503	Combined Ash	Clay	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
3136	Keystone	1301	SI	Low Volume Waste Inlet Pond (A)	40.76202222	-79.46743056	7.508	--	--	Combined Ash	Yes	Excluded
3136	Keystone	1302	SI	Low Volume Waste Inlet Pond (B)	40.761903	-79.466419	7.508	--	--	Combined Ash	Yes	Excluded
3136	Keystone	1303	SI	Low Volume Waste Outlet Pond (A)	40.765825	-79.465603	7.508	--	--	Combined Ash	Yes	Excluded
3136	Keystone	1304	SI	Low Volume Waste Outlet Pond (B)	40.766278	-79.465044	7.508	--	--	FGD Waste	Yes	Excluded
3136	Keystone	736	LF	Original Ash Site	40.66025	-79.35361111	--	--	--	Combined Ash	None	Excluded
3136	Keystone	1297	SI	Bottom Ash Thermal Pond	40.66408056	-79.351125	7.11662075	128.5583104	18.06451613	Combined Ash	Composite	--
3136	Keystone	1300	SI	East Valley Ash Site Storm Water Pond (B)	40.66461944	-79.34950556	7.508	--	--	Combined Ash	Yes	--
3136	Keystone	1299	SI	East Valley Ash Site Storm Water Pond (A)	40.66524167	-79.34615278	7.508	--	--	Combined Ash	Yes	--
3136	Keystone	1298	SI	West Valley Ash Site Contact Stormwater / Leachate Pond	40.66516944	-79.34444167	7.508	--	--	Combined Ash	Yes	Excluded
3136	Keystone	1151	LF	West Valley Ash Site	40.67577778	-79.33927778	--	--	--	Combined Ash	Yes	--
3136	Keystone	1152	LF	East Valley Ash Site	40.67580556	-79.33494444	155	14047.38843	90.62831245	Combined Ash	Yes	--
6031	Killen Station	32	SI	Bottom Ash Pond	38.689341	-83.471246	39	1903	48.79487179	Combined Ash	--	--
6031	Killen Station	31	SI	Fly Ash Pond	38.683126	-83.467549	191	11004	57.61256545	Combined Ash	--	--
876	Kincaid Generation LLC	388	SI	Slag Field	39.59563889	-89.49238889	178	3560	20	Combined Ash	None	--
876	Kincaid Generation LLC	969	LF	--	--	--	--	--	--	Combined Ash	--	--
3407	Kingston	134	SI	Stilling Pond	--	--	29	290	10	Combined Ash	--	--
3407	Kingston	135	SI	Main Ash Pond	--	--	92	8907	96.81521739	Combined Ash	--	--
733	Kraft	1150	LF	Grumman Road Dry Ash Monofill	32.14027778	-81.18361111	--	--	--	Combined Ash	None	--
733	Kraft	375	SI	Ash Pond	--	--	8	41	5.125	Ash & Coal Refuse	--	--
2876	Kyger Creek	738	LF	Type III landfill	38.92361111	-82.16472222	--	--	--	Combined Ash	Yes	--
2876	Kyger Creek	716	SI	Bottom Ash Pond	38.91027778	-82.13277778	34	1435	42.20588235	Combined Ash	None	--
2876	Kyger Creek	717	SI	South Fly Ash Pond	38.91888889	-82.13055556	66	2500	37.87878788	Combined Ash	None	--
2713	L.V. Sutton Electric Plant	665	SI	1971 Pond	34.29591944	-77.9899	53	921	17.37735849	Combined Ash	None	--
2713	L.V. Sutton Electric Plant	666	SI	1984 Pond	34.29224722	-77.98971389	82	1364	16.63414634	Combined Ash	Clay	--
1241	La Cygne	739	LF	Utility Waste Landfill	38.35722222	-94.62777778	--	--	--	Combined Ash	Yes	--
1241	La Cygne	513	SI	Scrubber Sludge Ponds	--	--	483	9298	19.2505176	Combined Ash	Clay	--
1241	La Cygne	514	SI	Bottom Ash Settling Pond	--	--	2	12	6	Combined Ash	Clay	--
2103	Labadie	607	SI	Bottom Ash Pond	--	--	154	12000	77.92207792	Combined Ash	None	--
2103	Labadie	608	SI	Fly Ash Pond	--	--	79	1900	24.05063291	Combined Ash	Composite	--
2098	Lake Road	752	LF	Fly Ash Landfill	39.71777778	-94.88666667	9.7	80.34894399	8.283396287	Combined Ash	Clay	Excluded
2098	Lake Road	605	SI	Slag/Coal Pile Run-off Pond	39.72277778	-94.87861111	1.8	7	3.888888889	Combined Ash	None	Excluded
2098	Lake Road	606	SI	Settling Pond	--	--	1	5	5	Combined Ash	--	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
2838	Lake Shore	1270	SI	Combined Treatment Basin	41.53333333	-81.64166667	0.50505051	2.525252525	5	Combined Ash	None	--
964	Lakeside	400	SI	Lakeside Ash Pond	39.76305556	-89.59722222	37	680	18.37837838	Combined Ash	None	Excluded
1047	Lansing	730	LF	Closed Ash Disposal Facility	43.329578	-91.16616	--	--	--	Combined Ash	None	Excluded
1047	Lansing	741	LF	Active Ash Disposal Facility	43.328369	-91.163119	--	--	--	Combined Ash	None	--
1047	Lansing	477	SI	Lower Ash Pond	--	--	--	2	--	Combined Ash	None	--
1047	Lansing	478	SI	Main Ash Pond	--	--	15	294	19.6	Combined Ash	None	--
643	Lansing Smith	743	LF	Ash Landfill	30.26802778	-85.68436111	--	--	--	Combined Ash	Yes	--
643	Lansing Smith	341	SI	Ash Pond	--	--	172	2611	15.18023256	Combined Ash	None	--
6204	Laramie River Station	744	LF	Landfill	42.11333333	-104.9022222	--	--	--	Combined Ash	None	--
6204	Laramie River Station	188	SI	Bottom Ash Ponds 1 & 2 (BAP1 & BAP2)	42.108251	-104.89733	105	2111	20.1047619	Combined Ash	Composite	--
6204	Laramie River Station	189	SI	Emergency Holding Pond	42.117535	-104.882691	54.1	916	16.93160813	FGD Waste	Composite	--
1891	Laskin Energy Center	588	SI	Cells A, B, C & D (retired)	--	--	73	730	10	Combined Ash	None	Excluded
1891	Laskin Energy Center	589	SI	Cell E	--	--	23	174	7.565217391	Combined Ash	Composite	--
1250	Lawrence Energy Center	745	LF	Landfill 600	39.005	-95.27333333	825	21260.3306	25.7700977	Combined Ash	None	--
1250	Lawrence Energy Center	747	LF	Landfill 0333	39.00611111	-95.26277778	30	619.834711	20.66115703	Combined Ash	None	Excluded
1250	Lawrence Energy Center	1149	LF	Landfill 0847	39.004994	-95.259549	22	842.975207	38.31705486	Combined Ash	Yes	--
1250	Lawrence Energy Center	515	SI	Area 4	--	--	14	185	13.21428571	Combined Ash	None	--
1250	Lawrence Energy Center	516	SI	Area 1	--	--	5	71	14.2	Combined Ash	None	--
1250	Lawrence Energy Center	517	SI	Area 3	--	--	18	273	15.16666667	Combined Ash	Clay	--
1250	Lawrence Energy Center	518	SI	Area 2	--	--	10	155	15.5	Combined Ash	None	--
2817	Leland Olds	749	LF	SP-143	47.24605833	-101.3635333	20	283.884298	14.1942149	Combined Ash	Yes	--
2817	Leland Olds	683	SI	Ash Pond #1	47.28069444	-101.3181944	27	744	27.55555556	Combined Ash	None	--
2817	Leland Olds	684	SI	Ash Pond #2	47.28069444	-101.3181944	38	924	24.31578947	Combined Ash	None	--
2817	Leland Olds	685	SI	Ash Pond #3	47.28069444	-101.3181944	3	12	4	Combined Ash	None	--
2817	Leland Olds	748	LF	SP-038	47.27644722	-101.3107889	37	1115.70248	30.15412108	Combined Ash	None	--
6089	Lewis & Clark	750	LF	Savage Mine	47.47905556	-104.4383611	--	--	--	Combined Ash	None	--
6089	Lewis & Clark	1374	SI	West Scrubber Pond Cell 1	47.68016667	-104.1579167	1.33149679	11.47842057	8.620689655	Combined Ash	Clay	--
6089	Lewis & Clark	1375	SI	West Scrubber Pond Cell 2	47.67975	-104.1572222	0.42699725	2.089072544	4.892473118	Combined Ash	Clay	--
6089	Lewis & Clark	1377	SI	East Scrubber Pond Cell 2	47.67975	-104.1572222	0.42699725	2.089072544	4.892473118	Combined Ash	Clay	--
6089	Lewis & Clark	1376	SI	East Scrubber Pond Cell 1	47.67936111	-104.1563889	1.33149679	11.47842057	8.620689655	Combined Ash	Clay	--
6089	Lewis & Clark	751	LF	Scrubber Sludge	47.68258333	-104.1521111	--	--	--	Combined Ash	None	Excluded
6089	Lewis & Clark	1378	SI	Ash Pond 1	47.68144444	-104.1517222	15.1905418	182.2773186	11.9993955	Combined Ash	Composite	--
6089	Lewis & Clark	786	LF	-999	--	--	--	--	--	Combined Ash	None	Excluded
298	Limestone	300	SI	ST 18	31.41888889	-96.25638611	--	--	--	--	Clay	Excluded
298	Limestone	308	SI	DSDA Unit No. 003	31.41888889	-96.25638611	20.84	--	--	Combined Ash	Clay	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
298	Limestone	821	LF	Class II Landfill	31.43277778	-96.24138889	--	--	--	Combined Ash	Yes	--
298	Limestone	301	SI	FGD Emergency Pond E	--	--	1	31	31	FGD Waste	--	--
298	Limestone	302	SI	ST-10 Pump	--	--	--	1	--	Combined Ash	--	Excluded
298	Limestone	303	SI	ST-9 Pump	--	--	--	--	--	Combined Ash	--	Excluded
298	Limestone	304	SI	Bottom Ash Cooling Pond	--	--	3	50	16.66666667	Combined Ash	--	--
298	Limestone	305	SI	Dewatered Sludge Disposal Area	--	--	3	25	8.333333333	FGD Waste	--	Excluded
298	Limestone	306	SI	Stormwater Pond A	--	--	1	14	14	--	--	Excluded
298	Limestone	307	SI	Stormwater Pond B	--	--	1	14	14	--	--	Excluded
2240	Lon Wright	765	LF	Ash Monofill	--	--	--	105.3719008	--	Combined Ash	Yes	--
6664	Louisa	801	LF	CCR Landfill	41.33361111	-91.09555556	26	79.2271809	3.047199265	Combined Ash	None	--
6664	Louisa	223	SI	Bottom Ash Pond	41.48055556	-90.81611111	42	--	--	Ash & Coal Refuse	Clay	--
6664	Louisa	222	SI	Louisa Surface Impoundment	--	--	42	242	5.761904762	Combined Ash	Clay	--
976	Marion Generating Station	402	SI	Pond A-1	37.622483	-88.959618	32	--	--	Combined Ash	--	--
976	Marion Generating Station	401	SI	Fly Ash Disposal Pond	37.623085	-88.958022	45	--	--	Combined Ash	--	--
976	Marion Generating Station	411	SI	South Fly Ash Pond	37.614852	-88.957672	103	--	--	Combined Ash	--	--
976	Marion Generating Station	410	SI	Pond 4	37.622813	-88.955435	55	--	--	Combined Ash	--	--
976	Marion Generating Station	412	SI	Pond 2	37.623314	-88.953918	15	--	--	Combined Ash	--	--
976	Marion Generating Station	405	SI	Pond 1	37.62245	-88.953884	9	--	--	Combined Ash	--	--
976	Marion Generating Station	802	LF	1990555005	37.62472222	-88.95288889	143	1983.47107	13.87042706	Combined Ash	None	--
976	Marion Generating Station	409	SI	Pond S-3	37.62583	-88.952365	20	--	--	Combined Ash	--	--
976	Marion Generating Station	406	SI	Pond S-1	37.623553	-88.95221	71	--	--	Combined Ash	--	--
976	Marion Generating Station	408	SI	Pond S-2	37.625837	-88.951926	25	--	--	Combined Ash	--	--
976	Marion Generating Station	404	SI	Pond S-6	37.62782	-88.951541	16	--	--	Combined Ash	--	--
976	Marion Generating Station	403	SI	Pond 3	37.624879	-88.95028	20	--	--	Combined Ash	--	--
976	Marion Generating Station	407	SI	Pond 3A	37.624139	-88.949876	20	--	--	Combined Ash	--	--
2727	Marshall	803	LF	FGD Residue Landfill	35.60361111	-80.97833333	18	145.3512397	8.075068871	Combined Ash	Composite	--
2727	Marshall	804	LF	Ash Landfill	35.61611111	-80.96861111	58	3595.041322	61.98347107	Combined Ash	None	Excluded
2727	Marshall	680	SI	Active Ash Pond	35.605944	-80.959917	1188	6885	5.795454545	Combined Ash	None	--
492	Martin Drake	1254	SI	Drake Equalization Basin	38.82385	-104.8330528	0.03859045	0.491046832	12.72456871	Combined Ash	None	--
492	Martin Drake	1253	SI	Drake W. Bottom Ash Basin	38.82361111	-104.833025	0.0530303	0.265151515	5	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
492	Martin Drake	1252	SI	Drake E. Bottom Ash Basin	38.82361944	-104.8328833	0.05050505	0.265151515	5.25	Combined Ash	None	--
492	Martin Drake	1251	SI	Drake Cooling Tower 4	38.82458333	-104.8326583	0.07889118	0.394444444	4.999854503	Combined Ash	None	--
492	Martin Drake	805	LF	-999	--	--	--	--	--	Combined Ash	None	--
6146	Martin Lake	822	LF	PDP #2	32.26124167	-94.58276111	--	--	--	Combined Ash	Yes	Excluded
6146	Martin Lake	810	LF	PDP #3	32.25926944	-94.58261944	--	--	--	Combined Ash	Yes	Excluded
6146	Martin Lake	808	LF	PDP #1	32.26230556	-94.5823	--	--	--	Combined Ash	Yes	Excluded
6146	Martin Lake	1226	SI	Permanent Disposal Pond #4	32.25824444	-94.57884444	15.339876	347.107438	22.62778638	Combined Ash	Composite	--
6146	Martin Lake	1225	SI	East Bottom Ash Pond	32.26187778	-94.56365278	14.5798898	306.177686	21	Combined Ash	None	--
6146	Martin Lake	1224	SI	West Bottom Ash Pond	32.26071667	-94.56348889	14.5798898	306.177686	21	Combined Ash	Composite	--
6146	Martin Lake	1223	SI	ESP	32.26076944	-94.56153889	12.0999082	211.0130854	17.43923031	FGD Waste	Composite	--
6146	Martin Lake	807	LF	Caney Branch	32.243539	-94.540761	--	--	--	Combined Ash	Yes	Excluded
6146	Martin Lake	806	LF	A-1 ash disposal	32.22916944	-94.52399167	290	18595.04132	64.12083214	Combined Ash	Yes	--
6250	Mayo Electric Generating Facility	204	SI	1982 Pond	36.5378	-78.8931	140	4100	29.28571429	Combined Ash	None	--
6124	McIntosh	87	SI	Ash Pond	--	--	27	342	12.66666667	Ash & Coal Refuse	--	--
3287	McMeekin	1155	LF	Ash Landfill	34.04633333	-81.21327778	--	--	--	Combined Ash	None	--
2104	Meramec	609	SI	Bottom Ash Pond (3)	--	--	14	280	20	Combined Ash	None	--
2104	Meramec	610	SI	Fly Ash Pond #494 (Pond 7), Fly Ash Pond #495 (Pond 8), Fly Ash Pond #490 (Pond 9), and Fly Ash Pond #491 (Pond 10)	--	--	--	--	--	Combined Ash	None	Excluded
2104	Meramec	611	SI	Old Fly Ash Pond	--	--	18	300	16.66666667	Combined Ash	Composite	--
2104	Meramec	612	SI	New Fly Ash Pond	--	--	14	230	16.42857143	Combined Ash	Composite	--
2104	Meramec	613	SI	Retention Pond	--	--	1	10	10	Combined Ash	None	Excluded
864	Meredosia	385	SI	Fly Ash Pond	--	--	186	700	3.76344086	Combined Ash	None	Excluded
864	Meredosia	386	SI	Bottom Ash Pond	--	--	34	186	5.470588235	Combined Ash	None	Excluded
6213	Merom	812	LF	Area 2	39.06638889	-87.50027778	65	5268.595041	81.05530833	Combined Ash	Yes	--
6213	Merom	813	LF	Area 1	39.07472222	-87.50027778	--	--	--	Combined Ash	None	Excluded
6213	Merom	190	SI	All	--	--	--	--	--	Combined Ash	--	Excluded
2364	Merrimack Station	754	LF	Coal Ash Landfill	43.13497222	-71.4765	--	--	--	Combined Ash	Yes	--
2364	Merrimack Station	1319	SI	WWT #3 Slag Sluice Settling Area	43.14125	-71.47186111	0.64538567	0.529476584	0.820403372	Combined Ash	None	--
2364	Merrimack Station	1320	SI	Waste Treatment #4 Slag Settling Pond	43.13983333	-71.47016667	1.73576676	10.0674472	5.8	Combined Ash	None	--
2832	Miami Fort	700	SI	Ash Basin B	39.11194444	-84.81277778	20	515	25.75	Ash & Coal Refuse	None	--
2832	Miami Fort	699	SI	Ash Basin A	39.1125	-84.81	20	803	40.15	Ash & Coal Refuse	None	--
2832	Miami Fort	1121	LF	Miamiview Road Ash Landfill	39.15388889	-84.78888889	--	--	--	Combined Ash	Yes	Excluded
2832	Miami Fort	1109	LF	Lawrenceberg Road Ash Landfill	--	--	80	2479.338843	30.99173554	Combined Ash	Yes	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
997	Michigan City	451	SI	Primary 2	41.716443	-86.915613	2.6	44	16.92307692	Combined Ash	--	--
997	Michigan City	450	SI	Secondary 2	41.71739	-86.914924	0.2	3	15	Combined Ash	--	--
997	Michigan City	453	SI	Primary 1	41.71814	-86.914534	2.2	36	16.36363636	Combined Ash	--	--
997	Michigan City	452	SI	Secondary 1	41.718947	-86.913976	0.2	3	15	Combined Ash	--	--
997	Michigan City	448	SI	Final Settling Pond	41.720692	-86.913242	5.7	85	14.9122807	Combined Ash	--	--
997	Michigan City	449	SI	Bottom Ash Area	41.719552	-86.912839	0.7	1	1.428571429	Combined Ash	--	--
1364	Mill Creek	543	SI	Ash Pond	33.204167	-85.909242	43	--	--	Combined Ash	None	--
1364	Mill Creek	817	LF	Mill Creek Special Waste Landfill-Site A	38.04222222	-85.90888889	--	--	--	Combined Ash	None	--
1364	Mill Creek	819	LF	Mill Creek Special Waste Landfill-Site B	38.05083333	-85.90555556	--	--	--	Combined Ash	None	--
1364	Mill Creek	818	LF	Mill Creek Special Waste Landfill-Site C	38.04444444	-85.90472222	--	--	--	Combined Ash	Yes	--
1364	Mill Creek	544	SI	Emergency Pond	--	--	1	--	--	FGD Waste	--	--
1364	Mill Creek	545	SI	Dead Storage Pond	--	--	2	--	--	FGD Waste	--	--
1364	Mill Creek	546	SI	Construction Run Off Pond	--	--	3	--	--	FGD Waste	--	--
1364	Mill Creek	547	SI	Clearwell Pond	--	--	2	--	--	FGD Waste	--	--
2823	Milton R. Young Station	777	LF	IT-197	47.07111111	-101.3134528	--	--	--	Combined Ash	None	Excluded
2823	Milton R. Young Station	788	LF	IT-205 Section 3	47.06308333	-101.3125278	--	--	--	Combined Ash	None	--
2823	Milton R. Young Station	809	LF	IT-068	47.07941389	-101.2864889	--	--	--	Combined Ash	None	Excluded
2823	Milton R. Young Station	811	LF	Horseshoe Pit	47.07838889	-101.2733833	--	--	--	Combined Ash	None	Excluded
2823	Milton R. Young Station	820	LF	Cell 1 30 Year Ponds	47.05989	-101.22055	80	4028.92562	50.36157025	Combined Ash	Yes	--
2823	Milton R. Young Station	686	SI	Cell 1	--	--	--	--	--	Combined Ash	Clay	--
2823	Milton R. Young Station	687	SI	Unit 1 Alternative Bottom Ash Pond	--	--	2	25	12.5	Combined Ash	Clay	--
2823	Milton R. Young Station	688	SI	30 Year Ponds (Cell 2)	--	--	27	1252	46.37037037	Combined Ash	Clay	--
2823	Milton R. Young Station	689	SI	Horseshoe Pit Evaporation Pond	--	--	4	34	8.5	Combined Ash	--	--
2171	Missouri City	1257	SI	Ash Pond	39.23212222	-94.30763611	0.331	--	--	Combined Ash	None	--
3948	Mitchell	160	SI	Bottom Ash Complex	39.825	-80.815556	10.2	262	25.68627451	Combined Ash	Composite	--
3948	Mitchell	161	SI	Fly Ash Pond	39.823611	-80.815	71	13500	190.1408451	Ash & Coal Refuse	--	--
727	Mitchell	364	SI	Ash Pond A	--	--	4	61	15.25	Combined Ash	None	--
727	Mitchell	365	SI	Ash Pond 2	--	--	43	644	14.97674419	Combined Ash	None	--
727	Mitchell	366	SI	Ash Pond 1	--	--	44	659	14.97727273	Combined Ash	None	--
3181	Mitchell Power Station	779	LF	Inactive coal combustion byproduct disposal site	40.226871	-79.978892	--	--	--	Combined Ash	None	Excluded
3181	Mitchell Power Station	778	LF	Active Coal Combustion byproduct disposal site	40.22611111	-79.97888889	70	3471.07438	49.58677686	Combined Ash	None	--
1048	ML Kapp	479	SI	Main Ash Secondary Settling Pond	--	--	2	1	0.5	Combined Ash	None	--
1048	ML Kapp	480	SI	Emergency Ash Primary Settling Pond	--	--	1	3	3	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
1048	ML Kapp	481	SI	Emergency Ash Secondary Settling Pond	--	--	1	2	2	Combined Ash	None	--
1048	ML Kapp	482	SI	Main Ash Primary Settling Pond	--	--	7	4	0.571428571	Combined Ash	None	--
1733	Monroe Power Plant	582	SI	Fly Ash Basin	41.88416667	-83.37527778	410.576	18595	45.29003157	Combined Ash	none	--
1733	Monroe Power Plant	583	SI	Bottom Ash Basin	--	--	100	620	6.2	Combined Ash	--	--
6147	Monticello	781	LF	G Area	33.14444444	-95.03805556	--	--	--	Combined Ash	Yes	--
6147	Monticello	1204	SI	West Decant Basin(s)	33.08489722	-95.03458056	0.88699311	15.96434803	17.99827732	Combined Ash	Composite	Excluded
6147	Monticello	1203	SI	East Decant Basin(s)	33.08515	-95.03393056	0.88705234	15.96434803	17.99707557	Combined Ash	None	Excluded
6147	Monticello	1205	SI	Bottom Ash Pond(s)	33.08775556	-95.03381111	20.2298439	293.6139118	14.51389904	Combined Ash	None	--
6147	Monticello	1206	SI	New Operating Scrubber Pond 2	33.08592778	-95.03345556	1	12.00325987	12.00325987	FGD Waste	Composite	Excluded
6147	Monticello	782	LF	A Area	33.09211111	-95.02919444	--	--	--	Combined Ash	None	Excluded
6147	Monticello	780	LF	B Area	--	--	--	--	--	Combined Ash	None	--
2080	Montrose	783	LF	Utility Waste Landfill	38.31138889	-93.94388889	--	--	--	Combined Ash	Yes	--
2080	Montrose	601	SI	South Ash Pond	38.31053889	-93.93953611	2.7	--	--	Combined Ash	--	--
2080	Montrose	600	SI	North Ash Pond	38.31093889	-93.93916667	1.65	--	--	Combined Ash	--	--
2080	Montrose	602	SI	Ash Settling Pond	--	--	4	13	3.25	Combined Ash	--	--
1573	Morgantown Generating Plant	1108	LF	Controlled Storage	38.36138889	-76.96944444	212	4772.727273	22.51286449	Combined Ash	Yes	--
1573	Morgantown Generating Plant	785	LF	Faulkner Ash Site	38.439064	-76.961462	--	--	--	Combined Ash	Yes	--
1606	Mount Tom	563	SI	Equalization Tank	42.278607	-72.60317	0.014	--	--	Combined Ash	--	Excluded
1606	Mount Tom	798	LF	Former Bottom Ash Basin "A"	42.276003	-72.602229	--	--	--	Combined Ash	None	Excluded
1606	Mount Tom	564	SI	Special Basin	--	--	1	7	7	Combined Ash	--	Excluded
1606	Mount Tom	565	SI	Bottom Ash Basin	--	--	2	18	9	Combined Ash	--	Excluded
6264	Mountaineer	787	LF	Little Broad Run Landfill	38.94666667	-81.95166667	325	10289.2562	31.65924984	Combined Ash	Composite	--
6264	Mountaineer	211	SI	Bottom Ash Complex	38.97	-81.936667	29	508	17.51724138	Combined Ash	Clay	--
3954	Mt. Storm	1112	LF	Closed Ash Mtn	39.19111111	-79.29027778	54	--	--	Combined Ash	Clay	Excluded
3954	Mt. Storm	1110	LF	Phase B Landfill	39.18555556	-79.28388889	155	656.5656566	4.235907462	Combined Ash	None	--
3954	Mt. Storm	1111	LF	Phase A Landfill (ASH)	39.196095	-79.282034	71	505.0505051	7.113387395	Combined Ash	Clay	--
3954	Mt. Storm	789	LF	Phase A Landfill (FGD)	39.196262	-79.276722	71	491.2764004	6.919385921	Combined Ash	Composite	--
1167	Muscatine #1	792	LF	Coal Combustion Residue Landfill	41.38	-91.20722222	36	1239.669422	34.43526171	Combined Ash	Yes	--
1167	Muscatine #1	1361	SI	coal pile runoff pond	41.38861111	-91.05805556	0.45913682	4.591368228	10	Ash & Coal Refuse	Clay	Excluded
2872	Muskingum River	712	SI	Unit 1-4 Bottom Ash Pond Dam	39.58362778	-81.68921111	5	100	20	Combined Ash	None	--
2872	Muskingum River	714	SI	Middle Fly Ash Pond	39.58166667	-81.68833333	40	1370	34.25	Combined Ash	None	--
2872	Muskingum River	715	SI	Lower Fly Ash Dam	39.58583333	-81.68833333	16	660	41.25	Combined Ash	None	--
2872	Muskingum River	713	SI	Upper Fly Ash Pond	39.575	-81.685	116.8	5250	44.94863014	Combined Ash	None	--
2952	Muskogee	1174	SI	T01	35.76555556	-95.29222222	23.14	--	--	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
2952	Muskogee	1173	SI	F03	35.75361111	-95.29027778	0.44977043	--	--	Combined Ash	None	--
2952	Muskogee	1172	SI	F01	35.76388889	-95.28111111	17.5298439	--	--	Combined Ash	Clay	--
4162	Naughton Plant	15	SI	FGD Pond #1	41.767492	-110.595608	40	1038	25.95	Combined Ash	Composite	--
4162	Naughton Plant	14	SI	South Ash Pond	41.748486	-110.594661	206	4057	19.69417476	Combined Ash	None	--
4162	Naughton Plant	13	SI	North Ash Pond	41.761525	-110.588586	151.5	3370	22.24422442	Combined Ash	None	--
4162	Naughton Plant	12	SI	FGD Pond #2	41.766639	-110.586917	40	671	16.775	Combined Ash	Composite	--
4162	Naughton Plant	980	LF	--	--	--	--	--	--	Combined Ash	--	--
4941	Navajo Generating Station	793	LF	Ash Disposal Area	36.90861111	-111.3569444	--	--	--	Combined Ash	None	--
6064	Nearman Creek	795	LF	Fly Ash Dry Deposition Area	39.10694444	-94.71773889	--	--	--	Combined Ash	None	--
6064	Nearman Creek	794	LF	Bottom Ash Pond	39.174112	-94.692221	--	--	--	Combined Ash	Yes	--
6064	Nearman Creek	39	SI	N/A	--	--	7	124	17.71428571	Combined Ash	Clay	--
6096	Nebraska City	797	LF	NC2 Landfill Cell 1	40.62561111	-95.78605556	--	--	--	Combined Ash	Yes	--
6096	Nebraska City	943	LF	NC1 landfill	40.61922222	-95.78602778	17	371.9008265	21.8765192	Combined Ash	None	--
6096	Nebraska City	1271	SI	Bottom Ash Pond 1	40.625103	-95.774172	11.359045	96.7637741	8.518654002	Combined Ash	None	--
6096	Nebraska City	1272	SI	Bottom Ash Pond 2	40.625103	-95.774172	12.2520661	111.1042241	9.06820311	Combined Ash	None	--
4054	Nelson Dewey	170	SI	WPDES Pond	42.725581	-91.013559	4	26	6.5	Combined Ash	--	Excluded
4054	Nelson Dewey	893	LF	Ash Disposal Facility	42.72680556	-91.01277778	17.8	381.818182	21.45045966	Combined Ash	None	Excluded
4054	Nelson Dewey	171	SI	Slag Pond	42.725413	-91.008642	5	20	4	Combined Ash	--	--
3138	New Castle Plant	1350	SI	South Bottom Ash Pond	40.94	-80.37138889	0.72084481	5.766758494	8	Combined Ash	None	--
3138	New Castle Plant	1349	SI	North Bottom Ash Pond	40.941817	-80.368153	2.0087236	16.0697888	8	Combined Ash	None	--
3138	New Castle Plant	941	LF	Fly Ash Landfill	40.94555556	-80.36805556	57	3548.347107	62.25170364	Combined Ash	Composite	--
2167	New Madrid	1032	LF	UCW landfill	36.48964306	-89.58599806	--	--	--	Combined Ash	Yes	--
2167	New Madrid	622	SI	Ash Pond 1	36.50611111	-89.57388889	31	570	18.38709677	Combined Ash	None	--
2167	New Madrid	621	SI	Slag Pond 2	36.51444444	-89.55944444	4	14	3.5	Combined Ash	None	--
2167	New Madrid	620	SI	Ash Pond 2	36.50166667	-89.5575	79	1351	17.10126582	Combined Ash	Composite	--
2167	New Madrid	623	SI	Slag Pond 1	36.5075	-89.55666667	62	1137	18.33870968	Combined Ash	None	--
6017	Newton	1034	LF	Landfill Phase I	38.93305556	-88.295	--	--	--	Combined Ash	None	Excluded
6017	Newton	1033	LF	Landfill Phase II	38.93083333	-88.29194444	309	--	--	Combined Ash	Yes	--
6017	Newton	21	SI	Secondary Ash Pond	38.92195556	-88.29063889	9	83	9.222222222	Combined Ash	None	--
6017	Newton	22	SI	Primary Ash Pond	38.92836667	-88.28351389	400	9250	23.125	Combined Ash	None	--
2291	North Omaha	1113	LF	North Omaha Ash Landfill	41.33294444	-95.95097778	13	65.08264463	5.006357279	Combined Ash	None	--
2291	North Omaha	1036	LF	North Omaha Ash Landfill closed area	41.32966667	-95.9505	--	--	--	Combined Ash	Yes	Excluded
2291	North Omaha	1222	SI	Coal Pile Runoff pond	41.33008333	-95.94894444	2.298	--	--	Ash & Coal Refuse	None	Excluded
2291	North Omaha	1220	SI	West Ash Pond (IAW-3A)	41.33063889	-95.94569444	15.9894399	14.66023875	0.916870065	Combined Ash	Composite	--
2291	North Omaha	1221	SI	East Ash Pond (IAW-3B)	41.33063889	-95.94569444	11.5909091	10.6359045	0.917607447	Combined Ash	Composite	--
8224	North Valmy	1037	LF	U1, U2 & U3 Ash Landfill	40.89145278	-117.1504278	--	--	--	Combined Ash	None	--
2963	Northeastern	1038	LF	Fly Ash Landfill	36.41583333	-95.69833333	69	1974.291322	28.61291771	Combined Ash	Yes	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
2963	Northeastern	718	SI	Bottom Ash Pond	--	--	69	700	10.14492754	Combined Ash	Clay	--
667	Northside Generating Station	1039	LF	Outdoor pile 1	30.42694444	-81.55666667	--	--	--	Combined Ash	Yes	--
10030	NRG Energy Center Dover	251	SI	Waste Water Pond	--	--	--	--	--	Combined Ash	--	--
527	Nucla	338	SI	Coal/Ash Settling Basin	--	--	--	--	--	Combined Ash	--	--
527	Nucla	964	LF	--	--	--	41.2	929.7520665	22.56679773	Combined Ash	--	--
2848	O H Hutchings	705	SI	West Primary Settling Pond	39.61163056	-84.29494167	7.88	--	--	Combined Ash	None	--
2848	O H Hutchings	703	SI	Secondary Settling Pond	39.613175	-84.29474722	1.75	6	3.428571429	Combined Ash	None	--
2848	O H Hutchings	704	SI	East Primary Settling Pond	39.61177778	-84.29355556	5.4	--	--	Combined Ash	None	--
6180	Oak Grove	1040	LF	Ash Landfill 1	31.17544167	-96.49919167	--	--	--	Combined Ash	Yes	--
6180	Oak Grove	1185	SI	FGD-A	31.18421944	-96.49215278	9.43526171	144.2470156	15.28807786	Combined Ash	Clay	--
6180	Oak Grove	1042	LF	-999	--	--	--	--	--	Combined Ash	None	--
6180	Oak Grove	1054	LF	-999	--	--	--	--	--	Combined Ash	None	--
127	Oklaunion	281	SI	Wastewater Evaporation Pond 6	34.07999722	-99.17916667	58	1044	18	Combined Ash	Clay	--
127	Oklaunion	282	SI	Sludge Pond	--	--	23	565	24.56521739	FGD Waste	--	--
127	Oklaunion	283	SI	Pond #23	--	--	13	333	25.61538462	Combined Ash	--	--
127	Oklaunion	841	LF	--	--	--	--	--	--	Combined Ash	Composite	--
4151	Osage	1044	LF	Historic Ash Dam	43.971173	-104.40813	--	--	--	Combined Ash	None	Excluded
4151	Osage	1031	LF	Old Ash Dam	43.96988889	-104.4077778	--	--	--	Combined Ash	None	Excluded
4151	Osage	1267	SI	West Dam	43.96516667	-104.4068056	45	--	--	Combined Ash	None	Excluded
4151	Osage	1266	SI	East Dam	43.96483333	-104.40625	2.671	--	--	Combined Ash	Clay	Excluded
1831	Otto E. Eckert Station	586	SI	EPRI 5	--	--	151	4462.809917	29.55503257	Combined Ash	--	Excluded
6254	Ottumwa	1045	LF	Ottumwa Midland Landfill	41.07772222	-92.45022222	--	--	--	Combined Ash	Yes	--
6254	Ottumwa	205	SI	Monofill Leachate Retention Pond	--	--	--	1	--	Combined Ash	--	Excluded
6254	Ottumwa	206	SI	Monofill Storm Water Retention Pond	--	--	2	18	9	--	--	Excluded
6254	Ottumwa	207	SI	Main Ash Pond	--	--	18	229	12.72222222	Combined Ash	None	--
6254	Ottumwa	208	SI	Zero Liquid Discharge Pond	--	--	17	319	18.76470588	Combined Ash	None	Excluded
1378	Paradise	548	SI	Fly Ash Extension Area Pond	--	--	203	3935	19.38423645	Combined Ash	--	--
1378	Paradise	549	SI	Scrubber Sludge Complex	--	--	255	532	2.08627451	Combined Ash	--	--
1378	Paradise	550	SI	Slag Areas 2A & 2B	--	--	27	600	22.22222222	Combined Ash	--	Excluded
6248	Pawnee	1046	LF	Pawnee Station Landfill	40.20954167	-103.6840472	--	--	--	Combined Ash	None	--
6248	Pawnee	191	SI	Evaporative Pond C	--	--	11	96	8.727272727	Combined Ash	--	--
6248	Pawnee	192	SI	Intermediate Quality (IQ) Water Pond	--	--	4	48	12	Combined Ash	--	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6248	Pawnee	193	SI	New Bottom Ash Water Recovery Pond	--	--	6	52	8.666666667	Combined Ash	--	--
6248	Pawnee	194	SI	Ash Disposal Facility (ADF)	--	--	34	1349	39.67647059	Combined Ash	--	--
6248	Pawnee	195	SI	Ash Water Recovery Pond	--	--	1	5	5	Combined Ash	--	Excluded
6248	Pawnee	196	SI	Evaporative Pond B	--	--	15	138	9.2	Combined Ash	--	--
6248	Pawnee	197	SI	Bottom Ash Disposal Pond	--	--	13	250	19.23076923	Combined Ash	--	Excluded
6238	Pearl Station	1211	SI	AP	39.44888889	-90.61555556	12.7988981	127.9889807	10	Combined Ash	None	--
3938	Philip Sporn	157	SI	Unit 5 (Fly Ash Pond)	38.97361111	-81.93777778	70.3	1965	27.95163585	Combined Ash	None	--
3938	Philip Sporn	156	SI	Bottom Ash Pond	38.96888889	-81.92888889	9.5	256	26.94736842	Ash & Coal Refuse	None	--
3938	Philip Sporn	979	LF	--	--	--	--	--	--	Combined Ash	--	--
2843	Picway	702	SI	[blank]	39.792655	-83.007777	23	275	11.95652174	--	--	--
7902	Pirkey	236	SI	Scrubber Sludg Landfill Runoff Pond	32.45136111	-94.49844444	12.88	25	1.940993789	FGD Waste	None	Excluded
7902	Pirkey	233	SI	West Bottom Ash Pond	32.46736111	-94.49172222	30.85	188	6.094003241	Combined Ash	None	--
7902	Pirkey	235	SI	Secondary Bottom Ash Pond	32.46538889	-94.48772222	2.65	12	4.528301887	Combined Ash	None	--
7902	Pirkey	237	SI	Surge Pond	32.46297222	-94.48741667	4.7	19	4.042553191	FGD Waste	None	Excluded
7902	Pirkey	234	SI	East Bottom Ash Pond	32.46705556	-94.48675	30.85	188	6.094003241	Combined Ash	None	--
7902	Pirkey	238	SI	Auxilliary Surge Pond	32.46447222	-94.48580556	4.3	64	14.88372093	FGD Waste	None	--
7902	Pirkey	1132	LF	--	--	--	--	--	--	Combined Ash	Composite	--
59	Platte	1047	LF	Ash Disposal Phase II	40.85487778	-98.35371667	--	--	--	Combined Ash	None	--
59	Platte	1048	LF	Ash Disposal Phase I	40.85370833	-98.35303611	--	--	--	Combined Ash	None	Excluded
6170	Pleasant Prairie	1049	LF	Pleasant Prairie	42.56166667	-87.90111111	26	4028.92562	154.9586777	Combined Ash	Yes	--
6004	Pleasants Power Station	1050	LF	McElroy's Run	39.36819	-81.271275	--	--	--	Combined Ash	Yes	--
6004	Pleasants Power Station	17	SI	McElroy's Run Embankment	39.36666667	-81.27083333	219	20000	91.32420091	Combined Ash	None	--
7242	Polk	1051	LF	Slag Pile	27.72611111	-81.99138889	--	--	--	Combined Ash	Yes	--
3113	Portland	1020	LF	Quarry 1	40.87027778	-75.20027778	2.3	4.958448118	2.155847008	Combined Ash	None	Excluded
3113	Portland	1052	LF	Bangor Landfill	40.87194444	-75.19833333	16.6	954.5454545	57.50273823	Combined Ash	Composite	--
3113	Portland	1043	LF	Quarry 2 & 3	40.87027778	-75.19805556	12	25.45454545	2.121212121	Combined Ash	None	Excluded
3113	Portland	1201	SI	West Sedimentation Basin	40.90611111	-75.07777778	0.89990817	3.130257117	3.478418367	Combined Ash	None	--
3113	Portland	1200	SI	East Sedimentation Basin	40.90611111	-75.0775	0.89990817	3.130257117	3.478418367	Combined Ash	None	--
3113	Portland	1199	SI	IWT Sedimentation Basin	40.90638889	-75.0775	1.48	--	--	Combined Ash	Yes	Excluded
3113	Portland	1041	LF	-999	--	--	--	--	--	Combined Ash	None	Excluded
879	Powerton	1228	SI	East Yard Runoff Basin	40.53916667	-89.68027778	8.38	--	--	Combined Ash	None	Excluded
879	Powerton	1231	SI	Metal Cleaning Basin	40.54472222	-89.67777778	1.91000918	16.52892562	8.653846154	Combined Ash	None	Excluded
879	Powerton	1229	SI	Secondary Ash Settling Basin	40.54638889	-89.6775	1.78145087	23.15886134	13	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
879	Powerton	1227	SI	Ash Surge Basin	40.54638889	-89.67638889	8.14049587	113.9669421	14	Combined Ash	None	--
879	Powerton	1230	SI	Ash Bypass Basin	40.54194444	-89.67611111	0.90679522	6.081267218	6.706329114	Combined Ash	None	--
879	Powerton	1233	SI	Limestone Runoff Basin	40.545	-89.675	8.38	--	--	Combined Ash	Yes	Excluded
879	Powerton	1232	SI	41	40.54722222	-89.67416667	12.855831	51.42332415	4	Combined Ash	None	Excluded
3140	PPL Brunner Island	1114	LF	Disposal Area 8	40.08666667	-76.68833333	--	--	--	Combined Ash	Yes	--
3140	PPL Brunner Island	95	SI	Ash Basin No.6	40.086838	-76.688102	70	2600	37.14285714	Combined Ash	--	--
3140	PPL Brunner Island	93	SI	Industrial Waste Treatment Basin	40.078064	-76.680176	7	20	2.857142857	--	--	Excluded
3140	PPL Brunner Island	94	SI	Equalizatipond	40.07666	-76.678687	1	5	5	Combined Ash	--	--
3149	PPL Montour	1115	LF	Ash Area No. 3	41.06305556	-76.66111111	--	--	--	Combined Ash	Yes	--
3149	PPL Montour	1011	LF	Ash Area No. 2	41.06416667	-76.65138889	--	--	--	Combined Ash	--	Excluded
3149	PPL Montour	96	SI	Silo Runoff Pond	--	--	--	1	--	Combined Ash	--	Excluded
3149	PPL Montour	97	SI	Ash Area 3 Leachate Runoff Basin	--	--	2	11	5.5	Combined Ash	--	Excluded
3149	PPL Montour	98	SI	Detention Basin	--	--	21	53	2.523809524	--	--	Excluded
3149	PPL Montour	99	SI	Stormwater Basin	--	--	2	13	6.5	--	--	Excluded
3149	PPL Montour	100	SI	Ash Basin No. 1	--	--	143	5070	35.45454545	Combined Ash	--	--
1073	Prairie Creek	487	SI	Ash Pond #10	--	--	--	1	--	Combined Ash	--	--
1073	Prairie Creek	488	SI	Ash Pond #5	--	--	1	12	12	Combined Ash	--	--
1073	Prairie Creek	489	SI	Ash Pond #6	--	--	1	14	14	Combined Ash	--	--
1073	Prairie Creek	490	SI	Ash Pond #7	--	--	--	1	--	Combined Ash	--	--
1073	Prairie Creek	491	SI	Ash Pond #3	--	--	1	7	7	Combined Ash	--	--
1073	Prairie Creek	492	SI	Ash Pond #2	--	--	1	8	8	Combined Ash	--	--
1073	Prairie Creek	493	SI	Ash Pond #4	--	--	1	8	8	Combined Ash	--	--
1073	Prairie Creek	494	SI	Ash Pond #1	--	--	--	4	--	Combined Ash	--	--
1073	Prairie Creek	495	SI	Ash Pond #8 - Plant Drains	--	--	--	--	--	Combined Ash	--	--
1073	Prairie Creek	496	SI	Ash Pond #9 - Dumper Building	--	--	--	1	--	Combined Ash	--	--
1769	Presque Isle	1014	LF	Presque Isle Power Plant Ash Landfill #2	46.587834	-87.476013	--	--	--	Combined Ash	Yes	Excluded
1769	Presque Isle	1012	LF	Presque Isle Power Plant Ash Landfill #3	46.584725	-87.473626	292	8801.652893	30.14264689	Combined Ash	Yes	--
1769	Presque Isle	1013	LF	Presque Isle Power Plant Ash Landfill #1	46.587875	-87.469134	--	--	--	Combined Ash	None	Excluded
2403	PSEG Hudson Generating Station	1015	LF	Landfill 1	40.754374	-74.079108	--	--	--	Combined Ash	None	--
2403	PSEG Hudson Generating Station	1352	SI	South Pond	40.755306	-74.078844	4.233	59.13682277	13.97042825	Combined Ash	Clay	Excluded
2403	PSEG Hudson Generating Station	1351	SI	North Pond	40.75180556	-74.07522222	4.306	52.93847567	12.29411883	Combined Ash	Clay	Excluded
2408	PSEG Mercer Generating Station	1197	SI	South Pond	40.18036111	-74.72963889	0.854	--	--	Combined Ash	None	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
2408	PSEG Mercer Generating Station	1198	SI	North Pond	40.17874444	-74.72816667	0.854	--	--	Combined Ash	None	Excluded
2408	PSEG Mercer Generating Station	1016	LF	Landfill 1	40.18225	-74.71694444	--	--	--	Combined Ash	None	--
4072	Pulliam	1017	LF	Pulliam Landfill	44.54388889	-88.01666667	--	--	--	Combined Ash	None	Excluded
4072	Pulliam	1212	SI	Pulliam Waste Water Pond	44.54388889	-88.01305556	0.12454086	1.930394858	15.50009217	Ash & Coal Refuse	None	--
1295	Quindaro	1030	LF	Quindaro Ash Landfill	39.14894444	-94.64483333	--	--	--	Combined Ash	Yes	--
6639	R D Green	1019	LF	Green Station Landfill	37.63416667	-87.50444444	--	--	--	Combined Ash	None	--
6639	R D Green	220	SI	Ash Pond Dam #0980	37.63438889	-87.50400278	21.3	--	--	Combined Ash	None	--
2864	R. E. Burger	1381	SI	Bottom Ash Pond	39.91289722	-80.76889444	3.44352617	40.17447199	11.66666667	Combined Ash	None	Excluded
2864	R. E. Burger	1380	SI	Fly Ash Pond	39.910125	-80.76314444	9.50413223	109.0449954	11.47342995	Combined Ash	None	Excluded
2864	R. E. Burger	976	LF	--	--	--	--	--	--	Combined Ash	--	Excluded
1008	R. Gallagher	460	SI	Ash Pond A	38.25655833	-85.84235	37	936	25.2972973	Combined Ash	None	--
1008	R. Gallagher	461	SI	Secondary Ash Pond	38.25681111	-85.83926389	4.5	63	14	Combined Ash	None	--
1008	R. Gallagher	1023	LF	N/A	--	--	--	--	--	Combined Ash	--	--
1008	R. Gallagher	1024	LF	N/A	--	--	--	--	--	Combined Ash	--	--
1008	R. Gallagher	1025	LF	N/A	--	--	--	--	--	Combined Ash	--	--
1008	R. Gallagher	1026	LF	N/A	--	--	--	--	--	Combined Ash	--	--
1008	R. Gallagher	1027	LF	N/A	--	--	--	--	--	Combined Ash	--	Excluded
1008	R. Gallagher	1029	LF	N/A	--	--	--	--	--	Combined Ash	--	Excluded
1008	R. Gallagher	1053	LF	N/A	--	--	--	--	--	Combined Ash	--	Excluded
1008	R. Gallagher	1056	LF	N/A	--	--	--	--	--	Combined Ash	--	Excluded
1008	R. Gallagher	1001	LF	--	--	--	--	--	--	Combined Ash	--	--
1570	R. Paul Smith Power Station	1083	LF	CCB Landfill	39.58972222	-77.83666667	--	--	--	Combined Ash	Yes	--
1570	R. Paul Smith Power Station	562	SI	Ash Pond #4	39.58741944	-77.83118611	11	218	19.81818182	Combined Ash	Composite	--
1570	R. Paul Smith Power Station	561	SI	Ash Pond #3	39.59195556	-77.83095	6	104	17.33333333	Combined Ash	None	--
2790	R.M. Heskett Station	1080	LF	Ash Disposal Site	46.867451	-100.897253	58	960.7438017	16.5645483	Combined Ash	Yes	--
2790	R.M. Heskett Station	1081	LF	Old Ash Landfill	46.87	-100.8902778	--	--	--	Combined Ash	None	Excluded
6085	R.M. Schahfer	68	SI	Gypsum Storage (Units 14&15)A	41.21004722	-87.02274722	45	--	--	FGD Waste	None	--
6085	R.M. Schahfer	54	SI	Waste Disposal Area	41.20505	-87.02237778	75	1165	15.53333333	Combined Ash	None	Excluded
6085	R.M. Schahfer	56	SI	Material Storage Runoff Basin	41.21239444	-87.01941389	12	48	4	FGD Waste	None	--
6085	R.M. Schahfer	58	SI	Gypsum Storage (Units 14&15)B	41.20936944	-87.01741944	9.5	--	--	FGD Waste	None	--
6085	R.M. Schahfer	55	SI	Recycle Basin	41.20560556	-87.01729722	30	372	12.4	Combined Ash	None	--
6085	R.M. Schahfer	67	SI	Metal Cleaning Waste Basin	41.21192222	-87.01636389	12	48	4	FGD Waste	None	--
6085	R.M. Schahfer	57	SI	FGD Landfill Stormwater Runoff Pond	41.21859722	-87.00565556	5	12	2.4	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6085	R.M. Schahfer	1082	LF	RMSGS Landfill	41.21458333	-87.00162778	200	10661.15703	53.30578513	Combined Ash	Yes	--
6761	Rawhide	1086	LF	CCR Monofill	40.87283333	-105.0426944	150	3162.194674	21.08129783	Combined Ash	None	--
6761	Rawhide	225	SI	North Bottom Ash Transfer Pond	--	--	4	37	9.25	Combined Ash	--	--
6761	Rawhide	226	SI	South Bottom Ash Transfer Pond	--	--	4	37	9.25	Combined Ash	--	--
6761	Rawhide	996	LF	--	--	--	--	--	--	Combined Ash	--	--
8219	Ray D Nixon	1087	LF	Clear Spring Ranch Ash Landfill	38.60823	-104.7132283	--	--	--	Combined Ash	None	--
8219	Ray D Nixon	1255	SI	Nixon Equalization Basin	38.62931167	-104.6996264	3.71271809	40.9884068	11.03999975	Combined Ash	None	Excluded
55076	Red Hills Generating Facility	1256	SI	AMU Basin	33.3825	-89.21888889	2.62	--	--	Combined Ash	Yes	--
55076	Red Hills Generating Facility	1088	LF	AMU	33.37972222	-89.21583333	--	--	--	Combined Ash	Yes	--
2324	Reid Gardner	637	SI	Pond C2	36.65886111	-114.6510806	8.5	173	20.35294118	FGD Waste	Composite	Excluded
2324	Reid Gardner	632	SI	Pond C1	36.65701111	-114.649775	14	115	8.214285714	FGD Waste	Composite	Excluded
2324	Reid Gardner	631	SI	Pond B3	36.65356389	-114.649225	8.1	90	11.11111111	FGD Waste	Composite	--
2324	Reid Gardner	630	SI	Pond B2	36.65486111	-114.6482694	12.4	148	11.93548387	FGD Waste	Composite	--
2324	Reid Gardner	634	SI	Pond B1	36.65599444	-114.6467972	13.4	193	14.40298507	FGD Waste	Composite	--
2324	Reid Gardner	635	SI	Pond E2	36.65433889	-114.6403417	14.4	165	11.45833333	FGD Waste	Composite	--
2324	Reid Gardner	636	SI	Pond E1	36.65317778	-114.6386806	5.9	115	19.49152542	FGD Waste	Composite	--
2324	Reid Gardner	633	SI	Pond F	36.65478333	-114.6377	4	37	9.25	FGD Waste	Composite	--
2324	Reid Gardner	1090	LF	Landfill	--	--	112.5	2801.652893	24.90358127	Combined Ash	None	--
1740	River Rouge Power Plant	1186	SI	bottom ash pond	42.27247778	-83.11265556	1.83654729	18.36547291	10	Combined Ash	None	--
2732	Riverbend	682	SI	Primary Ash Disposal Pond	35.36520278	-80.96329444	37.2	1640	44.08602151	Combined Ash	None	--
2732	Riverbend	681	SI	Secondary Pond	35.36810556	-80.96187778	23.5	980	41.70212766	Combined Ash	None	--
1081	Riverside	501	SI	South Ash Pond	41.53555556	-90.45166667	12	140	11.66666667	Combined Ash	None	--
1081	Riverside	500	SI	North Ash Pond	41.54416667	-90.44611111	14.1	84	5.957446809	Combined Ash	None	--
1927	Riverside	594	SI	Triangle Pond	--	--	--	2	--	Combined Ash	--	Excluded
1239	Riverton	512	SI	Industrial Landfill-East and West Ponds	37.06895278	-94.70081389	28	992	35.42857143	Combined Ash	None	--
3945	Rivesville Power Station	1358	SI	Bottom ash basin	39.530214	-80.115744	0.4323	--	--	Combined Ash	None	--
3945	Rivesville Power Station	1356	SI	Lagoon 1	39.53027778	-80.11527778	0.46717172	4.671717172	10	Combined Ash	Yes	Excluded
3945	Rivesville Power Station	1355	SI	Lagoon 2	39.53055556	-80.11444444	0.40174472	4.017447199	10	Combined Ash	Yes	Excluded
3945	Rivesville Power Station	1095	LF	Closed ash site	39.53888889	-80.09916667	60	495.8677686	8.26446281	Combined Ash	None	Excluded
3945	Rivesville Power Station	1116	LF	Ash disposal	39.5392	-80.094436	40	780.5325987	19.51331497	Combined Ash	None	--
3945	Rivesville Power Station	1357	SI	Disposal Site Sedimentation Pond	39.54	-80.09055556	0.59917355	3.379935721	5.640996169	Combined Ash	Clay	Excluded
6166	Rockport	179	SI	Bottom Ash Complex	37.91877222	-87.03744444	137	1640	11.97080292	Combined Ash	None	--
6166	Rockport	1097	LF	Rockport Plant Ash Landfill	--	--	--	--	--	Combined Ash	Yes	--
6190	Rodemacher	186	SI	Fly Ash Pond	31.39273056	-92.704125	42	670	15.95238095	Combined Ash	Clay	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6190	Rodemacher	187	SI	Bottom Ash Pond	31.39666667	-92.70138889	43	641	14.90697674	Combined Ash	Clay	--
6190	Rodemacher	185	SI	Leachate Pond	31.39035833	-92.70029722	8	--	--	Combined Ash	Composite	--
2712	Roxboro Steam Electric Plant	661	SI	FGD Flush Pond	36.47371944	-79.07788611	3.1	53	17.09677419	FGD Waste	Composite	--
2712	Roxboro Steam Electric Plant	664	SI	FGD Settling Pond	36.46875	-79.07121111	16.6	420	25.30120482	FGD Waste	Composite	--
2712	Roxboro Steam Electric Plant	1096	LF	Fly ash landfill	36.47888889	-79.06166667	55	2581.61157	46.93839219	Combined Ash	None	--
2712	Roxboro Steam Electric Plant	662	SI	West Ash Pond Dam & Dikes 1, 2,,& 4	36.51852222	-79.022475	2400	--	--	Combined Ash	--	--
2712	Roxboro Steam Electric Plant	663	SI	Ash Pond	--	--	240	4800	20	Combined Ash	None	--
1393	RS Nelson	1330	SI	Coal Ash Settling Pond Unit 6	30.28611111	-93.30166667	11.4784206	60.83562902	5.3	Ash & Coal Refuse	Composite	Excluded
1393	RS Nelson	1085	LF	Unit 6 Coal Ash	30.27666667	-93.29833333	--	--	--	Combined Ash	Yes	--
1393	RS Nelson	1329	SI	CFB Ash Landfill Retention Basin	30.27805556	-93.28722222	2.47546488	11.96787649	4.834597577	Combined Ash	Composite	Excluded
1393	RS Nelson	1084	LF	CFB Ash Landfill	30.2775	-93.28694444	--	--	--	Combined Ash	Yes	--
6155	Rush Island	1091	LF	-999	--	--	--	--	--	Combined Ash	None	Excluded
6155	Rush Island	178	SI	Ash Pond	--	--	104	7000	67.30769231	Combined Ash	None	--
2451	San Juan	1308	SI	Solids Waste Pit	36.79915833	-108.4354222	21.293	--	--	FGD Waste	Yes	Excluded
6183	San Miguel	1094	LF	Mine Pits	28.64166667	-98.48972222	--	--	--	Combined Ash	Yes	--
6183	San Miguel	1093	LF	Emergency Ash Pit	28.68027778	-98.48333333	--	--	--	Combined Ash	Yes	Excluded
6183	San Miguel	1366	SI	Ash Water Transport Pond 1B	28.69944444	-98.47527778	13	216	16.61538462	Combined Ash	Clay	--
6183	San Miguel	1367	SI	Ash Water Transport Pond 1A	28.70027778	-98.47527778	12.7704316	216	16.91407205	Combined Ash	Clay	--
6183	San Miguel	1365	SI	Equalization Pond	28.70138889	-98.46777778	25	410	16.4	FGD Waste	Clay	Excluded
6648	Sandow No 4	1067	LF	Bottom Ash Fines	30.5401	-97.07942	51	1606.97888	31.5093898	Combined Ash	None	--
6648	Sandow No 4	1065	LF	Class II Landfill	30.54527778	-97.07883333	45	459.136823	10.20304051	Combined Ash	None	--
6648	Sandow No 4	1092	LF	B Pit	30.54713889	-97.07233333	56	2800.734619	50.01311819	Combined Ash	Clay	--
6648	Sandow No 4	1089	LF	Comb Slag-Bot Ash Landfills	30.56044444	-97.06358333	237	2295.684114	9.68643086	Combined Ash	None	--
6648	Sandow No 4	1057	LF	-999	--	--	--	--	--	Combined Ash	--	Excluded
6648	Sandow No 4	221	SI	EPRI 8	--	--	45	837.9997934	18.62221763	Ash & Coal Refuse	--	--
6257	Scherer	209	SI	Settlement-Recycle Pond	--	--	--	--	--	--	None	--
6257	Scherer	210	SI	Ash Pond	--	--	553	15955	28.8517179	Ash & Coal Refuse	None	--
2367	SCHILLER	1058	LF	Closed Landfill	43.093	-70.78186111	--	--	--	Combined Ash	None	Excluded
642	Scholz	1348	SI	Lower Pond	30.66897222	-84.89230556	11.2	168	15	Ash & Coal Refuse	None	--
642	Scholz	1347	SI	Middle Pond	30.66911111	-84.89086111	9.7	145.5	15	Ash & Coal Refuse	None	--
642	Scholz	1346	SI	Upper Pond	30.66983333	-84.89033333	10.9	375.8088843	34.47787929	Ash & Coal Refuse	None	--
136	Seminole Generating Station	1059	LF	FGD Landfill	29.74237778	-81.62952778	--	--	--	Combined Ash	Yes	--
1379	Shawnee	1060	LF	AFBC Fly Ash &	37.144521	-88.780926	2.5	39.02662994	15.61065197	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
1379	Shawnee	1061	LF	-999	--	--	--	--	--	Combined Ash	--	--
1379	Shawnee	551	SI	Ash Pond	--	--	180	3099	17.21666667	Combined Ash	--	--
1379	Shawnee	552	SI	Consolidated Waste Dry Stack	--	--	200	20575	102.875	Combined Ash	--	--
3131	Shawville	1248	SI	Pond B	41.06063889	-78.37491667	1.61193756	12.21303949	7.576620713	Combined Ash	Composite	--
3131	Shawville	1246	SI	Pond 2	41.06258333	-78.37202778	1.212	--	--	Combined Ash	None	Excluded
3131	Shawville	1247	SI	Pond A	41.06258333	-78.37202778	1.66083563	12.64921947	7.616177812	Combined Ash	Composite	--
3131	Shawville	1245	SI	Pond 1	41.06377778	-78.37033333	1.212	--	--	Combined Ash	None	Excluded
3131	Shawville	1063	LF	Original	41.057479	-78.366463	--	--	--	Combined Ash	None	Excluded
3131	Shawville	1062	LF	Current	41.05841	-78.363989	68	4958.677686	72.92173068	Combined Ash	Yes	--
2277	Sheldon Station	1064	LF	Ash Landfill No. 4	40.555094	-96.793041	9	232.4380165	25.82644628	Combined Ash	Yes	--
2277	Sheldon Station	1066	LF	Ash Landfill No. 2	40.55583333	-96.78833333	--	--	--	Combined Ash	None	Excluded
2277	Sheldon Station	1360	SI	PROCESS POND	40.56111111	-96.78805556	2.14150597	19.52167126	9.115861241	Combined Ash	Clay	Excluded
2277	Sheldon Station	1078	LF	Ash Landfill No. 3	40.55277778	-96.7875	--	--	--	Combined Ash	Yes	Excluded
2277	Sheldon Station	1055	LF	Ash Landfill No. 1	40.56527778	-96.78722222	--	--	--	Combined Ash	None	Excluded
6090	Sherburne County	1068	LF	Landfill	45.38972222	-93.90555556	--	--	--	Combined Ash	Yes	--
6090	Sherburne County	69	SI	Bottom Ash Pond	45.37458333	-93.89047222	18	620	34.44444444	Combined Ash	Clay	--
6090	Sherburne County	70	SI	Pond No. 1	45.37111111	-93.89011111	61	3099	50.80327869	Combined Ash	Clay	--
6090	Sherburne County	71	SI	Pond No. 2	45.36963889	-93.884	100	6198	61.98	Combined Ash	Clay	--
6090	Sherburne County	73	SI	Pond 3 N	45.37172222	-93.87838889	50	1860	37.2	Combined Ash	Composite	--
6090	Sherburne County	72	SI	Recycle Basin	--	--	7	--	--	Combined Ash	--	--
6090	Sherburne County	74	SI	Unit No. 3 Dry Ash Landfill Basin	--	--	3	--	--	Combined Ash	--	--
2094	Sibley	1069	LF	Utility Waste Landfill	39.17222222	-94.16333333	--	--	--	Combined Ash	Yes	--
2094	Sibley	603	SI	Slag Settling Pond	--	--	1	--	--	Combined Ash	None	--
2094	Sibley	604	SI	Fly Ash Settling Pond	--	--	15	224	14.93333333	Combined Ash	Clay	--
6768	Sikeston Power Station	227	SI	Fly Ash Pond	36.88083333	-89.61472222	30	560	18.66666667	Combined Ash	Clay	--
6768	Sikeston Power Station	228	SI	Bottom Ash Pond	36.8775	-89.61388889	54	891	16.5	Combined Ash	Clay	--
2107	Sioux	614	SI	Fly Ash Pond	--	--	60	960	16	Combined Ash	Composite	--
2107	Sioux	615	SI	Bottom Ash Pond	--	--	47	2100	44.68085106	Combined Ash	None	--
1058	Sixth Street	486	SI	Ash Pond 1	41.98642	-91.663308	0.45	7	15.55555556	Combined Ash	--	Excluded
1058	Sixth Street	483	SI	Ash Pond 2	41.98679	-91.662879	0.52	7	13.46153846	Combined Ash	--	Excluded
1058	Sixth Street	485	SI	Ash Pond 4	41.98631	-91.662258	3	32	10.66666667	Combined Ash	--	Excluded
1058	Sixth Street	484	SI	Ash Pond 3	41.987194	-91.661573	4	40	10	Combined Ash	--	Excluded
1613	Somerset Station	566	SI	North Lift Pit	--	--	--	--	--	Combined Ash	--	Excluded
1613	Somerset Station	567	SI	South Pond	--	--	--	2	--	Combined Ash	--	Excluded
1613	Somerset Station	568	SI	Coal Pile Run-Off Sump	--	--	--	--	--	Combined Ash	--	Excluded
1613	Somerset Station	569	SI	Equalization Basin	--	--	--	--	--	Combined Ash	--	Excluded
6095	Sooner	1260	SI	F07	36.45611111	-97.04583333	2.5	7.800022957	3.120009183	Combined Ash	Clay	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6095	Sooner	1259	SI	F04	36.46555556	-97.04305556	21	124.0005601	5.904788578	Combined Ash	Clay	--
6061	South Mississippi El Pwr Assn	1021	LF	West Active Landfill	31.21277778	-89.39944444	--	--	--	Combined Ash	--	--
6061	South Mississippi El Pwr Assn	1022	LF	Cells 1-6	31.20916667	-89.39833333	--	--	--	Combined Ash	Yes	--
6061	South Mississippi El Pwr Assn	1008	LF	East Inactive Landfill	31.21111111	-89.39777778	--	--	--	Combined Ash	--	--
6061	South Mississippi El Pwr Assn	1353	SI	Scrubber Supply Pond	31.21277778	-89.39555556	29.33	--	--	FGD Waste	Yes	--
6061	South Mississippi El Pwr Assn	1354	SI	Emergency Dump Pond	31.21527778	-89.39555556	29.33	--	--	FGD Waste	Yes	--
4041	South Oak Creek	1072	LF	Oak Creek South Ash Landfill	42.84580556	-87.84716667	--	--	--	Combined Ash	None	Excluded
4041	South Oak Creek	1070	LF	Caledonia Ash Landfill	42.83869444	-87.84177778	175	5361.57025	30.63754429	Combined Ash	Yes	--
4041	South Oak Creek	1071	LF	Oak Creek North Ash Landfill	42.85277778	-87.83872222	--	--	--	Combined Ash	None	Excluded
6195	Southwest Power Station	1074	LF	Demonstration	37.14555556	-93.38694444	--	--	--	Combined Ash	None	Excluded
6195	Southwest Power Station	1269	SI	West Ash Pond	37.1475	-93.38555556	5	--	--	Combined Ash	Clay	--
6195	Southwest Power Station	1268	SI	East Ash Pond	37.14777778	-93.38472222	3	--	--	Combined Ash	Clay	--
6195	Southwest Power Station	1073	LF	Landfill active	37.14805556	-93.38083333	--	--	--	Combined Ash	None	--
8223	Springerville	1384	SI	Process Water Collection pond	34.319558	-109.160581	0.61310836	2.301652893	3.754071966	Combined Ash	None	Excluded
8223	Springerville	1075	LF	Ash LandFill	34.311956	-109.155852	900	75757.57576	84.17508418	Combined Ash	None	--
1743	St Clair Power Plant	584	SI	Pond	--	--	--	--	--	Combined Ash	--	--
207	St Johns River Power Park	1076	LF	Area 2	30.43916667	-81.55222222	40	1794.600551	44.86501377	Combined Ash	None	--
207	St Johns River Power Park	1018	LF	Area 1	30.43833333	-81.54583333	72	4037.667585	56.07871646	Combined Ash	None	Excluded
207	St Johns River Power Park	1077	LF	Area B	30.443508	-81.538978	35	4032	115.2	Combined Ash	None	--
2824	Stanton	997	LF	Old Ash Landfill	47.24444444	-101.3377778	108	561.5702479	5.199724518	Combined Ash	Yes	Excluded
2824	Stanton	937	LF	Fly Ash Landfill	47.2425	-101.3344444	37.1	1137.396694	30.65759284	Combined Ash	Clay	--
2824	Stanton	940	LF	Bottom Ash Landfill	47.28277778	-101.3333333	10.5	283.8842975	27.03659976	Combined Ash	Clay	--
2824	Stanton	692	SI	South Bottom Ash Pond/Cell 2	47.281834	-101.331463	4	40	10	Combined Ash	--	Excluded
2824	Stanton	691	SI	North Bottom Ash Pond/Cell	47.283774	-101.33139	4	37	9.25	Combined Ash	--	--
2824	Stanton	690	SI	Middle Bottom Ash Pond/Retention Cell	47.28279	-101.331359	3	38	12.66666667	Combined Ash	--	--
564	Stanton Energy Center	942	LF	CWSA	28.48138889	-81.18027778	312	--	--	Combined Ash	None	--
1131	Streeter Station	1028	LF	Leversee Road	42.544536	-92.420248	--	--	--	Combined Ash	None	--
3152	Sunbury Generation LP	101	SI	Residual Waste Ash Basin No. 1	40.83027778	-76.83472222	62	1139	18.37096774	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
50951	Sunnyside Cogen Associates	944	LF	Sunnyside Ash Landfill - Landfill 1	39.53888889	-110.4105556	--	--	--	Combined Ash	None	--
1077	Sutherland	499	SI	Unit 3 Initial Settling Pond	42.047092	-92.85607	0.13	1	7.692307692	Combined Ash	--	--
1077	Sutherland	498	SI	Unit 1 & 2 Initial Settling Pond	42.047729	-92.855957	0.3	2	6.666666667	Combined Ash	--	--
1077	Sutherland	497	SI	Main Ash Settling Pond	42.047192	-92.854642	5.75	52	9.043478261	Combined Ash	--	--
1077	Sutherland	1117	LF	Marshalltown West	42.0686	-92.843121	17	--	--	Combined Ash	None	Excluded
1077	Sutherland	1118	LF	Marshalltown East	42.068625	-92.836794	2.58	86.46694215	33.51431866	Combined Ash	Clay	Excluded
10075	Taconite Harbor Energy Center	948	LF	Cell 2	47.53688389	-90.95482778	--	--	--	Combined Ash	Yes	--
10075	Taconite Harbor Energy Center	961	LF	Cell 3	47.536917	-90.954561	--	--	--	Combined Ash	Yes	--
10075	Taconite Harbor Energy Center	947	LF	Cell 1	47.53689083	-90.95415556	--	--	--	Combined Ash	Yes	--
988	Tanners Creek	418	SI	Fly Ash Pond - Clear Pond and Original (Lower Pond) Dike	39.07356944	-84.88386111	12	--	--	Combined Ash	Composite	--
988	Tanners Creek	417	SI	Fly Ash Pond - Upper Pond	39.07691667	-84.88013611	47.7	--	--	Combined Ash	None	--
988	Tanners Creek	419	SI	Fly Ash Pond	39.076917	-84.880136	60	1076	17.93333333	Combined Ash	Composite	--
988	Tanners Creek	950	LF	Ash Landfill	39.07527778	-84.875	--	--	--	Combined Ash	Yes	--
988	Tanners Creek	416	SI	Bottom Ash Complex	39.077375	-84.86681111	63.3	1645	25.98736177	Combined Ash	None	--
988	Tanners Creek	415	SI	Boiler Slag Pond (U-4)	--	--	20	820	41	Combined Ash	--	--
1252	Tecumseh Energy Center	519	SI	Area 2	39.05311111	-95.57283333	1	12	12	Combined Ash	None	--
1252	Tecumseh Energy Center	520	SI	Area 1	39.05219444	-95.57238889	2	20	10	Combined Ash	None	--
1252	Tecumseh Energy Center	1120	LF	Old Landfill	39.05583333	-95.56277778	--	--	--	Combined Ash	None	Excluded
1252	Tecumseh Energy Center	1133	LF	Landfill 322	39.04805556	-95.5625	32.2	331.6115702	10.29849597	Combined Ash	None	--
1252	Tecumseh Energy Center	995	LF	--	--	--	4.12	--	--	Combined Ash	--	--
2168	Thomas Hill	953	LF	MO-717502	39.53902583	-92.64948111	--	--	--	Combined Ash	None	--
2168	Thomas Hill	624	SI	Ash Pond Cell 2 - Middle	39.54277778	-92.63805556	12	31	2.583333333	Combined Ash	None	--
2168	Thomas Hill	627	SI	Ash Pond Slag Dewatering	39.54277778	-92.63805556	3	10	3.333333333	Combined Ash	None	--
2168	Thomas Hill	625	SI	Ash Pond Cell 1 - Upper	--	--	7	--	--	Combined Ash	--	--
2168	Thomas Hill	626	SI	Ash -3 Landfill	--	--	24	1050	43.75	--	--	--
2168	Thomas Hill	628	SI	Ash - 2 Landfill	--	--	44	1446	32.86363636	Combined Ash	--	--
2168	Thomas Hill	629	SI	Ash Pond Cell 3 - Lowest	--	--	10	50	5	Combined Ash	--	--
3115	Titus	955	LF	Old Ash Site (Flyash)	40.31472222	-75.91694444	--	--	--	Combined Ash	None	Excluded
3115	Titus	956	LF	Old Ash Site (Bottom Ash)	40.30944444	-75.91083333	--	--	--	Combined Ash	None	Excluded
3115	Titus	957	LF	Eyler Station Ash Site	40.31111111	-75.91083333	--	--	--	Combined Ash	None	Excluded
3115	Titus	954	LF	Beagle Club Ash Disposal Site	40.30583333	-75.90361111	39	1859.504132	47.67959313	Combined Ash	None	--
6194	Tolk	1161	LF	116	34.200988	-102.569056	--	--	--	Combined Ash	None	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
3845	TransAlta Centralia Generation	959	LF	Limited Purpose Landfill	46.75694444	-122.8166667	--	--	--	Combined Ash	Yes	--
1745	Trenton Channel Power Plant	960	LF	Sibley Quarry	42.16305556	-83.17472222	--	--	--	Combined Ash	None	--
1745	Trenton Channel Power Plant	585	SI	Pond	--	--	--	--	--	Combined Ash	--	--
6071	Trimble Co.	44	SI	Coal Combustion Waste Pond	38.59333333	-85.41777778	82	4841	59.03658537	Combined Ash	Clay	--
56224	TS Power Plant	816	LF	--	--	--	--	--	--	Combined Ash	--	--
7030	Twin Oaks Power One	928	LF	Ash Landfill	31.097149	-96.684213	61	3807.317975	62.41504877	Combined Ash	Yes	--
1361	Tyrone	537	SI	Ash Pond	38.04972222	-84.84527778	13	--	--	Combined Ash	None	--
1361	Tyrone	536	SI	Secondary Ash Pond	38.05138889	-84.84361111	1.2	--	--	Combined Ash	None	--
3295	Urquhart	1107	LF	Urquhart Landfill 1	33.429539	-81.91508	--	--	--	Combined Ash	None	--
3295	Urquhart	111	SI	Ash Pond	33.43527778	-81.91166667	9	--	--	Combined Ash	None	--
3295	Urquhart	110	SI	Ash Pond 1	--	--	1	11	11	Combined Ash	--	--
3295	Urquhart	112	SI	Ash Pond 2	--	--	1	7	7	Combined Ash	--	--
4042	Valley	920	LF	System Control Center Ash Landfill	43.05555556	-88.21694444	--	--	--	Combined Ash	Yes	Excluded
4042	Valley	919	LF	Highway 59 Ash Landfill	43.01222222	-88.19583333	--	--	--	Combined Ash	None	Excluded
4042	Valley	918	LF	Highway 32 Ash Landfill	43.342715	-87.915031	--	--	--	Combined Ash	Yes	--
4042	Valley	949	LF	Caledonia Ash Landfill	42.83861111	-87.84166667	16.4	330.9917355	20.1824229	Combined Ash	Yes	--
477	Valmont	1122	LF	Valmont Station ADF	40.028601	-105.203106	--	--	--	Combined Ash	None	--
477	Valmont	1123	LF	Closed Valmont Station ADF	40.03193056	-105.1951417	--	--	--	Combined Ash	None	Excluded
477	Valmont	329	SI	West Ash Settling Pond	--	--	1	16	16	Combined Ash	--	--
477	Valmont	330	SI	East Ash Settling Pond	--	--	1	16	16	Combined Ash	--	--
477	Valmont	331	SI	Coal Pile Stormwater Runoff Pond	--	--	--	--	--	Combined Ash	--	Excluded
897	Vermilion	395	SI	North Ash Pond System	40.18636944	-87.74571944	80	2400	30	Combined Ash	None	Excluded
897	Vermilion	396	SI	New East Ash Pond System	40.17841944	-87.73732222	20.6	340	16.50485437	Combined Ash	None	Excluded
897	Vermilion	970	LF	--	--	--	--	--	--	Combined Ash	--	Excluded
6073	Victor J. Daniel Jr	924	LF	CAMU - Central Ash Mngt. Unit	30.54972222	-88.56111111	--	--	--	Combined Ash	Yes	--
6073	Victor J. Daniel Jr	1124	LF	NAMU - North Ash Mngt. Unit	30.54305556	-88.55833333	49.2016308	--	--	Combined Ash	Yes	--
6073	Victor J. Daniel Jr	925	LF	-999	--	--	--	--	--	Combined Ash	--	Excluded
6073	Victor J. Daniel Jr	938	LF	-999	--	--	--	--	--	Combined Ash	--	Excluded
6073	Victor J. Daniel Jr	45	SI	EPRI 7	--	--	20.0387942	--	--	Ash & Coal Refuse	--	--
6019	W H Zimmer	26	SI	Wastewater Pond Complex	38.878405	-84.22883	15	75	5	FGD Waste	Clay	--
6019	W H Zimmer	929	LF	Class III Residual	38.85611111	-84.16777778	--	--	--	Combined Ash	Yes	--
3470	W. A. Parish	1125	LF	WAP Landfill	29.50888889	-95.62805556	28.6832221	--	--	Combined Ash	Yes	--
3470	W. A. Parish	136	SI	Air Preheater Pond	--	--	1	4	4	Combined Ash	--	Excluded

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
3470	W. A. Parish	137	SI	Unit 5 Bottom Ash Overflow Basin	--	--	--	--	--	Combined Ash	--	--
3470	W. A. Parish	138	SI	Flue Gas Desulfurization Emergency Pond (E-Pond)	--	--	--	2	--	FGD Waste	--	--
3470	W. A. Parish	139	SI	Unit 8 Bottom Ash Overflow Basin	--	--	--	--	--	Combined Ash	--	--
3470	W. A. Parish	140	SI	Unit 7/8 Dewatering Bin Basin	--	--	--	--	--	Combined Ash	--	Excluded
3470	W. A. Parish	141	SI	Unit 7 Bottom Ash Overflow Basin	--	--	--	--	--	Combined Ash	--	--
3470	W. A. Parish	142	SI	Coal Pile Run Off Pond	--	--	24	110	4.583333333	Combined Ash	--	Excluded
3470	W. A. Parish	143	SI	Unit 6 Bottom Ash Overflow Basin	--	--	--	--	--	Combined Ash	--	--
2866	W. H. Sammis	916	LF	Hollow Rock	40.51166667	-80.68	141.6	624.0128558	4.406870451	Combined Ash	Composite	--
2866	W. H. Sammis	1383	SI	South Ash Pond	40.52722222	-80.63027778	4.61432507	64.60055096	14	Combined Ash	None	--
2866	W. H. Sammis	1382	SI	North Ash Pond	40.52805556	-80.63027778	5.09641873	71.16620753	13.96396396	Combined Ash	None	--
3264	W. S. Lee	105	SI	Secondary Ash Pond	34.60424722	-82.44513056	23	391	17	Combined Ash	None	--
3264	W. S. Lee	106	SI	Primary Active Ash Pond	34.60294167	-82.44166667	41	779	19	Combined Ash	None	--
2716	W.H. Weatherspoon Plant	667	SI	Ash Pond	34.59083333	-78.97	54.5	1375	25.2293578	Combined Ash	None	Excluded
1010	Wabash River	462	SI	South Ash Pond	39.51	-87.425	70	1450	20.71428571	Combined Ash	Composite	--
1010	Wabash River	465	SI	Primary Ash Pond Cell A	39.518056	-87.421389	69	1350	19.56521739	Combined Ash	None	--
1010	Wabash River	464	SI	Primary Ash Pond Cell B	39.51805556	-87.42138889	21	530	25.23809524	Combined Ash	None	--
1010	Wabash River	463	SI	Secondary Ash Pond	39.515	-87.42111111	7	73	10.42857143	Combined Ash	None	--
2830	Walter C Beckjord	698	SI	Ash Pond A	38.99916667	-84.29833333	83.2	--	--	Combined Ash	None	Excluded
2830	Walter C Beckjord	697	SI	Ash Pond B	38.99472222	-84.29527778	50	280	5.6	Combined Ash	None	--
2830	Walter C Beckjord	696	SI	Ash Pond C	38.98583333	-84.29416667	45	1400	31.11111111	Combined Ash	None	--
2830	Walter C Beckjord	695	SI	Ash Pond C ext.	38.97777778	-84.29305556	58	1300	22.4137931	Combined Ash	None	Excluded
2830	Walter C Beckjord	1127	LF	Beckjord Ash Landfill	39.003333	-84.281388	126	--	--	Combined Ash	None	Excluded
2830	Walter C Beckjord	1126	LF	Pond Run Ash Disposal	38.995	-84.27916667	99	3595.041322	36.31354871	Combined Ash	Clay	--
1082	Walter Scott Jr. Energy Center	932	LF	Monofill	41.1622	-95.83461111	66.9	5578.512397	83.38583553	Combined Ash	Composite	--
1082	Walter Scott Jr. Energy Center	502	SI	North Surface Impoundment	--	--	171	2046	11.96491228	Combined Ash	None	--
1082	Walter Scott Jr. Energy Center	503	SI	South Surface Impoundment	--	--	133	1326	9.969924812	Combined Ash	None	--
6052	Wansley	35	SI	Ash Pond	--	--	343	16920	49.32944606	Ash & Coal Refuse	None	--
6705	Warrick Power Plant	224	SI	EPRI 9	--	--	140	2789.256198	19.92325856	Ash & Coal Refuse	--	--
3297	Wateree	933	LF	Wateree	33.824072	-80.63195	--	--	--	Combined Ash	Yes	--
3297	Wateree	114	SI	Ash Pond No. 1	33.82061111	-80.62081944	80	1200	15	Combined Ash	None	--
3297	Wateree	113	SI	Ash Pond No. 2	33.81611111	-80.61638889	80	1200	15	Combined Ash	None	--
883	Waukegan	1311	SI	East Ash Pond	42.37888889	-87.81444444	10	110	11	Ash & Coal Refuse	Composite	--
883	Waukegan	1312	SI	West Ash Pond	42.37888889	-87.81444444	10.1	111.1	11	Ash & Coal Refuse	Composite	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
6139	Welsh	177	SI	Primary Ash Pond	33.04975	-94.84635833	98.1	307	3.129459735	Combined Ash	None	--
6139	Welsh	934	LF	Ash landfill	33.04794444	-94.84608333	--	--	--	Combined Ash	None	--
6139	Welsh	175	SI	Active Bottom Ash Storage	33.04425833	-94.84401389	20	270	13.5	Combined Ash	Composite	--
6139	Welsh	176	SI	Secondary Ash Pond	33.04848611	-94.84154444	4.2	37	8.80952381	Combined Ash	None	--
4078	Weston	1318	SI	Tertiary BAT W3&4	44.85388889	-89.65805556	1.04196511	4.784022039	4.59134573	Combined Ash	Clay	--
4078	Weston	936	LF	Weston Onsite Ash Landfill #2879	44.85611111	-89.65611111	--	--	--	Combined Ash	None	Excluded
4078	Weston	1317	SI	South Secondary BAT W3&4	44.85361111	-89.655	2.95748393	14.08613407	4.762877635	Combined Ash	Clay	--
4078	Weston	1316	SI	North Secondary BAT W3&4	44.85444444	-89.655	2.83133609	13.60479798	4.805080554	Combined Ash	Clay	--
4078	Weston	1314	SI	North Primary BAT W3&4	44.85416667	-89.65388889	0.19338843	0.096694215	0.5	Combined Ash	Clay	--
4078	Weston	1315	SI	South Primary BAT W3&4	44.85361111	-89.65361111	0.18728191	0.093640955	0.5	Combined Ash	Clay	--
4078	Weston	1313	SI	W1&2 Seepage Basin	44.86277778	-89.6525	6.51551882	38.99609734	5.985110071	Combined Ash	None	--
4078	Weston	935	LF	Weston Ash - Legner	44.72361111	-89.63694444	18	371.9008265	20.66115703	Combined Ash	Yes	--
60	Whelan Energy Center Unit 1 (WEC1)	1214	SI	Ash Pond	40.578403	-98.313878	22.9568411	183.6547291	8	Combined Ash	Yes	--
6009	White Bluff	1128	LF	Ash Landfill	34.41694444	-92.14888889	--	--	--	Combined Ash	Yes	--
1040	Whitewater Valley	1323	SI	Aux Settling Pond A3	39.804328	-84.896458	0.168	--	--	Combined Ash	None	Excluded
1040	Whitewater Valley	1321	SI	Aux Settling Pond A1	39.803906	-84.896317	0.259	--	--	Combined Ash	None	Excluded
1040	Whitewater Valley	1324	SI	Aux Settling Pond A4	39.803561	-84.896272	0.235	--	--	Combined Ash	None	Excluded
1040	Whitewater Valley	1325	SI	Bottom Ash Sluicing Pond	39.803561	-84.896272	0.18939394	1.147842057	6.060606061	Combined Ash	None	--
1040	Whitewater Valley	1322	SI	Aux Settling Pond A2	39.804125	-84.896206	0.17	--	--	Combined Ash	None	Excluded
4057	WI Power & Light Co -Rock River Generating	2	SI	Slag Pond	42.577814	-89.031436	3	29	9.666666667	Combined Ash	--	--
4057	WI Power & Light Co -Rock River Generating	3	SI	WPDES Pond 2	42.576967	-89.03059	1	14	14	Combined Ash	--	--
4057	WI Power & Light Co -Rock River Generating	1	SI	WPDES Pond 1	42.577944	-89.030346	2	17	8.5	Combined Ash	--	--
4057	WI Power & Light Co -Rock River Generating	172	SI	Final WPDES Pond	42.580952	-89.030247	4	29	7.25	Combined Ash	--	--
50	Widows Creek	59	SI	Bottom Ash Stack	--	--	32	--	--	Combined Ash	None	--
50	Widows Creek	60	SI	Dredge Cell	--	--	116	--	--	Combined Ash	None	--
50	Widows Creek	61	SI	Gypsum Stack Pond 1	--	--	10	--	--	FGD Waste	None	--
50	Widows Creek	62	SI	Gypsum Stack Pond 2A	--	--	12	--	--	FGD Waste	None	--
50	Widows Creek	63	SI	Gypsum Stack Pond 2B	--	--	14	--	--	FGD Waste	None	--
50	Widows Creek	64	SI	Gypsum Stack Pond 3	--	--	59	--	--	FGD Waste	None	--
50	Widows Creek	65	SI	Gypsum Stack Stilling Pond	--	--	9	--	--	FGD Waste	None	--
50	Widows Creek	66	SI	Pump Pond	--	--	0.25	--	--	FGD Waste	None	--
50	Widows Creek	261	SI	Ash Pond	--	--	156	11709	75.05769231	Combined Ash	--	--
50	Widows Creek	262	SI	Gypsum Stack (Wet Stacking Area)	--	--	110	10961	99.64545455	Combined Ash	--	--

Attachment A-2. WMU Information

Oris Code	Plant Name	WMU ID	WMU Type	Unit Name	Latitude	Longitude	WMU Area (acres)	WMU Capacity (acre-ft)	WMU Depth (ft)	WMU Waste Type	WMU Liner Type	Shown in Results?
50	Widows Creek	289	SI	Red Water Pond	--	--	32	--	--	Combined Ash	None	--
50	Widows Creek	290	SI	Upper/Lower Stilling Pond	--	--	8	--	--	FGD Waste	None	--
884	Will County	389	SI	EPRI 3	--	--	--	--	--	--	--	Excluded
3298	Williams	1130	LF	Hwy 17A	33.14988889	-80.05594444	--	--	--	Combined Ash	Yes	--
3298	Williams	1129	LF	Hwy 52	33.11430556	-80.04661111	--	--	--	Combined Ash	Yes	--
3946	Willow Island	917	LF	-999	--	--	--	--	--	Combined Ash	Yes	--
6249	Winyah	199	SI	West Ash Pond	33.33189167	-79.37042778	62	1178	19	Combined Ash	None	--
6249	Winyah	198	SI	Unit 3 & 4 Slurry Pond	33.33744722	-79.36841111	100	1700	17	FGD Waste	None	--
6249	Winyah	200	SI	South Ash Pond	33.32435278	-79.35452222	61	1129	18.50819672	Combined Ash	None	--
6249	Winyah	202	SI	Ash Pond B	33.31872222	-79.35136111	63	537	8.523809524	Combined Ash	None	--
6249	Winyah	203	SI	Unit 2 Slurry Pond	33.33065	-79.35086667	34	416	12.23529412	FGD Waste	None	--
6249	Winyah	201	SI	Ash Pond A	33.325525	-79.34736111	88	807	9.170454545	Combined Ash	None	--
6249	Winyah	982	LF	--	--	--	--	--	--	Combined Ash	--	--
898	Wood River	398	SI	West Ash Pond (2 cells) Cells 2E and 3	38.86955278	-90.14046111	19	210	11.05263158	Combined Ash	Clay	--
898	Wood River	397	SI	East Ash Pond (2 cells)	38.86821944	-90.13142778	38	435	11.44736842	Combined Ash	Composite	--
50611	WPS Westwood Generation, LLC	951	LF	Closed Ash Landfill	40.62305556	-76.45194444	--	--	--	Combined Ash	Yes	Excluded
6101	Wyodak Plant	80	SI	Wyodak	44.28888889	-105.3911111	15.5	320	20.64516129	Combined Ash	None	--
6101	Wyodak Plant	981	LF	--	--	--	68	2169.421489	31.90325718	Combined Ash	--	--
728	Yates	987	LF	Gypsum Solid Waste Facility	33.46638889	-84.9	--	--	--	Combined Ash	Yes	--
728	Yates	986	LF	R-6 Ash Monofill	33.453585	-84.895905	--	--	--	Combined Ash	None	--
728	Yates	367	SI	Ash Pond 3	--	--	69	434	6.289855072	Combined Ash	None	--
728	Yates	368	SI	Pond B	--	--	6	--	--	Combined Ash	None	Excluded
728	Yates	369	SI	Ash Pond 1	--	--	17	184	10.82352941	Combined Ash	None	--
728	Yates	370	SI	Ash Pond 2	--	--	50	1103	22.06	Combined Ash	None	--
728	Yates	371	SI	B' Pond	--	--	30	298	9.933333333	Combined Ash	None	--
728	Yates	372	SI	Gypsum Solid Waste Facility	--	--	16	135	8.4375	FGD Waste	Composite	--
728	Yates	373	SI	Pond A	--	--	19	--	--	Combined Ash	None	Excluded
728	Yates	374	SI	Pond C	--	--	12	--	--	Combined Ash	None	Excluded
3809	Yorktown	1359	SI	Finger Ponds	37.21638889	-76.45777778	4.775	--	--	Combined Ash	Yes	Excluded
3809	Yorktown	988	LF	Ash Landfill	37.215975	-76.442493	48	991.7355372	20.66115702	Combined Ash	Clay	--

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EXHIBIT 47

The Second Declaration of Ken Liss

DECLARATION OF KENNETH W. LISS

I, Kenneth W. Liss, first being duly sworn on oath, depose and state as follows:

1. I am the President of Andrews Engineering. My current responsibilities include managing the day to day business of the company. As a technical consultant, I provide a broad range of environmental expertise to industry, government, and individual clients for regulatory compliance, permitting, remediation and testimony. I currently serve as the Principal-in-Charge and/or Program Manager on a number of multi-year contracts with both private and public sector clients.

2. Prior to my current role, I served an Office Director at Andrews Engineering for nine years, from 1999 to May 2008 and Vice President of Operations from May 2008 to July 2014. Prior to working at Andrews Engineering, I worked for the Illinois Environmental Protection Agency ("IEPA") in the Bureau of Land Permitting Section. Initially my responsibilities included preparing permit conditions and compliance determinations for regulated facilities under various programs including the Resource Conservation and Recovery Act (RCRA) and Illinois solid waste and groundwater protection regulations. In 1990, I became the Acting Manager of the Groundwater Unit in the Permit Section of Bureau of Land. My responsibilities included managing a staff of 12 employees in support of various permit programs focusing on groundwater monitoring systems, hydrogeologic investigations and corrective action. In addition, I provided testimony for compliance/enforcement to legal counsel, permit and regulatory hearings, testimony in proceedings for various regulations at the Illinois Pollution Control Board and testimony for legislative actions before the Illinois House and Senate committees. I have a Bachelor of Science degree in Geology from Illinois State University, December 1983.

3. I am familiar with the operations of Southern Illinois Power Cooperative's ("SIPC") Marion Generating Station.

4. At the request of SIPC I have reviewed the requirements for a groundwater monitoring program under 35 Ill. Admin. Code, Part 845 Standards For The Disposal of Coal Combustion Residuals (CCR) In Surface Impoundments, Subpart F: Groundwater Monitoring and Corrective Action. Specifically, Section 845.610 (b)(1)(D) requires a groundwater monitoring program that includes a minimum of eight independent samples from each groundwater monitoring well.

5. The independent samples are collected to determine the existing groundwater quality at each monitoring well in the groundwater monitoring program and to establish the groundwater protection standards for the site. The well data are then statistically evaluated to determine whether or not the impoundment(s) are impacting groundwater. An impact to groundwater is defined as a confirmed exceedance of the established groundwater protection standard, which may ultimately

DECLARATION OF KENNETH W. LISS (cont.)

require corrective action.

6. Requiring the collection of eight independent samples within 180 days is insufficient to account for natural or man induced variations in groundwater concentrations that can be attributed to seasonal or temporal influence such as periods of increased or decreased precipitation, temperature, gradient changes and the physical properties of the geologic zones. Collecting groundwater data for purposes of establishing a baseline quality is usually completed over a period of 12 to 24 months to account for such variations. In fact, the regulations require seasonal and temporal variations to be identified in the site hydrogeologic characterization under Section 845.620 before establishing the groundwater monitoring network of wells. Limiting the collection of this important data set to two seasons increases the probability of false positives into the statistical analysis procedures. There are steps in the evaluation process to investigate false positives before corrective action, however there is a cost with each step due to additional sampling, further evaluations and the potential for adding additional monitoring wells in the area of the statistically determined impact. False positives can be persistent until the statistical data set is adjusted to account for these variations. Therefore, compressing the collection of the baseline groundwater data set is counterproductive to the evaluation process.

7. Accordingly, a period of at least 12 months and up to 24 months is needed to properly establish baseline quality of the groundwater. This is exacerbated by the fact that groundwater flow is known to be slow in portions of the site. Additionally, it would be prudent to build in 90 days (prior to the start of groundwater data collection) to review the design, construction and locations of the current monitoring system and install any new/additional wells that are necessary to meet the performance standard of Section 845.630 Groundwater Monitoring Systems. Groundwater sampling for establishing the groundwater protection standards could commence immediately after the initial 90 days and a minimum of eight independent samples from each groundwater monitoring well collected over a period of at least 12 months.

FURTHER, Declarant sayeth not.



Kenneth W. Liss