BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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

To: See attached service list.

NOTICE OF ELECTRONIC FILING

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Illinois Pollution Control Board the attached RECOMMENDATION of the Illinois Environmental Protection Agency and a CERTIFICATE OF SERVICE, copies of which are herewith served upon you.

Dated: January 13, 2023

Respectfully submitted,
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,

Respondent,

BY: /s/Sara Terranova
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THIS FILING IS SUBMITTED ELECTRONICALLY

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RECOMMENDATION

The Illinois Environmental Protection Agency ("Illinois EPA" or "Agency"), by one of its attorneys, hereby files its Recommendation concerning the Southern Illinois Power Cooperative's ("SIPC" or "Petitioner") Marion Generating Station ("Marion Station") in Williamson County, Illinois pursuant to 415 ILCS 5/28.1 and 35 Ill. Adm. Code §104.416. For the reasons stated below, Illinois EPA recommends that the Illinois Pollution Control Board DENY Petitioner's request for an adjusted standard from 35 Ill. Adm. Code 845 ("Part 845") and DENY Petitioner's request for a finding of inapplicability of Part 845. In support of its Recommendation, the Illinois EPA states as follows:

BACKGROUND

1. Pursuant to 415 ILCS 5/22.59(g)(1), the Board was directed to adopt rules for coal combustion residuals ("CCR") surface impoundments "at least as protective and comprehensive" as Subpart D of 40 CFR 257 ("Part 257") and to use Part 257 "as a baseline." 415 ILCS 5/22.59(g)(1) and *In the Matter of: Standards for Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed New 35 Ill. Adm. Code 845*, R20-19 ("R20-19"), Order (February 4, 2021), at 11.

2. On April 15, 2021, the Board adopted new regulations providing standards for disposal of CCR in surface impoundments at 35 Ill. Adm. Code 845. R20-19, Final Order (April 15, 2021). The Part 845 rules became effective on April 21, 2021. 45 Ill. Reg. 5884 (May 7, 2021).

3. While independent of the federal rule, Part 845 complies with the statutory mandate in 415 ILCS 5/22.59(g)(1) using Part 257 as a baseline and written with at least the same protection and comprehensiveness as Part 257. R20-19, Order (February 4, 2021), at 11.

4. On May 11, 2021, SIPC filed a "Petition for an Adjusted Standard From 35 Ill. Adm. Code Part 845 or, in the Alternative, a Finding of Inapplicability" ("Petition" or "Pet."), concerning eight ponds located at SIPC's Marion Station. *See* Petition at 1. Petitioner designated the ponds as follows: Pond 3 (including Pond 3A), Pond 4, former Pond B-3, South Fly Ash Pond, Pond 6, the Former Fly Ash Holding Area, the Replacement Fly Ash Holding Area, and the Fly Ash Holding Area Extension. *See id.*

5. On September 2, 2021, SIPC filed an "Amended Petition for an Adjusted Standard from 35 Ill. Adm. Code Part 845 or, in the Alternative, a Finding of Inapplicability" ("Amended Petition" or "Amd. Pet."). The Amended Petition concerned the same eight ponds addressed in the May 11, 2021, Petition and included results of a Pond Investigation Report for Certain Ponds at Southern Illinois Power Company's Marion Station, the Updated Opinion of Lisa Bradley, and the Supplemental Declaration of Kenneth W. Liss. *See* Amd. Pet. at 1.

6. Illinois EPA must make a recommendation to the Board as to the disposition of the Petition within 45 days after the filing of the Petition or at least 30 days before a hearing, unless otherwise ordered by the hearing officer or Board. 35 Ill. Adm. Code §104.416. Pursuant to Motions for Extension of Time, the Board has ordered that the Agency file its Recommendation by January 13, 2023.

7. Illinois EPA will address Petitioner's request for a finding of inapplicability from Part 845 first, and then the request for an adjusted standard exempting the ponds at issue from Part 845 requirements.

I. REQUEST FOR FINDING OF INAPPLICABILITY

DEFINITIONS

8. A "CCR surface impoundment" is defined 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. *See* 415 ILCS 5/3.143, 35 Ill. Adm. Code 845.120, and 40 CFR 257.2

9. An "Existing CCR surface impoundment" is defined as a CCR surface impoundment in which CCR is placed both before and after October 19, 2015, or for which construction started before October 19, 2015 and in which CCR is placed on or after October 19, 2015. A CCR surface impoundment has started 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 October 19, 2015. See 35 Ill. Adm. Code 845.

10. An "Inactive CCR surface impoundment" is defined 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." Inactive CCR surface impoundments may be located at an active facility or an inactive facility. *See* 35 Ill. Adm. Code 845.120.

RELEVANT FEDERAL GUIDANCE

11. "Part 845's scope is dictated by the General Assembly's mandate to the Board in Section 22.59 (415 ILCS 5/22.59). Section 22.59(g) directs the Board to adopt rules for "CCR surface

impoundments"—a term defined in the Act—using USEPA's Part 257 as a baseline. 415 ILCS 5/22.59(g)." *See* R20-19, Order (February 4, 2021), at 11.

12. Because Part 845 was based on Part 257 (*see Id.),* written with the same protection and comprehensiveness as Part 257 (*see* 415 ILCS 5/22.59(g)(1)), and because the definition of a CCR surface impoundment in Section 845.120 mirrors the federal definition in Part 257, one must look to the preamble of Part 257 to examine the intended applicability of the definition of a CCR surface impoundment.

13. On April 17, 2015, 40 CFR 257 was published as a Final Rule in the Federal Register. 80 Fed. Reg. 21357 (April 17, 2015). In addition to the final rule language, the United States Environmental Protection Agency ("U.S. EPA") provided detailed guidance on the definition of a CCR surface impoundment and the types of units subject to the rule. *Id.*

14. In the preamble, U.S. EPA stated many comments were received regarding the proposed[1] definition of a CCR surface impoundment. *Id.* "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." *Id.* In other words, commenters were concerned that surface impoundments containing only a "de minimis" amount of CCR would be subject to the rule.

15. After an evaluation of comments received, U.S. EPA "amended the definition of CCR surface impoundment to clarify the types of units covered by the rule." *Id.* The revised definition provided that a CCR surface impoundment must meet three criteria: (1) The unit is a natural topographic depression, man-made 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[2]. *Id.*

[1] 75 Fed. Reg. 35128 (June 21, 2010).
[2] Section 845.120 mirrors this language.

16. U.S. EPA stated these criteria correspond to the units that are the source of the significant risks covered by the rule. *Id*. U.S. EPA further stated, "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." (***Emphasis added***). *Id.*

17. Therefore, if a unit meets the criteria provided in the definition of a CCR surface impoundment, not only does that mean the unit is subject to the rule; the unit also, by design, contains a substantial amount of CCR (and therefore, does not contain a "de minimis" amount of CCR).

18. The definition and criteria of a CCR surface impoundment was drafted and intentionally amended to ensure that units containing only truly "de minimis" levels of CCR would not be inappropriately captured as a CCR surface impoundment. *Id.*

19. What's more, U.S. EPA went on to provide examples of units that are CCR surface impoundments and examples of units that are not surface impoundments: "Examples of CCR surface impoundments are holding, storage, settling and aeration pits, ponds, and lagoons." *Id.* "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water hold ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.*

20. Finally, U.S. EPA stated "[T]he final definition [of a CCR surface impoundment] makes extremely clear the impoundments that are covered by the rule, so an owner or operator will be able to easily discern whether a particular unit is a CCR surface impoundment." *Id.*

APPLICABILITY ANALYSIS

21. The Agency agrees with U.S. EPA that it is easily discernable whether a particular unit is a CCR surface impoundment. The definition of a CCR surface impoundment is extremely clear which impoundments are subject to Part 845. Therefore, the Agency has applied the criteria of a CCR surface impoundment to each Pond at issue in the Amended Petition. Through a fact-based analysis, the Agency demonstrates below how each Pond at issue in the Amended Petition meets the requirements of a CCR surface impoundment and is therefore subject to Part 845.

Pond 3[3]

22. Pond 3 meets the criteria of an existing CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 3 is subject to 35 Ill. Adm. Code 845.

Meets the Definition

23. Pond 3 is an existing CCR surface impoundment. This is demonstrated by 1) Petitioner's various permits, 2) aerial photos, and 3) because Pond 3 is a type of facility intended to be covered by the definition of a CCR surface impoundment.

24. In 1969, SIPC was authorized to install and operate Pond 3 as an ash pond and was described as a settling pond. *See* Agency Ex OO. Pond 3 was designed to supplement Ponds 1 and 2, have slag and fly ash directly sluiced to it, and receive run-off containing CCR from the "ash storage area." *See* Agency Exhibit OO at 1. In addition, the Initial Fly Ash Holding area and the Fly Ash Holding Area Extension may have occasionally overflowed to Pond 3. *See* Amd. Pet. at. 10. Finally, CCR was stored within the pond as sediment and in the berm. *See* Pet Ex. 29.

25. By 1973, Pond 3 continued to receive run-off from the ash storage area. *See* Agency Ex. WW at 13.

[3] Pond 3 and Pond 3A must be addressed separately as each has its own origins, and each has its own bathometric survey and berm samples Pet. Ex. 29.

26. By 1975, Pond 3 was permitted to 1) receive sluiced ash residue from fired coal from Pond 4, in case of an emergency and 2) collect water run-off from ash storage piles. *See* Agency Ex. YY.

27. 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. *See* Agency Ex. XX at 3.

28. Aerial photos from 1998, 2006, and 2007 each show significant accumulation of CCR along the west side of Pond 3. *See* Agency Ex. 4, Agency Ex. 8, and Agency Ex. 7. By 2009, aerial photos show that an internal berm had been constructed along the west side of Pond 3 which approximates the extent of the CCR that was visible in 2006 and 2007. *See* Agency Ex. 9.

29. Additional aerial photos from 2017 to 2021 demonstrate Pond 3 meets the definition of an existing CCR surface impoundment. *See* Agency Exhibits 15-18. The aerial photographs show the continued placement of CCR in Pond 3 after October 19, 2015. *See Id.*

30. Finally, Pond 3 is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units <u>that are</u> CCR surface impoundments and examples of units that <u>are not</u> surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id.* (*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water hold ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* Pond 3 is a settling pond, designed to hold an accumulation of CCR. *See* Agency Exs OO and WW.

31. Pond 3 meets the criteria for a CCR surface impoundment and is a unit designed to hold an accumulation of CCR and in which treatment, storage, or disposal occurs.

32. According to U.S. EPA, "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." (*Emphasis added*). 80 Fed Reg 21357 (April 17, 2015).

33. Therefore, because Pond 3 meets the criteria provided in the definition of a CCR surface impoundment, not only is Pond 3 subject to Part 845, but by design, Pond 3 contains a substantial amount of CCR and therefore, does not contain a "de minimis" amount of CCR.

More than De Minimis

34. Although the Agency has already demonstrated Pond 3: 1) factually meets the requirements of the CCR surface impoundment; 2) by design "contain[s] substantial amounts of CCR; and 3) is therefore subject to Part 845, the Agency provides further support that Pond 3 contains more than a "de minimis" amount of CCR. This is evidenced through calculations using results from the bathometric survey and because the Petitioner provides no evidence that the entire volume of CCR in Pond 3 has ever been removed.

35. The bathometric survey indicates that Pond 3 contains an average of 1.38 feet of sediment. *See* Pet. Ex. 29, Attachment A. Two sediment samples analyzed for CCR content from inside Pond 3, were reported to be 93% and 96% CCR. *See* Pet Ex. 29, Table 7 at 15. Given the surface area of Pond 3 as measured from aerial photos and the thickness of CCR based on the bathometric survey *(See* Pet. Ex. 29, Attachment A), approximately 4,765 cubic yards of CCR are on the bottom of Pond 3.

36. In addition to the sediment samples, two berm samples were collected from Pond 3, sample B-3b from the southern berm and B-3a from the internal berm. *See* Pet. Ex. 29 Figure 3. While no CCR content analysis is provided for sample B-3b, sample B-3a is reported as 23% fly ash, but no

other CCR component fractions are provided. Given that fly ash control samples from SIPC Unit 123 contains 9% "Fly Ash", 53% "Bottom Ash", 11% "slag" and 26% "Other", Pet Ex 29, Attachment D, Table 2 at 10 of 12 and the control sample from Unit 4 contains 36% "Fly Ash", 2% "Bottom Ash" and 62% "Other", Pet Ex 29, Attachment D, Table 2 at 12 of 12 the partial listing of CCR content, demonstrates that CCR is present.

37. Based on the berm's length, width, and the reported Pond 3 bottom and surface elevations, measured from aerial photos and depths from Pet Ex. 29, the Agency estimates that 5,117 cubic yards of material are contained in the internal berm.

38. Finally, because CCR and storm water are entering Pond 3, west of the internal berm, the Agency estimated the amount of CCR in Pond 3, west of the internal berm as well. Using the surface area west of the internal berm; the bathometric survey to estimate the pond bottom depth (462 feet msl); Google Earth Pro to estimate the surface elevation (475 feet msl) of the deposited CCR; and Agency Ex. 18, which shows vegetation in most of the area indicating mostly CCR solids with little surficial water, the CCR stored within the Pond 3 west of the internal berm is approximately 16,000 cubic yards.

39. Pond 3 has a permitted volume of 53,000 cubic yards. *See* Agency Exhibit OO at 1. The bathometric survey indicates a volume is 34,673 cubic yards for Pond 3. *See* Pet. Ex. 29. This leaves 18,327 cubic yards unaccounted. The pond sediment samples demonstrate that CCR is directly below the water in Pond 3. *See* Pet. Ex. 29. Therefore, because of the historic use of this pond for treatment of water containing CCR (*See* Agency Exhibit OO), the Pond 3 volume beneath the surveyed CCR may be filled with CCR, because the bottom of Pond 3, when it was initially constructed, would have filled first. Because there is an internal berm, and fill within the internal berm of Pond 3, some of the unaccounted volume may be within those areas in addition to lying

beneath the surveyed CCR in Pond 3. Therefore, in total Pond 3 may be storing approximately 25,800 cubic yards of CCR according to the bathometric survey, or about 1,030 semi-truck loads and an additional 18,327 cubic yards or 733 semi-truck loads of CCR not surveyed.

40. Petitioner states that Pond 3 was cleaned to remove pond sediments and debris in 2006 and 2011. *See* Amend. Pet. at 10. Petitioner further states the cleaning would have removed any CCR that may have collected in the pond from historic operations. However, the Petitioner provides no evidence that the entire volume of CCR in Pond 3 has ever been removed.

41. Prior to the construction of the internal berm, Pond 3's shape approximated a rounded equilateral triangle. *See* Pet Ex. 29, Fig. 3 at 6. However, when performing the bathometric survey only in the area east of the internal berm was included. *See* Pet. Ex 29, Attachment A, Fig. 4. Beginning with aerial photos from April 2012 and continuing through July 2021, increasing deposits of CCR are visible to the west of the internal berm. *See* Agency Ex. 13, 14, 15, 16, 17, and 18. Agency Ex. 17 shows a plume flowing through the internal berm, demonstrating a connection between the two sides of the berm, and thus the entire area should be considered Pond 3, as displayed in Pet. Ex. 29, Fig. 3. Therefore, the Pond assessment did not account for all CCR in Pond 3.

42. Pond 3 meets the criteria of an existing CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 3 is subject to 35 Ill Adm. Code 845.

Pond 3A

43. Pond 3A meets the criteria of an inactive CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 3A is subject to 35 Ill Adm 845.

Meets the Definition

44. Pond 3A is an inactive surface CCR surface impoundment. This is demonstrated[4] through 1) aerial photos and 2) because Pond 3A is the type of facility intended to be covered by the definition of a CCR surface impoundment.

45. As evidenced in aerial photos, Pond 3A is a man-made, bermed area, designed as an ash pond to settle and store CCR. *See* Agency Exhibits 1-4. By 1971. Pond-3A was a down slope overflow area extending from the Initial Fly Ash Pond ("IFAP"). *See* Agency Ex. 1. By 1980, the CCR began to separate Pond 3A from the IFAP. *See* Agency Ex. 2. A separation between Pond 3A and the IFAP is visible, though it is not possible to accurately decern if a connection remains between the two ponds. *See* Agency Ex. 3. By 1998, Pond 3A had a distinct berm constructed between it and Pond 3, and a U-shaped berm around the southern perimeter of Pond 3A. *See* Agency Ex. 4. These are man-made berms designed to hold an accumulation of CCR and liquids and store an accumulation of CCR. *See* Pet. Ex. 29.

46. The Agency does not have evidence that CCR was placed in Pond 3A after October 19, 2015. Therefore, because Pond 3A is a settling pond, designed to hold an accumulation of CCR and liquids, and stores CC but no longer receives CCR on or after October 19, 2015, and still contains CCR after October 19, 2015, Pond 3A is an inactive CCR surface impoundment as defined in 35 Ill. Adm. Code 845.120.

47. Finally, Pond 3A is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units <u>that are</u> CCR surface impoundments and examples of units that <u>are not</u> surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id.*

[4] The Agency was unable to find any records that Petitioner applied for or received a permit to construct or operate this pollution control facility as required by 35 Ill. Adm. Code 309.

(*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* Pond 3A is a settling pond, designed to hold and store accumulation of CCR and liquids. *See* Pet Ex. 29.

More than De Minimis

48. Although the Agency has already demonstrated Pond 3A: 1) factually meets the requirements of the CCR surface impoundment; 2) by design, "contain[s] substantial amounts of CCR;" and 3) is therefore subject to Part 845, the Agency provides further support that Pond 3A contains more than a "de minimis" amount of CCR. This is evidenced through calculations using results from the bathometric survey and berm sample results.

49. The berm samples for Pond 3A are reported to be 90% and 91% fly ash. *See* Pet Ex. 29. No other constituent content was reported. Based on the southern berm's width, height, and length, as measured from aerial photos, the Agency estimates there are at least 6,800 cubic yards of CCR in the berm of Pond 3A. The bathometric survey of Pond 3A reports an average of 1.45 feet of sediment in the bottom of Pond 3A. *See Id.* The Pond 3A sampling point with the thickest sediment accumulation is reported to be almost half coal *See Id*. The sampling point with the thinnest sediment accumulation is reported to be 87% CCR. *See* Pet Ex. 29, Table 7 at 14. Given the average thickness and area of Pond 3A, as measured from aerial photos, there are approximately 4,765 cubic yards of CCR in the Pond 3A sediment. Pond 3A has an approximate volume of 32,260 cubic yards. *See* Agency Exhibit PP at 2. The bathometric survey indicates a volume of 26,583 cubic yards for Pond 3A. *See* Pet. Ex. 29. This leaves 5,684 cubic yards unaccounted. The pond sediment samples demonstrate that CCR is directly below the water in Pond 3A. *See Id*. Therefore,

because of the historic use of this pond for treatment of water containing CCR (*See* Agency Exs. 1-4), the Pond 3A volume beneath the surveyed CCR is most likely (and logically) filled with CCR.

50. In total, based on the above information, the Agency estimates Pond 3A is storing at least 11,565 cubic yards of CCR as sediment and in the berms, or about 460 semi-truck loads and an additional 5,684 cubic yards or 277 semi-truck loads are likely present below the surveyed CCR.

51. Pond 3A meets the criteria of an inactive CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 3A is subject to 35 Ill Adm. Code 845.

Pond 4

52. Pond 4 meets the criteria of an inactive CCR surface impoundment and therefore contains more than a de minimis amount of CCR. Therefore, Part 845 is applicable to Pond 4.

Meets the Definition

53. Pond 4 is an inactive surface CCR surface impoundment. This is demonstrated through 1) permits, 2) aerial photos, and 3) because Pond 4 is the type of facility intended to be covered by the definition of a CCR surface impoundment.

54. Pond 4 is a man-made, diked area, designed to settle and hold CCR and liquids. *See* Agency exhibit QQ. Pond 4 was permitted to use an earth levee (diked area) to construct a settling pond. *See Id*. The settling pond consisted of 18 million gallons and was designed to hold a month's detention of yard drainage, coal yard drainage, boiler blow down, effluent from existing slag-fly-ash-settling ponds and the slag line. *See Id*. The location of the settling pond was designed to serve as catch basin to hold any slag washing down-hill from the storage pile west of the settling ponds 1 and 2. *See Id*.

55. NPDES permit application documents for Pond 4 state that "[a]sh residue from fire coal is sluiced into pond 3 in case of emergency in Pond 4. *See* Agency Ex. YY. The application further states: " (a) [a]sh residue from fired coal is sluiced into settling ponds (b) Water run-off from settling ponds overflows to pond #4 (c) boiler blow down from boiler operations runs to pond #4 (d) coal storage rain runs off runs to pond #4." *See Id.* at 17.

56. 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.

57. NPDES permits issued in 1975, 1977, 1985, 1998, and 2007 all characterize Pond 4 as an ash pond. *See* Agency Ex. 51-55.

58. Finally, Petitioner has stated and demonstrated that Pond 4 receives overflow from Pond 6 and still stores CCR. *See* Pet Ex 29.

59. Pond 4 is CCR surface impoundment and likely contains about 38,387 cubic yards of CCR.

60. The Agency does not have evidence that CCR was placed in Pond 4 after October 19, 2015. Therefore, because Pond 4 is a settling pond, designed to hold an accumulation of CCR and liquids but no longer receives CCR on or after October 19, 2015, and still stores CCR after October 19, 2015, Pond 4 is an inactive CCR surface impoundment.

61. Finally, Pond 4 is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units <u>that are</u> CCR surface impoundments and examples of units that <u>are not</u> surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id.*

(*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* Pond 4 is a settling pond, designed to hold and store accumulation of CCR and liquids. *See* Pet Ex. 29.

More than De Minimis

62. Although the Agency has just demonstrated Pond 4: 1) factually meets the requirements of the CCR surface impoundment; 2) by design, "contain[s] substantial amounts of CCR;" and 3) is therefore subject to Part 845, the Agency provides further support that Pond 4 contains more than a "de minimis" amount of CCR. This is evidenced through calculations using results from the bathometric survey.

63. While not all CCR component percentages were provided for the berm samples from Pond 4, the samples were predominantly bottom ash, slag, and other CCR. *See* Pet Ex. 29, Table 7 at 14. Therefore, the berms are composed predominantly of CCR.

64. Prior to conducting the bathometric survey, SIPC lowered the water level in Pond 4. *See* Pet Ex. 29. Lowering the water level made a bathometric survey of the entire pond impossible. The exposed area is approximately half the size of the area for which a bathometric survey could be conducted. *See* Pet. Ex 29.

65. Given the thickness of the CCR reported in the exposed delta area of Pond 4 (*See* Pet. Ex. 29, Attachment A, Figure 12), the visible presence of CCR (*See* Agency Ex. 18), and the thicknesses of CCR sediment at the edge of the bathometric survey in several locations, the Agency estimated the exposed CCR to be approximately 5,460 cubic yards. *See* Pet. Ex. 29.

66. The bathometric survey indicates the average sediment thickness to be 1.67 feet. *See Id.* The area of Pond 4 that could be surveyed yields an estimated 5,316 cubic yards of CCR.

67. Pond 4 has a permitted volume of approximately 18 million gallons, which is 89,120 cubic yards. *See* Agency Exhibit QQ at 1. That volume is 38,377 cubic yards more than the total Pond 4 volume stated in Pet. Ex. 29. The fact that SIPC had lowered pond water levels prior to the bathometric survey does not account for the discrepancy, since the Petitioner used Google Earth to more accurately reflect historic operational water levels, Pet. Ex. 29 at 3, therefore the actual water elevation wasn't used. The pond sediment samples demonstrate that CCR is directly below the water in Pond 4, therefore, because of the historic use of this pond for treatment of water containing CCR, the unaccounted volume beneath the surveyed CCR in Pond 4 would also have to be filled with CCR. Some of the unaccounted volume in Pond 4 may be within the internal berm (also composed of CCR) in addition to lying beneath the surveyed CCR in Pond 4. Therefore, Pond 4 is storing approximately 10,776 cubic yards of CCR according to the bathometric survey, or about 430 semi-truck loads and an additional 27,611 cubic yards or 1,104 semi-truck loads of CCR not surveyed. The Agency does not consider 38,387 cubic yards of CCR or 1,534 semi-truck loads to be a de-minimis amount.

68. Pond 4 meets the criteria of an inactive CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 4 is subject to 35 Ill. Adm. Code 845.

Pond B-3

69. Pond B3 meets the criteria of an inactive CCR surface impoundment and as such contains more than a de minimis amount of CCR. Therefore, Pond B-3 is subject to Part 845.

Meets the Definition

70. Pond B3 is an inactive CCR surface impoundment. This is demonstrated through 1) permits, 2) aerial photos, and 3) because Pond B3 is the type of facility intended to be covered by the definition of a CCR surface impoundment.

71. Pond B-3 was permitted as an ash pond under Permit No. 1986-EN-0052. *See* Agency Ex. 48. The permit authorized "[c]onstruction of an earthen dam to impound 6.6 surface acres with a capacity of 45-acre feet (72,585 cubic yards) for disposal and settling of fly ash and sludge from sulfur dioxide scrubbers *See Id.* Agency Ex. 48. Fly ash and scrubber wastes will be discharged into the proposed impoundment for settling prior to discharge into Little Saline Creek." *See Id.*at 3. The permit engineer notes state that "Fly ash and SO_2 scrubber wastes will be sluiced to the proposed impoundment for settling prior to discharge to the South Fork Saline Creek via a 15" CMP to be designated Outfall No. 004* (005 must be new outfall)." *See Id.* at 5. Petitioner states that the pond was built by 1985 and was used primarily as a secondary pond to Pond A-1. *See* Amend Pet. at 12. Petitioner states that Pond A-1 received fly ash and coal pile runoff until 2003. *See Id.* at 12. Petitioner states that B-3 may have received discharges of fly ash from Units 1, 2, and 3 during Pond A-1 outages. *See* Amend Pet at 13.

72. Petitioner at times operated Pond B-3 as a primary CCR surface impoundment. *See* Amend Pet. at 13. Petitioner states that Pond B-3 was primarily operated as a secondary CCR surface impoundment. *See* Amend. Pet. at 12. "[S]econdary 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 from land disposal

elsewhere are also considered CCR surface impoundments and are covered by the rule." Fed. Reg. Vol. 80, No. 74 pg. 21357.

73. Pond B-3 operated as both a primary CCR surface impoundment and a secondary impoundment because it received sluiced CCR and it received of CCR from Pond A-1, a preceding impoundment, which resulted in significant amounts of CCR being stored in the CCR surface impoundment.

74. The Petitioner acknowledges that Pond B-3 received secondary and some primary discharges of fly ash for almost 20 years (1985-2003). *See* Pet. at 13. The Petitioner also states that the material removed from Pond B-3 had BTU content and a least a portion of the material was consumed for energy production. *See* Pet. at 13. The Petition provides no quantitative information regarding the amount of material that was burned nor the amount that was disposed of off-site. In Agency Ex. BB, Agency staff instructed SIPC personnel to properly dispose or land apply under an Agency permit all sludges removed from the Pond that were drying as of September 16, 2017. Agency staff further directed SIPC personnel to remove additional material from Pond B-3. Agency Ex. BB reports that SIPC personnel stated that the stockpiled material had been tested for metals and they believed it could be used as fill. The Petitioner has provided no information demonstrating that the material stockpiled in September of 2017 could meet the definition of CCB, under Section 3.135 of the Act or where and how the material was disposed. An aerial photo dated March 2017, Agency Ex. 15 shows a large amount of dark material with erosional channels inside Pond B-3 and on the face of the Pond B-3 berm.

75. Aerial photos in March 1993 and April 1998, display deltas. *See* Agency Ex. 3 and Ex. 4. Based on the Petitioner's statements that Pond B-3 received fly ash and scrubber sludge, the deltas are most likely CCR accumulating in Pond B-3. Sometime between April 1998 and March 2005,

an internal berm was constructed in the upper end of Pond B-3. *See* Agency Ex. 5. In August 2007, exposed CCR can be seen down-stream of the internal berm in Pond B-3. *See* Agency Ex. 8. In August 2010, a ring of CCR around the outer edge of Pond B-3 can be seen exposed at or above the water's surface. *See* Agency Ex. 10. The same ridge can be seen in Agency Ex. 15 after the Pond B-3 berm was breached and Pond B-3 was drained. Aerial photo dated November 2011, (*see* Agency Ex. 12), CCR is again visible down-stream of the internal berm. Based on the Petitioner's statements, no new CCR should have been placed in Pond B-3 after 2003. Therefore, Agency Ex. 8, Ex. 10 and Ex. 12, demonstrate that CCR and liquid was accumulated in Pond B-3, and CCR is stored in Pond B-3.

76. Pond B-3 is an inactive surface impoundment under Part 845 because it is a CCR surface impoundment that no longer receives CCR on or after October 19, 2015, and still contains CCR after October 19, 2015. Pond B-3 has not completed closure by removal requirements under Section 845.740(a).

77. Finally, Pond B3 is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units that are CCR surface impoundments and examples of units that are not surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id* (*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* Pond B3 is a settling pond, designed to hold and store accumulation of CCR and liquids and still contains CCR.

More than De Minimis

78. Although the Agency has just demonstrated Pond B3: 1) factually meets the requirements of the CCR surface impoundment; 2) by design "contain[s] substantial amounts of CCR;" and 3) is therefore subject to Part 845, the Agency provides further support that Pond B3 contains more than a de minimis amount of CCR. This is evidenced through calculations using results from the aerial photos and Pet. Ex 29.

79. During the SIPC Pond Investigation Pet. Ex. 29, Figure 3 at 6, SIPC was supposed to collect berm samples from Pond B-3. SIPC declined to collect sample B-3c. There was no CCR content determination done for samples B-3a or B-3b. Instead, the Petitioner relied only on indirect evidence from a partial shake test analysis Pet. Ex. 29, Table 5 at 12, also mischaracterizing those results, and earlier sampling to make a statement that the presence of CCR is unlikely. *See* Pet. Ex. 29 at 12. The Petitioner's Ex. 29 characterizes the concentrations of sulfate and calcium as low in Table 5. However, in the instance of sample B-3a the partial shake test reported sulfate results of 1,330 milligrams per liter (mg/L), which is well above the groundwater quality standard of 400 mg/L. In the instance of B-3b, Pet. Ex. 29 at 12 states that low concentrations of sulfate and calcium indicate there is likely no CCR present. However, the partial shake test for two samples taken at different depths from Pond 3A (samples labeled B-3Aa) in Pet. Ex. 29 Table 5 at 12, the concentrations of sulfate and calcium are lower or about the same as Pond B-3 samples. The CCR content of the Pond 3A samples were 90% and 91% fly ash, Pet ex. 29, Table 8 at 15. Therefore, based on the Petitioner's own information, the Agency believes even this partial, indirect data indicates the internal berm of Pond B-3 is CCR. In addition to the CCR left inside Pond B-3 Permit 1986EN0052, Agency Exs. 49 at 2, states that bottom ash will be used for erosion control on the berm constructed to create Pond B-3. As can be seen in a March 1993 aerial photo, Agency Ex. 3,

there is a dark strip of material where the plans call for bottom ash placement. Each subsequent aerial photo, Agency Ex. 3 through Ex 18, show varying degrees of vegetive cover and exposed bottom ash. Based on the size of the internal berm the Agency estimates there are approximately 4,680 cubic yards of CCR contained in the internal berm. Based on the length, width and thickness of bottom ash, per the construction permit, there are approximately an additional 466 cubic yards of bottom ash contained in the breached berm that formed Pond B-3. Assuming complete removal of all other CCR noted in the discussion above Pond B-3 stores in total, 5,146 cubic yards of CCR or about 205 semi-truck loads.

80. Pond B3 meets the criteria of an inactive CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 4 is subject to 35 Ill. Adm. Code 845.

South Fly Ash Pond

81. The South Fly Ash Pond meets the criteria of an existing CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, South Fly Ash Pond is subject to 35 Ill Adm. Code 845.

Meets the Definition

82. The South Fly Ash Pond is an existing CCR surface impoundment. This is demonstrated through 1) permits, 2) aerial photos, and 3) because the South Fly Ash Pond is the type of facility intended to be covered by the definition of a CCR surface impoundment.

83. The South Fly Ash Pond is comprised of "three earthen dams on an existing drainage way to impound 15.3 surface acres with a capacity of 117 acre-feet that forms a fly ash pond and the CCR surface impoundment was permitted to hold water at an elevation of 540.0 …" (*See* Pet. Ex. 12), and thus utilizes a combination of a natural topographic depression, man-made excavation, and is a diked area designed to hold an accumulation of CCR and water. *See* Agency Ex. NN.

84. The South Fly Ash Pond permit application establishes that the South Fly Ash Pond was designed to hold an accumulation of CCR and liquids and store CCR because the permit application was for the "[c]onstruction of Fly-ash settling Pond for an electric generator." *See Id.* at 4. Settling provides treatment by enabling solids to settle in the pond. *See* 80 Fed. Reg. 21357 (April 17, 2015).

85. Despite Petitioner assertions that "[n]o fly ash, bottom ash, or scrubber sludge was ever directly sent to or placed into the South Fly Ash Pond" (*see* Amended Petition at 9), direct sluicing of CCR is not a requirement to meet the definition of a CCR surface impoundment. *See* 80 Fed. Reg. 21357. "[S]econdary 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) … are also considered CCR surface impoundments and are covered by the rule." *See Id.*

86. The South Fly Ash Pond was principally a secondary impoundment (*see* Amend. Pet at 9) that received significant amounts of CCR from the former Emery Pond (*see* Pet Ex.29.)

87. Aerial photos from 2017 to 2021 demonstrate the South Fly Ash Pond meets the definition of an existing CCR surface impoundment. *See* Agency Exhibits 15-18. CCR formed a delta near the inlet from Emery Pond a CCR surface impoundment. *See Id.* Since these discharges continued until Fall 2020 (*see* Amd. Pet at 9), the Agency believes this represents placement of CCR in the South Fly Ash Pond after October 19, 2015.

88. South Fly Ash Pond is an existing CCR surface impoundment under Section 845.120 because it is a CCR surface impoundment that receives CCR on or after October 19, 2015 and still contains CCR after October 19, 2015.

89. Finally, the South Fly Ash Pond is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units that are CCR surface impoundments and examples of units that are not surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id.* a settling pond. (*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* The South Fly Ash Pond is a settling pond, designed to hold an accumulation of CCR and liquids.

More than De Minimis

90. Although the Agency has just demonstrated that the South Fly Ash Pond: 1) factually meets the requirements of the CCR surface impoundment; 2) by design, "contain[s] substantial amounts of CCR;" and 3) is therefore subject to Part 845, the Agency provides further support that the South Fly Ash Pond contains more than a "de minimis" amount of CCR. This is evidenced through calculations using results from the bathometric survey.

91. According to Pet. Ex. 29, Attachment A, the average depth of sediment in the SFAP is 1.57 feet. The surface area of what SIPC is currently calling the SFAP is approximately 59,000 square yards as measured on aerial photos. Using the average thickness that results in approximately 30,680 cubic yards of material. Prior to conducting the bathometric survey, SIPC lowered the water level in the SFAP (*see* Pet. Ex. 29) which made a bathometric survey of the entire pond impossible, while leaving areas of thicker sediment above water. *See* Pet. Ex. 29, Attachment A. An aerial photo from July 2021 (*see* Agency Ex. 18), shows a delta has formed at the discharge point from the former Emery Pond, which is a closed CCR surface impoundment. Based on the presence of

the delta near the discharge it appears that CCR did carry-over into the SFAP. *See* Agency Ex. 18. The Agency did not attempt to estimate the amount of exposed CCR in the SFAP, therefore, the total stored CCR estimated in the SFAP is conservative. Not discussed in the Pet. Ex. 29 is the northern end of the SFAP area as it was permitted by 1989-EN-3064, Agency Ex. 3. However, during 2009, SIPC began constructing an internal berm within the SFAP (*see* Agency Ex. 9), which separates approximately 3 acres or about 14,520 square yards of the original SFAP area. Based on the depth of the SFAP along the base of the internal berm, and the elevation of the top of the berm (540 feet MSL) as measured using Google Earth Pro, the berm is approximately 3.33 yards tall. This yields a volume of approximately 48,350 cubic yards of material to create the berm and fill the three-acre area. 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's estimates, there are approximately 79,030 cubic yards of CCR in total stored in the SFAP. Agency Exhibit NN at 1, indicates that the SFAP was permitted with a volume of 188,760 cubic yards. The total SFAP volume stated in Pet. Ex. 29 is 109,058 cubic yards. The difference between the permitted volume of the SFAP and the volume

stated in Pet. Ex. 29 is 79,702 cubic yards. The fact that SIPC had lowered pond water levels prior to the bathometric survey does not account for the discrepancy, since the Petitioner used Google Earth to reflect historic operational water levels more accurately, Pet. Ex. 29 at 3.

92. 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 (and logically) filled with CCR, because the bottom of the new pond would have filled first. The 79,702 cubic yards not accounted for by the survey 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. To put 158,730 cubic yards of CCR in a different perspective, a bulk material bed on a semi-tractor trailer typically holds 20-25 cubic yards of material. Assuming that each semi could haul 25 cubic yards of CCR, approximately 6,350 semi-trailer truck loads of material appear to be located in the SFAP.

93. A CCR surface impoundment remains CCR surface impoundment "even if they are ultimately dredged for land disposal elsewhere are also considered CCR surface impoundments and are covered by the rule." Fed. Reg. at 21357. U.S. EPA determined that this is a type of unit that poses the same risks of release due to structural instability and leachate contaminating ground or surface water, Id at 21357-8. It appears likely that three acres of the South Fly Ash Pond was filled with CCR to create a storage pad, simply adding to the volume of CCR already present.

94. The South Fly Ash Pond meets the criteria of an inactive CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, the South Fly Ash Pond is subject to 35 Ill. Adm. 845.

Pond 6

95. Pond 6 meets the criteria of an inactive CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 6 is subject to the Part 845.

Meets the Definition

96. Pond 6 is an inactive surface impoundment as evidenced through: 1) permits, 2) aerial photographs, and 3) because Pond 6 is the type of facility intended to be covered by the definition.

97. In 1982, SIPC obtained a construction and operation permit of a water pollution control facility for Pond 6. *See* Agency Exhibit RR. Specifically, SIPC was permitted to construct a dike to contain storm water run-off from their CCR pile.[5] *See* Id.

98. The top of the dike is at elevation 467.5 feet msl. *See* Agency Ex. CC at 7. The dike formed the northern extent of the impoundment. *See Id.* at 6. The natural land surface below 467.5 msl, or in some areas the base of the fly ash pond berms already constructed up-slope from the Pond 6 berm, formed the southern extent of the impoundment. *See Id*.

99. As can be seen in several aerial photos from 1993-2021, the CCR placed inside the diked area of Pond 6 has always been in direct contact with water, whenever an aerial photo was taken. *See* Agency Exhibits 3-18.

100. Piling of dry CCR in Pond 6 overflowed the limits of Pond 6. *See* Agency Exs. 2-9. This overflow of dry CCR extended onto IFAP, the RFAP, and onto a large portion of the FAE. *See* Agency Exs. 2-9. As a result, construction of CCR surface impoundments took place on top of this dry CCR deposited into Pond 6, Initial Fly Ash Pond (IFAP), Replacement Fly Ash Pond (RFAP), and the Fly Ash Extension (FAE).[6] *See* Agency Exhibit DD at 2.

[5] SIPC constructed the dike prior to obtaining the permit to construct. *See* Agency Ex. RR at 5.
[6] IFAP, RFAP, and FAE will each be discussed in detail below.

101. Following 10 years of operating Pond 6 as a CCR surface impoundment, in which dry CCR was deposited along with water, the Petitioner filed an initial facility report (IFR) in 1992. *See* Pet Exhibit 15. The IFR stated Pond 6 was only a narrow strip of open water and the CCR deposited in the remainder of Pond 6 was a permit exempt landfill. *See* Pet Exhibit 15.

102. However, less than one year after filing the IFR, SIPC sent a letter to the Agency stating their concerns over "effective water pollution control" could be addressed by dredging part of the sludge out of Pond 6 to increase the treatment capacity. *See* Agency Ex. AA. Therefore, the CCR contents of Pond 6 were being dredged to increase the water treatment capacity of Pond 6, in spite of Petitioner's claims that most of Pond 6 is a landfill.

103. Despite, SIPC's filing of an IFR, Pond 6 remained a CCR surface impoundment and continues to meet the current definition today. Pond 6 has been used since its construction as part of the water treatment circuit. *See* Agency Ex. DD at 2 and Pet Ex. 29, Figure 1.

104. Pond 6 meets the definition of an inactive surface impoundment. Pond 6 is an inactive surface impoundment under Section 845.120 because it is a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains an estimated 1 million cubic yards of CCR after October 19, 2015.

105. Finally, Pond 6 is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units <u>that are</u> CCR surface impoundments and examples of units <u>that are not</u> surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id.* (*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water holding ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.*

Pond 6 is a settling pond, designed to hold an accumulation of CCR and liquids and still contains CCR.

More than De Minimis

106. Although the Agency demonstrated above that Pond 6: 1) factually meets the requirements of the CCR surface impoundment; 2) by design "contain[s] substantial amounts of CCR;" and 3) is therefore subject to Part 845, the Agency provides further support that Pond 6 contains more than a de minimis amount of CCR. This is evidenced through evidenced through calculations using results from the bathometric survey.

107. Results from the bathometric survey indicate Pond 6 contains more than a de minimis amount of CCR. While the Petitioner included Pond 6 in the SIPC Pond Investigation Report (*see* Pet. Ex. 29), the Petitioner did not collect samples from location B-6a[7], due to steep slopes (*see* Pet. Ex. 29, Fig. 3 at 6), even though Petitioner anticipates future construction at the same location. *See* Pet. Ex. 10 at 3. The Petitioner also declined to collect a sample at location B-6c[8]due to wet soil conditions. *See* Pet. Ex. 29, Fig. 3 at 6. The wet conditions where CCR was deposited further demonstrate the direct contact of water and CCR in what is the full extent of Pond 6, which is larger than arbitrarily designated small ribbon-like footprint area of open water in of Pond 6. Based on the topographic map in Agency Ex. CC at 6 and elevation of water at 463.5 msl noted in Agency Ex. DD and Pet. Ex. 29, Attachment A, Fig. 8, which reports the down slope depth of Pond 6 at approximately 459.0 msl, there are at least four feet of saturated CCR below the rest of the dry placed CCR in Pond 6.

108. The Agency does not find the bathometric survey of Pond 6 from Pet. Ex. 29, Attachment A, Fig. 9 to be convincing, since it ignores the fact that the majority of the permitted foot-print of

[7] Also called B-S6a.
[8] Also called B-S6c.

Pond 6 is filled with CCR above the level of water in the impoundment. For consistency in its evaluation, based on the length, width and reported CCR thickness in what the Petitioner chooses to call Pond 6, the Agency estimates approximately 3,670 cubic yards of CCR, or about 147 semi-truck loads of CCR within the surveyed area of Pond 6. Further calling the Pet. Ex. 29 into question, is the disparity between the reported Pond 6 volume 46,830 cubic yards Pet. Ex. 29 and the volume reported by other documents submitted to the Agency by the Petitioner. Agency Ex. MM at 18 and Agency Ex. PP at 3, which were produced by the Petitioner, report Pond 6 volume at 25,795 cubic yards and 25,813 cubic yards, respectively. While the Agency does not agree that Pond 6 is composed only of the narrow ribbon of visible water, it is unclear why the bathometric survey reports 80% more volume than is reported by Petitioner's other documents. The reported sediment samples collected from Pond 6 (only 2 of 3 collected samples were reported) indicate the samples are almost 100% CCR Pet. Ex. 29, Table 7 at 14, which is to be expected in a CCR surface impoundment.

109. The Agency believes a more realistic estimate of the amount of CCR in Pond 6 as it was permitted in 1982, Agency Ex. RR, can be derived from the IFR. Agency Ex. 3, which is March 1993 aerial photo, shows that some amount of the CCR being deposited dry in Pond 6 has already obscured the berm constructed for the RFAP and is over filling it, has begun to enter the FAE and is at the edge of the IFAP berm, which abuts the RFAP. Agency Ex. 4, an April 1998 aerial photo shows that CCR has accumulated onto the IFAP and the CCR has been reworked to once again form long narrow impounding structures on top of the location of Pond 6 and extending onto the RFAP too. Subsequent aerial photos, Agency Ex. 8 and Ex. 9 show continued placement of CCR into Pond 6, but also shows movement of CCR from Pond 6 into the FAE. In Agency Exs. 13 and 14, the pipes used to carry the CCR and liquids are visible. The 2020 Annual Landfill Report,

Agency Ex. FF, indicates there are approximately 1,344,247 cubic yards of CCR in what SIPC calls the former landfill, with 930,160 cubic yards of remaining capacity, for a total amount of 2,274,407. While the Agency cannot verify that either of the values provided by SIPC is correct, given the size of the permitted area of Pond 6, the fact that Pond 6 includes a fairly large area of land with a lower, relatively flat topographic elevation and the fact the IFAP, RFAP, and FAE into which CCR overflowed from Pond 6 also contain significant amounts of CCR, the Agency estimates, there are at least 1 million cubic yards of CCR in Pond 6, which is about 40,000 semi-truck loads. Of those estimated 1 million cubic yards, given the area of Pond 6 and the measured elevation of water in Pond 6 discussed above, at least 89,400 cubic yards of CCR in Pond 6 are expected to be saturated continuously.

110. Pond 6 meets the criteria of an inactive CCR surface impoundment and as such, contains more than a de minimis amount of CCR. Therefore, Pond 6 is subject to 35 Ill. Adm. Code 845.

Initial Fly Ash Pond (IFAP)

111. The Initial Fly Ash Pond meets the criteria of an inactive CCR surface impoundment. Therefore, the Initial Fly Ash Pond is subject to 35 Ill Adm. Code 845.

Meets the Definition

112. The IFAP is an inactive CCR surface impoundment as evidenced through aerial photographs and because the IFAP is the type of facility intended to be covered by the definition. Finally, the Petitioner's activities demonstrate the IFAP remains a CCR surface because it was never closed or dewatered.

113. The permit history[9] for the surrounding CCR surface impoundments demonstrates the IFAP meets the criteria of a CCR surface impoundment. Permit #1977-EN5732 permitted the

[9] Petitioner states the IFAP received wet fly ash until approximately 1977. There is no permitting record documenting this.

construction of a water pollution control facility referred to as the Replacement Fly Ash Pond *See* Agency Ex. EE. Agency Ex. TT confirms that the "existing" fly ash pond being referred to in Permit #1977-EN5732 is the IFAP. No permit could be located documenting the construction of the IFAP.

114. Agency Ex. DD shows the IFAP with flow lines running to it and it is included as part of the NPDES permit flow system. Agency Exs. 3-14 display the continued use of the IFAP for sluicing of CCR from 1980-2015. Therefore, the IFAP was designed to hold an accumulation of CCR and liquids and still stores CCR.

115. Aerial photos demonstrate the IFAP meets the definition of a CCR surface impoundment. Aerial photos from March 1993 through May 2015 (*see* Agency Exs. 3-14), show the area in use for receiving sluiced material, as deltas of CCR and water are visible. In Agency Ex. 13, the discharge point can be seen at the head of a stream of water inside the impoundment. The Petition at 15 acknowledges that the area currently contains CCR. Therefore, by design and function, the IFAP meets the definition of a CCR surface impoundment and was being used as a CCR surface impoundment after SIPC filed their initial facility report claiming they were operating a Part 815 landfill.

116. Agency Ex. 3, a March 1993 aerial photo appears to display a reflective surface that looks similar to the dry waste being placed in Pond 6. By April 1998, Agency Ex. 4, the aerial view shows that the Petitioner had modified the surface of the CCR stacked on top of the IFAP to allow additional mixed liquids and solids settling. Agency Ex. 5, March 2005, through Agency Ex. 14, May 2015 display varying amounts of visible liquids and solids in the IFAP. Agency Ex. DD, from the 2007 NPDES permit contains a notation that the water elevation in the IFAP is 505.0 feet msl. Agency Ex. DD also contains notations and diagrams showing that flow lines for waste (CCR)

transport water to enter the IFAP. Later available aerial photos taken in 2017, 2018, 2020 and 2021 do not show the IFAP area with any visible liquid in it. *See* Agency Exs. 15, 16, 17, and 18.

117. The IFAP meets the definition of an inactive surface impoundment. The IFAHP is an inactive surface impoundment because it is a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains CCR after October 19, 2015.

118. The IFAP is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units that are CCR surface impoundments and examples of units that are not surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id.* (*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water hold ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* The IFAP is a settling pond, designed to hold an accumulation of CCR and liquids and still contains CCR.

119. Finally, Petitioner's activities demonstrate that the IFAP is a CCR surface impoundment. Specifically, the Petitioner never closed the IFAP as required and the IFAP was never dewatered. Therefore, the IFAP remains subject Part 845.

120. Special Condition 2, of the Petitioner's permit required closure of the pond. *See* Agency Ex. SS. The condition required the "existing" fly ash pond be covered with soil and seeded to prevent erosion. See Id. IFAP was never closed as required by the permit.

121. By 1981, the RFAP became filled with CCR to the point that SIPC applied for and was granted an additional construction and operation permit for the water pollution control facility referred to as the Fly Ash Extension. *See* Agency Ex. GG at 6. This permit supplemented the initial

permit, allowing the temporary use of the IFAP for discharge of the fly ash and bottom ash lines prior to flowing to Pond 3. *See* Agency Ex. GG.

122. Therefore, since the IFAP was available for use four years after Special Condition 2 in Permit 1977EN5732 required it's closure, the Petitioner had not complied with the closure requirement. Further, Agency Ex. 2 demonstrates that in August 1980, no soil cover and vegetation was in place on the IFAP, thus further confirming the closure condition had not been met.

123. Further confirming the closure condition had not been met, the IFAP was never properly dewatered as required by 35 Ill. Adm. Code 845.750. Based on the reported water elevations noted in Agency Ex. DD, the location of the ponds with reported water elevations and the initial topographic surface of the area Agency Ex. TT, the Agency believes it likely that a portion of the CCR in the IFAP remains saturated.

124. The IFAP meets the criteria of an inactive CCR surface impoundment. Therefore, the IFAP is subject to 35 Ill Adm. Code 845.

Replacement Fly Ash Pond (RFAP)

125. The RFAP meets the criteria of an inactive CCR surface impoundment. Therefore, the RFAP is subject to 35 Ill Adm. Code 845.

Meets the Definition

126. The RFAP is an inactive CCR surface impoundment as evidenced through permits, aerial photographs, and because RFAP is the type of facility intended to be covered by the definition. Finally, the Petitioner's activities demonstrate the RFAP remains a CCR surface because it was never closed or dewatered.

127. The permit history demonstrates the RFAP meets the criteria of a CCR surface impoundment. The RFAP was permitted under water pollution control permit 1977EN5732 in November 1977. *See* Agency Exs. SS and TT.

128. The RFAP received water and fly ash from the hydroveyer system and may also have received fly ash from Units 1, 2, 3, and 4 from construction until 1985. *See* Petition at 14-15. The Petitioner acknowledges that the area currently contains CCR. *See* Petition at 15.

129. Permit 1977EN5732 permitted the construction of the RFAP, a water pollution control facility. *See* Agency Ex. EE. The RFAP was permitted to receive an average of 34,500 gallons per day from the power plant (*see* Agency Ex. EE at 3) to hold fly ash and settle the solids (*see* Agency Ex. EE at 7) and be used for back-up treatment only (Agency Ex. EE at 8). However, the permitted use of the RFAP accumulated so much CCR, it required the construction of the Fly Ash Extension (FAE) for additional capacity, under Permit 1981EN2776. *See* Agency Ex. 34.

130. A 1980 NPDES permit modification request identified a problem with the FGD conveyor system during freezing weather and requested that FGD slurry also be added to the RFAP when dry placement into the CCR surface impoundments was not possible. *See* Agency Ex. HH.

131. Aerial photos demonstrate the RFAP meets the criteria of a CCR surface impoundment.

132. Agency Ex. 2, an aerial photo dated August 1980, documents the internal filling taking place in the RFAP. However, by March 1993, Agency Ex. 4, dry placed CCR has spilled over from Pond 6 and has filled the majority of the RFAP. This is a likely result because the upslope end of Pond 6 and the berm which forms the RFAP immediately abut one another, Agency Ex. CC at 6.

133. By April 1998, Agency Ex. 4, shows that SIPC has constructed long narrow impoundments on the surface of the dry placed CCR within the footprint of Pond 6 and the footprint of the RFAP.

Though continued dry handling of CCR is evident in the aerial photo, the need for liquid handling of CCR in cold weather and during mechanical malfunctions as described in Agency Ex. HH, would still be necessary.

134. Agency Ex. 5 through Agency Ex. 14, which are aerial photos dated between March 2005 and May 2015 show varying amounts of solids and liquids in the long thin impoundments.

135. Agency Ex. 9, October 2009 aerial photo shows run-off from the area of the RFAP in the western most impoundment being redeposited as a delta in Pond 6. CCR was being managed in conjunction with water.

136. Agency Ex. DD reports water elevations for each of the long thin impounds that were being operated until at least May 2015 in the footprint of the RFAP and Pond 6. Agency Ex. DD also contains notations and diagrams showing that flow lines for waste transport water to enter each of the thin impoundments and for those impoundments to in turn discharge to Pond 3. Agency Ex. DD makes it clear that the RFAP was being operated as a CCR surface impoundment long after it was full of CCR, and additional wet handling was needed.

137. In Agency Ex 13, discharge pipes can be seen in the photo discharging into trenches within the foot print of the RFAP.

138. The RFAP meets the definition of a an inactive CCR surface impoundment. The RFAP is an inactive surface impoundment because it is a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains CCR after October 19, 2015.

139. The RFAP is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units that are CCR surface impoundments and examples of units that are not surface impoundments: “Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons.” *Id.*

(*emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water hold ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* The RFAP is a settling pond, designed to hold an accumulation of CCR and liquids and still contains CCR.

140. The Petitioner's activities demonstrate the RFAP remains a CCR surface because it was never closed or dewatered. The Petitioner has not shown that the RFAP has been dewatered, under 35 Ill. Adm Code 845.750, nor has the Petitioner shown that the CCR within a portion of the RFAP is not saturated.

141. Based on the reported elevation of 491.4 feet msl within the FAE, Agency Ex. DD, the bottom elevations of the RFAP where it adjoins the FAE having elevations ranging from 471.3 to 485 Agency Ex. EE at 15, and the fact that every available aerial photograph from March 1993 to Summer 2021, Agency Ex. 3 through Agency Ex. 18 shows some amount of surficial water in the FAE, presumably at approximately 491 feet msl, the Agency believes it is likely a portion of the CCR in the RFAP is saturated.

142. The RFAP meets the criteria of an inactive CCR surface impoundment. Therefore, the RFAP is subject to 35 Ill Adm. Code 845.

Fly Ash Extension (FAE)

143. The FAE meets the criteria of an inactive CCR surface impoundment. Therefore, the FAE is subject to 35 Ill Adm. Code 845.

Meets the Definition

144. The FAE is an inactive CCR surface impoundment as evidenced through its permit, aerial photographs, and because it is the type of facility intended to be covered by the definition.

145. The permit history demonstrates the FAE meets the criteria of a CCR surface impoundment. Permit 1981EN2776 authorized the construction of the water pollution control facility referred to as the Fly Ash Extension, was approved September 1981. *See* Agency Ex. 34. The impoundment was a 39.7 acre-feet fly ash storage pond. The permit for the FAE estimates between 11,000 and 15,000 cubic yards of CCR will be sluiced to the FAE annually, because only 1,000 cubic yards of capacity remains in the existing fly ash pond. *See* Agency Ex. 34 at 11. The application form WPS-PS-1 states that the permit was applied for an "extension to existing fly ash pond to allow storage of flyash from 4 coal fired generating units." *Id*. at 7 The drawing (A-326) labeled the Flyash Extension as "Proposed Flyash Storage Pond Extension). *Id*. at 13. Therefore, the Fly Ash Extension is a natural topographic depression, man-made excavation, or diked area designed to hold an accumulation of CCR and water because it was designed to be a fly ash storage pond. The FAE was also designed to treat, store, or dispose of CCR because the permit application stated that it was "to allow storage of fly ash."

146. Aerial photos demonstrate the FAE meets the criteria of a CCR surface impoundment. In addition to sluiced CCR visible in Agency Ex. 3, March 1993, which is the first available photo after the impoundment was constructed, aerial photos beginning with April 1998 through April 2012, Agency Ex. 4 through Ex. 13, show progressive filling of the FAE with dry handled CCR from the east and south sides of the impoundment. Though vegetated in the Summer 2021 aerial photo, Agency Ex 18, displays essentially the same CCR contours as are visible in April 2012, Agency Ex.13.

147. It is important to note that every aerial photo available from 1993 through 2021, Agency Ex. 3 through Agency Ex.18, displays some amount of water visible in the FAE. Given the photographic evidence, the FAE contained water and CCR since at least 1993. There must be both

visible water and CCR within an impoundment to be federally regulated as a CCR surface impoundment and hence be regulated by Part 845, the FAE is a CCR surface impoundment. Pooled water at the surface of the FAE demonstrates that the CCR in the FAE is saturated.

148. The FAE is an inactive closed CCR surface impoundment because it is a CCR surface impoundment in which FAE was placed before but not after October 19, 2015, and still contains CCR on or after October 19, 2015.

149. The FAE is the type of facility intended to be covered by the definition: a settling pond. In the preamble to federal rule, U.S. EPA provided examples of units that are CCR surface impoundments and examples of units that are not surface impoundments: "Examples of CCR surface impoundments are holding, storage, *settling* and aeration pits, ponds, and lagoons." *Id.* (*Emphasis added)* 80 Fed. Reg. 21357 (April 17, 2015). "CCR surface impoundments do no not include cooling water ponds, process water ponds, wastewater treatment ponds, storm water hold ponds or aeration ponds – as they are not designed to hold an accumulation of CCR." *Id.* The FAE is a settling pond, designed to hold an accumulation of CCR and liquids and still contains CCR.

150. The FAE meets the criteria of an inactive CCR surface impoundment. Therefore, the FAE is subject to 35 Ill Adm. Code 845.

151. As demonstrated through the fact-based analysis in the Applicability Analysis above, each Pond at issue in the Amended Petition: 1) meets the requirements of a CCR surface impoundment; 2) as such, contains more than a de minimis amount of CCR; and 3) are therefore, subject to 35 Ill Adm. Code 845.

152. Part 257 was not intended to impose any requirements on CCR surface impoundments that have in fact "closed" before the effective date of Part 257 Pet. at 36, with the concept that a CCR surface impoundment that does not have visible water is not ***managed with water*** (emphasis

original) Amend Pet. at 36. Saturated CCR below the surface also exerts hydraulic head on the CCR below the saturated zone. The Petitioner appears to assert that adding additional dry CCR to a CCR surface impoundment, which has not been dewatered, constitutes the closure of the CCR surface impoundment. In fact, to properly close a CCR surface impoundment, it must be dewatered under Section 257.102 and Section 845.750.

153. Following the Petitioner's reasoning, a CCR surface impoundment dewatered for closure, would no longer meet the definition of a CCR surface impoundment and would be exempt from regulation under both Part 257 and Part 845.

154. However, whether a CCR surface impoundment leaks dry, is pumped dry, or is filled with dry CCR, an appropriate cover system is required to prevent future impoundment of liquids and to minimize infiltration to the maximum extent feasible. The Petitioner makes no claim that the IFAP, RFAP, and the FAE ever had free liquids removed from within the CCR stored there.

155. USEPA makes clear that the only inactive CCR surface impoundments that do not require regulatory oversight are those that have been properly closed: "The sole exception is for 'inactive' CCR surface impoundments that have completed dewatering and capping operations (in accordance with the capping requirements finalized in this rule)…". 80 Fed. Reg. 21342 (Apr. 17, 2015).

156. In addition, 40 C.F.R. § 257.102(d) provides criteria that must be met to ensure that a CCR surface impoundment no longer contains water and can no longer impound liquid.

157. SIPC has provided no evidence has been presented that would establish the surface impoundments were closed with an Agency approved plan.

158. The Petitioner also states that IFAP, RFAP, and the FAE are not currently, and were not as of October 19, 2015, "designed to hold an accumulation of CCR and liquids." The Act defines a CCR surface impoundment as follows:

> *Sec. 3.143 CCR surface impoundment. "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. 415 ILCS 5/3.143*

159. When evaluating the definition of CCR surface impoundment; the Petitioner appears to focus on the present tense verb "is" because Petitioner claims that the IFAP, RFAP, and FAE and have been at least since the early 1990's dry and thus claim the CCR surface impoundments are not currently designed to hold an accumulation of CCR and liquids. Pet. at 26 However, "is" modifies the past participle "designed". The use of the present tense "is" in conjunction with the past tense "designed" has been interpreted by the Petitioner to mean a CCR surface impoundment must contain both CCR and liquids during the entire active life of the impoundment. Pet. at 26-27. However, in its August 21, 2018 decision in the case of *Utility Solid Waste Activities Group, et al. v. Environmental Protection Agency and Waterkeeper Alliance, et al.*, the District of Colombia United States Court of Appeals addressed a similar joining of the present tense "is" and the past tense "disposed of" in what is known as the "USWAG decision." 901 F.3d 414, 438-42. The Agency draws an applicable parallel here, wherein, in its discussion, the Court states the following:

> To divine its proper meaning, we must interpret the operative phrase "is disposed of" as a whole. Importantly, while the "is" retains its active present tense, the "disposal" takes the form of a past participle ("disposed"). In this way, the disposal itself can exist (it "is"), even if the act of disposal took place at some prior time.

160. Similarly, "designed" is the past participle of "design," while "is" allows the design to exist even if the initial design was in the past. Participles are known as "non-finite verbs" because they

are verbs that, by themselves, do not show tense. The Agency's exhibits demonstrate that the design of the Initial Fly Ash Pond, the Replacement Fly Ash Pond, and the Fly Ash Extension is designed to contain an accumulation of CCR and liquids, they were operated in that capacity, and as required by the definition of CCR surface impoundment, still store CCR

161. Therefore, the Agency has demonstrated how each Pond at issue meets the requirements of a CCR surface impoundment and is therefore subject to Part 845.

REQUIRED ADJUSTED STANDARD ANALYSIS

Illinois EPA's Recommendation must set forth the rationale for the Agency's position and may present any information which the Agency believes is relevant to the Board's consideration of the proposed adjusted standard. 35 Ill. Adm. Code 104.416(a). At a minimum, the Agency must address and respond to the petition with respect to each issue raised by the requirements of Section 104.406(a) through (j). 35 Ill. Adm. Code 104.416(b).

Illinois EPA hereby provides its analysis of SIPC's request for an adjusted standard exempting the ponds at issue from Part 845 requirements:

35 Ill Adm. Code 104.406(a). ***A statement describing the standard from which an adjusted standard is sought. This must include the Illinois Administrative Code citation to the regulation of general applicability imposing the standard as well as the effective date of that regulation;***

SIPC requests an adjusted standard from 35 Ill. Adm. Code 845; Standards for the Disposal of Coal Combustion Residuals. Part 845 took effect on April 21, 2021.

35 Ill Adm. Code 104.406(b). ***A statement that indicates whether the regulation of general applicability was promulgated to implement, in whole or in part, the requirements of the CWA (33 USC 1251 et seq.), Safe Drinking Water Act (42 USC 300(f) et seq.), Comprehensive Environmental Response, Compensation and Liability Act (42 USC 9601 et seq.), CAA (42 USC 7401 et seq.), or the State programs concerning RCRA, UIC, or NPDES (see 415 ILCS 5/28.1);***

Part 845 implements Sections 12, 22, and 22.59 of the Act.

35 Ill Adm. Code 104.406(c). ***The level of justification as well as other information or requirements necessary for an adjusted standard as specified by the regulation of general applicability or a statement that the regulation of general applicability does not specify a level of justification or other requirements;***

Illinois EPA agrees with Petitioner that Part 845 does not specify a level of justification for an adjusted standard. *See* Amd. Pet. at 40-41. Therefore, the applicable level of justification are the factors identified in Section 28.1(c) of the Act, 415 ILCS 5/28.1(c).

35 Ill Adm. Code 104.406(d). ***A description of the nature of the petitioner's activity that is the subject of the proposed adjusted standard. The description must include the location of, and area affected by, the petitioner's activity. This description must also include the number of persons employed by the petitioner's facility at issue, age of that facility, relevant pollution control equipment already in use, and the qualitative and quantitative description of the nature of emissions, discharges or releases currently generated by the petitioner's activity;***

The Petition adequately describes the location of the subject facility. The Agency has no information to dispute the number of employees or the dates when the facility initiated coal combustion in certain units, or stopped operating the units.

The Petitioner has not provided adequate information about the area affected by the Petitioner's activities and the relevant pollution control equipment, which for this adjusted standard petition are surface impoundments.

Also, the Petitioner has not provided an adequate qualitative or quantitative description of the nature of emissions, discharges, or releases generated by the Petitioner's activities.

The Petitioner owns and operates several impoundments at its facility. These impoundments treat water from several waste streams. See Agency Ex. 55 at 2. Based on the Petitioner's own exhibits Pet. Ex 29, many of the impoundments at the site currently store CCR.

The Petitioner claims to have had only one impoundment that meets the definition of a CCR surface impoundment Amd Pet at 7-8. However, as demonstrated in this recommendation, the Petitioner's own documents, Pet. Ex. 29, it is very clear there are more CCR surface

impoundments. The Agency provides further documentation in the form of permits and aerial photos, as described and referenced relative to each of the impoundments subject to this Petition, that there are more impoundments that meet the definition of a CCR surface impoundment.

As discussed in the Agency's response to Pond 3, one of the permitted uses was run-off from the scrubber sludge storage area (i.e. the overfilled part of Pond 6, the IFAP and the RFAP). The run-off discharges directly to Pond 3 and is continuing. As discussed in the Agency's response to Pond 6, the IFAP, the RFAP and FAE dry CCR was discharged directly into those ponds. Therefore, it's unclear when the petitioner says "direct discharges" if the Petitioner means only sluicing will not occur. The definition of a CCR surface impoundment does not require a direct discharge of CCR into the impoundment. It does not matter if the CCR was carried through multiple ponds. The definition only requires that the impoundment is designed to hold an accumulation of CCR and liquids and that CCR is treated, stored, or disposed of in the impoundment. The Agency agrees that impoundments containing de minimis amounts of CCR do not meet the definition of a CCR surface impoundment, however, as explained in its recommendation, each pond subject to this petition contains a significant amount of CCR.

With regard to current operational condition, Pet. at 6 states that with the 2003 repowering of Unit 123, the circulating fluidized bed (CFB) allowed 100% dry ash handling and ended the wet fly ash handling at the Marion Station. That statement does not account for other CCR streams such as bottom ash, scrubber sludge or bed ash. For example, Pet. at 7 states that Units 1, 2, 3 and 4 sluiced bottom ash to Ponds 1 and 2, but Unit 4 did not shut down until October 2020. Pet. at 3. As detailed in the IFAP, RFAP, and Pond 6 discussions in this recommendation, SIPC had a need for surface impoundments to handle wet CCR when the dry

handling system froze or broke. The Pet. at 7 makes a point of saying 100% of the bottom ash from closed units 1,2,3 and 4 was sluiced to Ponds 1 and 2 prior to being removed for beneficial use. The Petition also states that ash from Unit 123's bed boiler is handled dry and beneficially used off-site. The Petition does not claim that 100% of the bed ash is used beneficially and provides no information on how the bed ash or Unit 123 fly ash is used or disposed. There is also no explanation provided in the Petition of what happens if the Unit 123 bed ash or fly ash handling equipment has a mechanical failure, or if used beneficially, what happens when the beneficial end use is unavailable for a period of time, yet CCR is being generated. The Petitioner provides no evidence in the form of a shake test that Unit 123 CCR meets the criteria of Section 3.135 of the Act for beneficial use, though its beneficial use is claimed.

The Petition at 3 states that Unit 4 closed in October 2020. The petitioner makes no claim that between October 2015, when Part 257 became effective, and October 2020 when Unit 4 closed that there were no direct (or indirect) discharges of CCR to any of the impoundments subject to the Petition. However, Pet Ex. 29, Table 9 at 17 displays a simplified summary of shake test results. The summary displays concentrations of Boron, Selenium, and Thallium in Unit 4 fly ash in excess of the Class I groundwater standards. Therefore, Unit 4 fly ash could not be beneficially used under Section 3.135 of the Act, based on even this partial listing of the metals required for analysis for beneficial use. The Petitioner claims the CCR surface impoundments stopped receiving CCR before October 2015, Pet. at 6, so the CCR could not go there. The Petitioner could have sent the Unit 4 fly ash to a coal mine permitted to accept coal combustion waste, but the Petition makes no such claim. Petitioner does make reference to burning mine waste (i.e. recovered carbon) Pet. at 3, but is silent with regard to waste disposal at a coal mine.

The Petitioner also does not claim that the CCR was sent to an off-site landfill. If Unit 4 fly ash (and possibly Unit 123 fly ash) was not landfilled on-site, not landfilled off-site, not disposed at a mine, not stored in a CCR surface impoundment and could not be used beneficially, the Petitioner must provide an explanation of how CCR was, and is currently handled during periods of mechanical failure, system upsets or temporary lack of a beneficial use to appropriately address the requirements for the adjusted standard.

In addition, 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 impoundment 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.

Under the assumption that shallow groundwater flow mimics the natural topography and using Pet Ex. 29, Fig 1, the Agency provides the following observations about the groundwater monitoring wells locations displayed in Fig. 1. 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. Monitoring well C3 is up gradient of the SFAP. 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. 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. 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. Monitoring well S4 is not down gradient of any of the CCR surface impoundments, is down gradient of the Lake of Egypt dam, and on the other side of a slope that may create at least a partial hydrologic divide. Monitoring well S5 is upgradient of all of the CCR surface impoundments. Finally, monitoring well S6 is up gradient of Pond B-3 and at best cross gradient from Pond 4. The Petitioner did not monitor for the proper constituents, did not utilize proper sampling methods nor did the Petitioner establish appropriate groundwater protection standards, and therefore does not allow for a proper groundwater impact assessment. Therefore, the groundwater data the Petitioner is using does not seem suitable for the purpose for which it is being used.

The Agency would like to compare the groundwater monitoring results evaluated in Pet. Ex. 29, with the groundwater monitoring results evaluated in Pet. Ex. 11, which are proximate to former Emery Pond. The former Emery Pond is the only Pond SIPC acknowledged to be a CCR surface impoundment and was closed by removal prior to July 30, 2021. As a comparison to the

other impoundments, SIPC's initial operating permit application for the former Emery Pond, Agency Ex. II at 15, states Emery Pond has an approximate 6.6 acre-foot capacity, which equals 10,648 cubic yards of CCR. As discussed in the Agency's evaluation of each of the de-minimis Ponds all of them with the exception of Pond B-3 contain more CCR than Emery Pond was capable of containing.

In Pet. Ex. 11 at 30, Hanson (Petitioner's consultant) concludes that "…concentrations of Arsenic, Boron, Calcium, Chloride, Cobalt, Lead, pH, Sulfate, Thallium, and TDS found above the Class I and Class II standards are the result of pond and contact water migration from the Site." The Agency notes that there is no Part 620 groundwater protection standard for Calcium and Part 845 has only a monitoring requirement for Calcium. The Agency further notes that at the time Pet. Ex. 11 was written, the Section 845.600 groundwater protection standards had not been adopted. However, when adopted, the Section 845.600(a)(1) groundwater protection standards were established at the lower numerical value of either Section 620.410 Class I groundwater standards, or Part 257 Appendix III or Appendix IV. Therefore, the exceedances identified by Hanson would also represent exceedances of the Section 845.600(a)(1) groundwater protection standards.

Based on Pet. Ex. 11, the Agency believes it is likely that the numerous other unlined CCR surface impoundments operated by SIPC also have similar groundwater protection standards exceedances. The Agency maintains that a properly placed and constructed monitoring well system, down gradient of the other CCR surface impoundments at the facility, when properly sampled for all of the Part 845 constituents would show a different set of groundwater conditions than the partial assessment provided in Pet. Ex. 29.

Therefore, the Agency maintains that to provide an adequate qualitative or quantitative description of the nature of emissions, discharges or releases, an adequate groundwater monitoring system, sampled and analyzed correctly, is necessary to define the full extent of releases.

35 Ill Adm. Code 104.406(e). A description of the efforts that would be necessary if the petitioner was to comply with the regulation of general applicability. All compliance alternatives, with the corresponding costs for each alternative, must be discussed. The discussion of costs must include the overall capital costs as well as the annualized capital and operating costs;

The Agency agrees that complying with a rule that requires monitoring, a properly placed and constructed monitoring well system, structural safety assessments, modeling groundwater flow to evaluate impacts on groundwater and surface water and thoroughly evaluating site conditions, closure options and closure as part of a permit process will cost considerably more than taking no action. The Petition at 47, cites Board orders that say extremely high costs to control a particular pollutant is not economically reasonable if the controls would not result in significant environmental improvement. The Petitioner has not provided a facility wide hydrogeologic assessment that demonstrates there is no need to provide further management or corrective action of the surface impoundments at the facility. The only facility wide network of monitoring wells discussed in Pet. Ex. 29, was not reviewed or approved by the Agency prior to their installation. Petitioner's Ex. 16 demonstrates that the facility wide well network was not properly monitored. Based on the information provided by the Petitioner, the Petitioner cannot confirm that significant environmental impact has not already occurred or that significant environmental benefit will not be realized by regulation under Part 845. Petitioner's Ex. 11 describes significant levels of contaminants proximate to former Emery Pond where localized hydrogeologic investigation was undertaken. Therefore, thorough inspections, a hydrogeologic

characterization of the entire facility, and an adequate groundwater monitoring system as required by Part 845 is warranted.

Due to SIPCs CCR handling practices Agency Exs. 1-18 and the fact that most of the water pollution control facilities were permitted immediately adjacent to one another Agency Exs. EE, GG, 34, CC, RR, the junction between Pond 3, the RFAP, the IFAP, and FAE, where they abut the south end of Pond 6 has been obscured by CCR Agency Exs. 2-18. Pond 4 immediately abuts the south end of the FAE Agency Ex CC. Further Pond 3A is immediately adjacent to Pond 3 Pet Ex. 29. A single groundwater monitoring system for these seven CCR surface impoundments would be logical.

Section 845.630(d) allows the installation of multiunit groundwater monitoring systems. 35 Ill. Adm Code 845.630(d). Pond B-3 which is located considerably to the west of the Pond 3, 3A, Pond 4, Pond 6, the IFAP, the RFAP, and FAE would require its own down gradient wells but may be able to share background wells with the other impoundments north of Lake of Egypt Road. Given its location, the SFAP is likely to require its own groundwater monitoring system.

Contrary to Pet. at 48, individual monitoring systems for each CCR surface impoundment would not be necessary. As a practical matter, individual groundwater monitoring systems would not be possible because of CCR surface impoundment locations and past CCR handling practices Agency Exs. 1-18, EE, GG, 34, CC, RR. Based on available information from Agency Exhibits and an understanding of hydrogeology, the Agency believes no more than three groundwater monitoring systems would be required to meet the Part 845 requirements for the ponds subject to this Petition. Therefore, the $100,000 estimated for O&M for Ponds 3, 3A, 4, 6, B-3 and SFAP Pet. at 47-50 (which would be $33,333 annually) and $67,536 annually for the first 10 years and $33,752 annually for remainder of the post-closure period Pet at 60 for the IFAP, RFAP, FAE

and Pond 6, are not separate costs, but more likely, akin to the costs predicted for the IFAP, RFAP, FAE and Pond 6. Therefore, in round numbers, the Agency estimates O&M costs of $70,000 for the first year and $35,000 for the remainder of post-closure care.

As described above, at least seven of the CCR surface impoundments subject to this Petition could be monitored by a single groundwater monitoring system. Since the area occupied by those seven CCR surface impoundments occupy approximately the same area as the "landfill", it is unclear to the Agency, from the data provided Amd. Pet. at 59-60, why O&M for the "landfill" is estimated as $42,000 annually for the first five years and $12,400 annually for the next ten years Pet. at 60, unless the anticipated O&M will be far less comprehensive than estimated under Part 845. The Agency acknowledges that in addition to groundwater monitoring, closure in place (if approved) would require cover maintenance and inspections. However, as pointed out by the Petition at 58, the cover requirements of Part 815 and Part 845 are consistent with each other. Therefore, the Agency questions why the Petitioner estimates the early years of O&M are 60% more expensive annually under Part 845 than under Part 815, and 280% more expensive annually for subsequent years under Part 845 than under Part 815. Regardless of the final number of groundwater monitoring systems, if done properly, one initial operating permit and one construction permit could address all of the impoundments.

In addition, as discussed above, the monitoring wells currently being used to assess the site as a whole, including the "landfill", are not properly placed and according to Pet. Ex. 16, have not been properly monitored. Therefore, the Agency does expect some additional expense would be incurred by the Petitioner to install and adequate groundwater monitoring system.

The Petition at 49 estimates it will cost approximately $15 million to close just Ponds 3, 3A, 4, 6, B-3 and SFAP by removal, which the Petitioner states is the cheapest option. However,

the cost of closure by removal is not a cost associated only with compliance with Part 845. If the Board determines any pond does not meet the definition of a CCR surface impoundment and Part 845 is not applicable then any pond so determined, when that pond is closed, will have to have all solids in the pond removed and properly disposed.

While Part 845 recognizes that truly de-minimis amounts of CCR are not included under the rule Section 845.120, there is no minimum amount of waste which must be removed and properly disposed if the impoundment is not a CCR surface impoundment under Part 845. Under Part 845, which is applicable to Ponds 3, 3A, 4, 6, B-3 and SFAP as demonstrated by the Agency's Recommendation, the CCR in these impoundments could potentially be consolidated, saving transportation and off-site disposal fees. While a site-specific rule could allow consolidation and closure in place, the Petitioner has already concluded that closure by removal is the cheapest means of closing Ponds 3, 3A, 4, 6, B-3 and SFAP. Pet. at 49. The Agency does not have specific cost estimates for removal that contradict the cost provided by the Petitioner but has no reason to believe that the cost of removal, off-site transportation, and off-site disposal will go down in the future, if for no other reason than inflation. Closing Ponds 3, 3A, 4, 6, B-3 and SFAP under Part 845 as CCR surface impoundments may, therefore, be considerably less expensive now, than closing water treatment units that contain solids in the future. Part 845 requires a closure alternatives analysis, which must include an assessment of closure by removal, but closure of a water treatment unit containing any CCR (or other waste) must be by removal or site-specific rule, with no other options.

The CCR surface impoundments that make up the footprint of what the Petitioner refers to as the former landfill, are the IFAP, the RFAP, the FAE and Pond 6. While the Petitioner refers to Pond 6 as one of the "de-minimis ponds", the majority of the area referred to as the

"landfill" is Pond 6, as described in the Agency's Recommendation. The Petition at 58 states that the cover required by Part 811 and Part 845 are consistent. The Petition estimates the closure of Pond 6, the IFAP, the RFAP, and the FAE as a Part 815 landfill will cost between $3.5 and $5.2 million in capital costs, while closure with a cover system under Part 845 "…is nearly $5.5 million in capital and other upfront costs…" Pet. at 60. The Agency first notes that $5.2 million is nearly $5.5 million, therefore the costs under Part 815 and Part 845, may not be greatly different. Neither the Petition nor Pet. Ex. 10 explains how if closed under Part 815 a synthetic or compacted clay cover would be installed and maintained while allowing the visible wastewater in Pond 6 to wash against it and continue to saturate ash under the cover system. Dewatering and grading the slope of the CCR in Pond 6 would certainly account for a portion of the cost difference. The stability analyses required by Part 845 to insure the long steep slope currently existing on the north side of Pond 6 is stable would also be required. The Agency notes that the Petitioner claims that the slope of the CCR in Pond 6 where the Agency requested sample B-6a be collected was too steep for sample collection, Pet Ex. 29, Fig 3 at 6, yet Pet. Ex. 10 somehow anticipates the equipment and personnel required to install a low permeability cover can successfully and safely complete that task in the same location. Petition Ex 10, Sheet B-03 does not display a significant alteration of the slope. The Petitioner states at 61 "Given that there is no environmental benefit to managing the Former Fly Ash Holding Units pursuant to Part 845 rather than 811, the additional cost is not reasonable and the Petition should be granted." As discussed in the Agency's Recommendation, the Petitioner has no basis to claim that any of its impoundments are not adversely impacting the environment. Petitioner's Ex. 11 demonstrates properly placed monitoring wells detect exceedances of multiple contaminants.

35 Ill Adm. Code 104.406(f)A narrative description of the proposed adjusted standard as well as proposed language for a Board order that would impose the standard. Efforts necessary to achieve this proposed standard and the corresponding costs must also be presented;

The Petitioner proposes four items for an adjusted standard. Amd. Pet. at 61. In Item 1, the Petitioner proposes that Ponds 3, 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 have an adjusted standard from Section 845.100. Amd. Pet. at 61. This addresses the Petitioner's claim of inapplicability, as each of the listed ponds would be exempt from the scope of Part 845.

In Item 2, the Petitioner proposes that the adjusted standard apply to SIPC Marion Station. Amd. Pet. at 61.

In Item 3, the Petitioner proposes that Part 845 not apply to Ponds 3, 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. Amd. Pet. at 61. This addresses the Petitioner's alternative argument, that should the Board find that any or all the ponds do meet the definition of a CCR surface impoundment, the ponds should be exempt from the Part 845 regulations anyway. Amd. Pet. at 61.

In Item 4, the Petitioner requests that the adjusted standard become effective on the date of the order.

Except for Item 4, and the Agency respectfully requests the Board deny the Petitioner's proposed adjusted standard. The Agency has provided evidence demonstrating how each of the ponds subject to this Petition meets the definition of a CCR surface impoundment, and properly falls within the scope of Part 845. Therefore, Item 1 of the Petitioner's proposed adjusted standard should be denied.

The legislature required that Part 845 address the construction, operation, and closure of CCR surface impoundments. 415 ILCS 5/22.59(g). If the Board agrees with the Agency that the ponds subject to this Petition meet the definition of a CCR surface impoundment, then Part 845 must be applied to them. If the Board determines that the ponds subject to this Petition are CCR surface impoundments but agrees with the Petitioner that they should not be regulated by Part 845, (Proposed Adjusted Standard Item 3), any or all the ponds could have CCR placed in them in the future with no regulatory oversight. Additionally, if the Board finds that the ponds subject to this Petition are any type of surface impoundment, then they would not be landfills. 35 Ill. Adm. Code 810.103. As a surface impoundment, Part 815 and Part 811 would not be applicable and no closure under the landfill regulations would be required. If an adjusted standard were in place exempting these CCR surface impoundments from regulation under Part 845, they could continue to store an estimated 1.5 million cubic yards of CCR, exposed to the weather and continued leaching outside of the regulatory framework intended to address CCR surface impoundments. Therefore, Item 3 of the Petitioner's proposed adjusted standard should be denied.

Item 2 of the Petitioner's proposed adjusted standard applies the adjusted standard to SIPC's Marion Station. Amd. Pet. at 61. The Agency believes Item 2 would apply the conditions of the adjusted standard to the entire facility including CCR surface impoundments that are not subject to the Petition, impoundments which are not currently CCR surface impoundments and potentially new CCR surface impoundments. For example, Ponds 1 and 2 were used from the beginning of plant operation until 2020, for sluiced ash. Amd. Pet. at 7. The ash was then removed from the impoundment and stacked for off-site beneficial reuse. Amd. Pet. at 7. The Petitioner denies that Ponds 1 and 2 are CCR surface impoundments Agency Ex. UU. Item 2

would extend the adjusted standard proposed by the Petitioner to these CCR surface impoundments also, exempting them from regulation under Part 845, when in fact these CCR surface impoundments must apply for a closure permit under Section 845.200. Emery Pond was closed and a non-CCR storm water pond took its place. Agency Exs. MM and VV. Even though the permit for the storm water pond Agency Ex. MM prohibits the storm water ponds use for CCR, extending the adjusted standard to the entire facility would potentially allow CCR to be stored or treated in the storm water pond, but be exempt from regulation under Part 845. Ponds not expressly included and discussed in the Petition such as Pond 1 and Pond 2, should not be part of any adjusted standard granted by the Board. Therefore, Item 2 of the Petitioner's proposed adjusted standard should be denied.

In preparing the Agency's Recommendation, for costs, the Agency relies primarily on the Petitioner's own cost estimates, because the Agency does not have independent data. The Agency does, however, question certain aspects of the Petitioner's estimates. The Agency does not dispute that it may cost $15 million to close Ponds 3, 3A, 4, 6, B-3 and SFAP by removal. However, removal of sludge from a surface impoundment is necessary when it closes. If a surface impoundment is not a CCR surface impoundment, it must be closed in a manner that would satisfy the requirements for proper environmental control of potential contaminants.

In this instance, off-site disposal is required since the Petitioner claims there are no on-site CCR surface impoundments Amd. Pet. at 22-23 and 35-38, or on-site landfills Amd. Pet. 15-16 that could accept CCR from these impoundments. If a surface impoundment is a CCR surface impoundment and regulated by Part 845, it is not necessarily required to be closed by removal. Consolidation of CCR from various ponds could be allowed within the limits of Section 845.750(d), or an adjusted standard from Section 845.750(d) could be allowed by the Board. In

the case of either compliance with Section 845.750(d), or an adjusted standard from it, the elimination of off-site transportation and disposal fees would result in significant cost savings. Based on an information contained in SIPC's Final Emery Pond Closure Report and Certification, Agency Ex. VV at 58, trucking fees for hauling the estimated volume of CCR in Ponds 3, 3A, 4, 6, B-3 and SFAP would cost about $14/ton. The number of tons calculated by the Agency is based on the bathometric surveys and sampling reported in Pet. Ex. 29, and unaccounted permitted volumes. If CCR weighs approximately 0.95 tons per cubic yard, which is confirmed by the weights being hauled, Agency Ex. VV at 59 the cost for hauling the estimated 253,945 tons (267,311 cubic yards) of CCR in Ponds 3, 3A, 4, 6, B-3 and SFAP to Perry Ridge Landfill, where the CCR from Emery Pond was taken, Agency Ex. VV at 58, would be approximately $3,555,230. Using the estimated 253,945 tons, Pet. Ex 29, and unaccounted pond volumes of CCR in Ponds 3, 3A, 4, 6, B-3 and SFAP, the cost of off-site disposal is estimated at $5,078,900. These assumptions are based on the premise that landfill space is available, and trucking and disposal fees have not increased significantly. As explained, the cost of closing Ponds 3, 3A, 4, 6, B-3 and SFAP (estimated at $15 million by the Petitioner), Amd. Pet. at 49. may potentially be reduced by as much as an estimated $8.6 million (i.e. the avoided cost of off-site transportation and landfill tipping fees presented above) with a properly planned and designed closure plan under Part 845.

The Petitioner has estimated it would cost approximately $5.5 million to close the IFAP, the RFAP, the FAE, and the bulk of Pond 6 as CCR surface impoundments under Part 845, compared to $3.5 to $5.2 million under Part 815. Amd. Pet. at 59-60. However, what the Petitioner does not make clear is whether those costs include actual compliance with the requirements of Part 815, or simply installing a Part 815 compliant cover. As a practical matter

Pet. Ex. 10 does not explain how the cover slope requirements and installation under Part 815 will be accomplished nor is there any indication how a cover system will be installed over CCR immersed in the water located in Pond 6. 35 Ill. Adm. Code 811. However, if the IFAP, the RFAP, the FAE, and Pond 6 can be closed in place under Part 845, the cover system would extend over the top of the existing berm of Pond 6 permitted under 1981-EN-2776-2. The issue of installing a cover immersed in water would be eliminated. The extension of the closure slope to include the permitted berm of Pond 6 would also allow the reduction of slope angles on the north facing slope of a cover system.

The Petitioner states that SIPC is ineligible to borrow subsidized funds to pay the costs required to comply with Part 845. Pet. at 50. The Petitioner has not provided information why the subsidized funds are unavailable. Specifically, the Petitioner has provided no explanation why the initial years of O&M under Part 815 would be less than the O&M under Part 845, since the required cover systems are essentially the same and both require post-closure groundwater monitoring. However, based on the Petitioner's estimates, initial O&M costs for closure in place for the IFAP, the RFAP, the FAE, and Pond 6 would be somewhere between $42,000 and $67,000 annually. Based on the Petition, the higher number would include O&M for Ponds 3, 3A, 4, 6, B-3 and SFAP too. The Agency has explained that the upper cost estimate of closing as a landfill $5.2 million , is not greatly different than the cost estimate the Petitioner provided ($5.5 million), Amd. Pet. at 59-60, for closing in place under Part 845. Considering the cost of preparing permit applications, safety, and stability certifications, installing, and sampling an adequate groundwater monitoring system and inspections, which are required by permit under Part 845, but have no permit system under Part 815, the cost difference is reasonable.

Additionally, closing Ponds 3, 3A, 4, 6, B-3 and SFAP under Part 845, may save SIPC as

much as $8.6 million, which is more than the cost estimated by the Petitioner of closing the IFAP, the RFAP, the FAE, and Pond 6 under Part 845. The cost of closing Ponds 3, 3A, 4, 6, B-3 and SFAP by removal is not specific to Part 845. Furthermore, the active permitting, inspections, adequate groundwater monitoring and review of the results required by Part 845, which do not exist under Part 815, will provide significant environmental benefit.

35 Ill Adm. Code 104.406(g) The quantitative and qualitative description of the impact of the petitioner's activity on the environment if the petitioner were to comply with the regulation of general applicability as compared to the quantitative and qualitative impact on the environment if the petitioner were to comply only with the proposed adjusted standard. To the extent applicable, cross-media impacts must be discussed. Also, the petitioner must compare the qualitative and quantitative nature of emissions, discharges or releases that would be expected from compliance with the regulation of general applicability as opposed to that which would be expected from compliance with the proposed adjusted standard;

Due to the lack of site wide data, the Agency's quantitative and qualitative evaluation of the rule of general applicability (Part 845) will be somewhat speculative. The Agency does have data available that was collected from groundwater monitoring wells down gradient and up gradient of the Former Emery Pond. Based on the information contained in Pet. Ex. 11, under Part 845, monitoring wells placed up gradient of the various CCR surface impoundments at the site might be expected to detect Antimony and Beryllium above groundwater protection standards. The Agency notes that these two constituents are not found in the down gradient wells and the wells up gradient of Emery Pond are down gradient of the coal storage area. Down gradient of Emery Pond Arsenic, Boron, Chloride, Cobalt, Lead, pH, Sulfate, Thallium and TDS are found in excess of the groundwater protection standards, but notably, are not found up gradient of Emery Pond in excess of the groundwater protection standards. Not all of the samples, for all of the constituents analyzed and reported in Pet. Ex. 11, had reporting limits equal to or below the groundwater protection standards. This improper analytical protocol followed by the Petitioner does not demonstrate the absence of a constituent. Therefore,

additional constituents could be present that were not detected, in either the up gradient or down gradient wells at Emery Pond.

Under Part 845, the exceedances of the listed constituents down gradient, when they are absent up gradient, would require corrective action to protect groundwater resources. In addition to exceedances of groundwater protection standards, the Agency reviewed 35 Ill. Adm. Code 302.208 and compared reported concentrations to the General Use Water Quality Standards. A one-to-one comparison cannot be made between groundwater and surface water, but the Agency notes that Boron is reported in Pet. Ex. 11 at concentrations above the General Use Chronic Standard for Boron, which is 7,600 micrograms per liter (7.6 milligrams per liter). The corrective actions required to protect groundwater would also evaluate those corrective actions with regard to their protection of surface water resources.

The adjusted standard Petition seeks to convince the Board that nine impoundments owned by SIPC, all of which contain CCR, are not CCR surface impoundments and therefore Part 845 is not applicable. In the alternative, SIPC proposes that if any or all those impoundments meet the definition of a CCR surface impoundment, the adjusted standard should be that neither the subject impoundments nor any other CCR surface impoundment located at the site be regulated by Part 845. In other words, the Petitioner is saying Part 845 does not apply to its impoundments, because they do not meet the definition of a CCR surface impoundment. This would include Ponds 1 and 2, as well as Emery Pond, which has been closed, but is currently subject to groundwater monitoring and potentially additional corrective action under Part 845. The basis of the Petitioner's argument for its proposed adjusted standard is that CCR which is not stored in water does not pose enough risk to be regulated. Further, the Petitioner uses data from its site wide monitoring network, which the Agency points out is not correctly

placed to detect migration from the on-site impoundments, to claim low concentrations of sulfate exist at the site. The Petitioner theorizes that because the CCR within the impoundments contains high concentrations of sulfate, the low concentrations in monitoring wells is evidence that its unlined ponds are not leaking contaminants.

Lastly, the Petitioner states that the impoundments at the site can be adequately regulated by the Part 620 groundwater quality standards and its NPDES permit. The Agency agrees that the Part 620 groundwater standards are protective of the groundwater resource. However, Part 620 is composed only of groundwater standards and instructions for how new groundwater quality standards may be created. Part 620 does not contain any requirements to collect groundwater samples for analysis. Part 620 relies on other programs to require groundwater monitoring and then provides the standards for comparison. Without a rule, such as Part 845 to specifically require investigation and corrective action, SIPC has to date never submitted any such investigation. In contrast, Part 845 requires groundwater monitoring and provides the groundwater protection standards for comparison. In addition, Part 845 contains operational requirements, corrective action requirements, closure requirements and inspections designed to maintain the physical integrity of impoundments. In short, Part 845 is the best rule to regulate CCR surface impoundments, because it was designed to regulate CCR surface impoundments, from construction through post-closure care.

35 Ill Adm. Code 104.406(h). A statement that explains how the petitioner seeks to justify, under the applicable level of justification, the proposed adjusted standard;

Illinois EPA agrees with Petitioner that because Part 845 does not specify a level of justification for an adjusted standard, the applicable level of justification are the factors identified in Section 28.1(c) of the Act. *See* Amd. Pet at 13. Section 28.1 of the Act provides:

(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 general applicability; and
(4) the adjusted standard is consistent with any applicable federal law.

(1) The Petitioner has not demonstrated the existence of the factors needed to justify an adjusted standard. Each Pond at issue in the Amended Petition meets the definition of a CCR surface impoundment. In addition, each impoundment (except for the IFAP, which pre-dates Agency permitting) was permitted as a water pollution control unit. These units were designed as CCR surface impoundment, were operated as CCR surface impoundments, even after they were filled and overflowed with CCR. The Petitioner continued to use them as surface impoundments. Therefore, each pond at issue is subject to Part 845.

(2) The Petitioner has not demonstrated the existence of the factors needed to justify an adjusted standard.

(3) The ponds subject to the Petition and Amended Petition have not been adequately characterized to determine the extent to which constituents are impacting groundwater. However, available data at Emery Pond, a closed CCR surface impoundment at the Marion Station, suggests the impact will be significant.

(4) Pursuant to 415 ILCS 5/22.59(g)(1), the Board was directed to adopt rules for coal combustion residuals ("CCR") surface impoundments "at least as protective and comprehensive" as Subpart D of 40 CFR 257 ("Part 257") and to use Part 257 "as a baseline." 415 ILCS 5/22.59(g)(1) and *In the Matter of: Standards for Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed New 35 Ill. Adm. Code 845*, R20-19 ("R20-19"), Order (February 4, 2021), at 11. On April 15, 2021, the Board adopted new regulations providing

standards for disposal of CCR in surface impoundments at 35 Ill. Adm. Code 845. R20-19, Final Order (April 15, 2021). The Part 845 rules became effective on April 21, 2021. 45 Ill. Reg. 5884 (May 7, 2021). While independent of the federal rule, Part 845 complies with the statutory mandate in 415 ILCS 5/22.59(g)(1) using Part 257 as a baseline and written with at least the same protection and comprehensiveness as Part 257. R20-19, Order (February 4, 2021), at 11.

35 Ill Adm. Code 104.406(i). A statement with supporting reasons that the Board may grant the proposed adjusted standard consistent with federal law. The petitioner must also inform the Board of all procedural requirements applicable to the Board's decision on the petition that are imposed by federal law and not required by this Subpart. Relevant regulatory and statutory authorities must be cited;

Pursuant to 415 ILCS 5/22.59(g)(1), the Board was directed to adopt rules for coal combustion residuals ("CCR") surface impoundments "at least as protective and comprehensive" as Subpart D of 40 CFR 257 ("Part 257") and to use Part 257 "as a baseline." 415 ILCS 5/22.59(g)(1) and *In the Matter of: Standards for Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed New 35 Ill. Adm. Code 845*, R20-19 ("R20-19"), Order (February 4, 2021), at 11.

On April 15, 2021, the Board adopted new regulations providing standards for disposal of CCR in surface impoundments at 35 Ill. Adm. Code 845. R20-19, Final Order (April 15, 2021). The Part 845 rules became effective on April 21, 2021. 45 Ill. Reg. 5884 (May 7, 2021).

While independent of the federal rule, Part 845 complies with the statutory mandate in 415 ILCS 5/22.59(g)(1) using Part 257 as a baseline and written with at least the same protection and comprehensiveness as Part 257. R20-19, Order (February 4, 2021), at 11.

Recommended Adjusted Standard Language

Should the Board determine that any one or all the units subject to the Petition are not regulated under Part 845, the Agency respectfully requests that the Board state in its Order and Opinion which Part or Parts under Title 35 are applicable to those units. The Agency offers the following language:

For all CCR surface impoundments subject to AS21-006, the following applies;

A) All of Subpart A is applicable, except for Section 845.170.

B) All of Subpart B is applicable as related to existing or inactive CCR surface impoundments, except for Section 845.230(d)(1).

C) All of Subpart C is applicable, except for Sections 845.300 and 845.350.

The Agency is of the opinion that the exception of Section 845.300, placement above the uppermost aquifer, is moot Since the CCR surface impoundments in question have already been constructed and because they are unlined, they will be required to close. The timing of the required closure by failing to determine or failing to meet this restriction is also moot, as this adjusted standard recommendation will have to establish an appropriate time to submit a closure construction permit.

The Agency recommends the exception of Section 845.350, because under subsection 845.350(a), failure to show compliance requires closure, which is already a forgone conclusion since these are unlined CCR surface impoundments. Under subsection 845.350(b), the requirement specifically applies to new and lateral expansions of CCR surface impoundments, which is not applicable to the impoundments subject to this adjusted standard.

D) In Subpart D, the following Sections are applicable 845.400(g), 845.430, 845.440, 845.450 and 845.460.

New and or expanded CCR surface impoundments will not be constructed at the Marion Station under the proposed adjusted standard. Further, all the CCR surface impoundments subject to the Petition are unlined, therefore most of the liner verification criteria under Section 845.400, all of the liner construction criteria under Section 845.410 and all of the leachate collection system criteria under Section 845.420 are moot. The Agency does recommend the closure of the subject unlined CCR surface impoundments be generally governed by Section 845.700, except as provided under Recommendation G, and therefore recommends the applicability of subsection 845.400(g).

E) All of Subpart E is applicable.

F) All of Subpart F is applicable.

While the Agency believes all of Subpart F is generally applicable to the subject CCR surface impoundments, it does acknowledge that certain aspects of the requirements, make the Agency recommended schedules for permit applications tight. For example, Section 845.620 requires a thorough, site wide hydrogeologic site characterization, which to the best of the Agency's knowledge has never been completed for this site. The Agency expects the requirements of much of Subpart F will have to be carried out simultaneously, given the lack of existing data at the site. The existing site wide monitoring system is inadequate in design, and as evidenced by Pet. Ex. 16, was not properly or adequately monitored. Most of the subject impoundments can be monitored by a single monitoring well system, which will reduce the number of wells required and the time needed for installation and monitoring. Following Section 845.630 will provide appropriate monitoring well locations and some of the information required in the hydrogeologic characterization.

G) Most of Subpart G is applicable, except for Section 845.700(a) and (b) with regard to where specific dates are referenced or where time triggers for closure are referenced.

The remainder of subsections 845.700(a) and (b) remain applicable. Subsections 845.700(c), (d), (g) and (h) are inapplicable because the categorization is used to determine the schedule for submission of closure construction permit applications. The schedule for submission will be dictated by the adjusted standard approved by the Board. Section 845.730 is not applicable as the initiation of closure will be dictated by the adjusted standard approved by the Board. The Agency recommends that closure be considered initiated when waste placement has ceased, and a closure construction permit application has been submitted to the Agency.

The Petition claims that no CCR placement has taken place in any of the subject surface impoundments since October 2015. However, the Agency believes placement of CCR is an on-going condition in Pond 3 because run-off from other over filled CCR surface impoundments continues to be deposited in Pond 3. The Agency recommends the adjusted standard state that only CCR from ponds subject to AS21-006, be eligible for consolidation. The Agency recommends the adjusted standard specifically require the Petitioner to record and report monthly the amount of CCR removed from any CCR surface impoundment, regardless if it is moved off-site and regardless if it is piled on-site prior to being consolidated into another CCR surface impoundment at the site. The Agency recommends an adjusted standard for subsections 845.750(d)(2) and (3) if closure in place is approved. Because of the natural topographic difference between the base of the northern berm of Pond 6 and the height of the CCR within Pond 6, and the fact that CCR obscures the juncture between the IFAP, the RFAP and part of the FAE, grading the CCR from the top of Pond 6 to a lower point could technically violate subsection 845.750(d)(2). The Agency recommends the adjusted standard contain an exemption from subsection 845.750(d)(2), provided the CCR being placed originates from one or more of the subject CCR surface impoundments. Similarly, subsection 845.750(d)(3) should have an

adjusted standard because the historic handling practices of the Petitioner has obscured the boundaries of the various CCR surface impoundments. Therefore, if closure in place is approved, the adjusted standard should require that any added CCR be within the perimeter berm of the CCR surface impoundment or placed on top of CCR existing at the time the Petition was filed. The Agency recommends that the adjusted standard give SIPC nine months from the due date of the operating permit application to submit the closure construction permit application. Part 845 required all CCR surface impoundments to submit initial operating permits October 31, 2021. Part 845 required inactive CCR surface impoundments that have exceedances of groundwater protection standards to submit closure construction permit applications three months later (February 1, 2022). Part 845 required active CCR surface impoundments that have exceedances of groundwater protection standards to submit closure construction permit applications nine months later (August 1, 2022). The rationale behind the later date for active CCR surface impoundments was that owners and operators would need time to modify operations prior to closure. While the Agency believes all of the subject CCR surface impoundments (with the exceptions of Pond 3 and the SFAP) are inactive CCR surface impoundments, the Agency does recognize the Petitioner's need to treat wastewater prior to discharge under its NPDES permit.

The Agency believes, based on the results found in Pet. Ex. 11, that properly located and constructed wells down gradient of the subject ponds will have similar exceedances of groundwater protection standards. Section 845.770 should not have an adjusted standard. The Petitioner states that all the CCR generated on-site is handled dry, therefore there is no need to retrofit any CCR surface impoundment at this site. If the Petitioner's handling practices change, new CCR surface impoundments could be constructed under Part 845.

H) All of Subpart H is applicable.

I) None of Subpart I applies because SIPC is a not-for-profit electrical cooperative, which were specifically exempted from the financial assurance requirements of Subpart I by Section 22.59(f) of the Act.

The adjusted standard language proposed by the Agency in its Recommendation does not eliminate any of the protective components of Part 845. The Agency's suggested language for its adjusted standard proposal addresses the schedule for permit application submittal and suggests some minor modifications to a small number of closure requirements to better tailor Part 845 to SIPC's site specific circumstances.

RECOMMENDATION

WHEREFORE, for the above and foregoing reasons Illinois EPA recommends that the Board DENY Petitioner's request for an adjusted standard from 845.740(a) and DENY Petitioner's request for a finding of inapplicability of Part 845.

Dated: January 13, 2023

Respectfully submitted,
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,

Respondent,

BY: /s/Sara Terranova
Sara Terranova

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CERTIFICATE OF SERVICE

I, the undersigned, on affirmation certify the following:

That I have electronically served the attached **ELECTRONIC NOTICE AND FILING** and **RECOMMENDATION OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY** upon those listed on the Service List before 4:30 p.m. on January 13, 2023.

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By:____/s/ Sara Terranova___
Sara Terranova
Assistant Counsel
Division of Legal Counsel

DATED: January 13, 2023

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SIPC Exhibits Cited

Exhibit 1 Aerial Photo 1971 October
Exhibit 2 Aerial Photo 1980 August
Exhibit 3 Aerial Photo 1993 March
Exhibit 4 Aerial Photo 1998 April
Exhibit 5 Aerial Photo 2005 March
Exhibit 6 Aerial Photo 2005 September
Exhibit 7 Aerial Photo 2006 August
Exhibit 8 Aerial Photo 2007 August
Exhibit 9 Aerial Photo 2009 October
Exhibit 10 Aerial Photo 2010 August
Exhibit 11 Aerial Photo 2011 May
Exhibit 12 Aerial Photo 2011 November
Exhibit 13 Aerial Photo 2012 April
Exhibit 14 Aerial Photo 2015 May
Exhibit 15 Aerial Photo 2017 March
Exhibit 16 Aerial Photo 2018 September
Exhibit 17 Aerial Photo 2020 February
Exhibit 18 Aerial Photo 2021 Summer1

Agency notes there are no exhibits 19-33

Exhibit 34 1981EN2776

Agency notes there are no exhibits 35-47

Exhibit 48 1986EN0052 Permit
Exhibit 49 1986EN0052 Drawings
Exhibit 50 1973-ED-1343-OP
Exhibit 51 1975 NPDES IL0004316 Permit
Exhibit 52 1977 NPDES IL0004316
Exhibit 53 1985 NPDES IL0004316
Exhibit 54 1998 NPDES IL0004316 Permit
Exhibit 55 2007 NPDES IL0004316 Permit

Agency notes there are no exhibits A-Z

Exhibit AA Pond 6 1993 Letter Dredging to Expand Water Treatment
Exhibit BB Pond B-3 Inspection Memo
Exhibit CC 1981EN2776_2_map
Exhibit DD 2007 NPDES IL0004316 Figures
Exhibit EE 1977EN5732 RFAP
Exhibit FF 2020 Annual Landfill Report
Exhibit GG 1981EN2776_1
Exhibit HH 1980 NPDES IL0004316 Permit Modification Request
Exhibit II SIPC Initial Operating Permit App
Exhibit JJ 2018_07_03_VN_800041

Agency notes there is no exhibit KK

Exhibit LL Letter Requesting Site Wide Investigation July 2013
Exhibit MM 2020 EA 65428 Storm Water Pond
Exhibit NN 1989-EN-3064
Exhibit OO 1969-EB-707

Exhibit PP W1998600002 2007 figures

Exhibit QQ 1970-EB-355

Exhibit RR 1981EN2776_2

Exhibit SS 1977EN5732

Exhibit TT 1977EN5732_map

Exhibit UU 2020 01 22 SIPC Letter Re Invoice for CCR Impoundments

Exhibit VV 2021-08-02-FINAL-Emery-Pond-Closure-Completion-Report-and-Cert

Exhibit WW 1973-ED-1349

Exhibit XX 1985EN3031

Exhibit YY 1975 NPDES IL0004316 Application documents

Exhibit ZZ Formally_Exhibit 23_Engineer Survey of WTF 2_21_1974

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

1

Exhibit 1: SIPC October 1971

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water

Legend

Pond Name and Location

North is towards the top of the page.

Aerial photo was provided by USDA.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

2

Exhibit 2: SIPC August 1980

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water

Legend

Pond Name and Location

North is towards the top of the page.

No Scale Provided; August 23, 1980 aerial photo provided by USDA.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

3

Exhibit 3: SIPC March 1993

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

4

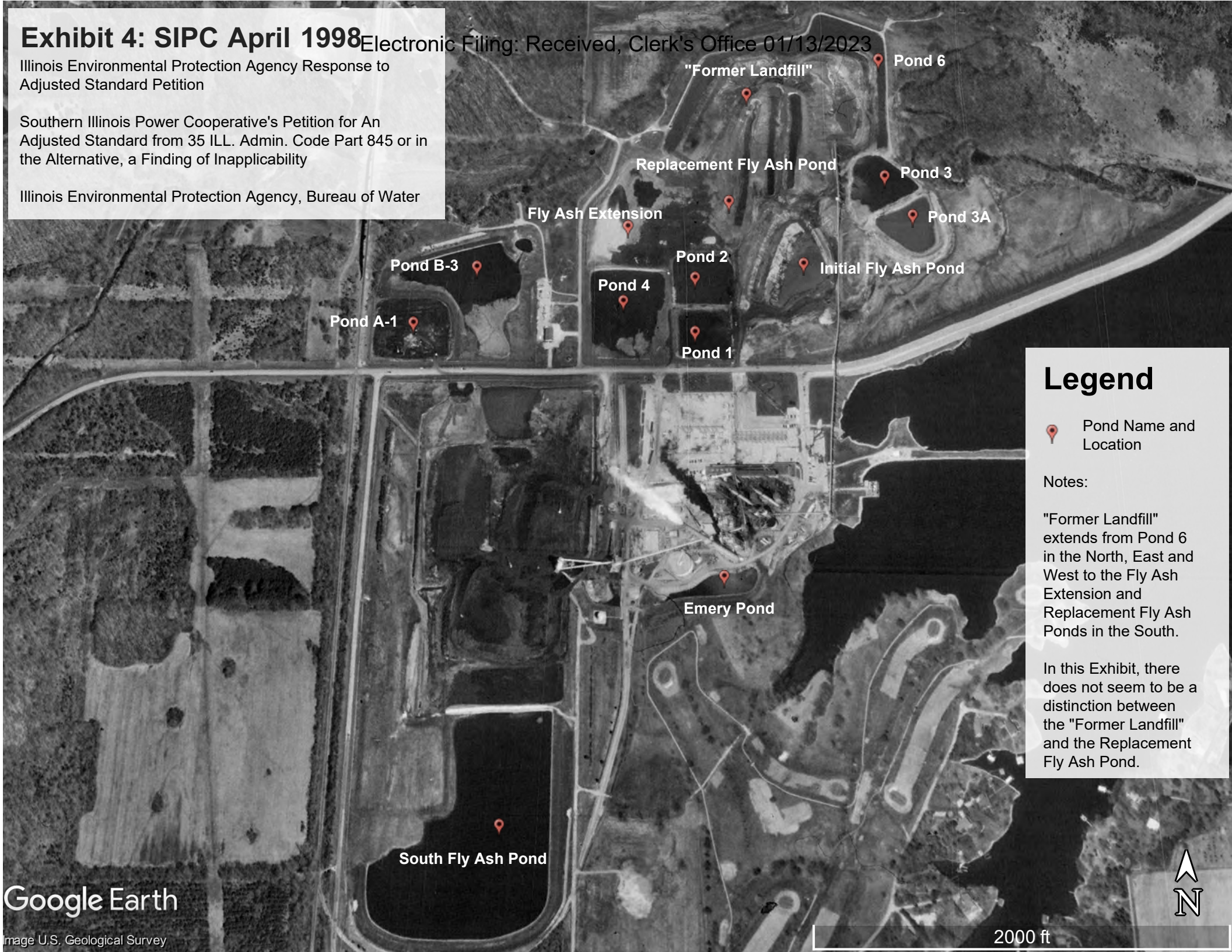
Exhibit 4: SIPC April 1998

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:

"Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

In this Exhibit, there does not seem to be a distinction between the "Former Landfill" and the Replacement Fly Ash Pond.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

5

Exhibit 5: SIPC March 2005

Electronic Filing: Received, Clerk's Office 01/13/2023

Ilinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water

Legend

Pond Name and Location

Notes:

1. See Summary Table of Ponds for additional details on berms added to Ponds B-3 and 4.

2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

6

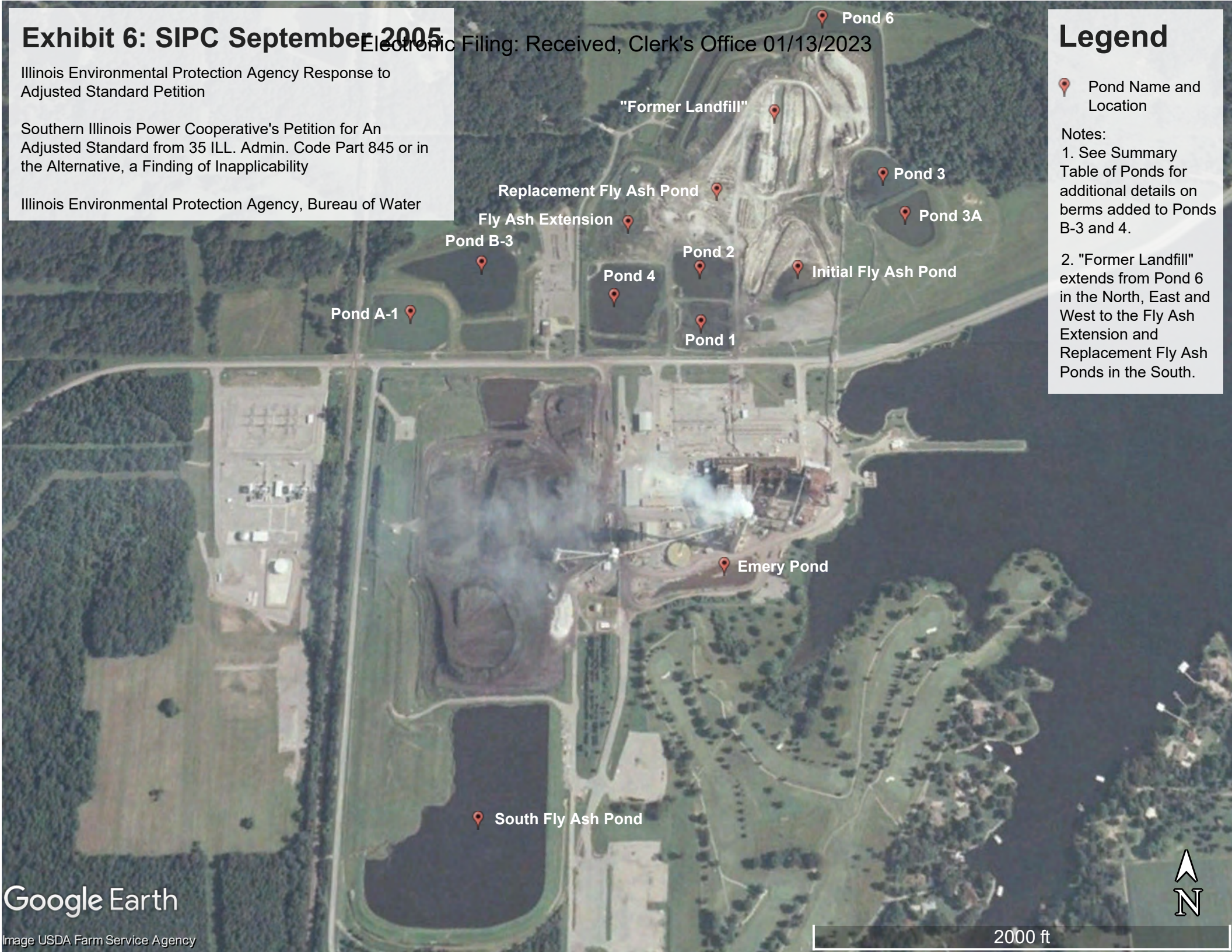
Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit 6: SIPC September 2005

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:

1. See Summary Table of Ponds for additional details on berms added to Ponds B-3 and 4.

2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

7

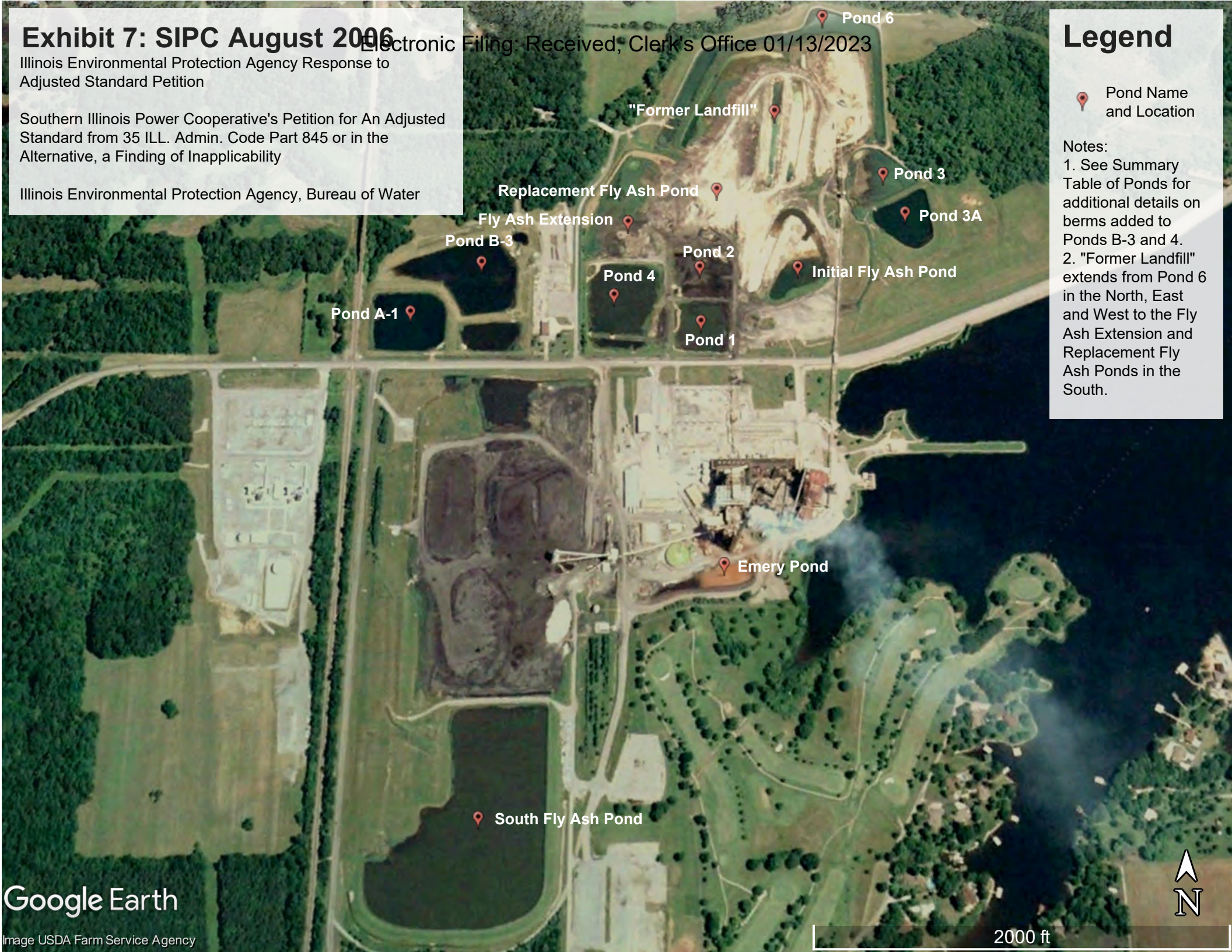
Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit 7: SIPC August 2006

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:
1. See Summary Table of Ponds for additional details on berms added to Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

8

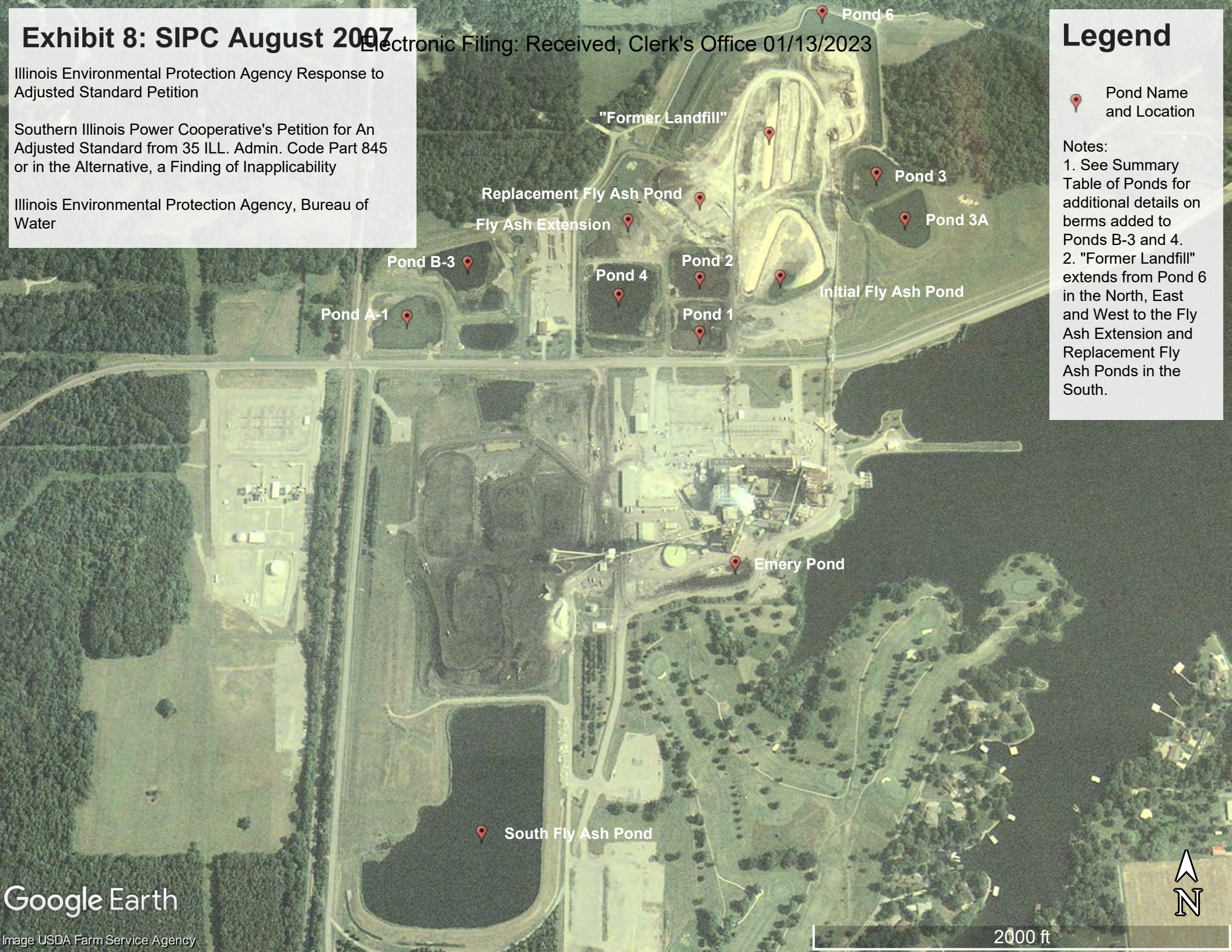
Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit 8: SIPC August 2007

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:
1. See Summary Table of Ponds for additional details on berms added to Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

9

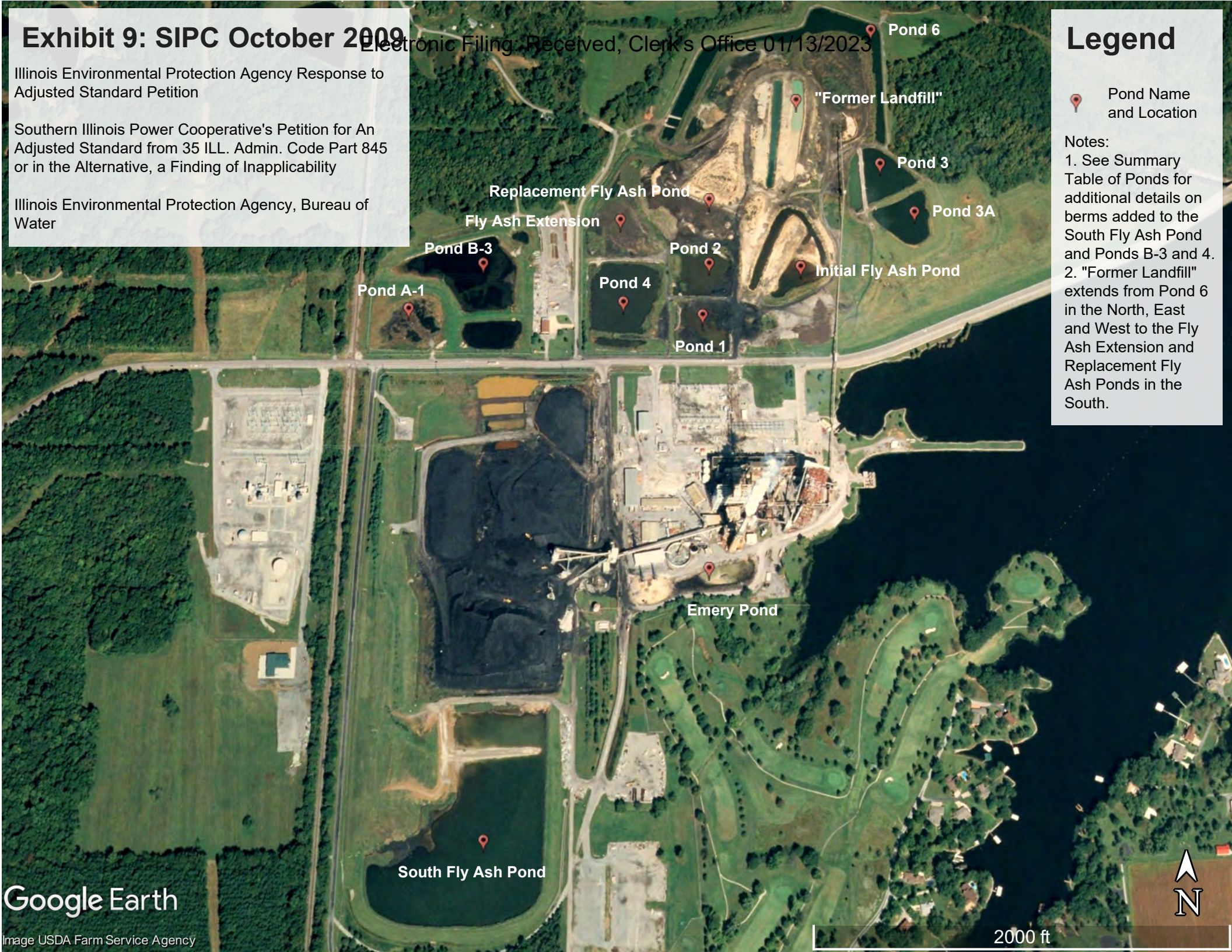
Exhibit 9: SIPC October 2009

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:
1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

10

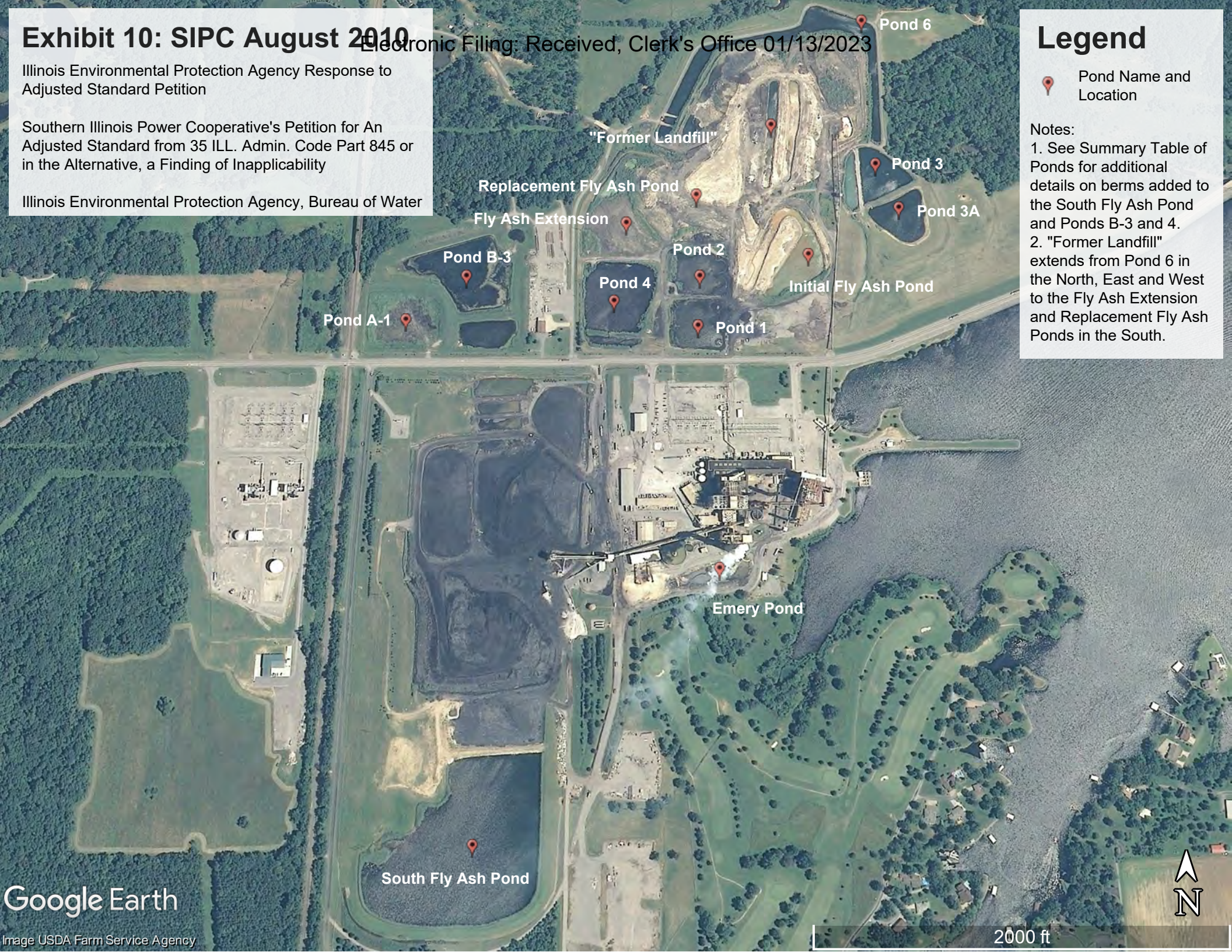
Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit 10: SIPC August 2010

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:
1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

11

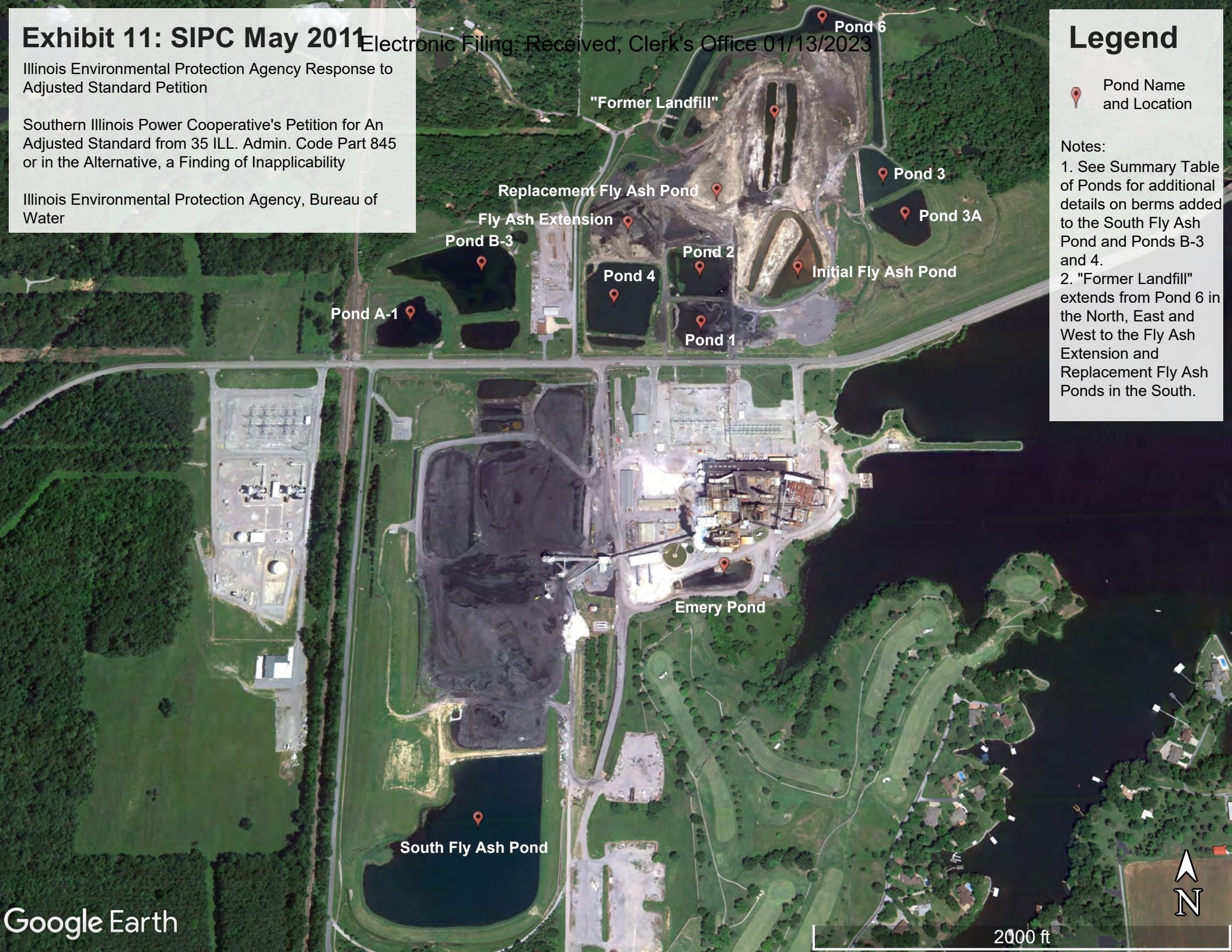
Exhibit 11: SIPC May 2011

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

12

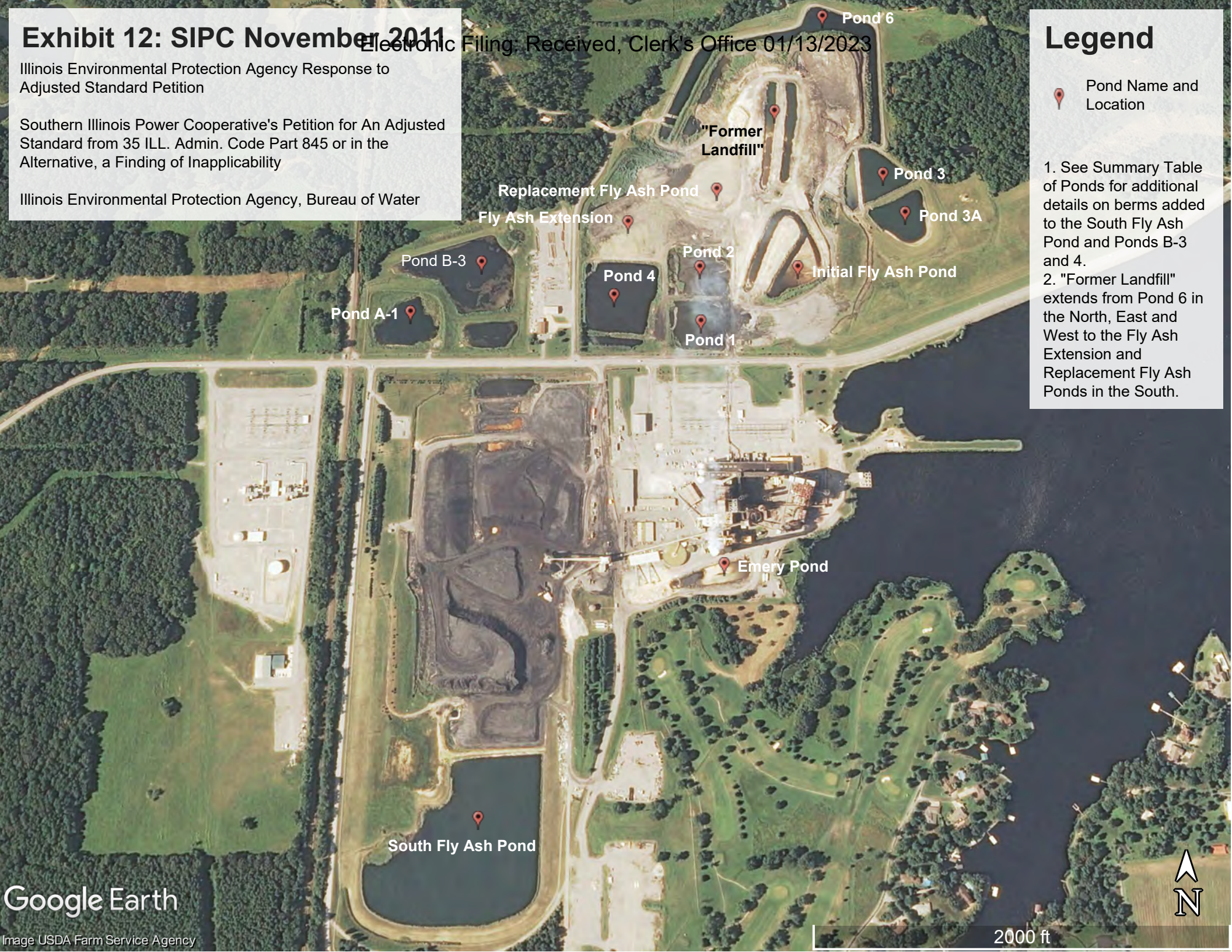
Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit 12: SIPC November 2011

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

13

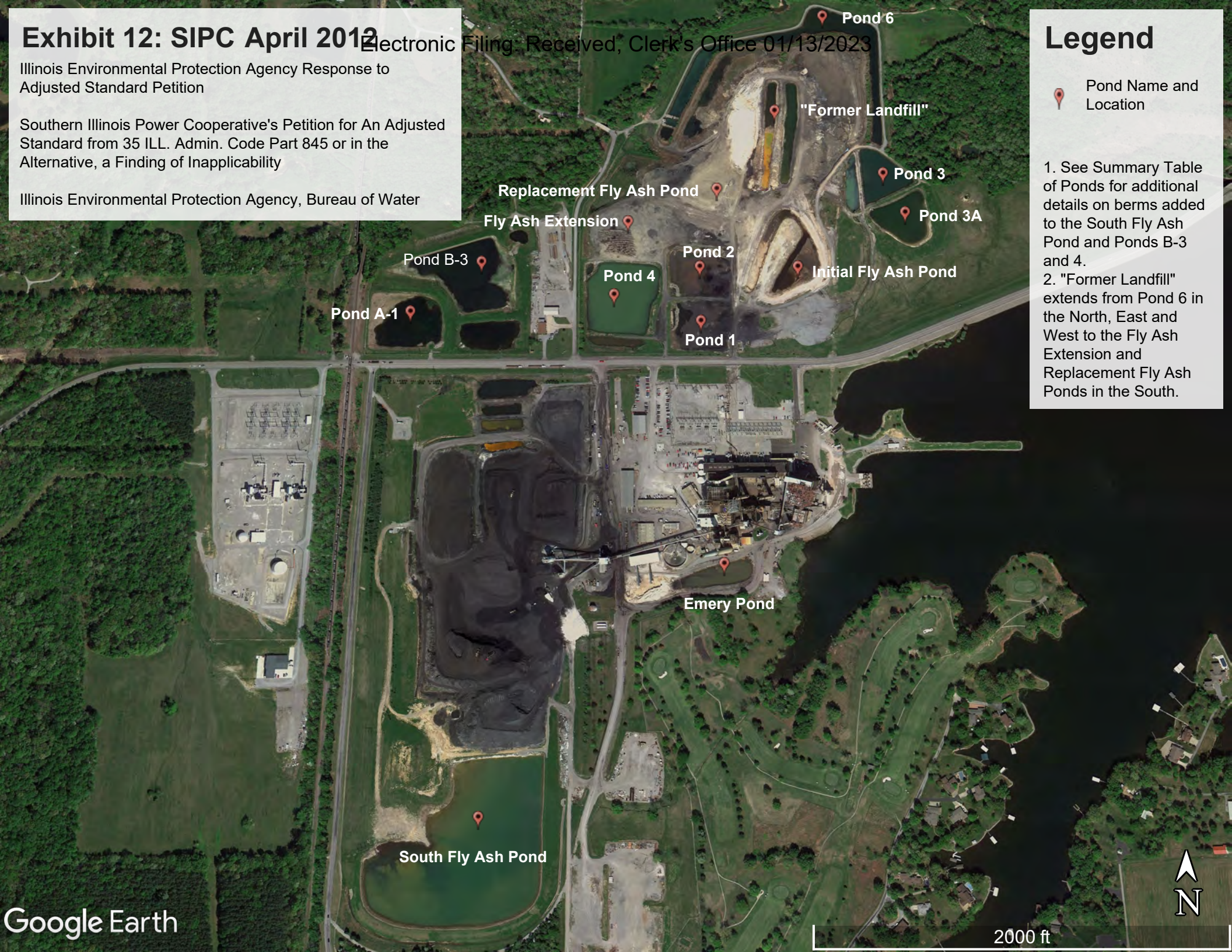
Exhibit 12: SIPC April 2012

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

14

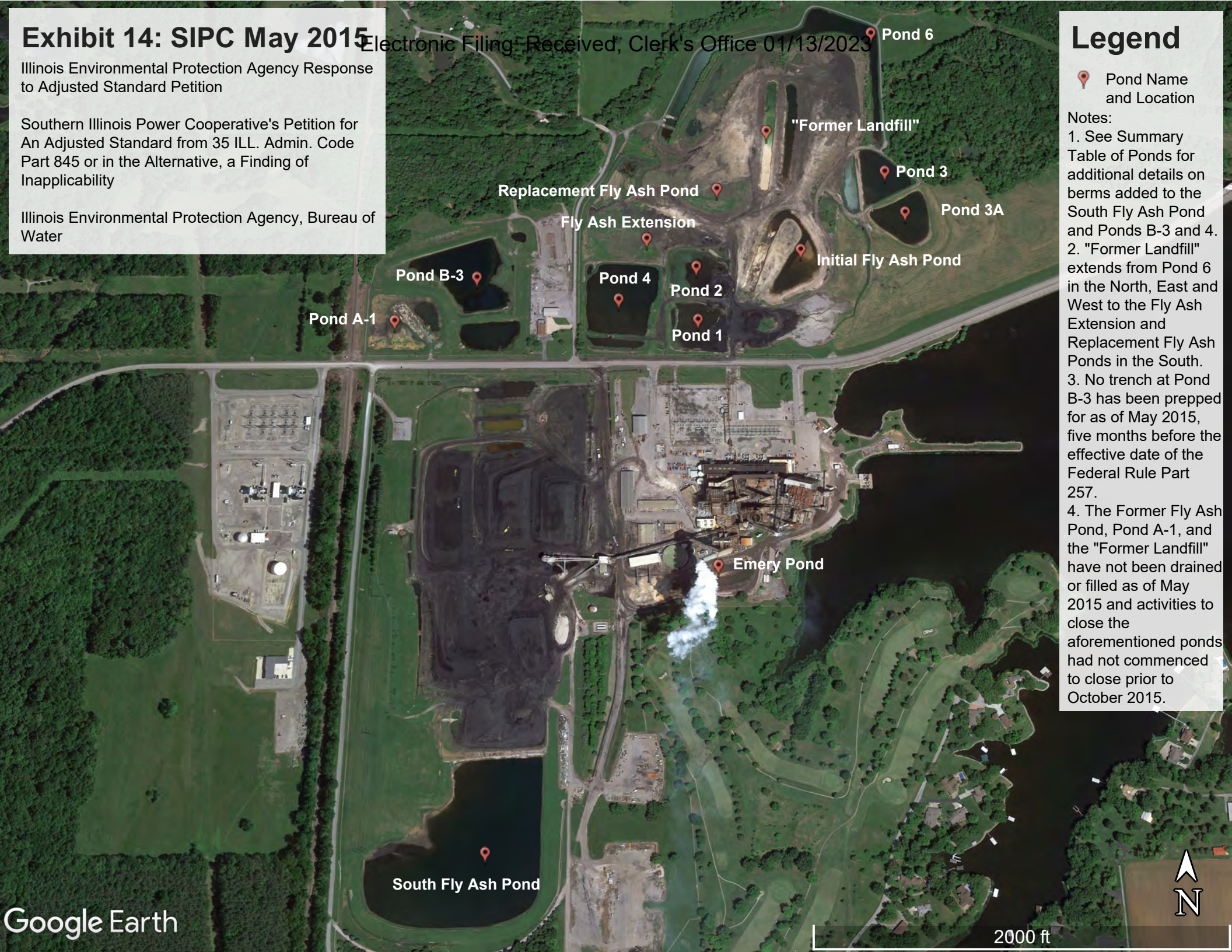
Exhibit 14: SIPC May 2015

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.
3. No trench at Pond B-3 has been prepped for as of May 2015, five months before the effective date of the Federal Rule Part 257.
4. The Former Fly Ash Pond, Pond A-1, and the "Former Landfill" have not been drained or filled as of May 2015 and activities to close the aforementioned ponds had not commenced to close prior to October 2015.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

15

Exhibit 15: SIPC March 2017

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water

Legend

Pond Name and Location

Notes:

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.
3. Trench used to drain Pond B-3 is located on the North side of Pond B-3.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

16

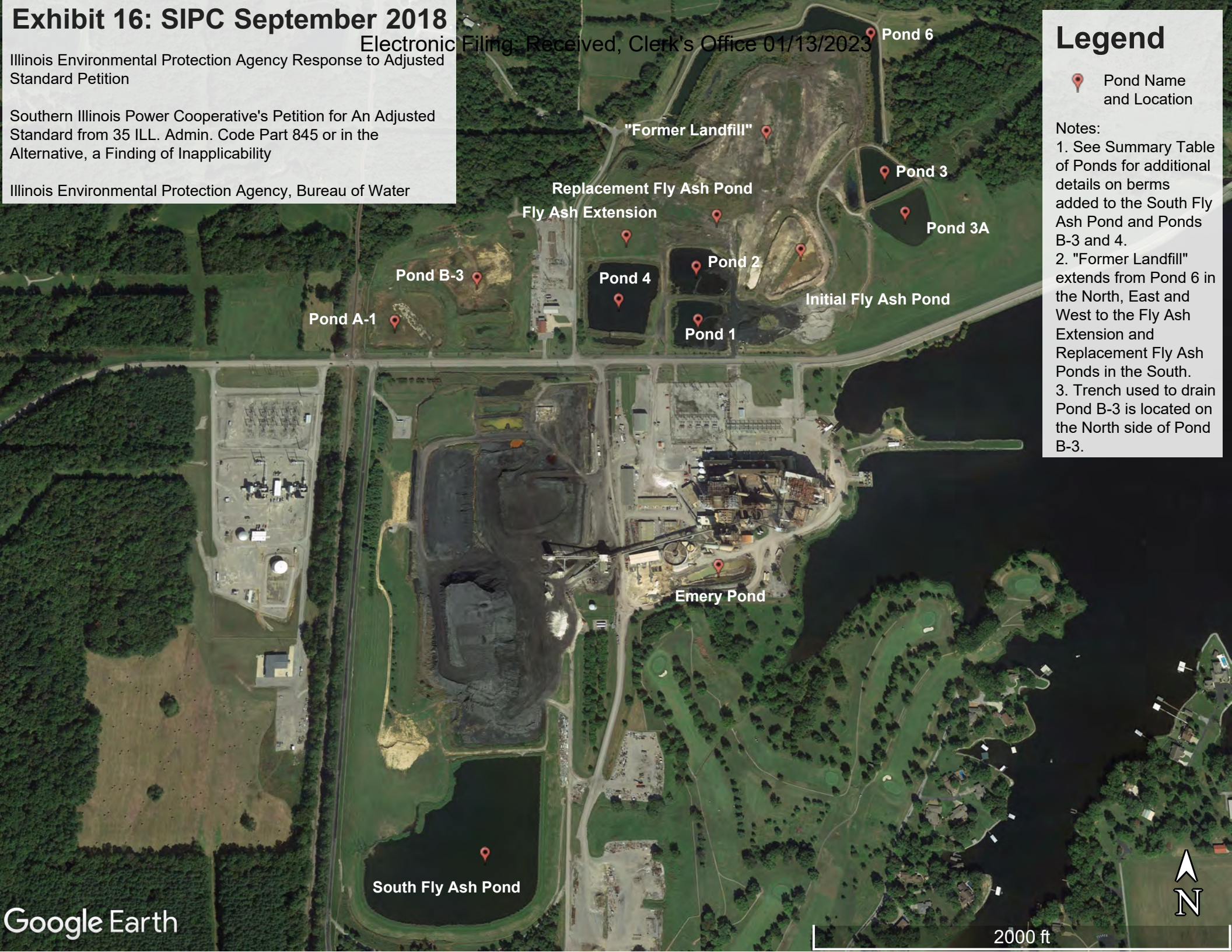
Exhibit 16: SIPC September 2018

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for An Adjusted Standard from 35 ILL. Admin. Code Part 845 or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water



Legend

Pond Name and Location

Notes:

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.
3. Trench used to drain Pond B-3 is located on the North side of Pond B-3.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

17

Electronic Filing: Received, Clerk's Office 01/13/2023

SIPC February 2020

Illinois Environmental Protection Agency Response to Adjusted Standard Petition

Southern Illinois Power Cooperative's Petition for an Adjusted Standard from 35 Ill. Admin. Code Part 845, or in the Alternative, a Finding of Inapplicability

Illinois Environmental Protection Agency, Bureau of Water

Legend

Pond Name and Location

Notes:

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Former Fly Ash Holding Area Extension and Replacement Fly Ash Holding area in the South.
3. Trench used to drain Pond B-3 is located on the North side of Pond B-3.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

18

Source Water Assessment Protection Program

Southern Illinois Power Cooperative

Summer 2021

Illinois Environmental Protection Agency, Bureau of Water

600ft

-88.949 37.619 Degrees

Legend

Pond Name and Location

1. See Summary Table of Ponds for additional details on berms added to the South Fly Ash Pond and Ponds B-3 and 4.
2. "Former Landfill" extends from Pond 6 in the North, East and West to the Fly Ash Extension and Replacement Fly Ash Ponds in the South.

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

34

WI1998011676A SOUTHERN ILL POWER-FLY ASH PND 03 1981EN2776 1

Electronic Filing: Received, Clerk's Office 01/13/2023

PERMIT/PLAN/SPECIFICATION
MICROFILM JACKET INFORMATION

1.	DIVISION CODE	W
2.	FIPS COUNTY CODE	199
3.	CITY/TOWNSHIP CODE	860
4.	GOVERNING BODY CODE	1676A
5.	PERMITTEE NAME (FILE SUBJECT) SOUTHERN ILL POWER-FLY ASH PND	
6.	FILE DIVISION	03
7.	IEPA PERMIT NUMBER	1981EA2776

CROSS REFERANCE INFORMATION

8.	GOVERNING BODY NAME SOUTHERN ILLINOIS POWER COOP	
9.	F/S/P/ CODE	B1525A
10.	NPDES NUMBER	IL0004316

2019-0025

Electronic Filing: Received, Clerk's Office 01/13/2023

Recvd.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NO.: 1981-EN-2776 DATE ISSUED: September 29, 1981

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS PREPARED BY: Crawford and Whiteside, P.C.

LOG NUMBERS: 2776-81

SUBJECT: SOUTHERN ILLINOIS POWER CO-OPERATIVE - Marion Facility - Fly Ash Storage Pond Extension

PERMITTEE TO CONSTRUCT AND OWN
Southern Illinois Power Co-operative
Route 4 - Box 255
Marion, Illinois 62959

Permit is hereby granted to the above designated permittee to construct water pollution control facilities described as follows:

A 39.7 acre-foot fly ash storage pond. Discharge will be to the existing fly ash holding pond located east of fly ash storage pond. In addition, 850 linear feet of 14 inch diameter cast iron pipe is to be installed to relocate the discharge from existing bottom ash pond #4 to a point downstream from the fly ash storage pond.

This Permit is issued subject to the following Special Condition(s). If such Special Condition(s) require(s) additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for issuance of a Supplemental Permit.

SPECIAL CONDITION 1: The operation of the fly ash storage pond shall be subject to the conditions of NPDES permit number IL0004316.

SPECIAL CONDITION 2: The operation of the fly ash storage pond shall comply with any promulgated guidelines pursuant to Section 307 of the 1977 Federal Clean Water Act for the appropriate industrial classification.

2021600026

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:DEU:mgg1386c/7
cc: EPA - Region 7
Crawford and Whiteside, P.C.

DIVISION OF WATER POLLUTION CONTROL

Thomas G. McSwiggin, P.E.
Manager, Permit Section

WPC-146 (Rev. 11-79)

READ ALL CONDITIONS CAREFULLY.

STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year after date of issuance unless construction or development on this project has started on or prior to that date. In any event, construction must be completed in three years for treatment works and two years for sewers and wastewater sources, unless otherwise stated by special condition.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentation of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit.

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit.

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit.

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants.

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the Agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rule or Regulation effective thereunder as a result of the construction or development authorized by this permit.

SRP2160027

Electronic Filing: Received, Clerk's Office 01/13/2023

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

Subject Southern Illinois Power Co-Op
Data Log # 2776-81
Reviewed by Dan Umfleet Date 9-22-81

Application for construction of additional flyash storage
- proposed flyash storage holding pond to be located directly west of existing flyash storage
- SIPCO estimates that 5 additional years of capacity will be provided
- berms are to be constructed with 2½:1 slope and of stable clay
- width of top of berm at 15.6 feet

A 14 inch diameter line is to be placed under the fly ash pond bottom to transport effluent from the bottom ash pond to a point downstream from the proposed flyash pond.
- pipe material not specified → Cast iron
- pipe to be installed without manholes at changes in grade and direction. Since the installation of manholes is impractical, none will be required. Problems could exist with pipe breakage if uneven settling occurs. It is SIPCO's responsibility to maintain the pipe.

The proposed fly ash pond will discharge into the existing fly ash pond.

Pond Seal

No information provided on the following:
- location of private wells located near the pond
- permeability of the pond bottom

It should be noted that a seal has not been required for the existing flyash pond. In addition, the volume of this pond is small compared to that of the flyash already disposed of on-site... i.e. If flyash is leaching heavy metals to the groundwater at this site, requiring a seal on this small storage area will not affect the groundwater quality. DLPC policy requires a seal with a permeability of 1×10^{-7} cm/sec & a 2' clay seal of 10' feet (thickness is negotiable) according to Gene Theiss of DLPC. Data submitted by SIPCO on Fly ash sludge leachate had the following:

	Sludge (ug/gm)	liquid (mg/l)
iron	1330	0.2
lead	1.5	0.014
Cu	7.8	0.08
Ni	11.75	0.1
pH		6.95

Electronic Filing: Received, Clerk's Office 01/13/2023

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

Subject SIPCO

Data Log 2776-81

Reviewed by _____ Date 9-22-81

Also, analysis of the fly ash pond discharge, as submitted with the NPDES permit renewal application, is as follows:

		(mg/l)			
	Arsenic	0.008		Selenium	<0.005
	Barium	0.2		Silver	<0.02
***	Boron	8.6	***	Sulfate	544.0
	Cadmium	0.13	**	Zinc	1.6
	Chromium	0.03		pH	4.1 - 7.9
***	Copper	0.04			
	CN^-	<0.001			
	Fluoride	0.8			
~~(**)~~ ~~(***)~~ (*)	Iron	2.3			
	Lead	<0.05			
*	Manganese	0.43			
(**)(*)	Mercury	<0.2			
	Nickel	0.08			
	Phenol	0.002			

* - violation of drinking water standard
** - violation of 408, Ch. 3 (effluent)
*** - violation of 203, Ch. 3 (water quality)

violation of drinking water standards for iron, mercury, and manganese.

It is expected that groundwater flow will be towards the creek located just north of the fly ash pond. No private wells are located in this area as the area around the pond is currently owned by SIPCO.

The violation of 408 effluent standards for zinc, mercury, and iron may be corrected with this additional storage. Additional monitoring of these parameters will be incorporated into the next NPDES permit reissuance.

Action ⇒ Permit

Electronic Filing: Received, Clerk's Office 01/13/2022

81-776

RECEIVED

DATE RECEIVED:

AUG 03 1981

Environmental Protection Agency
WPC — Permit Log In

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

APPLICATION FOR PERMIT OR CONSTRUCTION APPROVAL

WPC-PS-1

1. NAME AND LOCATION:

Name of project: Flyash Storage Pond Extension

Municipality or Township Not applicable County Williamson

2. BRIEF DESCRIPTION OF PROJECT: Extension to existing flyash pond to allow storage of flyash from 4 coal fired generating units.

3. DOCUMENTS BEING SUBMITTED: If the project involves any of the items listed below, submit the corresponding schedule, and check the appropriate spaces.

PROJECT

Private Sewer Connection	.A	Spray Irrigation	.H
Public Sewer Extension	.B	Septic Tanks	.I
Sewer Extension Construct Only	.C	Industrial Treatment or Pretreatment	.J
Sewage Treatment Works	.D		
Excess Flow Treatment	.E	Cyanide Acceptance	.L
Lift Station/Force Main	.F	Updating Cyanide Acceptance Form	.M
Sludge Disposal	.G	Waste Characteristics	.N

LAND TRUST: Is the project identified in item number 1 herein, for which a permit is requested, to be constructed on land which is the subject of a trust? ___ Yes X No
If yes, item number 6.1.1 herein must be signed by a beneficiary, trustee or trust officer, and a trust disclosure must be submitted (see instructions, item 3).

Plans: Title Plans for flyash storage pond extension Number of Pages 3

Specifications: Title Flyash storage pond extension Number of Books/Pages 1/40

Other Documents (Please Specify) None

4. THIS IS AN APPLICATION FOR (CHECK):

X A. Joint Construction And Operating Permit
___ B. Authorization To Construct (See Instructions) NPDES Permit No. ILOO_____ Issue Date _____
___ C. Construct Only Permit (Does Not Include Operations)
___ D. Operate Only Permit (Does Not Include Construction)

5. CERTIFICATIONS AND APPPOVAL:

5.1 Certificate by Design Engineer
I hereby certify that I am familiar with the information contained in this application, including the attached schedules indicated above, and that to the best of my knowledge and belief such information is true, complete and accurate. The plans and specifications (specifications other than Standard Specifications or local specifications on file with this Agency) as described above were prepared by me or under my direction.

ENGINEER John H. Crawford (NAME) 29206 (REGISTRATION NUMBER)

FIRM Crawford and Whiteside, P.C.

ADDRESS P. O. Box 21
Carterville, IL. 62918 PHONE NUMBER 618-985-6390

SIGNATURE

JOHN H. CRAWFORD 29206 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

6. CERTIFICATIONS AND APPROVALS FOR PERMITS:

6.1 Certificate by Applicant(s)
I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application, and am/are authorized to sign this application in accordance with the Rules and Regulations of the Illinois Pollution Control Board. I/We hereby agree to conform with the Standard Conditions and with any other Special Conditions made part of this Permit.
6.1.1 NAME OF APPLICANT FOR PERMIT OR AUTHORIZATION TO CONSTRUCT A Flyash Storage Pond Extension

Route 4, Box 255 (STREET) Marion (CITY) IL. (STATE) 62959 (ZIP CODE)

SIGNATURE

TITLE Exec. V.P. & General Manager ORGANIZATION Southern Illinois Power Cooperative

WPC 150 Rev. 5/80

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6.1.2 NAME OF APPLICANT FOR PERMIT TO OWN AND OPERATE Southern Illinois Power Cooperative

Route 4, Box 255 (STREET) Marion (CITY) IL. (STATE) 62959 (ZIP CODE)

SIGNATURE [signature]

TITLE Executive Vice President and General Manager

6.2 Attested (Units of Government)

DATE _____ SIGNATURE Not applicable TITLE _____ (CITY CLERK, VILLAGE CLERK, SANITARY DISTRICT CLERK, ETC.)

6.3 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or his duly authorized representative.

6.4 CERTIFICATE BY INTERMEDIATE SEWER OWNER Not applicable

I hereby certify that (Please check one):

____1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3, Illinois Pollution Control Board Rules and Regulations, or

____2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Chapter 3 to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET _____ CITY _____ STATE _____ ZIP CODE _____

SIGNATURE _____ DATE _____ TITLE _____

6.4.1 ADDITIONAL CERTIFICATE BY INT. SEWER OWNER Not applicable

I hereby certify that (Please check one):

____1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3, Illinois Pollution Control Board Rules and Regulations, or

____2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Chapter 3 to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET _____ CITY _____ STATE _____ ZIP CODE _____

SIGNATURE _____ DATE _____ TITLE _____

6.5 CERTIFICATE BY WASTE TREATMENT WORKS OWNER Not applicable

I hereby certify that (Please check one):

____1. The waste treatment plant to which this project will be tributary has adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3, Illinois Pollution Control Board Rules and Regulations, or

____2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Chapter 3 to allow construction and operation of the facilities that are the subject of this application.

I also certify that the industrial waste discharges described in the application is capable of being treated by the treatment works, and such waste discharges will be in compliance with all currently applicable local, state or federal pretreatment requirements.

Name and location of waste treatment works to which this project will be tributary:

TREATMENT WORKS OWNER _____

STREET _____ CITY _____ STATE _____ ZIP CODE _____

SIGNATURE _____ DATE _____ TITLE _____

JG:bs/sp/1933b/1-2

2021900022

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2776-81

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Environmental Protection Agency
WPC — Permit Log In

FLYASH STORAGE POND EXTENSION

Southern Illinois Power Cooperative is an Illinois nonprofit corporation engaged in the generation and transmission of electric power for its three member rural electric cooperatives which serve 36,000 consumers in 18 Illinois counties. See drawing A-328. Power is purchased from SIPC and distributed by the Egyptian Electric Coop. Assc., the Southeastern Illinois Electric Coop., Inc., and the Southern Illinois Electric Cooperative.

In addition, there are interconnections with the Illinois towns of McLeansboro, Fairfield, and Red Bud.

The Marion steam generating plant is located on a site eight miles south of Marion in Williamson County, Illinois. The plant is adjacent to the 2,300-acre Lake of Egypt that is owned by SIPC and was formed to provide the cooling water for the present generating station.

The Marion steam generating station consists of four units with a total name-plate gross generating capacity of 272 megawatts. These units burn a mixture of "gob" refuse and coal in cyclone furnaces.

Combustion of the coal and "gob" material results in the production of both flyash and bottomash. Bottomash is, of course, that material which collects on the furnace walls while flyash is that dust which is entrained with the flue gas.

In practice the dust loading of the flue gas from coal fired cyclone units is in the range of 20 to 30 percent of the ash in the coal, compared with about 80% for a dry-ash pulverized coal fired unit. (As a sidelight, it is important to note that, if both units were equipped with 95% efficient precipitators, the ash discharged from the stack of a cyclone fired unit will be less than half that from the stack of a dry-ash pulverized coal fired unit.)

At present, disposal of the flyash by-product is handled in either of two ways. The majority of material is mixed with bottomash and scrubber sludge (90%$CaSo_3$/ 10%$CaSo_4$), with the resulting material being landfilled. Unfortunately, the remainder of the flyash must be sluiced to a storage pond where it remains. We are presently engaged in an assessment to determine if any other industry could use this material in their operations. Although some interest has been generated, no agreements have yet been signed. We must, therefore, make provisions to pond this material.

We have been successful in finding various uses for the bottomash which consumes our excess. Our bottomash is now used as filler for drain fields, for winter road control and for road construction material.

In order to determine our ash storage pond requirements, we must make some projections on the total amount of fuel consumed and its' ash content. Table 1 details the amounts of flyash and bottomash which will be generated in various years.

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TABLE 1

Waste Quantities*

Year	Coal Consumption 1,000 T	Total Ash 1,000 T	Bottomash 1,000 T	Flyash 1,000 T
1981	798.472	131.748	105.398	26.350
1982	845.087	139.439	111.551	27.888
1983	891.702	147.131	117.705	29.426
1984	938.318	154.822	123.858	30.964
1985	984.933	156.574	125.259	31.315

*Assuming 16.5% ash content, 80/20 split on bottomash/flyash, of course, not all of the flyash will be captured by the electrostatic precipitator installed on each unit. Table 2 shows the actual quantities which must be disposed of.

TABLE 2
Captured Flyash*

Year	Unit 1, 2, 3 1,000 T	Unit 4 1,000 T	Total Flyash 1,000 T
1981	8.094	17.017	25.111
1982	8.567	18.073	26.640
1983	9.039	19.128	28.167
1984	10.565	20.182	30.747
1985	12.089	20.182	32.271

*Assuming precipitator efficiencies Unit 1, 2, 3 99.1%, Unit 4 99.4%.

Based partly on our present performance and partly on our expected future performance, we should be able to landfill 80% of the flyash generated by Unit 4 with the scrubber sludge/bottomash. We must, therefore, find storage for 20% of the flyash from Unit 4 and all of the flyash from Units 1, 2 and 3. Table 3 shows the amount of flyash by year which will have to be stored in a pond. (It should be noted that these amounts represent worst case since they assume no alternate use is found).

TABLE 3

Flyash Quantities To Be Ponded

Year	Units 1, 2, 3 1,000 T	Unit 4 1,000 T	Total Flyash 1,000 T
1981	8.094	3.403	11.709
1982	8.567	3.615	12.393
1983	9.039	3.826	13.075
1984	10.565	4.036	14.561
1985	12.089	4.036	16.125

2021900223

Assuming that one cubic yard of flyash weighs 1920 pounds, we can generate the required pond volumes (Table 4).

TABLE 4

Flyash volumes to be ponded

Year	Flyash Volume Cu. Yds.	Cumulative Volume Cu. Yds.
1981	11,485	11,485
1982	12,197	23,682
1983	12,910	36,592
1984	13,620	50,212
1985	15,168	65,380

Of course, the fact that the year 1981 is about 1/2 over will have to be considered in later calculations. At present, we have only about 1,000 cu. yds. available for storage in our existing flyash pond. We have, therefore, decided that we should add an extension to the existing pond to allow our continued use of this system. The attached drawing, A-326, shows our proposed addition. With this addition we would gain approximately 64,000 cu. yds. of storage.

Allowing for the material already in place from 1981, we should have adequate storage through 1985. We will, of course, continue trying to find alternate uses for the flyash generated by our plant.

$$64{,}000\ yd^3 \times \frac{27\ ft^3}{yd^3} \times \frac{1\ acre}{43{,}560\ ft^2} = 39.7\ acre\text{-}ft.$$

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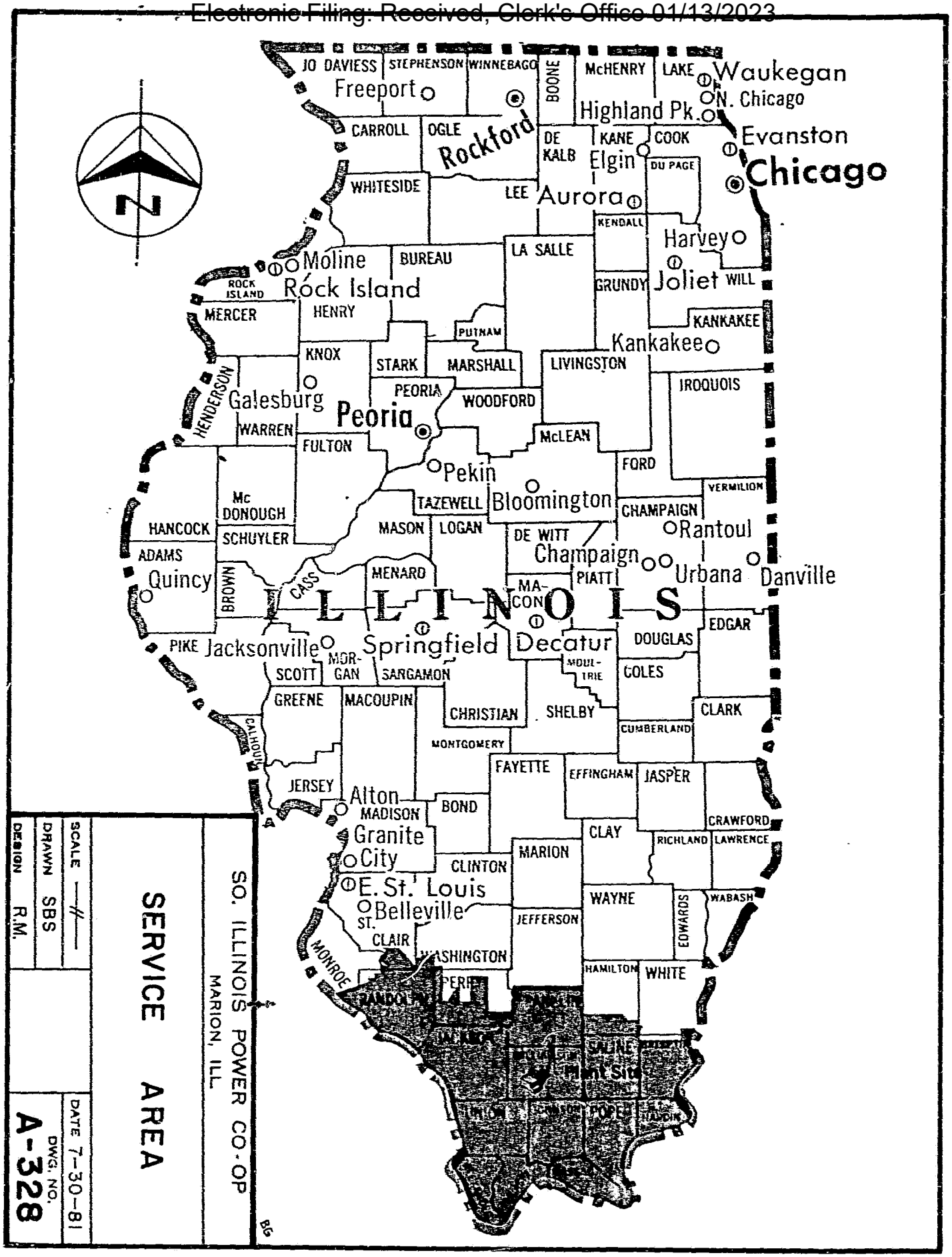

SERVICE AREA

SO. ILLINOIS POWER CO-OP
MARION, ILL.

SCALE —//—
DRAWN SBS
DESIGN R.M.
DATE 7-30-81
DWG. NO. A-328

5219 0n 2025

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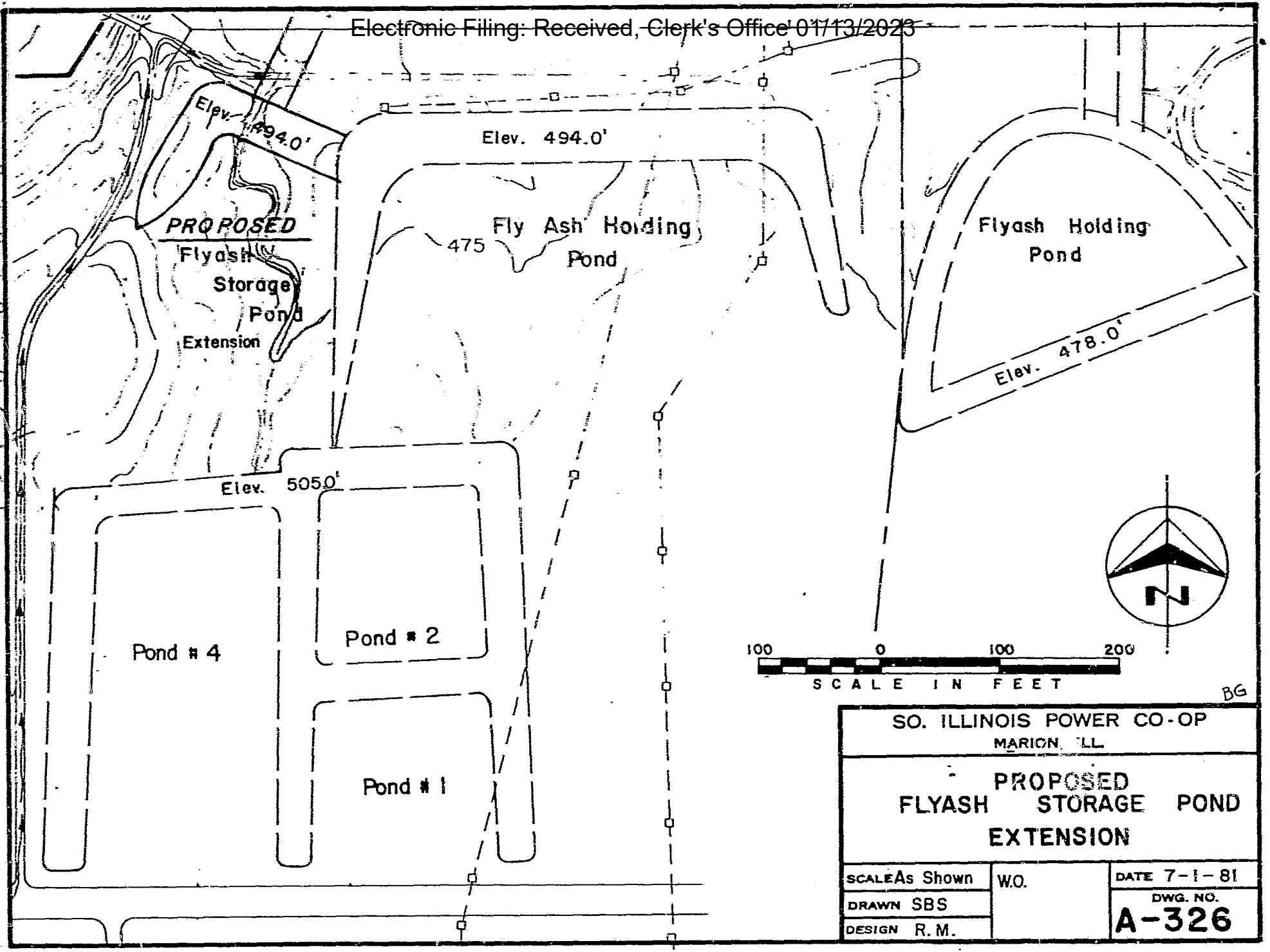

SO. ILLINOIS POWER CO-OP
MARION, ILL.

PROPOSED FLYASH STORAGE POND EXTENSION

SCALE As Shown	W.O.	DATE 7-1-81
DRAWN SBS		DWG. NO. A-326
DESIGN R. M.		

Electronic Filing: Received, Clerk's Office 01/13/2023

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

TO: Dwight Hill (FOS, Region 1); Dan Umfleet (DWPC - Permits) DATE: 9-9-81

FROM: Roger Cruse (DWPC - CAS) RC

[X] Information only

SUBJECT: Southern Illinois Power Coop IL0004316

[ ] Response requested

per conversation with Dick Myott (Environmental Affairs - Southern):

Dick called me today to discuss two subjects which he hopes will alleviate some of the TDS excursions that have been occuring lately (both of which will be submitted in correspondence to the Permit Section soon). They are: (1) The company feels that if the new ash line can be a combination of fly and bottom ash, it could conceivably reduce or eliminate excursions occuring at the fly ash pond discharge. (2) The proposal for the construction of the new dam has been completed and will be mailed in the near future.

Dick is of the opinion that both of these proposals, if implemented, will bring about substantial compliance for his company.

RECEIVED
SEP 10 1981
Environmental Protection Agency
Division of Water Pollution Control
Permit Section-Springfield
State of Illinois

2027020019

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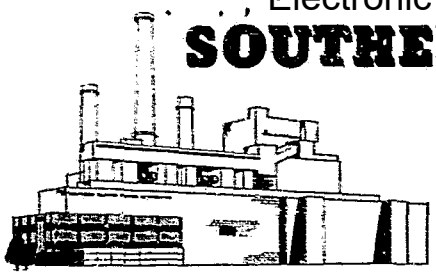

SOUTHERN ILLINOIS POWER CO-OP.

ROUTE 4 – BOX 255 • MARION, ILLINOIS 62959
AREA CODE 618/964-1448

July 30, 1981

2776-81

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AUG 3 1981

ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION - SPRINGFIELD
STATE OF ILLINOIS

Illinois EPA
Division of Water Pollution Control
Permit Section
2200 Churchill Road
Springfield, Il. 62706

RE: Southern Illinois Power Cooperative
Flyash storage pond extension
Construction and Operation

Gentlemen:

We have determined that an extension to our existing flyash pond is necessary. This extension is required as the present pond has almost reached its' limits as regards flyash storage.

We intend that this letter serve as our application for a permit to construct and operate the required flyash storage pond extension.

For your evaluation we have attached your form WPC-PS-1 which includes a copy of our plan which discusses this expansion. As you will note, no detailed specifications were included in this submittal. We plan to have these specifications available for your review during the latter portion of August.

We hope that providing this initial information will facilitate your review of our application. If we can provide any additional assistance, please contact us.

Very truly yours,

Richard Myott

Richard G. Myott
Environmental Superintendent

RGM/mp

cc: Jim Chapman
Clyde Rice

2021900226

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Exhibit

48

W1998601676A SOUTHERN ILLS POWER SL DISP PND 03 1986EN0052 1

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PERMIT/PLAN/SPECIFICATION
MICROFILM JACKET INFORMATION

1.	DIVISION CODE	W
2.	FIPS COUNTY CODE	199
3.	CITY/TOWNSHIP CODE	860
4.	GOVERNING BODY CODE	1676A
5.	PERMITTEE NAME (FILE SUBJECT) SOUTHERN ILL POWER-SL DISP PND	
6.	FILE DIVISION	03
7.	IEPA PERMIT NUMBER	1986EN0052

CROSS REFERANCE INFORMATION

8.	GOVERNING BODY NAME SOUTHERN ILLINOIS POWER COOP	
9.	F/S/P/ CODE	B1525A
10.	NPDES NUMBER	IL0004316

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NO.: 1986-EN-0052 DATE ISSUED: January 21, 1986

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS PREPARED BY: Southern Illinois Power Cooperative, Inc. LOG NUMBERS: 0052-86

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE, INC., Marion Generating Station Fly Ash and Scrubber Sludge Disposal Pond

PERMITTEE TO CONSTRUCT
Southern Illinois Power Cooperative, Inc.
Route 4, Box 311
Marion, Illinois 62959

Permit is hereby granted to the above designated permittee to construct water pollution control facilities described as follows:

Construction of an earthen dam to impound 6.6 surface acres with a capacity of 45 acre feet for disposal of fly ash and sludge from sulfur dioxide scrubbers using a lime slurry reactant. Fly ash and scrubber wastes will be discharged into the proposed impoundment for settling prior to discharge into Little Saline Creek. The dam will be a maximum of 36 feet above existing grade to elevation 498.0 M.S.L. with a 2.75:1 outside slope and a 10 foot top width. The operational depth of the impoundment is at elevation 495.0 M.S.L. with overflow via a 30 inch daimeter CMP riser and 15 inch diameter CMP outfall pipe at invert elevation 490.0 M.S.L.

In situ or placed soils within the impoundment shall provide a three foot thick soil liner exhibiting a maximum permeability of 1 X 10^{-7}cm/sec in both horizontal and vertical planes. The bottom and side seals shall exhibit compaction to 90% modified Proctor Density.

The subject impoundment will be located on site at Southern Illinois Power Cooperative, Inc. - Marion Generating Station in the NE 1/4, Section 26, T10S, R2E Williamson County.

This Permit is issued subject to the following Special Condition(s). If such Special Condition(s) require(s) additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for issuance of a Supplemental Permit.

SPECIAL CONDITION 1: Operation of the subject facility shall be governed by the limitations, monitoring and reporting requirements established in NPDES Permit No. IL0004316.

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:GC:sf/1146f, 8
cc: IEPA - [illegible]
Marion Regional Office
Permit Section

DIVISION OF WATER POLLUTION CONTROL

Thomas G. McSwiggin, P.E.
Manager, Permit Section

IL 532-0009
WPC 146 Rev. 2/82

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless the construction for which this permit is issued has been completed, this permit will expire (1) two years after the date of issuance for permits to construct sewers or wastewater sources or (2) three years after the date of issuance for permits to construct treatment works or pretreatment works.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentation of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit.

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit.

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit.

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants.

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the Agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rule or Regulation effective thereunder as a result of the construction or development authorized by this permit.

Electronic Filing: Received, Clerk's Office 01/13/2023

Subject Southern Illinois Power Cooperative, Inc.
Data Marion Generating Station
Reviewed by GC Date

Receiving Date: 8-29-85 SIPC submits application for construction of a proposed 6.6 acre fly ash and SO_2 scrubber slurry and sludge solid waste disposal pond.

Proposal: Disposal Pond B-3 (Next Stage in Handling Waste at Station)

Location: Williamson County
Goreville Quadrangle Map
NE¼, Sec 26, T10S, R2E
Latitude 37° 37' 29"
Longitude 88° 57' 02"

Facility: Coal Fired Steam Electric Generating Station
272 MW - four cyclone boilers
Construction of an earthen dam to impound 72,600 cubic yds capacity in a natural drainage way.

Proposed impoundment to be located west of existing disposal site

Site at present: Trees with existing drainage channel
Elevation 465 to 510 msl
May be in Flood plain of Little Saline Creek

IDOT Permit Issued

Design: Fly ash and SO_2 scrubber wastes will be sluiced to the proposed impoundment for settling prior to discharge to the South Fork Saline Creek via a 15" CMP to be designated Outfall No. 004 * (005 must be new outfall)

Note: * New outfall will require NPDES operating permit to be modified. Outfall 001 through 004 have been used - the proposed facility will be 005

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39
054-002

Subject Southern Illinois Power Cooperative
Data Marion Generating Station
Reviewed by GC Date

Dam: Approximately 700 ft long
Height 36 ft
MAX ELV 498.0 msl
Slope 2.0-1.0 inside 2.25 to 1.0 outside

Impoundment: 6.6 surface acres (45 acre feet)
92,600 cuyds.
Bottom ELV
Capacity ELV. 495.0 msl

Outlet Structure: 30" CMP riser
15" outfall pipe @ ELV 493.0 msl
Emergency spillway at ELV. 493.75 msl

Water Shed: 19 acres
Fly ash and SO_2 scrubber waste @ 1300 gpm
SiO_2, Al_2O_3, Fe_2O_3 + oxides + alkalies, $CaSO_3$, $CaSO_4$ + heavy metals
100 yr 6hr rainfall = 5.0 in.
25 yr 6 hr " = 4.2 in

C factor used 0.9
Peak Discharge 12 cfs

Wastes: reactive fly ash causes a low pH
Scrubber sludge plus fly ash = pH ok

SO_2 = 30 % solids cake from a belt filter
calcium sulfite and calcium sulfate
$CaO + SO_2 \Rightarrow CaSO_3 + CaSO_4$

Ash Pond Discharge Quality: * Boron
* Iron
* above water quality stad. * Manganese
* Zinc

✓ DMR's —

2024500219

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39
054-002

Subject Southern Illinois Power Cooperative
Data Marion Generating Station
Reviewed by GC Date

Hydrologic Design

19 acre watershed
pond depth max. 35'
pond surface area 6.6 acres

fly ash and sludge sluicing water @ 1300 gpm

outfall = overflow riser into a 15" dia. CMP pipe

Basis of Design: ash sluicing water plus the 25 yr. rainfall

Spillway crest and riprapped energy dissipator

Volumetric method: riser diameter 2.5'
outflow pipe diameter 15"
peak discharge .12 cfs
top of riser ELV. 493.0

Storage capacity 45 acre-ft

19 acres * 43560 ft²/ac * 5/12 ft = 344850 ft³

344850 ft³ ÷ 43560 ft³/ac ft = 7.9 ac ft

1300 gpm * 360 min/day = 0.468 MGD

0.468 MGD / 7.48 gal/ft³ = 62566.8 ÷ 43560 ft³/ac ft = 1.43 ac ft

7.9 + 1.43 = 9.33 ac ft / 6.6 surface ac = 1.41 ft rise in pond

1.41 ft rise − overflow rate = rise in pond from storm.

2210224

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39
054-002

Subject Southern Illinois Power Cooperative
Data Marion Generating Station
Reviewed by CC Date

$Q = VA$

$Q = \frac{1.486}{0.013} * \frac{1.4}{2.466}^{2/3} .01^{1/2} = 7.8 \text{ cfs}$

7.8 cfs * 86400 sec/day ÷ 43560 sq/acft = 15.5 acft/day

influent 1.4 acft/day per storm event
effluent 15.5 acft/day = 0.64 acft/hr
* Head not included ok
spillway designed at 12 cfs

Action ⇒ Permit with liner requirement
Note: NPDES permit modification required to add a new outfall 005

? will other outfalls be eliminated

IEPA 0222447

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Subject Southern Illinois Power Cooperative
Data Marion Station — DMR's
Reviewed by GC Date

1985

Outfall 001 Ash Pond #3 Effluent

	Flow (MGD)			pH		TDS		
	min	AVG	MAX	min	MAX	MIN	AVG	MAX
J	1.357	2.665	4.650	6.6	6.8	640.0	990.0	1531.0
F	1.121	1.521	1.922	6.1	6.4	485.0	763.5	894.3
M	1.357	1.539	1.722	6.5	7.3	396.1	558.3	727.0
A	0.900	1.265	1.528	7.0	7.3	899.6	959.7	999.3
M	2.156	3.868	4.722	7.2	7.6	453.0	779.1	926.0
J	1.829	1.829	1.829	7.1	8.0	315.6	549.1	760.6
J	0.381	1.011	1.528	7.2	7.5	704.0	853.7	996.2
A	0.665	1.526	1.822	6.5	7.4	216.0	576.5	856.1
S	1.528	2.428	3.894	6.9	7.3	365.0	559.7	931.0
O	1.330	2.398	3.810	6.7	7.3	110.0	141.8	185.1
N	1.357	2.145	3.780	7.2	7.4	377.0	502.0	836.0
D								

	TSS			Oil + Grease		
	min	AVG	MAX	min	AVG	MAX
J	9.0	13.5	19.6	1.2	2.2	3.6
F	10.1	10.7	12.0	1.9	2.3	2.5
M	10.3	12.5	14.5	1.0	1.2	1.5
A	5.0	8.9	14.5	0.6	0.8	1.7
M	4.0	8.3	10.6	0.0	2.1	2.3
J	6.6	9.6	13.1	1.3	1.9	2.3
J	8.0	11.0	14.5	0.3	0.7	1.0
A	11.0	11.9	14.9	0.1	1.6	3.0
S	10.0	12.0	17.0	1.1	2.8	7.0
O	10.0	14.1	18.1	1.2	1.7	2.0
N						
D						

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Subject Southern Illinois Power Cooperative
Data Marion Station — DMR's
Reviewed by GC Date
1995

(cont) Outfall 001 Ash Pond #3 Effluent

	Iron			Boron		
	min	AVG	MAX	min	AVG	MAX
J	0.9	1.0	1.0	—	—	—
F	0.9	1.0	1.1	—	—	—
M	0.4	0.9	1.2	—	—	—
A	0.6	0.7	0.9	—	—	—
M	0.6	0.7	0.8	—	—	—
J	0.4	0.5	0.7	—	0.40	—
J	1.1	1.1	1.2	0.4	0.4	0.4
A	0.4	0.6	0.9	—	—	—
S	0.6	0.8	0.9	—	—	—
O	0.3	0.8	1.4	—	—	—
N	0.6	0.8	1.0	—	—	—
D						

	Cadmium			Zinc		
	min	AVG	MAX	min	AVG	MAX
J	—	—	—	—	—	—
F	—	—	—	—	—	—
M	—	—	—	—	—	—
A	—	—	—	—	—	—
M	—	0.15	0.30	—	—	—
J	—	0.01	—	—	0.05	—
J	0.01	0.01	0.01	0.05	0.05	0.05
A	—	—	—	—	—	—
S	—	—	—	—	—	—
O	—	—	—	—	—	—
N	—	—	—	—	—	—
D						

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Subject Southern Illinois Power Cooperative
Data Marion Station - DMR's
Reviewed by GC Date

1985

Outfall 002 Ash Pond #4 Effluent

	Flow MGD			pH		TDS		
	min	AVG	MAX	min	MAX	min	AVG	MAX
J	2.885	2.891	2.900	6.6	7.1	191.0	446.0	701.1
F	3.874	6.290	8.706	6.5	6.6	552.0	734.7	882.2
M	0.419	3.025	3.874	6.4	7.1	331.6	393.0	415.9
A	3.874	7.240	9.740	6.5	7.4	156.1	386.7	931.0
M	1.322	3.168	8.706	6.6	7.6	81.0	336.5	989.2
J	4.036	8.451	9.922	6.4	8.2	311.2	499.3	592.1
J	1.121	1.793	2.017	6.5	6.9	849.5	913.0	989.2
A	1.722	6.958	9.618	6.8	7.4	308.0	516.7	745.0
S	2.885	6.313	9.740	6.7	7.4	451.0	629.5	921.0
O	1.810	2.221	2.530	6.8	7.2	153.1	186.7	210.0
N	5.608	7.200	8.221	7.0	7.3	349.0	454.0	643.0
D								

	TSS			Oil + Grease		
	min	AVG	MAX	min	AVG	MAX
J	11.0	13.5	14.5	0.0	0.4	1.3
F	11.9	14.6	18.2	0.4	0.6	0.9
M	9.5	12.6	14.9	1.9	2.5	3.5
A	11.5	16.5	22.5	0.9	1.5	3.0
M	3.5	13.8	21.0	0.6	3.9	5.6
J	4.9	11.9	19.0	0.9	1.2	2.0
J	6.1	11.1	21.1	0.2	0.8	1.1
A	4.0	12.1	20.0	0.5	0.8	1.5
S	10.1	13.4	21.0	0.0	0.4	0.6
O	6.1	8.9	12.8	1.6	1.6	1.7
N	6.5	14.7	26.5	0.2	0.4	0.6
D						

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ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39
054-002

Subject Southern Illinois Power Cooperative

Data Marion Station — DMR's

Reviewed by G-C Date

1985

Outfall 002 Ash Pond #4 Effluent

	Iron			Boron		
	min	AVG	MAX	min	AVG	MAX
J	1.0	1.5	1.7	—	—	—
F	1.2	1.7	1.9	—	—	—
M	0.9	1.0	1.2	—	—	—
A	1.8	2.3	3.5	—	—	—
M	0.9	1.1	1.3	—	—	—
J	0.6	0.8	0.9	—	0.50	—
J	1.1	1.6	2.0	0.50	0.50	0.50
A	0.8	1.0	1.2	—	—	—
S	0.7	0.9	1.0	—	—	—
O	1.0	1.2	1.4	—	—	—
N	1.0	1.3	1.8	—	—	—
D						

C 9 1 2 5

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IL 532-0357
ADM 39
054-002

Subject Southern Illinois Power Cooperative
Data Marion Generating Station
Reviewed by GC Date

Telephone conversation with Loyde Young with Bechtell Engineering — he is a geotechnical engineer.

@ SIPC testing — ran 2 tests 95% density compaction 1% above and 1% below optimum moisture. Best is wet of optimum

he will ✓ BP-4 soils which are below quality of others.

Dam was designed differently than originally designed — moved upstream

Requesting application forms — ok

5210022552

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DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

3032-85

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AUG 29 1985

Environmental Protection Agency
WPC—Permit Log In

APPLICATION FOR PERMIT OR CONSTRUCTION APPROVAL

WPC-PS-1

1. NAME AND LOCATION:

Name of project: Fly ash/scrubber sludge disposal Pond B-3

~~Municipality~~ or Township: Southern County: Williamson

2. BRIEF DESCRIPTION OF PROJECT: construction and operation of a fly ash/sludge settling basin

3. DOCUMENTS BEING SUBMITTED: If the project involves any of the items listed below, submit the corresponding schedule, and check the appropriate spaces.

PROJECT			
Private Sewer Connection	A	Spray Irrigation	H
Public Sewer Extension	B	Septic Tanks	I
Sewer Extension Construct Only	C	Industrial Treatment or Pretreatment	J X
Sewage Treatment Works	D		
Excess Flow Treatment	E	Cyanide Acceptance	L
Lift Station/Force Main	F	Updating Cyanide Acceptance Form	M
Sludge Disposal	G	Waste Characteristics	N

LAND TRUST: Is the project identified in item number 1 herein, for which a permit is requested, to be constructed on land which is the subject of a trust? ☐ Yes ☒ No
If yes, item number 6.1.1 herein must be signed by a beneficiary, trustee or trust officer, and a trust disclosure must be submitted (see instructions, item 3).

Plans: Title Technical specifications for fly ash pond for Southern Illinois Power Cooperative Marion Station Number of Pages: 14

Specifications: Title Number of Books/Pages:

Other Documents (Please Specify) Final design report for proposed fly ash and scrubber sludge Pond B-3

4. THIS IS AN APPLICATION FOR (CHECK):

X A. Joint Construction And Operating Permit
B. Authorization To Construct (See Instructions) NPDES Permit No. IL00 04316 Issue Date 3/29/85
C. Construct Only Permit (Does Not Include Operations)
D. Operate Only Permit (Does Not Include Construction)

5. CERTIFICATIONS AND APPROVAL:

5.1 Certificate by Design Engineer
I hereby certify that I am familiar with the information contained in this application, including the attached schedules indicated above, and that to the best of my knowledge and belief such information is true, complete and accurate. The plans and specifications (specifications other than Standard Specifications or local specifications on file with this Agency) as described above were prepared by me or under my direction.

ROY H. DUNHAM
PROFESSIONAL ENGINEER
AGRICULTURE
SEAL
COMMERCE
TENNESSEE
No. 4047

ENGINEER Roy H. Dunham (NAME) 4047 (REGISTRATION NUMBER)

FIRM: Bechtel Energy Corporation

ADDRESS: 15740 Shady Grove Rd. (1B6)
Gaithersburg, MD 20877-1454 PHONE NUMBER: (301) 258-3116

SIGNATURE Roy H Dunham PHONE No (301) 258-3116

6. CERTIFICATIONS AND APPROVALS FOR PERMITS:

6.1 Certificate by Applicant(s)
I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application, and am/are authorized to sign this application in accordance with the Rules and Regulations of the Illinois Pollution Control Board.
I/We hereby agree to conform with the Standard Conditions and with any other Special Conditions made part of this Permit.

6.1.1 NAME OF APPLICANT FOR PERMIT OR AUTHORIZATION TO CONSTRUCT Southern Illinois Power Co-op

Rt. 4 - Box 311 (STREET)	Marion (CITY)	IL (STATE)	62959 (ZIP CODE)

SIGNATURE Richard G Wyatt

TITLE Support Systems Department Mgr ORGANIZATION Southern Illinois Power Co-op

IL 532-0010
WPC 150 Rev. 2/83

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6.1.2 NAME OF APPLICANT FOR PERMIT TO BE ISSUED TO: Southern Illinois Power Cooperative

Rt. 4, Box 311 | Marion | IL | 62959

STREET | CITY | STATE | ZIP CODE

SIGNATURE Richard B Myatt

TITLE Support Systems Department Manager

6.2 Attested (Units of Government)

DATE _____ SIGNATURE _____ TITLE _____
(CITY CLERK, VILLAGE CLERK, SANITARY DISTRICT CLERK, ETC.)

6.3 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or his duly authorized representative.

6.4 CERTIFICATE BY INTERMEDIATE SEWER OWNER

I hereby certify that (Please check one):

_____ 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Subtitle C, Chapter I, or

_____ 2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

6.4.1 ADDITIONAL CERTIFICATE BY INTERMEDIATE SEWER OWNER

I hereby certify that (Please check one):

_____ 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Subtitle C, Chapter I, or

_____ 2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

6.5 CERTIFICATE BY WASTE TREATMENT WORKS OWNER

I hereby certify that (Please check one):

_____ 1. The waste treatment plant to which this project will be tributary has adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Subtitle C, Chapter I, or

_____ 2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.

I also certify that the industrial waste discharges described in the application is capable of being treated by the treatment works, and such waste discharges will be in compliance with all currently applicable local, state or federal pretreatment requirements.

Name and location of waste treatment works to which this project will be tributary:

TREATMENT WORKS OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

JG:6452C
WPC 150
(Rev 2/83)

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

SCHEDULE J INDUSTRIAL TREATMENT WORKS CONSTRUCTION OR PRETREATMENT WORKS

1. NAME AND LOCATION:

1.1 Name of project: Fly ash/scrubber sludge disposal Pond B

1.2 Plant Location

1.2.1	Quarter Section	Section	Township	Range	P.M.
	NE	26	10S	2E	3

1.2.2 Latitude 37° 37' 29" North
Longitude 88° 57' 02" West

1.2.3 Name of USGS Quadrangle Map (7.5 or 15 Minutes): Goreville (7.5)

2. NARRATIVE DESCRIPTION AND SCHEMATIC WASTE FLOW DIAGRAM: (see instructions)

Fly ash from plant will be sluiced to this basin - after settling, the clear water will be sent to settling pond existing system through new outfall 004

2.1 PRINCIPAL PRODUCTS: electricity

2.2 PRINCIPAL RAW MATERIALS: coal and air

3. DESCRIPTION OF TREATMENT FACILITIES:

3.1 Submit a flow diagram through all treatment units showing size, volumes, detention times, organic loadings, surface settling rate, weir overflow rate, and other pertinent design data. Include hydraulic profiles and description of monitoring systems.

3.2 Waste Treatment Works is: Batch ____, Continuous X ; No. of Batches/day ____, No. of Shifts/day ____

3.3 Submit plans and specifications for proposed construction.

3.4 Discharge is: Existing ____; Will begin on pond completion

4. DIRECT DISCHARGE IS TO: Receiving Stream X Municipal Sanitary Sewer ____, Municipal storm or municipal combined sewer ____. If receiving stream or storm sewer indicated complete the following:

Name of receiving stream Southfork Saline Creek; tributary to Little Saline Creek;

tributary to ---; tributary to ---.

5. Is the treatment works subject to flooding? If so, what is the maximum flood elevation of record (in reference to the treatment works datum) and what provisions have been made to eliminate the flooding hazard? No

6. APPROXIMATE TIME SCHEDULE: Estimated construction schedule:

Start of Construction 5/1/86; Date of Completion 9/30/86

Operation Schedule 10/1/86; Date Operation Begins 10/11/86

100% design load to be reached by year not applicable

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required under that Section. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

IL 532-0018
WPC 158

090-001

5522900219

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7. DESIGN LOADINGS

7.1 Design population equivalent (one population equivalent is 100 gallons of wastewater per day, containing 0.17 pounds of BOD_5 and 0.20 pounds of suspended solids;

BOD N/A ; Suspended Solids N/A ; Flow N/A

7.2 Design Average Flow Rate N/A MGD.

7.3 Design Maximum Flow Rate N/A MGD.

7.4 Design Minimum Flow Rate N/A MGD.

7.5 Minimum 7-day, 10-year low flow N/A cfs N/A MGD.

Minimum 7-day, 10-year flow obtained from N/A

7.6 Dilution Ratio N/A ; N/A

8. FLOW TO TREATMENT WORKS (if existing):

8.1 Flow (last 12 months)

8.1.1 Average Flow N/A MGD

8.1.2 Maximum Flow N/A MGD

8.2 Equipment used in determing above flows flow meter

9. Has a preliminary engineering report for this project been submitted to this Agency for Approval?

YES X NO ___. If so, when was it submitted and approved. Date Submitted 11/20/84

Certification 0045E/2

Dated 1/7/85

10. List Permits previously issued for the facility: NPDES

11. Describe provisions for operation during contingencies such as power failures, flooding, peak loads, equipment failure, maintenances shut-downs and other emergencies. Not applicable - see NPDES permit

12. Complete and submit Schedule G if sludge disposal will be required by this facility. not applicable

13. WASTE CHARACTERISTICS: Schedule N must be submitted. See attached NPDES application

14. TREATMENT WORKS OPERATOR CERTIFICATION: List names and certification numbers of certified operators:

Information previsouly provided for NPDES permit

2022090152

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DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

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SCHEDULE N WASTE CHARACTERISTICS

1. Name of Project Fly ash/scrubber sludge disposal Pond B-3

2. FLOW DATA

	EXISTING	PROPOSED-DESIGN
2.1 Average Flow (gpd)	See DMR - outfall 001	
2.2 Maximum Daily Flow (gpd)	See DMR - outfall 001	

2.3 TEMPERATURE

Time of year	Ave. Intake Temp. F	Avg. Effluent Temp. F	Max. Intake Temp. F	Max. Effluent Temp. F	Max. Temp. Outside Mixing Zone F
SUMMER					
WINTER					

2.4 Minimum 7-day, 10-year flow: _____ cfs _____ MGD.

2.5 Dilution Ratio: _____ ; _____

2.6 Stream flow rate at time of sampling _____ cfs _____ MGD.

3. CHEMICAL CONSTITUENT Existing Permitted Conditions ___ ; Existing conditions ___ ; Proposed Permitted Conditions _____.

Type of sample: ___ grab (time of collection ___); ___ composite (Number of samples per day _____)

(see instructions for analyses required)

Constituent	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l)	Max.	UPSTREAM SAMPLES (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Ammonia Nitrogen (asN)	SEE DMR - OUTFALL 001				
Arsenic (total)					
Barium					
Boron					
BOD_5					
Cadmium					
Carbon Chloroform Extract					
Chloride					
Chromium (total hexavalent)					
Chromium (total tribalent)					
Copper					
Cyanide (total)					
Cyanide (readily released @ 170°F & pH 4.5)					
Dissolved Oxygen					
Fecal Coliform					

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	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l) Max.	UPSTREAM (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Fluoride	SEE DMR - OUTFALL 001			
Hardness (as $CaCO_3$)				
Iron (total)				
Lead				
Manganese				
MBAS				
Mercury				
Nickel				
Nitrates (asN)				
Oil & Grease (hexane solubles or equivalents)				
Organic Nitrogen (as N)				
pH				
Phenols				
Phosphorous (as P)				
Radioactivity				
Selenium				
Silver				
Sulfate				
Suspended Solids				
Total Dissolved Solids				
Zinc				
Others				

5212500023

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FINAL DESIGN REPORT

FOR

PROPOSED FLY ASH AND SCRUBBER

SLUDGE DISPOSAL POND B-3

MARION STATION

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REPORT TO

SOUTHERN ILLINOIS POWER COOPERATIVE, INC.

MARION, ILLINOIS

BY

BECHTEL ENERGY CORPORATION

GAITHERSBURG, MARYLAND

BECHTEL JOB 16240-027

JULY 1985

5219 0 0 2 2 5 9

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Exhibit

49

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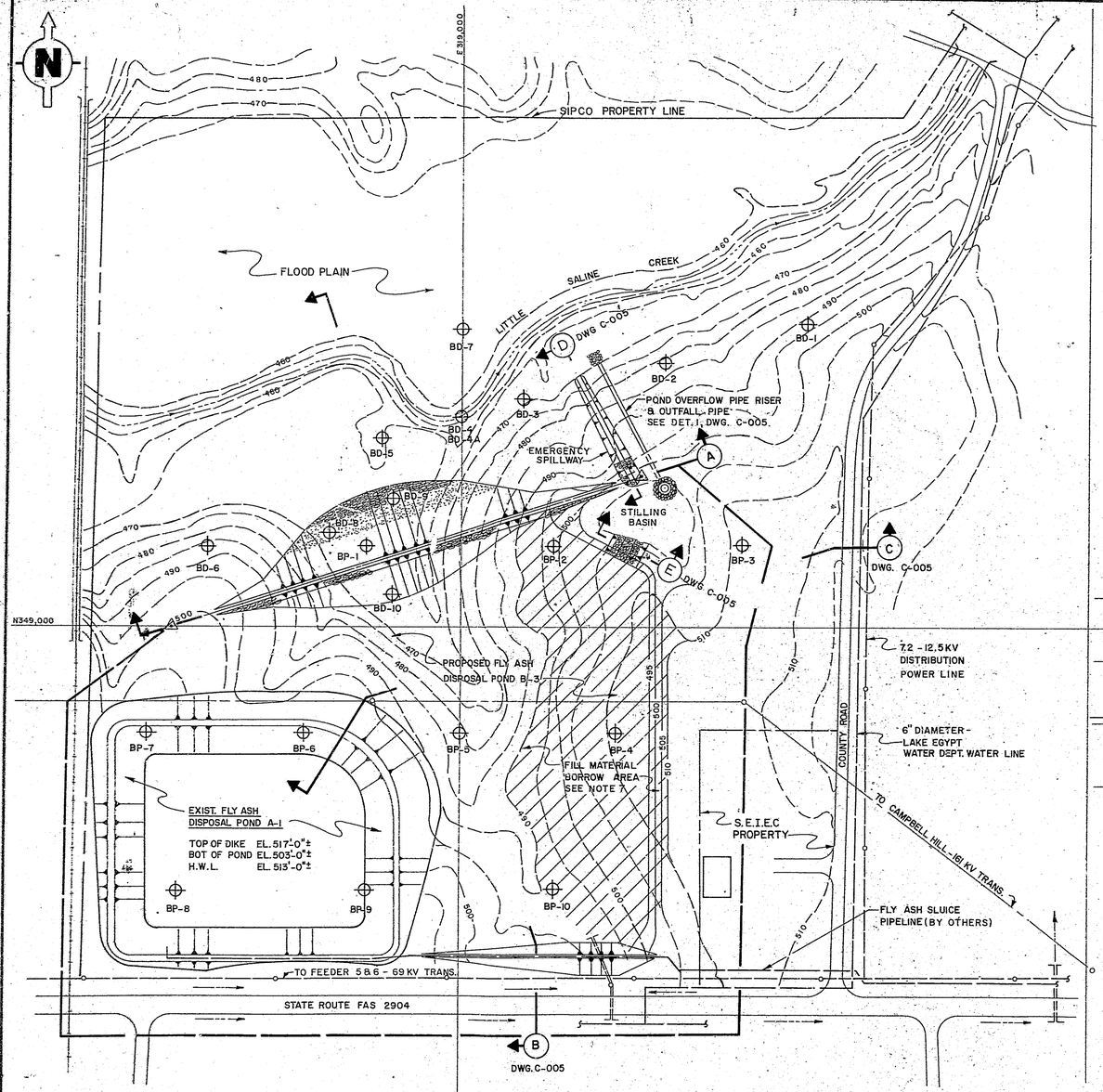
Southern Illinois Power Cooperative, Inc. - Marion Generating Station Fly Ash and Scrubber Sludge Disposal Pond
Permit No. 1986-EN-0052



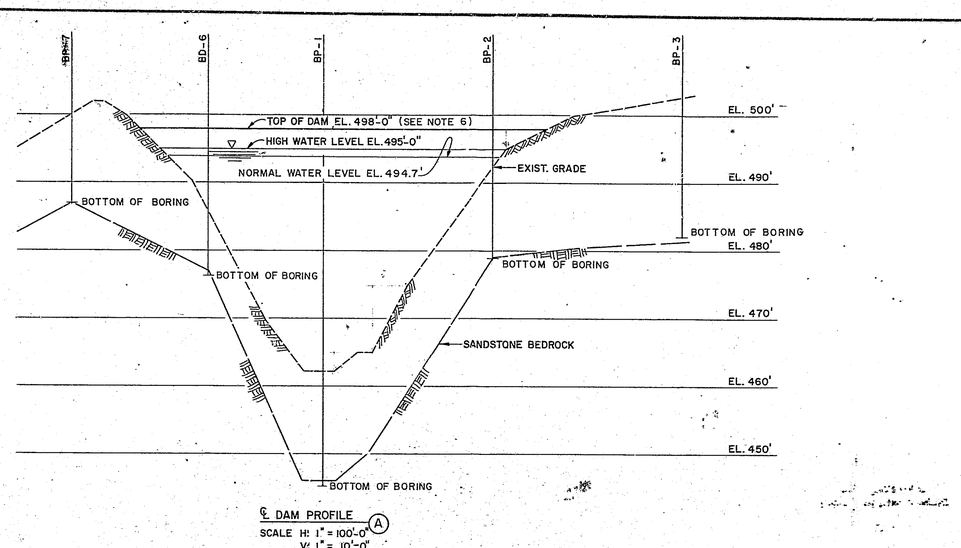
FLY ASH DISPOSAL POND B-3 - PLAN
1"=100'-0"

REFERENCE DRAWINGS

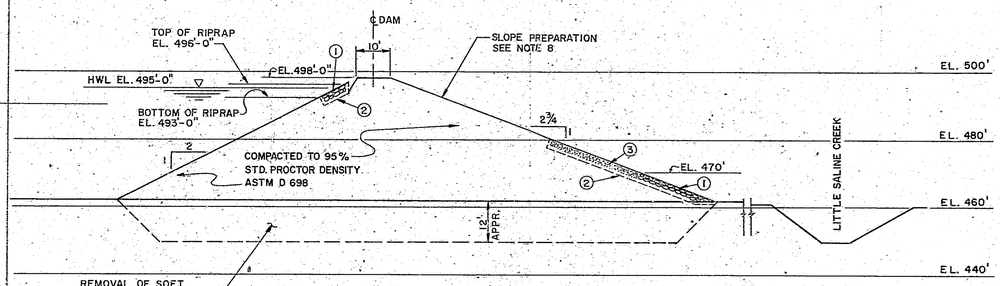
DWG. NO.	TITLE
16240-C-004	PLAN AND SECTIONS
16240-C-005	SECTIONS AND DETAILS
16240-C-006	SITE UTILITY PLAN

LEGEND

- EXIST. BORINGS
- 480 EXIST. CONTOUR
- 500 PROPOSED CONTOUR
- FILL MATERIAL BORROW AREA
- WORK POINT
- LIMIT OF STORM DRAINAGE WATERSHED
- LOCATION OF RIPRAP



℄ DAM PROFILE
SCALE H: 1"=100'-0"
V: 1"=10'-0"



TYPICAL DAM CROSS SECTION
SCALE H: 1"=20'-0"
V: 1"=20'-0"

EROSION PROTECTION

① 12" LIMESTONE RIPRAP THICKNESS (2 LAYERS - D85 = 9") 3032-85
② FILTER FABRIC
③ 12" BOTTOM ASH

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GENERAL NOTES

1. SEE FINAL DESIGN REPORT FOR THE FOLLOWING DESIGN CONCEPT AND CRITERIA:
   - GEOTECHNICAL INVESTIGATION
   - LABORATORY SOIL TESTING
   - DAM EMBANKMENT STABILITY ANALYSIS
   - HYDROLOGIC AND HYDRAULIC ANALYSIS
   - CONSTRUCTION QUALITY CONTROL AND MAINTAINENCE PLAN
2. DAM EMBANKMENT SHALL BE CONSTRUCTED BY PLACING MAXIMUM 9 INCH LIFT AND COMPACTED TO 95% OF MAXIMUM DRY DENSITY AS PER ASTM D-698 (STD. PROCTOR)
3. ALL HORIZONTAL CONTROLS APE BASED ON LOCAL GRID SYSTEM.
4. ALL VERTICAL CONTROLS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM.
5. BOTTOM ASH AVAILABLE AT OWNER'S STOCKPILE ADJACENT TO POWER PLANT.
6. TO PROVIDE FOR DAM COMPRESSION CAMBER DAM 12 INCHES ABOVE EL. 498'-0" AT MAXIMUM SECTION, TAPERING TO ZERO CAMBER AT ABUTMENTS.
7. COVER SANDSTONE BEDROCK AND GRANULAR MATERIAL IN POND AREA WITH 3 FEET OF COMPACTED CLAY AS DESCRIBED IN SPECIFICATIONS.
8. SEEDING AND MULCHING BY OWNER.

No.	DATE	REVISIONS	BY	CHKD	DESIGN SUPV	ENGR	PROJ ENGR	APPR
0		ISSUED FOR CONSTRUCTION	DB	GS	N.A.	WB		NA

SCALE AS SHOWN | DESIGNED M. YOSHII | DRAWN BENNETT

BECHTEL ENERGY CORPORATION
GAITHERSBURG, MARYLAND

SOUTHERN ILLINOIS POWER COOP.
MARION, ILLINOIS

FLY ASH DISPOSAL POND B-3
PLAN AND SECTIONS

JOB No.	DRAWING No.	REV.
16240	16240-C-004	0

2196 of 2196 G-455.4

34 x 44 "E" SIZE

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E 319,000 E 320,000 E 321,000 E 322,000 E 323,000 E 324,000

N 351,000 N 350,000 N 349,000 N 348,000

S.I.P.C. PROPERTY LINE

SOUTH FORK SALINE RIVER

L.E.W.D. WATER LINE

EL. 467.5'

SLUDGE STORAGE AREA

COUNTY ROAD

S.I.P.C.

LITTLE SALINE CREEK

EL. 494.0'

FLY ASH STORAGE POND

FLY ASH POND

FLY ASH SETTLING POND

POND # 3

EL. 476.0'

SPILLWAY

WEIR EL. 500'-0

TO S.I.P.C. ADM. B.L.D.G.

TO S.I.P.C.

EL. 509.5'

BOTTOM ASH HOLDING POND # 2

BOTTOM ASH SETTLING POND #4

BOTTOM ASH HOLDING POND # 1

BOT. ASH SLUICE PIPE

EMERG. SLURRY BY PASS PIPE

SHELL LINE

FEEDERS 2 & 3

FEEDER 1

TO CAMPBELL HILL

PROPOSED FLY ASH DISPOSAL POND B-3

EXIST. FLY ASH DISPOSAL POND A-1

S.E.I.E.C.

FEEDERS 5 & 6

L.E.W.D. SEWER LINE

L.E.W.D. WATER LINE

S.I.P.C. WATER LINE

STATE ROUTE FAS 2904 WILLIAMSON COUNTY

TO ST. RT. # 37

TO RENSHAW

LAKE OF EGYPT

S.I.P.C. STEAM GENERATING PLANT

LEGEND

PROPERTY LINES

161 KV TRANSMISSION

69 KV TRANSMISSION

7.2-12.5 KV DISTRIBUTION

PIPE LINE

No.	DATE	REVISIONS	BY	CHKD	DESIGN SUPV	ENGR	PROJ ENGR	APPR
0		ISSUED FOR CONSTRUCTION	DB	GS	NA	WB		NA

SCALE 1"= 200' | DESIGNED M. YOSHII | DRAWN BENNETT

BECHTEL ENERGY CORPORATION
GAITHERSBURG, MARYLAND

SOUTHERN ILLINOIS POWER COOP.
MARION, ILLINOIS

FLY ASH DISPOSAL POND B-3
SITE UTILITY PLAN

JOB No.	DRAWING No.	REV.
16240	16240-C-006	0

G-455.6

22 x 34 "D" SIZE

2196.000197

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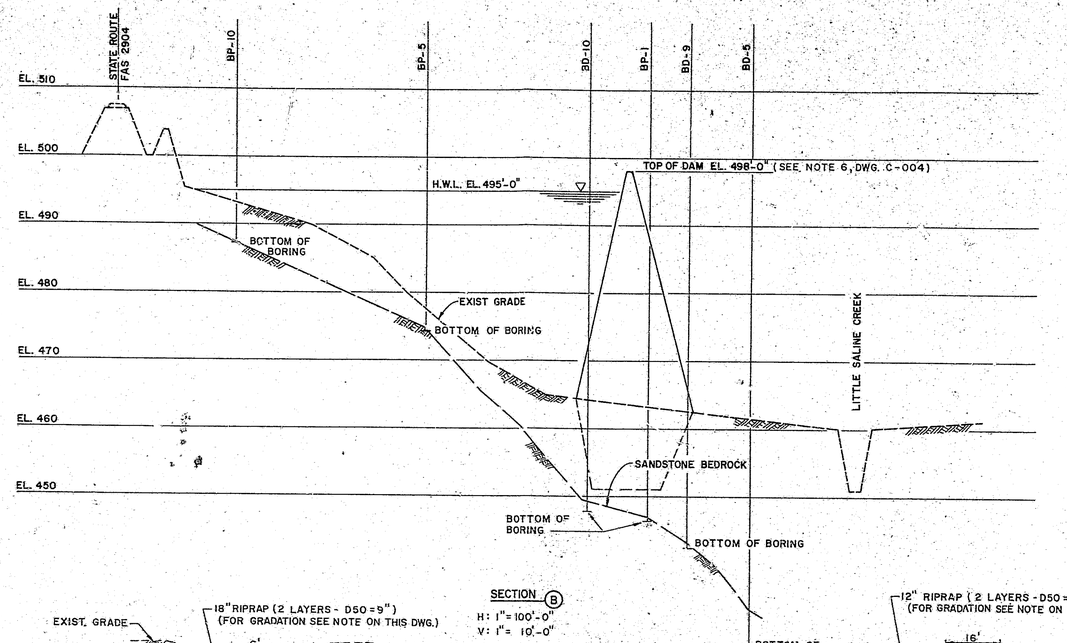
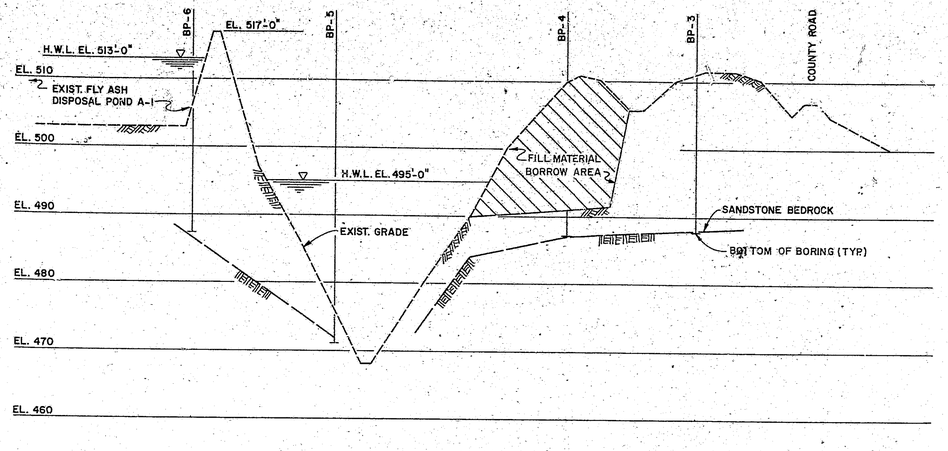


SECTION (B)
H: 1"= 100'-0"
V: 1"= 10'-0"



SECTION (C)
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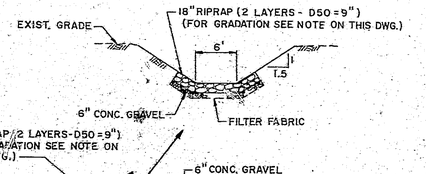
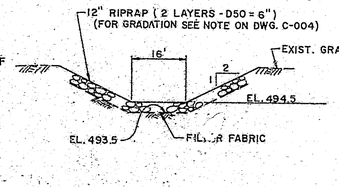
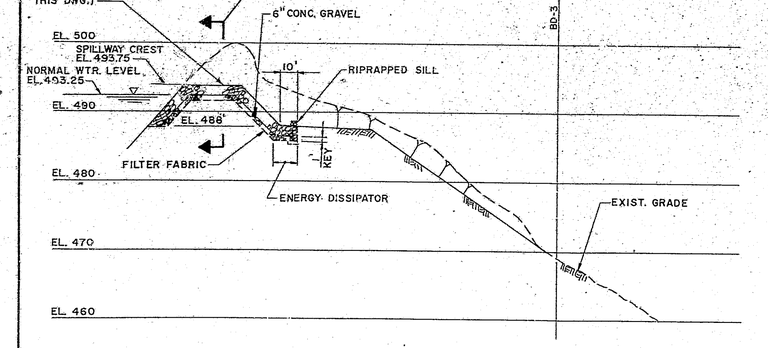
V: 1"= 10'-0"

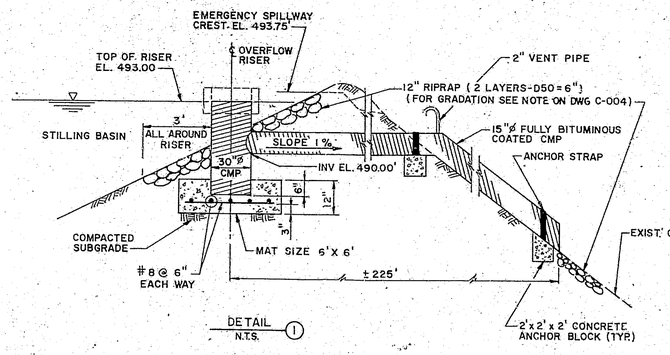






SECTION (D)
H: 1"= 40'-0"
V: 1"= 10'-0"

SECTION (E)
N.T.S.



DETAIL (I)
N.T.S.

NOTE: SPILLWAY RIPRAP GRADATION
D85 = 12 INCHES
D50 = 9 INCHES
D15 = 6 INCHES

3032-85
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AUG 29 1985
Environmental Protection Agency
— WPC — Permit Log In

NO.	DATE	REVISIONS	DRN	CHKD	DSN SUPV.	PROJ ENG	APPR
6		ISSUED FOR CONSTRUCTION	DB		WB		NA

SCALE: AS SHOWN | DRN BENNETT | DSN M. YOSHII | CHIEF ENG.

BECHTEL ENERGY CORPORATION
GAITHERSBURG, MARYLAND

SOUTHERN ILLINOIS POWER COOP.
MARION, ILLINOIS

FLY ASH DISPOSAL POND B-3
SECTIONS G-455.5

JOB No.	DRAWING No.	REV.
16240	16240-C-005	0

STATE OF MARYLAND — WILLIAM F. BECHTEL — No. 9813 — REGISTERED PROFESSIONAL ENGINEER

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Exhibit

50

W1990551676A SOUTHERN ILL POWER PND 3 DISC 00T 03 1973ED1343 1

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PERMIT/PLAN/SPECIFICATION
MICROFILM "JACKET" INFORMATION

1. Division Code W
2. FIPS County Code 199
3. City/Township Code 055
4. Governing Body Code LGZGA
5. PERMITTEE NAME (File Subject)
   SOUTHERN ILL POWER PNO 3 DISC 001
6. File Division 03
7. IEPA Permit Number 1973ED1343

CROSS-REFERENCE INFORMATION

8. Governing Body Name
   SOUTHERN ILLINOIS POWER COOP
9. ~~F/S/P Code~~ B1525
10. NPDES Number IL00

DWPC Records Unit

IL 532-0486
ADM 1081 8/78

2320601-4999

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NUMBER: 1973-Ed-1343-OP

DATE ISSUED: June 27, 1973

PROJECT LOG NUMBERS: 1625-73

SUBJECT: SOUTHERN ILLINOIS POWER CO-OP - (Williamson Co.)
Pond #3 Discharge J01

TO OPERATE: Southern Illinois Power Co-Op
P.O. Box 143
Marion, Illinois 62959

Permit is hereby granted to the above designated permitee to discharge wastewater described as follows:

Ash pond receiving waste from facilities issued Permit #1969-EB-707 tributary to the Little Saline Creek on a periodic basis with a total of 30,000,000 gallons per year discharge.

The final plans, specifications and supporting documents approved by this permit were prepared by Southern Illinois Power CO-OP and are identified in the records of the Illinois Environmental Protection Agency, Division of Water Pollution Contol, Permit Section, by the log numbers designated in the subject heading above.

The Standard Conditions of issuance of this permit are itemized below.

COPY - COPY - COPY -

READ ALL CONDITIONS CAREFULLY:

STANDARD CONDITIONS

Pertaining to both construction and operation permits.

1. If any statement or representation is found to be incorrect, this permit may be revoked and the permittee thereupon waives all rights thereunder.

2. During or after the construction or the installation of the sewage works, any agent duly authorized by the Environmental Protection Agency shall have the right to inspect such work and its operation.

3. The issuance of this permit (a) shall not be considered as in any manner affecting the title of the premises upon which the sewage works are to be located; (b) does not release the permittee from any liability for damage to person or property caused by or resulting from the installation, maintenance or operation of the proposed sewage works; (c) does not take into consideration the structural stability of any units or parts or the project; and (d) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or with applicable local laws, regulations or ordinances.

4. Treatment works will be operated or supervised by a duly qualified sewage works operator certified under the Regulations of the Environmental Protection Agency.

5. The treatment works or wastewater source covered by this permit shall be constructed and operated in compliance with the provisions of Environmental Protection Act and Chapter 3 of the Rules and Regulations adopted by the Illinois Pollution Control Board.

6. Plans, specifications and other documentation submitted constitute a part of the application and when approved shall constitute part of the permit.

7. This Permit may not be assigned or transferred without a new permit from the Illinois Environmental Protection Agency.

Pertaining only to construction permits.

1. There shall be no deviations from the approved plans and specifications unless revised plans, specifications and application shall first have been submitted to the Environmental Protection Agency and a supplemental written permit issued.

2. The installation shall be made under the supervision of an inspector, who is familiar with the approved plans and specifications provided by and approved by the owner, and said inspector shall require that construction to compliance with the plans and specifications approved by this Agency.

3. Unless otherwise stated by Special Condition, construction must be completed in three years for treatment works and two years for sewers and wastewater sources.

4. Unless otherwise stated by Special Condition, the issuance of this permit shall be a joint construction and operation permit provided that:

a) All standard and Special Conditions, are compiled with.

b) This Agency is notified within ten (10) days, respectively, of the start of construction and the date of testing and start-up of full operation.

c) The submission of operating reports of the treatment works covered under this permit shall be at a frequency specified by this Agency.

d) The operation permit shall expire one year from the date of start-up of operation.

e) At least 90 days prior to the expiration date of the operation permit, the permittee shall apply for a renewal of the operation permit.

This permit is issued in accordance with the Illinois Environmental Protection Act of 1970 and the Chapter III Water Pollution Regulations adopted by the Illinois Pollution Control Board in March of 1972.

TRW/RRF/ik

cc: Standards Section
EPA-Collinsville Surveillance Office
Div. of Water Resource Management
USEPA

DIVISION OF WATER POLLUTION CONTROL

William H. Busch

William H. Busch, P.E.
Manager, Permit Section

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FOR EPA USE: Log # Received Permit Number Date

File Subject

Richard B. Ogilvie
Governor

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
Division of Water Pollution Control
Permit Section
Springfield, Illinois 62706

William L. Blaser
Director

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APR 3 1973
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STATE OF ILLINOIS

1625-73

IEPA/WPC/73-095

APPLICATION FOR PERMIT FOR TREATMENT WORKS OR WASTEWATER SOURCES

(Read Instruction Booklet Before Completing)

PART II - APPLICATION FOR OPERATING PERMIT

SECTION I - General Information

1. Name of Facility: Pond #3 Discharge 001

2. Owner's Name and Address: Southern Illinois Power Cooperative (Name)
P. O. Box 143 (Street) Marion (City) Illinois (State) 62959 (Zip Code)

3. Plant Mailing Address: Same as Above (Street) (City) (State) (Zip Code)

4. County: Williamson

5. Engineer: Harold G. Clarida (Name) 24022 (Illinois Registration Number)

Firm: Clarida Engineering

Address: 308 South Court (Street) Marion (City) Illinois (State) 62959 (Zip Code)

Telephone: 618 (Area Code) 993-6411 (Number)

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6. Construction permit issued for the construction, additions, modifications, and upgrading of this treatment works or wastewater source. 1969 - EB - 707

7. List previous operation permits issued for this facility after July 1, 1972.

None

8. Date that treatment works or wastewater source started operation, using all facilities currently at plant 1970

9. Name of certified operator in charge of this facility Carl M. Stafford

IL9320001502

SECTION II - Effluent Data

1. Approved Loadings (Design)

Not applicable

a. Gallons Per Day		GPD
b. Pounds of BOD Per Day		Lbs BOD/Day
c. Pounds Suspended Solids Per Day		Lbs SS/Day
d. Population Equivalent (at .17 lb BOD/P.E.		P.E.

2. Current Loadings On Stream

a. Gallons Per Day	82,000	GPD
b. Influent BOD Concentration	0.10	mg/l
c. Pounds of BOD Per Day	0.07	Lbs BOD/Day
d. Influent Suspended Solids Concentration	10.0	mg/l
e. Pounds Suspended Solids Per Day	6.81	Lbs. SS/Day
f. Population Equivalent(at .17 lb BOD/P.E.	82.0	P.E.

3. History of Flows

	Year	Flow	
(a)	1969		MGD
Used for ash - disposal area	1970	2.104	MGD
Used to hold area run off only	1971	1.670	MGD when Discharging
" " " " "	1972	1.670	MGD " "

(b) Graph of Flows (Last 12 Months)

4. Excess Flows

a. Number of times which flow was bypassed to excess flow treatment or bypassed raw to the waters of the State for as long as data is available 0 Times

b. Length of time that above data covers 2 Years 0 Months

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c. Average amount of flow bypassed each time 0 Million Gallons

d. Maximum amount of flow bypassed during single bypassing period 0 Million Gallons

5.

Chemical Constituents	a Influent to Treatment Works	b Effluent from Treatment Works	c Upstream Sample	d Downstream Sample
Ammonia Nitrogen (as N)	0.05	0.05		
Arsenic (Total)				
Barium				
Boron (Total)				
Cadmium (Total)				
Chloride	3.0	3.0		
Carbon Chloroform Extract				
Chromium (Total Hexavalent)				
Chromium (Total Trivalent)	0.03	0.03	NOT AVAILABLE	NOT AVAILABLE
Copper (Total)	0.04	0.03		
Cyanide				
Flouride				
Iron (Total)				
Iron (Dissolved)				
Lead (Total)				
Manganese (Total)				
Mercury (Total)				
Nickel (Total)	0.04	0.4		
Oil (Hexane Soluables or Equivalent)				
pH	7.0	6.3	* 7.3	* 7.3
Phenols	0.001	0.001		
Phosphorous (as P)	0.10	0.10		
Selenium (Total)				
Silver				
Sulfate	6.0	8.0		
Total Dissolved Solids	90	150		
Zinc (Total)	.04	0.04		
Dissolved Oxygen	8.0	8.0		
Specifie Conductance u mhos	150	260	* 230	* 230
Suspended Solids	5.0	10.0	* 31	* 37
MAX.			Ph 8.5	7.7
			Spec. Cond. 510	400
			Sus. Solids 286	273
MIN.			Ph.7.1	6.8
			Spec. Cond. 180	120
			Sus. Solids 3	5

*Aug. Values

1932015004

SECTION III - Non-contact Cooling Water

1. Source of Water Intake Lake of Egypt & Area Run-off from Ash disposal area.

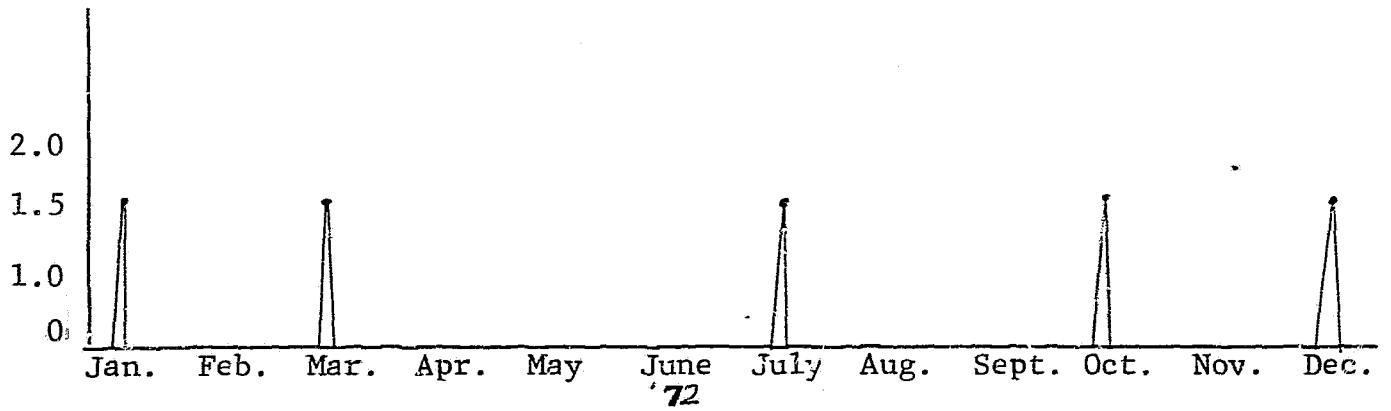
2. Discharge Quantities (Average of Last Year)

	Minimum	Average	Maximum
Flow (MGD)	0.001	0.082	1.67
Intake Temperature(°F)	43	60	77.0
Discharge Temperature (°F	44	61	78.0

3. Does maximum discharge remperature normally occur at times of maximum discharge flow?
Yes (No) (Circle) If no, explain.

This facility is used to trap rain water run-off from ash disposal area plus blowdown from water plant plus sink drain from plant laboratory. Facility will hold approximately 10,000,000 gallons. Treatment with lime is begun when pond is 60% full. Approx. 5 of this 6 million gallons is then discharged requiring 3 days time.

The facility is drained through a 4" diameter siphon only when water meets current water quality standards. Flow from this facility will be approx. 1.67mgd when discharging. This pond was discharged 5 times last year (1972) approximately 30,000,000 gallons.



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File Subject

SECTION IV - Septic Tank and Seepage Field Application for Operating Permit

1. Name of Facility Sewage Treatment Plant

2. Owner's Name and Address Southern Illinois Power Cooperative
(Name)

P. O. Box 143 (Street) Marion (City) Illinois (State) 62959 (Zip Code)

3. County Williamson

4. Construction Permit Issued for this Facility 1971 - FB - 499

5. List Previous Operation Permits Issued for this Facility after July 1, 1972 None

6. Date that operation began December 2, 1971

7. Average daily flow 640 Gallons/Day

8. Period of time used for determing #7 one (1) Year 0 Months

9. Permitted Average Daily flow specified in Construction Permit 1000 GPD

Certificate by Owner

I hereby certify that the information submitted above is true and that the operation of my facility is in compliance with all Standard and Special Conditions listed on the Construction Permit issued for this facility. I further agree that the application shall not constitute a permit until signed by the Manager of the Permit Section, Division of Water Pollution Control.

Date April 19, 1973 Signature of Owner [signature]

Approval by the Illinois Environmental Protection Agency

Permit Number

Date

This Permit Expires

Manager
Permit Section
Division of Water Pollution Control

2023013-0506

SECTION V - Signature by Engineer

I hereby certify to the best of my knowledge that the information contained in this application is true and correct.

Date April 19, 1973 Signature Glenn Claude (Seal)

Certificate by Applicant

I hereby certify to the best of my knowledge that the information submitted is true and correct and the facility for which this permit is applied is being operated in compliance with all Standard and Special Conditions listed on the Construcrion Permit issued for this facility. I further agree that this Application for Permit shall not constitute a Permit until signed by the Manager of the Permit Section, Division of Water Pollution Control.

Date April 19, 1973 Signature of Applicant Carl M. Stafford

Title Plant Engineer

Approval by Illinois Environmental Protection Agency

Permit Number _____

Date _____

This Permit Expires _____

_____

Manager
Permit Section
Division of Water Pollution Control

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Southern Illinois Power Cooperative (SIPC) is a generation and transmission cooperative, providing wholesale electrical energy to three member Rural Electric Cooperatives who serve 27,000 rural customers in 18 Illinois counties.

Current generating facilities consist of 3 identical coal fired units totaling 105,000 KW located at the Marion Steam Plant approximately 8 miles south of Marion, Illinois. The site actually used by the generation station consists of approximately 180 acres. The site also includes a coal storage area, ash disposal ponds and borders the Lake of Egypt, which is also owned by SIPC. The lake was built in conjunction with the station to provide cooling water requirements. At full load, this plant will require in excess of 100,000 gallons per minute, most of which is used to condense the steam from the turbines and then discharged back to the lake. At normal pool, the lake covers 2,300 acres to an average depth of 18.5 feet, and a maximum depth of 50 feet at the dam.

The earth fill dam is 3,100 feet long and 70 feet high at the highest point. 485,000 cubic yards of earth were required for its construction. The spillway is 200 feet long and its top located at 500.0 feet above mean sea level. The maximum pool stage is at 510.0 feet above mean sea level at which point the spillway will discharge at the rate of 16,000 c.f.s. or 7,200,000 gallons per minute. The highest pool stage recorded in the past ten years is 503.7 feet above mean sea level.

The foregoing statements are made not only to furnish general background information but also to make the point that all plant flows, whether it be coal, steam, air, or waste water, are proportional to the electrical generation load on the plant. (See Table 1).

There are 33 men working in the plant. Twenty of the men are in plant operations, and therefore, 5 of these men will be off duty on any given day. During the hours of 00:00 to 08:00 there will be 5 men on duty 7 days a week. During the hours of 08:00 to 16:00 there will be 23 men on duty 5 days a week and during the hours of 16:00 to 24:00 there will be 5 men on duty 7 days a week. This calculates to be 8.8 P.E. per day loading on the small sewage plant. If overtime work amounts to 15% of the total hours worked, then there is an equivalent of 10 men on duty in the plant 24 hours a day, 7 days a week, 52 weeks per year. The system has a design P.E. of 15 at 1,000 gpd flow. The sewage plant consists of a very large septic tank of approximately 2,750 gallons capacity coupled to a pumping tank or secondary sedimentation chamber, a recirculating tank and a chlorinating tank each with a capacity of approximately 600 gallons.

The septic tank was one of the earliest primary treatment devices. They are no longer used except for small institutions or individual residences. The function of any primary treatment device is to remove from the sewage organic and inorganic settleable solids by the process of sedimentation. This is effected by reducing the velocity of the flow. Sewers are designed to maintain a velocity of approximately 2 ft./sec. which is adequate to carry all solids with the sewage flow and prevent their deposition in the sewer. In septic

tank primary treatment, this velocity is further reduced to a fraction of an inch per second and held under anaerobic conditions for a period of 12 to 24 hours during which time a high removal of the settleable solids is effected. These solids decompose in the bottom of the tank with the formation of gas which entrained in the solids causes them to rise through the sewage to the surface and lie as a scum layer until the gas has escaped, after which they again settle. The continual floatation and resettling of solids carry them in the current of the sewage toward the outlet with some eventually passing out with the effluent, thus partially defeating the purpose of the tank. Due to the long holding period and the mixing with the decomposing solids, the sewage leaves the tank in a septic condition making the secondary treatment more difficult.

The dosing pump operates on a float switch whose limits are set one foot apart. From start of the pump to stop, then approximately 17 cu. ft. of sewage is removed from the dosing tank and pumped up on the sand filter where it seeps through 30" of sand and 6" of sized gravel into two collecting troughs of the bottom of the filter and returned to the recirculating tank. By orificing the influent line to the chlorination chamber, approximately 75% of the filtered water is returned to the dosing tank to be refiltered again, while the other 25% passes to the chlorination tank. The small hypochlorinator is interlocked with the dosing pump such that each pump is running simultaneously. A residual of 0.5 to 1.0 ppm free CL_2 is maintained in the chlorination chamber effluent at all times. A small electrical pulsing counter in the dosing pump circuit indicates the number of times the filter is dosed each day. The average number of counts is 20. If the pump limits are set one foot apart and require 4 minutes of pumping time to pass between start and stop, then 17 ft^3 x 7.48 gal./ft^3 = 127 gpm is pumped. If 20 counts per day are recorded, then 2,540 gallons per day have been pumped to the sand filter; and if 75% of the flow is recirculated, then 2540 - .75 (2540) = 635 gal. per day is the effluent flow to and from the chlorination chamber. From the foregoing measurements, the influent flow to the system is 635 gallons per day average and the effluent flow from the system is 635 gallons per day. The pumping chamber of this system also acts as a secondary sedimentation chamber. It is receiving sewage at the rate of 635 gpd and 150 ppm BOD_5 + 1,905 gpd recirculation flow from the "high rate" sand filter with a BOD_5 of 5 ppm. From this chamber the sewage is pumped to the sand filter which would be classified as a "high rate" trickling filter since the BOD_5 loading is slightly in excess of 15#/1,000 ft^3 of filter medium. The area of this filter is 13' x 26' = 338 sq. ft. The depth of the sand and gravel filter medium is 3 ft. making the volume 1,014 ft^3. The area of the filter in acres would be:

$$\text{Acres} = \frac{338\ ft^2}{43560\ ft^2/\text{Acre}} = .0078$$

The hydraulic loading to the filter would be:

$$\text{Hyd. loading} = \frac{2540\ \text{gpd}}{.0078\ \text{acres}} = \frac{.002540\ \text{mg/day}}{.0078\ \text{acres}} = 0.325\ \text{mgp/d}$$

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$$\#BOD_5 \text{ applied} = .000635 \text{ mg/day} \times 8.34 \#/\text{gal} \times 150 \text{ ppm } BOD_5 + .001905 \times 8.34 \times 5$$
$$= 15.86 \#BOD_5/\text{day}$$

$$BOD_5 \text{ loading} = \left(\frac{15.86 \#BOD_5/\text{day}}{1014.0 \text{ ft}^3}\right) 1000 = 15.64 \frac{\#BOD_5}{1000 \text{ ft}^3}$$

of filter medium/day.

The system has been in operation for 15 months and produces effluents having an average pH of 7.0 suspended solids of 10 ppm, five day BOD of 4 ppm, and dissolved oxygen of 2 - 5 ppm. The wastes treated by the system are almost 100% domestic with only a small amount of oil coming from the mechanics hands and bodies. Oil in the turbine generators is centrifuged, filtered and recycled. Oil in the machine shop is also filtered and recycled.

Routinely the sewage plant is checked daily to insure an adequate supply of hypochlorite solution and the free operation of the dosing pump switch. Since the sewage enters the secondary sedimentation chamber in a septic condition, malfunctioning of the pump switch causes the whole system to "go septic" in 24 hours or less depending on the ambient temperature. The filter bed is levelled, aerated, and weeded as required. The percent settleable solids in the influent and effluent of the system is checked twice weekly. The pH, conductivity, suspended solids, and free chlorine of the effluent are checked daily. One BOD_5 sample is taken weekly from the effluent of the sand filter, which has produced effluents from 1 - 9 ppm of BOD_5.

The holding ponds 1 & 2 take only ash slurry from the power plant (see sketch B-36). Their only function is to provide the necessary retention time to precipitate the ashes from the water. The over flow from these two ponds flows to pond #4. Only one pond is in use at a time, while the other is being cleaned of its ashes.

Pond #3 receives only the run-off from the ash storage area plus a small amount of precipitated solids from the small (250 gpm) package water plant plus the sink drain from the plant laboratory. The holding capacity of #3 pond is approximately 6 million gallons. The water will invariably be acid and have an average pH of 4.0. Treatment consists of inducing hydrated lime slurry to the water through a special lime feeder designed solely for this purpose (see attached pictures). Of the several compounds available for neutralization of acid water and the precipitation of any associated iron, lime was chosen because of its ready availability, safety in handling, and cost. Theoretically, it requires approximately .65 pound of hydrated lime of 95% available calcium hydroxide to neutralize 1,000 gallons of water containing 100 ppm acid. Because the coal used as fuel originally contained iron pyrite in varying amounts and because of other factors involved, it will usually require approximately 1 pound of commercial hydrated lime to neutralize 1,000 gallons of acid water of 100 ppm acid content.

The following equations show the possible reactions which may occur when water, oxygen, and coal ashes come into contact.

(1) $2\ FeS_2$ (Iron Disulfide, Pyrite or Sulfur balls) + $7O_2$ (oxygen) + $2\ H_2O$ (water) $\longrightarrow$ $2\ FeSO_4$ (Ferrous Sulfate) + $2\ H_2SO_4$ (Sulfuric Acid)

In this reaction iron disulfide is partly oxidized which frees part of the sulfur which unites with oxygen and water to form acid.

(2) $4\ FeSO_4$ (Ferrous Sulfate) + O_2 (Oxygen) + $2\ H_2SO_4$ (Sulfuric Acid) $\rightarrow$ $2\ Fe_2(SO_4)_3$ (Ferric Sulfate) + $2\ H_2O$ (water)

In this reaction ferrous sulfate is oxidized to ferric sulfate.

(3) $Fe_2(SO_4)_3$ (Ferric Sulfate) + $6\ H_2O$ (water) $\longrightarrow$ $2\ F_c(OH)_3$ (Ferric Hydroxide (Insoluable)) + $3\ H_2(SO_4)$ (Sulfuric Acid)

In this reaction ferric sulfate is hydrolized to sulfuric acid.

Some further reactions which may occur are:

(4) $Fe_2(SO4)_3$ (Ferric Sulfate) + FeS_2 (Iron Disulfide (Pyrite)) $\longrightarrow$ $3\ FeSO_4$ (Ferrous Sulfate (as in 2 above)) + $2\ S$ (Sulfur)

(5) S (Sulfur (as in 4)) + $1\ 1/2\ O$ (Oxygen) + H_2O (water) $\longrightarrow$ H_2SO_4 (Sulfuric Acid)

This reaction is very slow.

(6) FeS_2 (Iron DiSulfide) + $2\ O_2$ (Oxygen) $\rightarrow$ $Fe(SO_4)$ (Ferrous Sulfate) + S (Sulfur)

From this reaction, reactions 2, 3, 4 and 5 may occur or repeat. A case of regeneration.

Reactions of acid and iron compounds (ferrous sulfate and ferric sulfate) in acid water when treated with hydrated lime ($Ca\ (OH)_2$)

(7) H_2SO_4 (Sulfuric acid) + $Ca(OH)_2$ (Calcium hydroxide) $\longrightarrow$ $CaSO_4$ (Calcium sulfate (Insoluable after a certain point.)) + $2\ H_2O$ (water)

(8) $FeSO_4$ (Ferrous Sulfate) + $Ca(OH)_2$ (Calcium Hydroxide) $\longrightarrow$ $Fe(OH)_2$ (Ferrous Hydroxide (Insoluable)) + $CaSO_4$ (Calcium Sulfate (Insoluable))

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(9) $Fe_2(SO_4)_3$ + 3 Ca $(OH)_2$ ⟶ 2 $Fe(OH)_3$ + 3 $CaSO_4$

Ferric Sulfate + Calcium Hydroxide ⟶ Ferric Hydroxide (Insoluable) + Calcium Sulfate (Insoluable)

Although Ferric Hydroxide $Fe(OH)_3$ of (9) may react with Ferrous Disulfide (FeS_2) (Pyrite) if any is present, this is unlikely to be the case after treatment with Hydrated Lime. When acid water containing acid, ferrous iron, and ferric iron is treated with hydrated lime, it is not likely that the three reactions 7, 8, and 9 occur simultaneously. The acid is neutralized first. The acid will be neutralized at approximately 6.0 pH after which the iron will be precipitated by the lime. Usually, all of the iron will be precipitated out at pH 8.5. Once treated to this level the iron is fixed and will not hydrolize to form more acid. Pond #3 is drained through a 4" siphon after water has been tested in the plant laboratory and found to meet present water quality standards.

The same treatment principles are used to treat the over flow of pond #4. This pond has a holding capacity of approximately 18 million gallons which gives 7.3 days of holding when the plant is operating at full load. The pond will also hold 6 days of full load operation plus 3" of rain fall. Full load operation at 105,000 KW/hr. will produce a waste water flow of approximately 2.4 mgd to #4 pond. (See Table 1).

Pond #4 has a control valve in its discharge. Daily laboratory testing of the water for pH, conductivity, and suspended solids determines whether this water is to be discharged or not. Also one BOD_5 and one dissolved oxygen determination are made on this discharge each week. If this pond or #3 has been treated with lime to pH 8.5 or greater, the iron content determination is made on the water to be discharged. Average iron content of these effluents is 50 p.p.b.

2015-032

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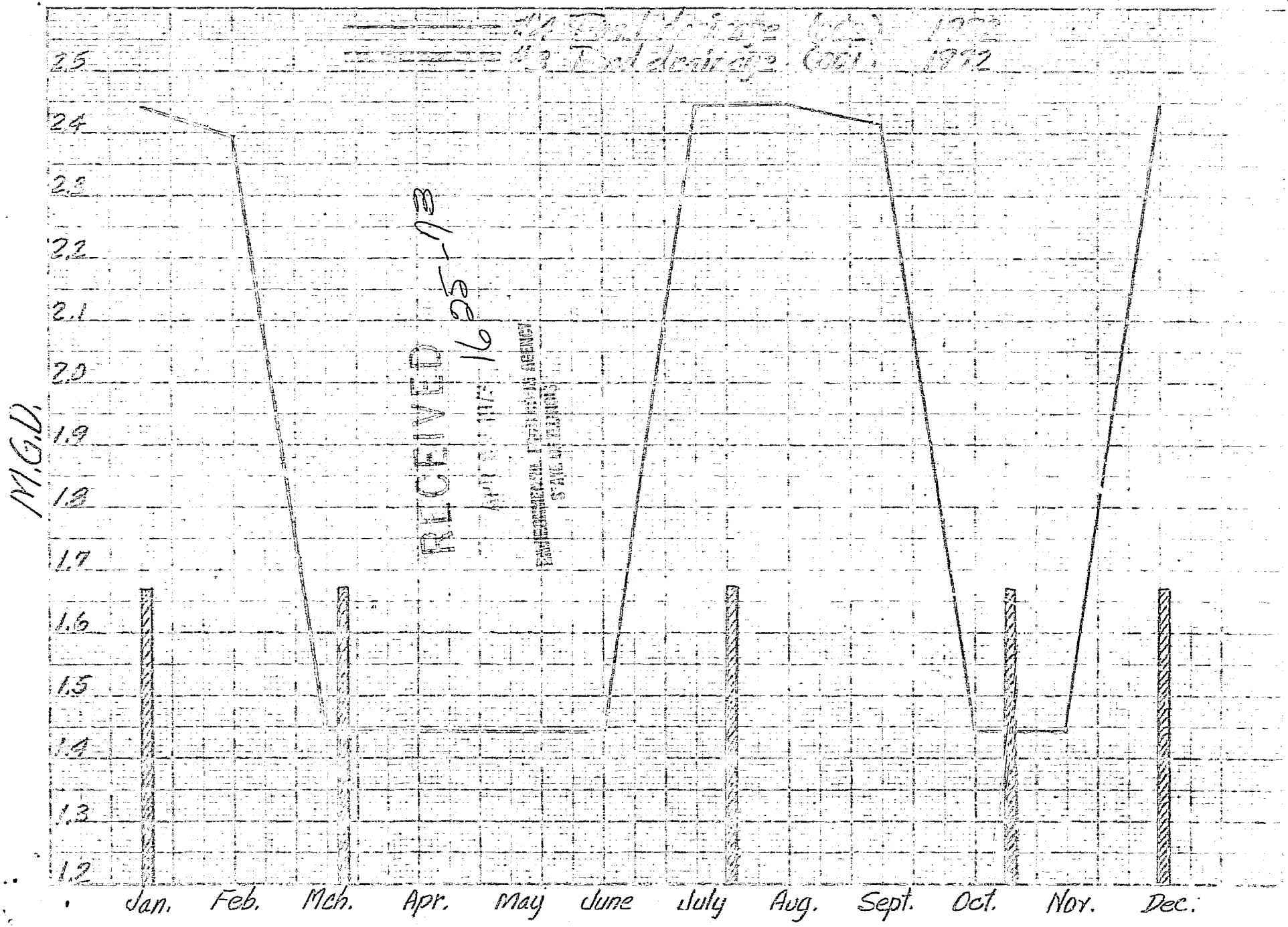
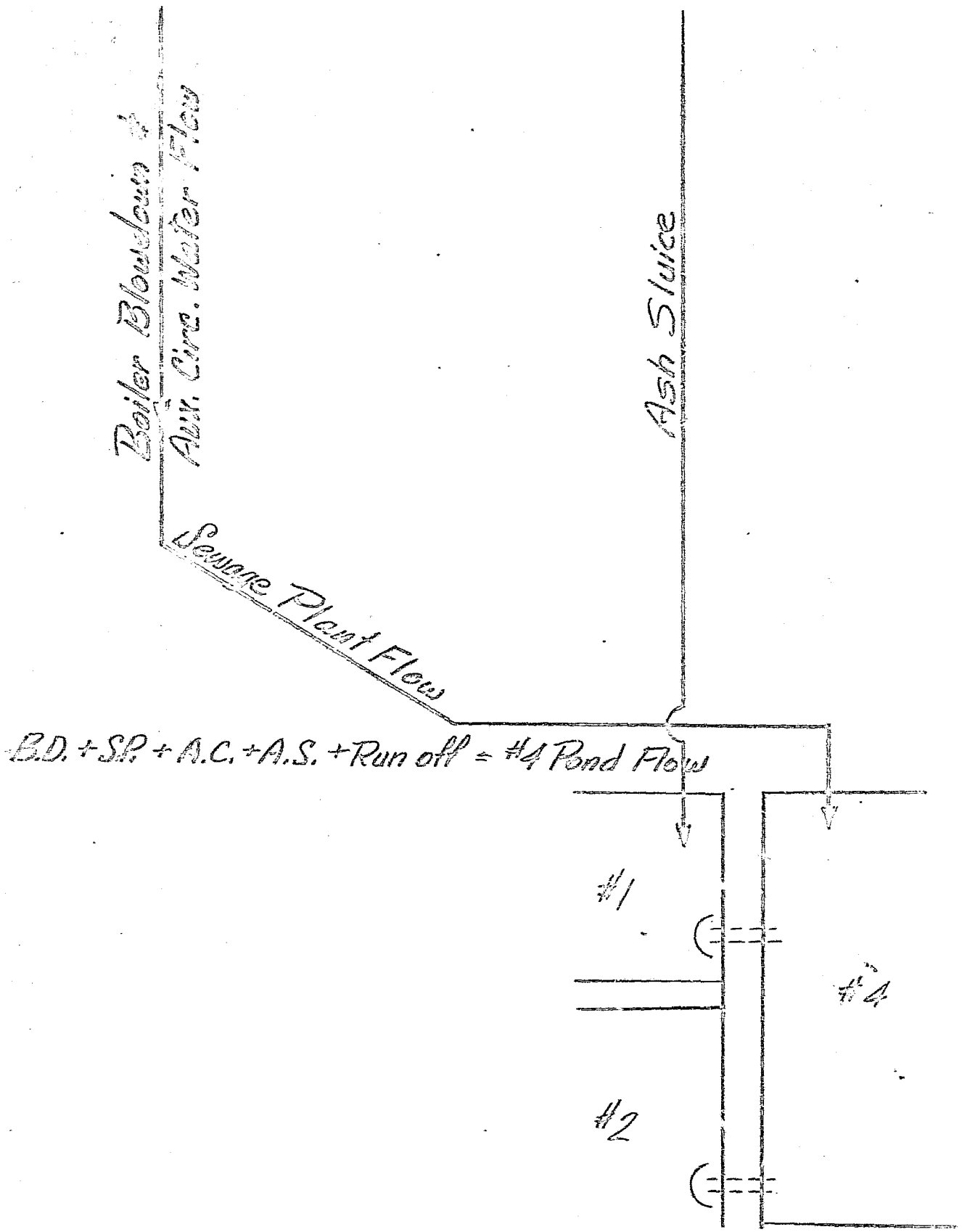


Electronic Filing: Received, Clerk's Office 01/13/2023

I 9 3 2 0 0 0 1 5 1 4



Electronic Filing: Received, Clerk's Office 01/13/2023

STATE OF ILLINOIS
DEPARTMENT OF
REGISTRATION AND EDUCATION
DIRECTOR, SPRINGFIELD
Dean Barringer
BOARD OF
NATURAL RESOURCES
AND CONSERVATION
CHAIRMAN
BIOLOGY . . . . . THOMAS PARK
ENGINEERING . . ROBERT H. ANDERSON
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GEOLOGY . . . . . LAURENCE L. SLOSS
SOUTHERN ILLINOIS UNIVERSITY . . . .
ROGER E. SEYLER
UNIVERSITY OF ILLINOIS . . . . . .
WILLIAM L. EVERITT

Illinois State Water Survey

WATER RESOURCES BUILDING • MAIL: BOX 232, URBANA, ILLINOIS 61801 • AREA CODE 217
605 E. SPRINGFIELD, CHAMPAIGN PHONE 333-2210

WILLIAM C. ACKERMANN, CHIEF

February 7, 1973

Mr. Carl Stafford
Southern Illinois Power Cooperative
P. O. Box 143
Marion, Illinois 62959

Hello Carl:

You had phoned us on February 5, 1973 for the 7-day 10-year low flow in Little Saline Creek upstream of the effluent from your Cooperative (NW 1/4 Sec. 26, T. 10S, R. 2E, Marion Quadrangle, Williamson County, Illinois). The 7-day 10-year low flow at the desired location is zero. This has been conveyed to you on the phone.

Sincerely yours,
ILLINOIS STATE WATER SURVEY

Krishan P. Singh
Hydrologist

KPS/ce

FEB 1973
ILLINOIS

Electronic Filing: Received, Clerk's Office 01/13/2023

TABLE I

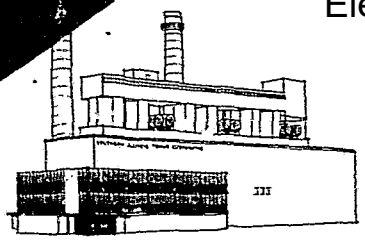
	MWH TOTAL GEN.	PLANT STEAM FLOW x 10^3 #/MO	UNITS OPERATIONAL	IN TEMP. #4 POND F°	OUT TEMP. #4 POND F°	BOILER BLOWDOWN GAL/MO.	AUX. CIRC. FLOW GAL/MO.	SEWAGE PLANT FLOW GAL/MO.	ASH SLUICE FLOW GAL/MO.	TOTAL FLOW GAL/MO.	TOTAL FLOW GAL/DAY
JAN.'72	47780	444398	3	43.6	48.0	532,833	61,829,200	19,200	13,392,000	75,773,240	2,444,300
FEB.	43950	408012	3	43.0	47.4	489,206	56,448,000	19,200	12,528,000	69,484,400	2,396,000
MAR.	35700	330544	2	48.8	52.2	396,222	37,531,200	19,200	6,693,800	44,640,400	1,440,000
APR.	34180	316188	2	57.2	60.6	379,110	36,321,700	19,200	6,480,000	43,200,000	1,440,000
MAY	35410	331072	2	63.0	66.4	395,756	37,531,200	19,200	6,693,800	44,640,400	1,440,000
JUN.	35350	330892	2	68.0	71.6	396,740	36,321,700	19,200	6,480,000	43,217,600	1,440,000
JUL.	49650	468224	3	73.3	76.9	561,400	61,829,200	19,200	13,392,000	75,802,000	2,445,000
AUG.	57220	540000	3	77.0	80.9	647,590	61,829,200	19,200	13,392,000	75,888,000	2,448,000
SEPT.	52570	496332	3	76.7	80.6	595,100	59,312,100	19,200	12,528,000	72,454,400	2,415,100
OCT.	44330	415620	2	67.3	70.9	498,328	37,531,200	19,200	6,693,800	44,742,500	1,443,300
NOV.	36500	343315	2	54.3	57.7	411,635	36,321,700	19,200	6,480,000	43,232,500	1,441,000
DEC.	50430	471992	3	46.0	49.4	565,918	61,829,200	19,200	13,392,000	75,806,318	2,445,300

19320001517

RECEIVED
1625-73
1626-78

Electronic Filing: Received, Clerk's Office 01/13/2023

Electronic Filing: Received, Clerk's Office 01/13/2023



SOUTHERN ILLINOIS POWER CO-OP.

P. O. BOX 143 • MARION, ILLINOIS 62959 • AREA CODE 618 993-8123

RECEIVED
APR 23 1973
ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS

1625-73
1626-73

April 19, 1973

Mr. William H. Busch
Manager Permit Section
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

Dear Mr. Busch:

Please find enclosed application for operation permit for our holding ponds #3 and #4, discharges 001 and 002 respectively, rule 903A of the Illinois Water Pollution Control standards.

Please note that I have had Mr. Glenn Clarida of Marion, Illinois (Registration #24022) to examine and seal this permit application.

Very truly yours,

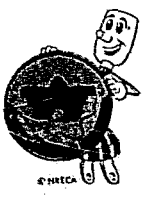
Carl M. Stafford

CARL M. STAFFORD
Plant Engineer

CMS:jr
Enc.

2025-115-00320

ABUNDANT ELECTRIC POWER FOR SOUTHERN ILLINOIS
FARM—HOME—INDUSTRY



Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

51

Electronic Filing: Received, Clerk's Office 01/13/2023

INFORMATION TO BE CONTAINED ON NPDES MICROFILM JACKET

OWNERSHIP CODE: PRI FACILITY TYPE: 0

1. DIVISION CODE #

2. FIPS COUNTY CODE 199

3. CITY/TOWNSHIP CODE 055

4. GOVERNING BODY CODE 16764

5. PERMITTEE NAME (FILE SUBJECT)

SOUTHERN ILLINOIS POWER COOP / 0675

6. FILE DIVISION 13

7. NPDES NUMBER IL0004316

OTHER INFORMATION NECESSARY FOR CROSS-REFERENCING

8. GOVERNING BODY NAME
SOUTHERN ILLINOIS POWER CO-OP

F/S/P CODE - - - - - - - - - - - -

10. DATE IDENTIFIED IN THE FIELD REFERS TO:

A. PERMIT ISSUE DATE 06-30-75

B. PERMIT CANCELLATION DATE - - - - - -

C. NO PERMIT REQUIRED DATE - - - - - -

11. PERMIT EXPIRATION DATE 06-25

1972000217

Electronic Filing: Received, Clerk's Office 01/13/2023

Trial Permit
Southern Illinois Co-Op.
(Electrical Power Generation Plant)
NPDES # 440-74
BM Williamson Co. Rig. V

JUN 30 1975

See Modified Permit Issued 4-25-77

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. K.S. Holt, President
Southern Illinois Power Cooperative
Post Office Box 143
Marion, Illinois 62959

Re: NPDES Permit
No. IL 0004316

Dear Mr. Holt:

Your application IL 0004316 for a National Pollutant Discharge Elimination System (NPDES) Permit has been processed in accordance with Sections 402 and 405 of the Federal Water Pollution Control Act Amendments of 1972 (86 Stat. 816; Public Law 92-500, 33 U.S.C. 1251 et seq.).

The enclosed NPDES Permit covers your operations which discharge into Saline Creek, the South Fork of the Saline River, and the Lake of Egypt at Marion, Illinois. All discharges from this facility shall be consistent with the terms and conditions of this permit. Please note that the amendments to 40 CFR 125 (published July 24, 1974 in the Federal Register at 27078-27084) require that any request for an adjudicatory hearing must be made within 10 days of receipt of this permit.

RECEIVED
JUL 9 1975
ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
RECORDS UNIT — SPRINGFIELD
STATE OF ILLINOIS

Very truly yours,

ORIGINAL SIGNED BY JAMES O McDONALD

James O. McDonald, Director
Enforcement Division

Enclosures
Permit
Reporting Forms

cc: Mr. W. H. Busch, Illinois EPA, w/Permit

RECEIVED

Permit No. IL 0004316

Application No. IL 0004316

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq; the "Act"),

SOUTHERN ILLINOIS POWER COOPERATIVE

is authorized by the United States Environmental Protection Agency, Region V,

to discharge from a facility located at Electrical Generation Plant
Marion Station
Williamson County, Illinois

to receiving waters named Saline Creek, the South Fork of the Saline River, and the Lake of Egypt.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit and the authorization to discharge shall expire at midnight, June 25, 1980 . Permittee shall not discharge after the above date of expiration. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information, forms, and fees as are required by the Agency authorized to issue NPDES permits no later than 180 days prior to the above date of expiration.

This permit shall become effective 30 days from this date of signature.

Signed this JUN 30 1975

James E. McDonald

Director, Enforcement Division

1720108216

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL 0004316

1972030220

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date of this permit and lasting until June 30, 1976, the permittee is authorized to discharge from outfall(s) serial number(s) 001 Discharge from Ash Pond #3.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	MONITORING REQUIREMENTS Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	Grab
Oil and Grease	-	-	-	15 mg/l	Daily*	Composite
Total Suspended Solids	-	-	-	25 mg/l	Daily*	Composite
Total Dissolved Solids	-	-	-	750 mg/l**	Daily*	Composite
Iron (total)	-	-	-	2.0 mg/l	Daily*	Composite

*During periods of discharge

**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspended solids.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to the South Fork of the Saline River.

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL 0004316

1972010021

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning July 1, 1976 and lasting until June 25, 1980, the permittee is authorized to discharge from outfall(s) serial number(s) 001 Discharge from Ash Pond #3.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
	-	-	-	-	Measure when sampling	Grab
Flow-M^3/Day (MGD)	-	-	-	15 mg/l	Daily*	Composite
Oil and Grease	-	-	-	15 mg/l	Daily*	Composite
Total Suspended Solids	-	-	-	750 mg/l**	Daily*	Composite
Total Dissolved Solids	-	-	-	2.0 mg/l	Daily*	
Iron						

*During periods of discharge.

**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspended solids.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to the South Fork of the Saline River.

Electronic Filing: Received, Clerk's Office 01/13/2023

1972000222

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning on the effective date of this permit and lasting until June 30, 1976, the permittee is authorized to discharge from outfall(s) serial number(s) 002 Discharge from Ash Pond #4.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	Grab
Oil and Grease	-	-	-	15 mg/l	Daily*	Composite
Total Suspended Solids	-	-	-	25 mg/l	Daily*	Composite
Total Dissolved Solids	-	-	-	750 mg/l**	Daily*	Composite
Iron (total)	-	-	-	2.0 mg/l	Daily*	

*During periods of discharge

**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspended solids.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to Saline Creek.

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL0004316

1972030022

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning July 1, 1976 and lasting until June 25, 1980, the permittee is authorized to discharge from outfall(s) serial number(s) 002 Discharge from Ash Pond #4.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	Grab
Oil and Grease	-	-	-	15 mg/l	Daily*	Composite
Total Suspended Solids	-	-	-	15 mg/l	Daily*	Composite
Total Dissolved Solids	-	-	-	750 mg/l**	Daily*	Composite
Iron (total)	-	-	-	2.0 mg/l	Daily*	Composite

*During periods of discharge

**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspended solids.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to Saline Creek.

Electronic Filing: Received, Clerk's Office 07/15/2025

Permit No. IL 0004316

1972000221

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning on the effective date of this permit and lasting until June 30, 1976, the permittee is authorized to discharge from outfall(s) serial number(s) 002 Sanitary Waste Treatment Plant Effluent.
Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	Grab
BOD_5	-	-	-	30 mg/l	Monthly	Grab
Total Suspended Solids	-	-	-	30 mg/l	Monthly	Grab
Fecal Coliform Organisms/100 ml	-	-	-	-	Monthly	Grab

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer prior to mixing with any other effluent.

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL 0004316

1972000225

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

6. During the period beginning July 1, 1976 and lasting until June 25, 1980, the permittee is authorized to discharge from outfall(s) serial number(s) 002 Sanitary Waste Treatment Plant Effluent.
Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	
BOD_5	-	-	-	30 mg/l	Monthly	Grab
Total Suspended Solids	-	-	-	30 mg/l	Monthly	Grab
Fecal Coliform*	-	-	200/100 ml	400/100 ml	Weekly	Grab

*A residual chlorine value not to exceed 0.75 mg/l may be substituted for the effluent limitation on fecal coliform.

In using the fecal coliform count, the geometric mean of the fecal coliform bacteria value for effluent samples collected in a period of 30 consecutive days shall not exceed 200 per 100 milliliters. The geometric mean of these values for effluent samples collected in a period of seven consecutive days shall not exceed 400 per 100 milliliters.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer prior to mixing with any other effluent.

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL 0004316

1972020800226

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning on the effective date of this permit and lasting until June 30, 1977, the permittee is authorized to discharge from outfall(s) serial number(s) 003 Non-Contact Condenser Cooling water.
Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Continuous	
Temperature ^oC (^oF)	-	-	-	-	Continuous	
Waste Heat Rejection Rate-KJ/hr (BTU/hr)	-	-	-	-	Monthly Maximum	
Plant Capacity Factor (% Capacity)	-	-	-	-	Monthly Average	
Total Chlorine Residual	-	-	-	-	Weekly	Grab
Duration of Chlorination	-	-	-	-	Monthly Report	
Frequency of Chloriration	-	-	-	-	Monthly Report	

*Intake and Discharge

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to the Lake of Egypt.

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No, IL 0004316

1972000227

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

8. During the period beginning July 1, 1977 and lasting until June 25, 1980, the permittee is authorized to discharge from outfall(s) serial number(s) 003 Non-Contact Condenser Cooling Water.
Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Continuous	
Temperature °C (°F)	-	-	-	-	Continuous	
Waste Heat Rejection Rate KJ/hr (BTU/hr)	-	-	-	-	Monthly Maximum	
Plant Capacity Factor (% Capacity)	-	-	-	-	Monthly Average	
Total Chlorine Residual	-	-	-	0.2 mg/l**	Weekly	Grab
Duration of Chlorination	-	-	-	-	Monthly Report	
Frequency of Chlorination	-	-	-	-	Monthly Report	

*Intake and Discharge, see A.9.

**The release of total chlorine residual shall be limited to two hours per day for this facility.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to the Lake of Egypt.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

9. Thermal Discharge Limitations and Monitoring

After July 1, 1977, discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving water to violate the following thermal limitations:

a. Maximum temperature rise above natural temperature must not exceed $5^{o}F$ at the edge of the mixing zone.

b. Water temperature at representative locations outside the mixing zone in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water t temperature at such locations exceed the maximum limits in the following table by $3^{o}F$:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
60	60	60	90	90	90	90	90	90	90	90	60
15.6	15.6	15.6	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	15.6

c. The mixing zone shall not extend over more than 26 acres.

In addition, the permittee shall perform the following thermal monitoring:

(1) The permittee shall determine the $2.8^{o}C$ ($5^{o}F$) contour, the contour of the applicable monthly maximum and the areas within these contours at 3 month intervals for a period of one year after the effective date of this permit. The results of these determinations shall be reported to the Regional Administrator and the Illinois Environmental Protection Agency on a quarterly basis.

Electronic Filing Received, Clerk's Office, 2/13/2023

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

9. Thermal Discharge Limitations and Monitoring

After July 1, 1977, discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving water to violate the following thermal limitations:

a. Maximum temperature rise above natural temperature must not exceed 5°F at the edge of the mixing zone.

b. Water temperature at representative locations outside the mixing zone in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water t temperature at such locations exceed the maximum limits in the following table by 3°F:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
60	60	60	90	90	90	90	90	90	90	90	60
15.6	15.6	15.6	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	15.6

c. The mixing zone shall not extend over more than 26 acres.

In addition, the permittee shall perform the following thermal monitoring:

(1) The permittee shall determine the 2.8°C (5°F) contour, the contour of the applicable monthly maximum and the areas within these contours at 3 month intervals for a period of one year after the effective date of this permit. The results of these determinations shall be reported to the Regional Administrator and the Illinois Environmental Protection Agency on a quarterly basis.

1972010022

10. After June 30, 1976 there shall be no discharge of debris from intake screen washing operations.

11. After June 30, 1976 liquid discharges from miscellaneous waste collection sumps, yard drains and excess run-off from coal storage areas shall be diverted to ash settling basins or comparable settling facilities for treatment prior to discharge.

19720000229

Illinois Pollution Control Board, Clerk's Office 01/13/2023

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results obtained during the previous three months shall be summarized on a monthly basis and reported on Discharge Monitoring Report Forms (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on October 28, 1975. Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

U.S. Environmental Protection Agency
Region V, Enforcement Division
ATTN: Chief, Compliance Section
230 South Dearborn
Chicago, Illinois 60604

Environmental Protection Agency
State of Illinois
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

1972000230

3. Definitions

a. "Daily Average" Discharge

1. Weight Basis - The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

2. Concentration Basis - The "daily average" concentration means the arithmetic average (weighted by flow value) of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during the calendar day.

b. "Daily Maximum" Discharge

1. Weight Basis - the "daily maximum" discharge means the total dis- ght during any calendar day.

2. Concent - the "daily maximum" concentration means t termination of concentration for any calenda

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Electronic Filing: Received, Clerk's Office 11/13/2025

4. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report From (EPA No. 3320-1). Such increased frequency shall also be indicated.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

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Electronic Data Received and Scanned 04/13/2023

C. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Ash Pond Discharges and Sanitary Waste Treatment Plant

Progress Report	September 30, 1975
Attainment of Operational Level	June 30, 1976

Chlorine Reduction

Progress Report	December 31, 1975
Attainment of Operational Level	June 30, 1976

Thermal

Preliminary Plans	December 31, 1975
Final Plans	March 31, 1976
Commencement of Construction	June 30, 1976
Progress Report	December 31, 1976
Completion of Construction	May 31, 1977
Operational Level Attained	June 30, 1977

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2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of non-compliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

Illinois EPA FOIA Request 8078 Cover 01/18/2023

PART II

A. MANAGEMENT REQUIREMENTS

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

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4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying disharge.

5. Bypassing

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if no date for implementation appears in Part I,

b. Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of one or more of the primary sources of power to the wastewater control facilities.

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B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any changes in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. Toxic Pollutants

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

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9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

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PART III

OTHER REQUIREMENTS

1. Intake Structures

Within 30 days of the receipt of the permit and the determination of the Regional Administrator, the permittee shall submit to the Regional Administrator and the Illinois Environmental Protection Agency for approval the design for an intake monitoring program to document the effects of the present intake on the various species and life stages of fish. Such a monitoring program shall include, but not be limited to, a tabulation of all fish trapped by the present intake structure. This tabulation shall be performed every fourth day unless the permittee justifies some alternative schedule to the Regional Administrator and the Illinois Environmental Protection Agency within thirty (30) days after the receipt of the permit and determination of the Regional Administrator. The tabulation shall begin within sixty (60) days after the receipt of the permit and determination of the Regional Administrator and end within twelve (12) months of the commencement of tabulation and shall include the number, weight, length, and species of each fish entrapped. Such monitoring data shall be submitted quarterly with other reports.

The permittee shall submit a final report to the Regional Administrator and to the Illinois Environmental Protection Agency by no later than Oct. 28, 1976 providing proposals for measures to be taken by the permittee to meet the requirements of Section 316(b) of the Act for the best cooling water intake technology available. Development of the report shall be guided by the "Development Document for Best Technology Available for Minimizing Adverse Environmental Impact for Cooling Water Intake Structures", as proposed by the U.S. EPA and by "Lake Michigan Intake Report on Best Available Technology by Lake Michigan Cooling Water Intake Technical Committee, August 1973".

This report shall be evaluated with regard to Section 316(b) of the Act. As a result of this evaluation, the Regional Administrator may modify the permit in accordance with Part II B4 to establish an implementation schedule to insure compliance with Section 316(b).

19/2000238

2. Additional Reporting of Monitoring to Illinois Environmental Protection Agency

Monitoring results obtained during the previous three months shall be summarized and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first quarterly report is due October 28,1975. The signed reports required herein, shall be submitted to the State at the following address:

Environmental Protection Agency
State of Illinois
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

3. This Permit incorporates all applicable provisions of the Illinois Environmental Protection Act and of the Rules and Regulations of the Illinois Pollution Control Board, as if they were set forth herein. All such provisions shall become conditions of this Federal NPDES permit granted to you as provided by Section 401(d) of the Federal Water Pollution Control Act Amendments of 1972.

This permit is specifically for the listed pollutants to be discharged from the designated outfalls only. Discharge of pollutants added in other than trace amounts or discharged from an undesignated outfall is not permitted.

4. Transformer Fluids

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluids.

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Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

52

INFORMATION TO BE CONTAINED ON NPDES MICROFILM JACKET

OWNERSHIP CODE: PRI FACILITY TYPE: 0

1. DIVISION CODE 4

2. FIPS COUNTY CODE 199

3. CITY/TOWNSHIP CODE 055

4. GOVERNING BODY CODE 1676A

5. PERMITTEE NAME (FILE SUBJECT)

SOUTHERN ILLINOIS POWER COOP / 0477

6. FILE DIVISION 13

7. NPDES NUMBER IL0004316

OTHER INFORMATION NECESSARY FOR CROSS-REFERENCING

8. GOVERNING BODY NAME
SOUTHERN ILLINOIS POWER CO-OP

F/S/P CODE

10. DATE IDENTIFIED IN THE FIELD REFERS TO:

A. PERMIT ISSUE DATE 04-25-77

B. PERMIT CANCELLATION DATE

C. NO PERMIT REQUIRED DATE

11. PERMIT EXPIRATION DATE 06-25-80

1972000241

Electronic Filing: Received, Clerk's Office 01/13/2023

MODIFIED PERMIT
SOUTHERN ILLINOIS POWER CO-OP
IL 0004316 Log #440-74 BM/5
ISSUED: 4-25-77
EXPIRES: 6-25-80

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Thomas Clevenger
Executive Vice President
and General Manager
Southern Illinois Power Cooperative
Route 4-Box 255
Marion, Illinois 62959

APR 25 1977

Re: Request for Modification of
NPDES Permit No. IL 0004316

Dear Mr. Clevenger:

The U.S. Environmental Protection Agency has examined the request in the September 30, 1975, letter from Carl M. Stafford for modification of the above referenced NPDES permit. Our determinations concerning this request were discussed in our August 28, 1976, letter to you and a proposed NPDES permit with modifications was the subject of a Joint Public Notice dated September 30, 1976. The Illinois Environmental Protection Agency (IEPA) has certified this proposed permit on the condition that certain changes would be incorporated A copy of the March 11, 1977, letter of certification from the IEPA specifying these changes is attached. Our final determination is to issue the proposed permit with the changes requested by the IEPA.

Enclosed is a copy of the modified permit. This permit is effective 30 days from the date of signature and it supersedes NPDES Permit No. IL 0004316 dated June 30, 1975. Please return the superseded permit to this office.

Very truly yours,

ORIGINAL SIGNED BY JAMES O. McDONALD

James O. McDonald, Director
Enforcement Division

Enclosure

cc: Mr. W.H. Busch, Illinois Environmental Protection Agency, w/Enclosure

RECEIVED
APR 29 1977

ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
RECORDS UNIT — SPRINGFIELD
STATE OF ILLINOIS

9720008044

Electronic Filing: Received, Clerk's Office 01/13/2023

RECEIVED
APR 29 1977
ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
RECORDS UNIT — SPRINGFIELD
STATE OF ILLINOIS

Permit No. IL 0004316

Application No. IL 0004316

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq; the "Act"),

SOUTHERN ILLINOIS POWER COOPERATIVE

is authorized by the United States Environmental Protection Agency, Region V,

to discharge from a facility located at Electrical Generation Plant
Marion Station
Williamson County, Illinois

to receiving waters named Saline Creek, the South Fork of the Saline River, and the Lake of Egypt.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit and the authorization to discharge shall expire at midnight, June 25, 1980 . Permittee shall not discharge after the above date of expiration. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information, forms, and fees as are required by the Agency authorized to issue NPDES permits no later than 180 days prior to the above date of expiration.

This permit, modified in accordance with 40 CFR 125, shall become effective 30 days from this date of signature and supersedes NPDES Permit number IL 0004316 dated June 30, 1975 .

Signed this APR 25 1977

James O. McDonald
Director, Enforcement Division

1972030044

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL 0004316

AS MODIFIED

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date of this permit and lasting until June 25, 1987, the permittee is authorized to discharge from outfall(s) serial number(s) 001 Discharge from Ash Pond #1.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	
Oil and Grease	-	-	-	15 mg/l	Weekly	G
Total Suspended Solids	-	-	-	15 mg/l	Weekly	G
Total Dissolved Solids	-	-	-	750 mg/l*	Weekly	G
Iron (Total)	-	-	-	2.0 mg/l**	Weekly	G

*Total dissolved solids shall not be increased more than 750 mg/l above background concentration for [illegible] and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

**The effluent iron (total) concentration in the subject discharge shall be limited to a level that will not cause the receiving stream to exceed the water quality standard limit in Rule 203 of the Water Pollution Regulations of Illinois, Chapter 3.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored by weekly grab samples.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to the South Fork of the Saline River.

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Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL0004316

PART I

AS MODIFIED

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning on the effective date of this permit and lasting until June 25, 1980, the permittee is authorized to discharge from outfall(s) serial number(s) 002 Discharge from Ash Pond #4.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	
Oil and Grease	-	-	-	15 mg/l	Weekly	Grab
Total Suspended Solids	-	-	-	15 mg/l	Weekly	8-hr.composite
Total Dissolved Solids	-	-	-	750 mg/l*	Weekly	8-hr.composite
Iron (total)	-	-	-	2.0 mg/l**	Weekly	8-hr.composite

*Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

**The effluent iron (total) concentration in the subject discharge shall be limited to a level that will not cause the receiving stream to exceed the water quality standard limit in Rule 203 of the Water Pollution Regulations of Illinois, Chapter 3.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored by weekly grab samples.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to Saline Creek.

1972900245

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL 0004812

PART I

AS MODIFIED

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning on the effective date of this permit and lasting until June 25, 1990, the permittee is authorized to discharge from outfall(s) serial number(s) 002 Sanitary Waste Treatment Plant Effluent.
Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	
BOD_5	-	-	-	30 mg/l	Monthly	Grab
Total Suspended Solids	-	-	-	30 mg/l	Monthly	Grab
Fecal Coliform*	-	-	200/100 ml	400/100 ml	Weekly	

*A residual chlorine value not to exceed 0.75 mg/l may be substituted for the effluent limitation of fecal coliform.

In using the fecal coliform count, the geometric mean of the fecal coliform bacteria value for effluent samples collected in a period of 30 consecutive days shall not exceed 200 per 100 milliliters. The geometric mean of these values for effluent samples collected in a period of seven consecutive days shall not exceed 400 per 100 milliliters.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer prior to mixing with any other effluent.

1972200624S

File Date: Filing Received, Clerk's Office 01/13/2023

Permit No. IL 0004316

PART I

AS MODIFIED

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning on the effective date of this permit and lasting until June 30, 1977, the permittee is authorized to discharge from outfall(s) serial number(s) 003 Non-Contact Condenser Cooling Water.
Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M³/Day (MGD)	-	-	-	-	Continuous	
Temperature °C (°F)*	-	-	-	-	Continuous	
Waste Heat Rejection Rate-KJ/hr (BTU/hr)		-	-	-	Monthly Maximum	
Plant Capacity Factor (% Capacity)	-	-	-	-	Monthly Average	
Total Chlorine Residual	-	-	-	-	Weekly	Grab
Duration of Chlorination	-	-	-	-	Monthly Report	
Frequency of Chlorination	-	-	-	-	Monthly Report	

*Intake and Discharge

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to the Lake of Egypt.

1972000247

Electronic Filing: Received, Clerk's Office 01/13/2023

Permit No. IL 0004316

AS MODIFIED

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning July 1, 1977 and lasting until June 25, 198[illegible] the permittee is authorized to discharge from outfall(s) serial number(s) 003 Non-Contact [illegible] Water.
Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	MONITORING REQUIREMENTS Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Continuous	
Temperature °C (°F) *	-	-	-	-	Continuous	
Waste Heat Rejection Rate KJ/hr (BTU/hr)	-	-	-	-	Monthly Maximum	
Plant Capacity Factor (% Capacity)	-	-	-	-	Monthly Average	
Total Chlorine Residual	-	-	-	0.2 mg/l**	Weekly	Grab
Duration of Chlorination	-	-	-	-	Monthly Report	
Frequency of Chlorination	-	-	-	-	Monthly Report	

* Intake and Discharge, see A.6

**The release of total chlorine residual shall be limited to two hours per day for this facility.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer immediately prior to discharge to the Lake of Egypt.

1972300024

Electronic Data Processing Section, Clerk's Office 01/10/2023

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS AS MODIFIED

6. Thermal Discharge Limitations and Monitoring

After July 1, 1977, discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving water to violate the following thermal limitations:

a. Maximum temperature rise above natural temperature must not exceed $5^{o}F$ at the edge of the mixing zone.

b. Water temperature at representative locations outside the mixing zone in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by $3^{o}F$:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
60	60	60	90	90	90	90	90	90	90	90	60
15.6	15.6	15.6	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	15.6

c. The mixing zone shall not extend over more than 26 acres.

In addition, the permittee shall perform the following thermal monitoring:

(1) The permittee shall determine the $2.8^{o}C$ ($5^{o}F$) contour, the contour of the applicable monthly maximum and the areas within these contours at 3 month intervals for a period of one year after the effective date of this permit. The results of these determinations shall be reported to the Regional Administrator and the Illinois Environmental Protection Agency on a quarterly basis.

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Electronic Filing: Received, Clerk's Office 01/13/2023

7. After June 30, 1977 there shall be no discharge of debris from intake screen washing operations.

8. Liquid discharges from miscellaneous waste collection sumps, yard drains, and excess runoff from coal storage areas and scrubber waste storage areas shall be diverted to ash settling basins or comparable settling facilities for treatment prior to discharge.

1972003025

SCHEDULE OF COMPLIANCE AS MODIFIED

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Chlorine Reduction

Attainment of Operational Level June 30, 1977

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of non-compliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

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AMENDED

C. Monitoring and Reporting

1. Representative Sampling - Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting - The results of such monitoring shall be reported on Discharge Monitoring Report forms, using one such form for each outfall during each calendar month. Such reports shall be received by permittee for each month of the calendar year, no later than the 15th day of those three months shall be mailed to the Agency after the end of the reporting period (i.e., for January, February, March, April, May, June, July, August, September (submit October, November, December

The permittee shall retain a copy of all reports and data, all copies shall be submitted to:

U. S. Environmental Protection Agency
Attention: Chief, Surveillance Unit
[illegible]
Chicago, Illinois [illegible]

The permittee shall submit two copies of each month to the State Agency by the 15th day of the following month at the following address: Illinois Environmental Protection Agency, Division of Water Pollution Control, 2200 Churchill Road, Springfield, Illinois [illegible].

3. Noncompliance Notification - If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition: (a) a description of the discharge, (b) cause of noncompliance; (c) the period of noncompliance, including exact dates and times; (d) if not corrected, the anticipated time the noncompliance is expected to continue, and (e) steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

4. Definitions

a. "Daily Average" Discharge
1. Weight Basis - The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

2. Concentration Basis - The "daily average" concentration means the arithmetic average (weighted by flow value) of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during the calendar day.

b. "Daily Maximum" Discharge
1. Weight Basis - The "daily maximum" discharge means the total discharge by weight during any calendar day.
2. Concentration Basis - The "daily maximum" concentration means the daily determination of concentration for any calendar day.

5. Test Procedures - Test procedures for the analysis of pollutants shall conform to regulations published pursuant to section 304(g) of the Act, under which such procedures may be required.

6. Recording of Results - For each measurement or sample taken pursuant to the requirements of this permit the permittee shall record the following information: (a) the exact place, date, and time of sampling; (b) the dates the analyses were performed; (c) the person(s) who performed the analyses; (d) the analytical techniques or methods used; and (e) the results of all required analyses.

7. Additional Monitoring by Permittee - If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

8. Records Retention - All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State Water Pollution Control Agency.

PART II - A. MANAGEMENT REQUIREMENTS

1. Change in Discharge - All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

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[illegible] shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

5. Adverse Impact - The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

6. Bypassing - Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

7. Removed Substances - Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

8. Power Failures - In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either: (a) in accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities; or, if no date for implementation appears in Part I, (b) halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of one or more of the primary sources of power to the wastewater control facilities.

B. RESPONSIBILITIES

1. Right of Entry - The permittee shall allow the head of the State Water Pollution Control Agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials: (a) to enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and (b) at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control - In the event of any changes in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State Water Pollution Control Agency.

3. Availability of Reports - Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State Water Pollution Control Agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. Permit Modification - After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following: (a) violation of any terms or conditions of this permit; (b) obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or (c) a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. Toxic Pollutants - Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability - Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failure" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability - Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Law - Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights - The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability - The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

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PART III

OTHER REQUIREMENTS

1. Intake Structures

Within 30 days of the receipt of the permit and the determination of the Regional Administrator, the permittee shall submit to the Regional Administrator and the Illinois Environmental Protection Agency for approval the design for an intake monitoring program to document the effects of the present intake on the various species and life stages of fish. Such a monitoring program shall include, but not be limited to, a tabulation of all fish trapped by the present intake structure. This tabulation shall be performed every fourth day unless the permittee justifies some alternative schedule to the Regional Administrator and the Illinois Environmental Protection Agency within thirty (30) days after the receipt of the permit and determination of the Regional Administrator. The tabulation shall begin within sixty (60) days after the receipt of the permit and determination of the Regional Administrator and end within twelve (12) months of the commencement of tabulation and shall include the number, weight, length, and species of each fish entrapped. Such monitoring data shall be submitted quarterly with other reports.

The permittee shall submit a final report to the Regional Administrator and to the Illinois Environmental Protection Agency by no later than Dec. 31, 1976 providing proposals for measures to be taken by the permittee to meet the requirements of Section 316(b) of the Act for the best cooling water intake technology available. Development of the report shall be guided by the "Development Document for Best Technology Available for Minimizing Adverse Environmental Impact for Cooling Water Intake Structures", as proposed by the U.S. EPA and by "Lake Michigan Intake Report on Best Available Technology by Lake Michigan Cooling Water Intake Technical Committee, August 1973".

This report shall be evaluated with regard to Section 316(b) of the Act. As a result of this evaluation, the Regional Administrator may modify the permit in accordance with Part II B4 to establish an implementation schedule to insure compliance with Section 316(b).

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2. This Permit incorporates all applicable provisions of the Illinois Environmental Protection Act and of the Rules and Regulations of of the Illinois Pollution Control Board, as if they were set forth herein. All such provisions shall become conditions of this Federal NPDES permit granted to you as provided by Section 401(d) of the Federal Water Pollution Control Act Amendments of 1972.

   This Permit is specifically for the listed pollutants to be discharged from the designated outfalls only. Discharge of pollutants added in other than trace amounts or discharged from an undesignated outfall is not permitted.

3. Transformer Fluids

   There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluids.

4. Rainfall Runoff

   Rainfall runoff from construction activity at the plant site and from material storage areas shall be diverted to the ash ponds and controlled to meet all the effluent restrictions specified in Part A.1 or Part A.2 of this permit.

5. Erosion Control

   The permittee shall utilize EPA Publication No. 430/9-73-007 "Process Procedures, and Methods to Control Pollution Resulting from Construction Activity," October 1973, in developing and implementing procedures and methods for controlling erosion and sediment deposition.

   As a minimum, the following practices shall be instituted:

   a. Minimization of the duration of excavation and grading activities.

   b. Control of the speed and volume of stormwater runoff, as necessary by:

      1. Proper sizing of drainage ditches;
      2. Use of energy dissipative devices such as check dams and pooling areas.

   c. Construction of sediment traps and settling areas as necessary to prevent sediment from leaving the site.

   d. Soil stabilization by minimizing slopes, revegetating spoil banks and cleared surfaces by seeding or sodding and through the proper and timely surfacing of parking lots, roads and laydown areas with crushed rock or gravel.

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e. Taking all necessary precautions to minimize erosion through proper timing and installation of necessary erosion control devices, by avoiding land clearing in fall (insofar as feasible) and prior to installation of sediment traps, runoff drainage or any necessary impoundments for sediment control.

6. Control of Other Construction Related Activity

a. The company will dike and berm such areas as necessary to prevent accidental spills and leakage of fuel and oil.

b. Proper receptacles will be provided for collection of oil soaked rags and papers to prevent contact with area runoff.

c. In order to prevent oil discharges, drainage from equipment maintenance buildings and equipment maintenance areas will be routed through appropriate treatment systems to provide the following effluent quality and monitoring during periods of discharge:

Parameter	Limits		Frequency	Sample Type
	Monthly Average	Daily Maximum		
Flow	-	-	Monthly	Daily Maximum Flow Estimate
Oil and Grease	15 mg/l	20 mg/l	Monthly	Grab

19720800256

Electronic Filing: Received, Clerk's Office 01/13/2023

Exhibit

53

INFORMATION TO BE CONTAINED ON NPDES MICROFILM JACKET

OWNERSHIP CODE: PRI FACILITY TYPE: 0

1. DIVISION CODE N

2. FIPS COUNTY CODE 199

3. CITY/TOWNSHIP CODE 860

4. GOVERNING BODY CODE 167oA

5. PERMITTEE NAME (FILE SUBJECT)

SOUTHERN ILL POWR COOP-MARION / 0385

6. FILE DIVISION 13

7. NPDES NUMBER IL0004316

OTHER INFORMATION NECESSARY FOR CROSS-REFERENCING

8. GOVERNING BODY NAME
SOUTHERN ILLINOIS POWER COOP

F/S/P CODE 3 - 1525 - A - - -

10. DATE IDENTIFIED IN THE FIELD REFERS TO:

A. PERMIT ISSUE DATE 03-29-85

B. PERMIT CANCELLATION DATE - -

C. NO PERMIT REQUIRED DATE - -

11. PERMIT EXPIRATION DATE 11-01-89

0500003

Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-0610

Southern Illinois Power Cooperative
Southern Illinois Power Cooperative
NPDES Permit No. IL0004316
Final Permit

MAR 2 9 1985

Southern Illinois Power Cooperative
Route 4 - Box 311
Marion, Illinois 62959

Gentlemen:

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. The failure of you to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit as issued is effective as of the date indicated on the first page of the Permit. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board prior to the effective date.

Should you have questions concerning the Permit, please contact Gary Cima at the telephone number indicated above.

Very truly yours,

Thomas G. McSwiggin, Act.
Manager, Permit Section
Division of Water Pollution Control

TGM:GC/maw/2046D/11

Enclosure: Final Permit

cc: USEPA/With Enclosure
Region VII/With Enclosure
Permit Section
Records Unit
Consulting Engineer

NPDES Permit No. IL0004316

Illinois Environmental Protection Agency

Division of Water Pollution Control

2200 Churchill Road

Springfield, Illinois 62706

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

IL0004316

Expiration Date: November 1, 1989

Issue Date: March 29, 1985
Effective Date: April 28, 1985

Name and Address of Permittee:

Southern Illinois Power Cooperative
Route 4 - Box 311
Marion, Illinois 62959

Facility Name and Address:

Southern Illinois Power Cooperative
Marion Station
Route 4 - Box 311
Marion, Illinois 62959
Williamson County

Discharge Number and Name:	Receiving Waters
No. 001 Ash Pond No. 3 Effluent	South Fork Saline River
No. 002 Ash Pond No. 4 Effluent	Little Saline Creek
No. 003 Condenser Cooling Water	Lake of Egypt
No. 004 Intake Screen Backwash	

In compliance with the provisions of the Illinois Environmental Protection Act, Subtitle C Rules and Regulations of the Illinois Pollution Control Board, and the FWPCA, the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:GC/maw/Sp/2047D

NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

PARAMETER	LOAD LIMITS lbs/day 30 DAY AVG.	LOAD LIMITS lbs/day DAILY MAX.	CONCENTRATION LIMITS mg/l 30 DAY AVG.	CONCENTRATION LIMITS mg/l DAILY MAX.	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until November 1, 1989, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfalls: 001 Ash Pond No. 3 Effluent

	This discharge consists of:	Approximate Flow
1.	Fly ash sluice water	0.514 MGD
2.	Water treatment plant wastes	0.008 MGD
3.	Demineralizer regenerant wastes	0.001 MGD
4.	Floor drains and equipment drains	0.017 MGD
5.	Blowdown from recirculating service water systems	0.017 MGD
6.	Non-chemical air preheater wash	Intermittent
7.	Slag storage pile runoff	Intermittent
8.	Scrubber sludge slurry waste	Intermittent
9.	Scrubber sludge disposal area runoff	Intermittent

PARAMETER	30 DAY AVG.	DAILY MAX.	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)			1/week	24 hour Total
pH	See Special Condition No. 1		1/week	Grab
Oil and Grease	15.0	20.0	2/month	Grab
Total Suspended Solids	15.0	30.0	1/week	8 hour composi
Total Dissolved Solids	See Special Condition No. 3		1/week	8 hour composi
Iron (Total)	2.0*	4.0*	1/week	8 hour composi
Boron (Total)		*	1/6 mos.	8 hour composi
Cadmium (Total)	0.15*	0.30*	1/6 mos.	8 hour composi
Zinc	1.0*	2.0*	1/6 mos.	8 hour composi

*See Special Condition No. 4

NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

PARAMETER	LOAD LIMITS lbs/day 30 DAY AVG.	LOAD LIMITS lbs/day DAILY MAX.	CONCENTRATION LIMITS mg/l 30 DAY AVG.	CONCENTRATION LIMITS mg/l DAILY MAX.	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until November 1, 1989, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 002 Ash Pond No. 4 Effluent

This discharge consists of:	Approximate Flow
1. Bottom ash sluice water	4.0 MGD
2. Boiler blowdown	0.034 MGD
3. Floor and equipment drains via oil separator No. 1	0.002 MGD
4. Auxiliary cooling water	0.420 MGD
5. Scrubber reclaim water blowdown	Intermittent
6. Coal pile runoff	Intermittent
7. Yard drains	Intermittent

Flow					1/Week	24 hour Tota
pH	See Special Condition No. 1				1/week	Grab
Oil and Grease			15.0	20.0	2/Month	Grab
Total Suspended Solids			15.0	30.0	1/week	8 hour composite
Total Dissolved solids	See Special Condition No. 3				1/week	8 hour composite
Iron (Total)			2.0*	4.0*	1/Week	Grab
Boron (Total)				*	1/6 mos.	8 hour composite

*See Special Condition No. 4

NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

PARAMETER	LOAD LIMITS lbs/day 30 DAY AVG.	LOAD LIMITS lbs/day DAILY MAX.	CONCENTRATION LIMITS mg/l 30 DAY AVG.	CONCENTRATION LIMITS mg/l DAILY MAX.	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until November 1, 1989, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 003 Condenser Cooling Water

This discharge consists of:	Approximate Flow
1. Condenser cooling water	187.0 MGD
2. Auxiliary cooling water	0.4 MGD
3. HVAC system discharge	0.4 MGD

Flow				Daily	24 hour average
Temperature	See Special Condition No. 5			Daily	24 hour average
Total Residual Chlorine		-	0.2	1/week	Concentration Curve**

**See Special Condition No. 6

Outfall(s): 004 Intake Screen Back Wash — Approx. Flow 0.3 MGD

No discharge of collected debris

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NPDES Permit No. IL0004316

Special Conditions

1. The pH shall be in the range 6.0 to 9.0.

2. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

3. The effluent Total Dissolved Solids concentration in the subject discharge shall be limited to a level that will not cause the receiving stream to exceed the water quality standard in Section 302.208 of 35 Ill. Adm. Code, Chapter 1, Subtitle C.

4. The effluent concentration in the subject discharge shall be limited to a level that will not cause the receiving stream to exceed the water quality standard in Section 302.208 of 35 Ill. Adm. Code, Chapter 1, Subtitle C.

5. Discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving waters to violate the following thermal limitations at the edge of the mixing zone which is defined by Section 302.211, Illinois Administrative Code, Title 35, Chapter 1, Subtitle C, as amended:

   A. Maximum temperature rise above natural temperature must not exceed 5oF(2.8oC).

   B. Water temperature at representative locations outside the mixing zone in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3oF(1.7oC):

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
oF	60	60	60	90	90	90	90	90	90	90	90	60
oC	16	16	16	32	32	32	32	32	32	32	32	16

   C. Compliance with the water temperature monitoring requirements shall be determined by reporting the monthly average water temperature, the individual maximum water temperature recorded and the individual minimum water temperature recorded for the month.

6. Chlorine may not be discharged from each unit's main cooling condenser for more than two hours in any one day.

NPDES Permit No. IL0004316

Special Conditions

A. The reported maximum, average and minimum concentration of Total Residual Chlorine shall be based on a chlorine concentration curve generated during the respective chlorination period of each unit. The chlorine concentration curve, the time samples were collected, the time and duration of the chlorine dosing period plus the amount of chlorine applied shall be reported.

7. There shall be no discharge of chemical metal cleaning agents and associated rinses unless this permit has been modified to include the new discharge.

8. There shall be no discharge of polychlorinated biphenyl compounds.

9. Southern Illinois Power Cooperative has complied with Section 302.211f of Title 35, Chapter 1, Subtitle C: Water Pollution Regulations and Section 316(a) of the CWA by demonstrating that thermal discharge from Marion Generating Station has not caused and cannot reasonably be expected to cause significant ecological damage to Lake of Egypt. Pursuant to 35 Ill. Adm. Code 302.211g no additional monitoring or modification is being required for reissuance of this NPDES Permit.

10. Southern Illinois Power Cooperative's demonstration for the Marion Generating Station in accordance with Section 316(b) of the CWA has been approved by this Agency. It is determined that no additional intake monitoring or modification is being required for reissuance of this NPDES Permit.

11. The permittee shall record monitoring results on Discharge Monitoring Report Forms using one such form for each discharge each month.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 15th day of the following month, unless otherwise specified by the permitting authority.

Discharge Monitoring Reports shall be mailed to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

Attention: Compliance Assurance Section

NPDES Permit No. IL0004316

Special Conditions

Additionally, Discharge Monitoring Report forms shall be mailed to United States Environmental Protection Agency in Chicago on a quarterly basis. The permittee shall submit the reports as follows, unless otherwise specified by the permitting authority.

Period	Report Due At U.S. Environmental Protection Agency
Jan, Feb, Mar	April 28th
April, May, June	July 28th
July, Aug, Sept	October 28th
Oct, Nov, Dec	January 28th

Reports shall be addressed to United States Environmental Protection Agency as follows:

NPDES Compliance Unit
United States Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

TGM:GC/maw/Sp/2047D/5-10

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ATTACHMENT H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, Ch. 111 1/2 Ill. Rev. Stat. Sec. 1001-1051 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L. 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24 hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24 Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8 Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records.**

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. This period may be extended by request of the Agency at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement.** All applications, reports or information submitted to the Agency shall be signed and certified.

(a) **Application.** All permit applications shall be signed as follows:

(1) **For a corporation**, by a principal executive officer of at least the level of vice president;

(2) **For a partnership or sole proprietorship**, by a general partner or the proprietor, respectively; or

(3) **For a municipality, State, Federal, or other public agency**, by either a principal executive officer or ranking elected official.

(b) **Reports.** All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

(c) **Changes of Authorization** If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

(12) **Reporting requirements.**

(a) **Planned Changes.** The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility.

(b) **Anticipated noncompliance.** The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) **Compliance schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(d) **Monitoring reports.** Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or, as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(e) **Twenty-four hour reporting.** The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours.

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(2) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit to be reported within 24 hours.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

(f) **Other noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs (12)(c), (d), or (e), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12)(e).

(g) **Other information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Transfer of permits.** A permit may be automatically transferred to a new permittee if:

(a) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date.

(b) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage and liability between the current and new permittees; and

(c) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(14) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(15) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharger which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(16) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(1) User charges pursuant to Section 204(b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;

(2) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(3) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(17) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(18) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(19) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(20) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500, nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.

(21) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(22) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(23) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(24) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(25) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board.

(26) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

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Exhibit

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 Mary A. Gade, Director

217/782-0610

September 29, 1998

RELEASABLE MAJOR

Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, Illinois 62959

Re: Southern Illinois Power Cooperative
Southern Illinois Power Cooperative - Marion Station
NPDES Permit No. IL0004316
Final Permit

Gentlemen:

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. The failure of you to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

The Permit as issued is effective as of the date indicated on the first page of the Permit. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

To assist you in meeting the self-monitoring and reporting requirements of your reissued NPDES permit, a supply of preprinted Discharge Monitoring Report (DMR) forms for your facility is being prepared. These forms will be sent to you prior to the initiation of DMR reporting under the reissued permit. Additional information and instructions will accompany the preprinted DMRs upon their arrival.

Should you have questions concerning the Permit, please contact Gary Wolf at the telephone number indicated above.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:SFN:GCW:97111903.dlk

Attachment: Final Permit

cc: Records
Compliance Assurance Section
Marion Region
USEPA
Facility
GERPDC

Printed on Recycled Paper

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NPDES Permit No. IL0004316

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

Expiration Date: September 30, 2003

Issue Date: September 29, 1998
Effective Date: October 1, 1998

Name and Address of Permittee:

Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, Illinois 62959

Facility Name and Address:

Southern Illinois Power Cooperative - Marion Station
10825 Lake of Egypt Road
Marion, Illinois 62959
(Williamson County)

Discharge Number and Name:		Receiving Waters:
002	Ash Pond No. 4 Effluent	Little Saline Creek
002A	Chemical Metal Cleaning Wastewater	Little Saline Creek
003	Condenser Cooling Water	Lake of Egypt
004	Intake Screen Backwash	Lake of Egypt
005	Fly Ash and Scrubber Sludge Disposal Pond B-3	Little Saline Creek
005A	Chemical Metal Cleaning Wastewater	Little Saline Creek
006	Storm Water Associated with Industrial Activity	Lake of Egypt

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:GCW:97111903.dlk

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NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall: 002 Ash Pond No. 4 Effluent*

This discharge consists of:

		Approximate Flow
1.	Bottom ash sluice water	2.0 MGD
2.	Boiler blowdown	0.008 MGD
3.	Floor and equipment drains via oil separator No. 1	0.002 MGD
4.	South fly ash pond	1.0 MGD
5.	Coal pile runoff	Intermittent
6.	Yard drains	0.0046 MGD
7.	Fly ash sluice water	0.514 MGD
8.	Water treatment plant wastes	0.008 MGD
9.	Demineralizer regenerant wastes	0.0014 MGD
10.	Floor drains and equipment drains	0.017 MGD
11.	Blowdown from recirculating service water pumps	0.017 MGD
12.	Non-chemical air preheater wash	Intermittent
13.	Slag storage pile runoff	Intermittent
14.	Scrubber sludge slurry water	0.05 MGD
15.	Scrubber sludge disposal area runoff	Intermittent
16.	Chemical metal cleaning wastewater	0.07 MGD once every 2 years

Flow (MGD)	See Special Condition 1			1/Week	Continuous
pH	See Special Condition 2			1/Week	Grab
Oil and Grease		15	20	2/Month	Grab
Total Suspended Solids		15	30	1/Week	8-Hour Composite
Total Dissolved Solids			1000	1/Month	8-Hour Composite
Iron (total)		2	4	1/Month	8-Hour Composite
Boron			**	1/Month	8-Hour Composite
Cadmium		0.002	0.024	1/Month	8-Hour Composite
Copper		0.023	0.037	1/Month	8-Hour Composite

*See Special Condition 11
**See Special Condition 17

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Effluent Limitations and Monitoring

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall: 003 Condenser Cooling Water

This discharge consists of: Approximate Flow

1. Condenser cooling water — 86.4 MGD
2. Auxiliary cooling water — 0.4 MGD
3. HVAC system discharge — 0.4 MGD

Flow (MGD)	See Special Condition 1			Daily	Continuous
Temperature	See Special Condition 4			Daily	Continuous
Total Residual Chlorine	See Special Condition 5		0.2	1/Week	Grab

Outfall: 004 Intake Screen Backwash

See Special Condition 10

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Effluent Limitations and Monitoring

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall: 005 Fly Ash and Scrubber Sludge Disposal Pond B-3

This discharge consists of: Approximate Flow

1. Fly ash sluice water — 0.514 MGD
2. Scrubber sludge slurry water — 0.05 MGD
3. Floor and equipment drains — 0.017 MGD
4. Yard drains — 0.046 MGD
5. Miscellaneous plant blowdowns — 0.035 MGD
6. Coal Pile Runoff — Intermittent

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Week	Continuous
pH	See Special Condition 2				1/Week	Grab
Oil and Grease			15	20	2/Month	Grab
Total Suspended Solids			15	30	1/Week	8-Hour Composite
Total Dissolved Solids				1000	1/Month	8-Hour Composite
Iron (total)			2	4	1/Month	8-Hour Composite
Boron				9.0*	1/Month	8-Hour Composite
Cadmium**			0.002	0.024	1/Month	8-Hour Composite

*See Special Condition 17
**See Special Condition 13

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NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:						
Outfalls: 002A and 005A Chemical Metal Cleaning Wastewater						
Flow (MGD)					Daily When Discharging	Measurement
Iron (total)			1.0	1.0	Daily When Discharging	8-Hour Composite
Copper (total)			1.0	1.0	Daily When Discharging	8-Hour Composite
Outfall: 006 Storm Water Associated with Industrial Activity						
See Special Condition 16						

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Special Conditions

SPECIAL CONDITION 1. Flow shall be recorded as a monthly average and daily maximum and shall be reported as such on the DMR form.

SPECIAL CONDITION 2. The pH shall be in the range 6.0 to 9.0. The monthly minimum and monthly maximum values shall be reported on the DMR form.

SPECIAL CONDITION 3. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream. For internal Outfalls 002A and 005A, samples shall be taken at a point representative of the discharge, but prior to mixture with other wastestreams. If chemical metal cleaning wastewater is used as scrubber make-up water, samples shall be taken prior to use as make-up water.

SPECIAL CONDITION 4. Discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving stream to violate the following thermal limitations at the edge of the mixing zone which is defined by Section 302.211, Illinois Administration Code, Title 35, Chapter 1, Subtitle C, as amended:

A. Maximum temperature rise above natural temperature must not exceed 5°F (2.8°C).

B. Water temperature at representative locations in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3°F (1.7°C).

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
°F	60	60	60	90	90	90	90	90	90	90	90	60
°C	16	16	16	32	32	32	32	32	32	32	32	16

C. The monthly maximum value shall be reported on the DMR form.

D. Compliance with the water temperature monitoring requirements shall be determined by reporting the condenser outlet monthly average water temperature, the individual maximum water temperature recorded and the individual minimum water temperature recorded for the month. The computer model, PDS program, shall be used to predict plume trajectory and the area enclosed by the surface isotherms to determine compliance with the above temperature limitations.

SPECIAL CONDITION 5. Total residual chlorine limit is an instantaneous maximum limit which shall not be exceeded at any time. Results of weekly grab samples shall be submitted with the monthly DMR form, with the maximum weekly value reported on the DMR form.

Chlorine may not be discharged from each units main cooling condenser for more than two hours in any one day.

SPECIAL CONDITION 6. There shall be no discharge of polychlorinated biphenyl compounds.

SPECIAL CONDITION 7 Southern Illinois Power Cooperative has complied with Section 302.211f of Title 35, Chapter 1, Subtitle C: Water Pollution Regulations and Section 316(a) of the CWA by demonstrating that thermal discharge from Marion Generating Station has not caused and cannot reasonably be expected to cause significant ecological damage to Lake of Egypt. Pursuant to 35 Ill. Adm. Code 302.211g no additional monitoring or modification is being required for reissuance of this NPDES Permit.

SPECIAL CONDITION 8. Southern Illinois Power Cooperative's demonstration for the Marion Generating Station in accordance with Section 316(b) of the CWA has been approved by this Agency. It is determined that no additional intake monitoring or modification is being required for reissuance of this NPDES Permit.

SPECIAL CONDITION 9. The permittee shall record monitoring results on Discharge Monitoring Report forms using one such form for each discharge each month. The completed Discharge Monitoring Report form shall be submitted monthly to IEPA, no later than the 15th of the following month, unless otherwise specified by the Agency, to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

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Special Conditions

SPECIAL CONDITION 10. There shall be no discharge of collected debris from Outfall 004 Intake Screen Backwash.

SPECIAL CONDITION 11. For the duration of this permit, Outfall 002 shall be monitored for fluoride once per month by eight hour composite sample. Monthly average and daily maximum values shall be reported on the DMR form. The agency may modify this permit during its term to incorporate additional limitations or requirements based on the results of the monitoring. Modifications under this permit shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 12. For the purpose of this permit, Outfall 003 is limited to non-contact cooling water, free from additives other than chlorine. If the permittee wishes to use cooling water additives, the following information must be submitted to the Agency for review:

a. Brand name;

b. List of active and inactive ingredients expressed as a percentage of the total product;

c. Feed rate and expected discharge concentration;

d. Aquatic toxicity results.

The additive(s) shall not be used until Agency approval has been given.

SPECIAL CONDITION 13. Cadmium limits of 0.002 mg/l (monthly average) and 0.024 mg/l (daily maximum) at Outfall 005 shall become effective two years from the effective date of this permit. The permittee shall construct treatment equipment, or undertake alternative means of compliance, in accordance with the following compliance schedule. Alternative means of compliance may include, among other things, providing documentation to the Agency that the cadmium limits are being achieved without treatment.

Compliance Schedule

	Item	Compliance Date
1.	Plans and specifications, if appropriate	6 months from the effective date of this permit
2.	Obtain a permit for construction, if appropriate	12 months from the effective date of this permit
3.	Submit an interim status report	16 months from the effective date of this permit
4.	Complete construction, if appropriate	22 months from the effective date of this permit
5.	Achieve compliance on or before	24 months from the effective date of this permit

Compliance dates set out in this Permit may be superseded or supplemented by compliance dates in judicial orders or Pollution Control Board orders.

The interim status report required under Item 3 of the Compliance Schedule shall be submitted to the Agency at the address listed under Special Condition 9.

Reporting

SPECIAL CONDITION 14. The Permittee shall conduct biomonitoring of the effluent from Outfall 002 and 005. The Permittee shall conduct biomonitoring of the effluent discharge no earlier than one (1) year prior to the expiration date of this Permit. The results shall be submitted with the Permit renewal application.

Biomonitoring

1. Acute Toxicity - Standard definitive acute toxicity tests shall be run on at least two trophic levels of aquatic species (fish, invertebrate) representative of the aquatic community of the receiving stream. Except as noted here and in the IEPA document "Effluent Biomonitoring and Toxicity Assessment", testing must be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fourth Ed.) EPA-600/4-90-027. Unless substitute tests are pre-approved; the following tests are required:

   a. Fish - 96 hour static LC_{50} Bioassay using one to two week old fathead minnows (Pimephales promelas).

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Special Conditions

b. Invertebrate 48-hour static LC_{50} Bioassay using Ceriodaphnia.

2. Testing Frequency - The above tests shall be conducted on a one time basis using 24-hour composite effluent samples unless otherwise authorized by the IEPA. Results shall be reported according to EPA/600/4-90/027, Section 12, Report Preparation, and shall be submitted to IEPA with the renewal application.

3. Toxicity Assessment - Should the review of the results of the biomonitoring program identify toxicity, the Agency may require that the permittee prepare a plan for toxicity reduction evaluation and identification. This plan shall include an evaluation to determine which chemicals have a potential for being discharged in the plant wastewater, a monitoring program to determine their presence or absence and to identify other compounds which are not being removed by treatment, and other measures as appropriate.

   The Agency may modify this permit during its term to incorporate additional requirements or limitations based on the results of any biomonitoring. In addition, after review of the monitoring results, the Agency may modify this permit to include numerical limitations for specific toxic pollutants. Modifications under this condition shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 15. The Agency has determined that the effluent limitations at outfall 002 and 005 constitute BAT/BCT for storm water which is treated in the existing treatment facilities for purposes of this permit reissuance, and no pollution prevention plan will be required for such storm water. In addition to the chemical specific monitoring required elsewhere in this permit, the permittee shall conduct an annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity, and determine whether any facility modifications have occurred which result in previously-treated storm water discharges no longer receiving treatment. If any such discharges are identified the permittee shall request a modification of this permit within 30 days after the inspection. Records of the annual inspection shall be retained by the permittee for the term of this permit and be made available to the Agency on request.

SPECIAL CONDITION 16.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. A storm water pollution prevention plan shall be developed by the permittee for the storm water associated with industrial activity at Outfall 006. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

B. The plan shall be completed within 180 days of the effective date of this permit. Plans shall provide for compliance with the terms of the plan within 365 days of the effective date of this permit. The owner or operator of the facility shall make a copy of the plan available to the Agency at any reasonable time upon request. [Note: If the plan has already been developed and implemented it shall be maintained in accordance with all requirements of this special condition.]

C. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this condition. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

D. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph G of this condition indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objective of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

E. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from storm water outfalls at the facility. The plan shall include, at a minimum, the following items:

   1. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

   2. A site map showing:

      i. The storm water conveyance and discharge structures;

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ii. An outline of the storm water drainage areas for each storm water discharge point;

iii. Paved areas and buildings;

iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

vi. Surface water locations and/or municipal storm drain locations

vii. Areas of existing and potential soil erosion;

viii. Vehicle service areas;

ix. Material loading, unloading, and access areas.

3. A narrative description of the following:

i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

iv. Industrial storm water discharge treatment facilities;

v. Methods of onsite storage and disposal of significant materials;

4. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

5. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

6. A summary of existing sampling data describing pollutants in storm water discharges.

F. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

1. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

2. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

3. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

4. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

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Special Conditions

5. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

   i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

   ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

   iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

   iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

   v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

   vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

6. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

7. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

8. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

G. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

H. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

I. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

J. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

Construction Authorization

K. Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee there upon waives all rights thereunder.

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Special Conditions

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as part of the storm water management practice shall be included in the SWPPP.

4. Construction activities which result from treatment equipment installation, including cleaning, grading and excavation activities which result in the disturbance of five acres or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding the required permit(s).

REPORTING

L. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part G of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

M. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

N. Annual inspection reports shall be mailed to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Annual Inspection Report
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

O. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

SPECIAL CONDITION 17. Once per month, an eight hour composite sample shall be collected at outfalls 002 and 005 for boron. Flow shall be measured at each outfall during this eight hour period.

The daily maximum effluent limitation for boron at outfall 005 is 9.0 mg/l. The daily maximum effluent limitation for boron at outfall 002 shall be calculated utilizing the following formula:

$$\text{Limit 002:} \quad \frac{(9.0\ \text{mg/l}\ (\text{Flow 005} + \text{Flow 002})) - (\text{Flow 005})(\text{Conc. 005})}{\text{Flow 002}}$$

Where:

Limit 002:	Calculated daily maximum effluent limitation for boron at outfall 002
Flow 002:	Measured effluent flow rate at outfall 002 during 8 hour composite sample period
Conc. 005:	Measured boron effluent concentration at outfall 005 from 8 hour composite sample period
Flow 005:	Measured effluent flow rate at outfall 005 during 8 hour composite sample period
9.0 mg/l:	Stream standard for boron set forth in Illinois Pollution Control Board Adjusted Standard (AS 92 - 10) dated July 1, 1993

Measured boron effluent concentrations at both outfalls from the eight hour composite sample shall be reported on the DMR form. Calculations for the effluent limitation for boron at outfall 002 shall be attached to the DMR form.

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ATTACHMENT H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, Ch. 111 1/2 ill. Rev. Stat., Sec. 1001 1057, as Amended

Agency means the Illinois Environmental Protection Agency

Board means the Illinois Pollution Control Board

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L. 92-500, as amended, 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act

USEPA means the United States Environmental Protection Agency

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24 Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8 Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8 hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) Duty to comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(2) Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, the permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) Duty to mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) Permit actions. This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) Duty to provide information. The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit.

(9) Inspection and entry. The permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit,

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit,

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) Monitoring and records.

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the permit, measurement, report or application. This period may be extended by request of the Agency at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) Signatory requirement. All applications, reports or information submitted to the Agency shall be signed and certified.

(a) Application. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

(b) Reports. All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a), and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

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(c) Changes of Authorization If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

(12) Reporting requirements.

(a) Planned changes The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility.

(b) Anticipated noncompliance The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) Compliance schedules Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(d) Monitoring reports Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(e) Twenty-four hour reporting The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit to be reported within 24 hours;

The Agency may waive the written report on a case by case basis if the oral report has been received within 24 hours.

(f) Other noncompliance The permittee shall report all instances of noncompliance not reported under paragraphs (12)(c), (d), or (e), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12)(e).

(g) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) Transfer of permits. A permit may be automatically transferred to a new permittee if:

(a) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date.

(b) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage and liability between the current and new permittees, and

(c) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(14) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l).

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile, five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol, and one milligram per liter (1 mg/l) for antimony.

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application, or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(15) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants, and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(16) If this permit is issued to a publicly owned or publicly regulated treatment works the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(1) User charges pursuant to Section 204(b) of the Clean Water Act and applicable regulations appearing in 40 CFR 35;

(2) User pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(3) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(17) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(18) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(19) The permittee shall not make any false statement, representation or certification in any application, record report, plan or other document submitted to the Agency or the USEPA or required to be maintained under this permit.

(20) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500, nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.

(21) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(22) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit shall, on failing monitoring reports or reports of compliance or non-compliance shall upon conviction be punished by a fine of not more than $10,000 per violation or by imprisonment for not more than 6 months per violation, or by both.

(23) Collected screenings, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(24) In case of conflict between these standard conditions and any other conditions included in this permit, the other conditions shall govern.

(25) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle F, and all applicable orders of the Board.

(26) The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of this permit to hold invalid, the remaining provisions of this permit shall continue in full force and effect.

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Exhibit

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – (217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 – (312) 814-6026

ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/782-0610

MAJOR

RELEASABLE

February 1, 2007

Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, Illinois 62959

Re: Southern Illinois Power Cooperative - Marion Station
NPDES Permit No. IL0004316
Final Permit

Gentlemen:

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. Failure to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

The Agency has begun a program allowing the submittal of electronic Discharge Monitoring Reports (eDMRs) instead of paper Discharge Monitoring Reports (DMRs). If you are interested in eDMRs, more information can be found on the Agency website, http://epa.state.il.us/water/edmr/index.html. If your facility is not registered in the eDMR program, a supply of preprinted paper DMR Forms for your facility will be sent to you prior to the initiation of DMR reporting under the reissued permit. Additional information and instructions will accompany the preprinted DMRs upon their arrival.

The Permit as issued is effective as of the date indicated on the first page of the Permit. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact Blaine Kinsley at the telephone number indicated above.

Sincerely,

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:BAK:JMC:04110101.jmc

Attachment: Final Permit

cc: Records
Compliance Assurance Section
Marion Region
USEPA
Facility

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NPDES Permit No. IL0004316

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

MAJOR

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit RELEASABLE

Expiration Date: February 29, 2012

Issue Date: February 1, 2007
Effective Date: March 1, 2007

Name and Address of Permittee:

Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, Illinois 62959

Facility Name and Address:

Southern Illinois Power Cooperative - Marion Station
10825 Lake of Egypt Road
Marion, Illinois 62959
(Williamson County)

Discharge Number and Name:		Receiving Waters:
002	Ash Pond No. 4 Effluent	Little Saline Creek
A02	Chemical Metal Cleaning Wastewater	Little Saline Creek
003	Condenser Cooling Water	Lake of Egypt
004	Intake Screen Backwash	Lake of Egypt
005	Fly Ash and Scrubber Sludge Disposal Pond B-3	Little Saline Creek
A05	Chemical Metal Cleaning Wastewater	Little Saline Creek
006	Storm Water Associated with Industrial Activity	Lake of Egypt

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:JMC:04110101.jmc

NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

RELEASABLE

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall: 002 Ash Pond No. 4 Effluent*

This discharge consists of:	Approximate Flow
1. Process wastewater	2.0 MGD
2. Boiler evaporation and blowdown	0.1 MGD
3. Bottom ash slurry	2.5 MGD
4. Coal pile runoff	Intermittent
5. Yard drains	0.005 MGD
6. Floor drains and equipment drains	0.002 MGD
7. Slag storage pile runoff	Intermittent
8. Scrubber sludge slurry water	0.05 MGD
9. Scrubber sludge disposal area runoff	Intermittent

Flow (MGD)	See Special Condition 1			1/Week	Continuous
pH	See Special Condition 2			1/Week	Grab
Oil and Grease		15	20	2/Month	Grab
Total Suspended Solids		15	30	1/Week	8-Hour Composite
Total Dissolved Solids			1000	1/Month	8-Hour Composite
Iron (total)		2	4	1/Month	8-Hour Composite
Boron			**	1/Month	8-Hour Composite
Fluoride		1.4		1/Month	8-Hour Composite
Copper***		0.023	0.037	1/Month	8-Hour Composite
Mercury****				1/Month	8-Hour Composite

*See Special Condition 13
**See Special Condition 16
***See Special Condition 17
****See Special Condition 19

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NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

RELEASABLE

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall: 003 Condenser Cooling Water*

This discharge consists of: Approximate Flow

1. Condenser cooling water 229 MGD
2. Auxiliary cooling water 0.4 MGD
3. HVAC system discharge 0.4 MGD

Flow (MGD)	See Special Condition 1		Daily	Continuous
Temperature	See Special Condition 4		Daily	Continuous
Total Residual Chlorine	See Special Condition 5	0.2	1/Week	Grab

*See Special Condition 7 and 8 concerning additional thermal discharge requirements.

Outfall: 004 Intake Screen Backwash

See Special Condition 10

NPDES Permit No. IL0004316

Effluent Limitations and Monitoring

RELEASABLE

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall: 005 Fly Ash and Scrubber Sludge Disposal Pond B-3*

This discharge consists of:	Approximate Flow
1. Fly ash sluice water	Intermittent
2. Scrubber sludge slurry water	Intermittent
3. Floor and equipment drains	Intermittent
4. Yard drains	Intermittent
5. Miscellaneous plant blowdowns	Intermittent
6. Coal Pile Runoff	Intermittent

Flow (MGD)	See Special Condition 1			Daily When Discharging	Continuous
pH	See Special Condition 2			Daily When Discharging	Grab
Oil and Grease		15	20	1/Month	Grab
Total Suspended Solids		15	30	Daily When Discharging	Grab
Total Dissolved Solids			1000	1/Month	Grab
Iron (total)		2	4	1/Month	Grab
Boron			9.0**	1/Month	Grab
Zinc***				1/Month	Grab
Mercury****				1/Month	8-Hour Composite

*See Special Condition 13
**See Special Condition 16
***See Special Condition 11
****See Special Condition 19

NPDES Permit No. IL0004316

RELEASABLE

Effluent Limitations and Monitoring

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfalls: A02 and A05 Chemical Metal Cleaning Wastewater

Flow (MGD)			*	Measurement
Iron (total)	1.0	1.0	*	8-Hour Composite
Copper (total)	1.0	1.0	*	8-Hour Composite

*See Special Condition 19

Outfall: 006 Storm Water Associated with Industrial Activity

See Special Condition 15

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Special Conditions

REPLACEABLE

SPECIAL CONDITION 1. Flow shall be recorded as a monthly average and daily maximum and shall be reported as such on the DMR form.

SPECIAL CONDITION 2. The pH shall be in the range 6.0 to 9.0. The monthly minimum and monthly maximum values shall be reported on the DMR form.

SPECIAL CONDITION 3. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream. For internal Outfalls A02 and A05, samples shall be taken at a point representative of the discharge, but prior to mixture with other wastestreams. If chemical metal cleaning wastewater is used as scrubber make-up water, samples shall be taken prior to use as make-up water.

SPECIAL CONDITION 4. Discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving stream to violate the following thermal limitations at the edge of the mixing zone which is defined by Section 302.211, Illinois Administration Code, Title 35, Chapter 1, Subtitle C, as amended:

A. Maximum temperature rise above natural temperature must not exceed 5 F (2.8 C).

B. Water temperature at representative locations in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3 F (1.7 C).

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
60	60	60	90	90	90	90	90	90	90	90	60
16	16	16	32	32	32	32	32	32	32	32	16

C. The monthly maximum value shall be reported on the DMR form.

D. The computer model, PDS program, shall be used to predict plume trajectory and the area enclosed by the surface isotherms to determine compliance with the above temperature limitations.

SPECIAL CONDITION 5. Total residual chlorine limit is an instantaneous maximum limit which shall not be exceeded at any time. The maximum weekly value shall be reported on the DMR form.

Results of all weekly grab samples shall be submitted with the monthly DMR form if maximum limit is exceeded during any week.

Chlorine may not be discharged from each units main cooling condenser for more than two hours in any one day.

SPECIAL CONDITION 6. There shall be no discharge of polychlorinated biphenyl compounds.

SPECIAL CONDITION 7 Due to increase in thermal discharge volume Southern Illinois Power Cooperative shall comply with Section 302.211f of Title 35, Chapter 1, Subtitle C: Water Pollution Regulations and Section 316(a) of the CWA by demonstrating that thermal discharge from Marion Generating Station will not cause and cannot reasonably be expected to cause significant ecological damage to Lake of Egypt. Pursuant to 35 Ill. Adm. Code 302.211g no additional monitoring or modification is being required for reissuance of this NPDES Permit.

SPECIAL CONDITION 8. The Permittee's facility has been deemed to meet the criteria as a Phase II existing facility (under section 316(b) of the Clean Water Act) pursuant to 40 CFR 125.91. Therefore, the permittee must fulfill the applicable requirements of 40 CFR 125 subpart J, and 40 CFR 122(r)(2), (3) and (5). The regulation at 40 CFR 125.95 requires submittal of a Proposal for Information Collection (PIC) to support the development of a Comprehensive Demonstration Study (CDS) for the herein permitted facility. The PIC will be reviewed by the Agency and a response will be provided. An extension of time to submit the CDS has been granted. Therefore, you must submit your CDS on or before January 7, 2008. Once the CDS has been reviewed by the Agency and a compliance strategy has been approved, this permit will be modified to include implementation, monitoring, and reporting requirements pursuant to 40 CFR 125.98.

NPDES Permit No. IL0004316

Special Conditions

REVISED

SPECIAL CONDITION 9. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/edmr/index.html.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the last calender day of the following month, unless otherwise specified by the permitting authority.

Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 10. There shall be no discharge of collected debris from Outfall 004 Intake Screen Backwash.

SPECIAL CONDITION 11. Sample frequency for zinc at outfall 005 shall be once a month until six samples have been collected; after which and upon written notification to the Agency, the sampling may cease, unless the Agency modifies the permit to require continued sampling at some frequency.

SPECIAL CONDITION 12. For the purpose of this permit, Outfall 003 is limited to non-contact cooling water, free from additives other than chlorine. If the permittee wishes to use cooling water additives, the following information must be submitted to the Agency for review:

a. Brand name;

b. List of active and inactive ingredients expressed as a percentage of the total product;

c. Feed rate and expected discharge concentration;

d. Aquatic toxicity results.

The additive(s) shall not be used until Agency approval has been given.

SPECIAL CONDITION 13. The Permittee shall conduct biomonitoring of the effluent from Outfall 002 and 005. The Permittee shall conduct biomonitoring of the effluent discharge no earlier than one (1) year prior to the expiration date of this Permit. The results shall be submitted with the Permit renewal application.

Biomonitoring

1. Acute Toxicity - Standard definitive acute toxicity tests shall be run on at least two trophic levels of aquatic species (fish, invertebrate) representative of the aquatic community of the receiving stream. Except as noted here and in the IEPA document "Effluent Biomonitoring and Toxicity Assessment", testing must be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fourth Ed.) EPA-600/4-90-027. Unless substitute tests are pre-approved; the following tests are required:

   a. Fish - 96 hour static LC_{50} Bioassay using one to two week old fathead minnows (Pimephales promelas).

   b. Invertebrate 48-hour static LC_{50} Bioassay using Ceriodaphnia.

Special Conditions

2. Testing Frequency - The above tests shall be conducted on a one time basis using 24-hour composite effluent samples unless otherwise authorized by the IEPA. Results shall be reported according to EPA/600/4-90/027, Section 12, Report Preparation, and shall be submitted to IEPA with the renewal application.

3. Toxicity Assessment - Should the review of the results of the biomonitoring program identify toxicity, the Agency may require that the permittee prepare a plan for toxicity reduction evaluation and identification. This plan shall include an evaluation to determine which chemicals have a potential for being discharged in the plant wastewater, a monitoring program to determine their presence or absence and to identify other compounds which are not being removed by treatment, and other measures as appropriate.

   The Agency may modify this permit during its term to incorporate additional requirements or limitations based on the results of any biomonitoring. In addition, after review of the monitoring results, the Agency may modify this permit to include numerical limitations for specific toxic pollutants. Modifications under this condition shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 14. The Agency has determined that the effluent limitations at outfall 002 and 005 constitute BAT/BCT for storm water which is treated in the existing treatment facilities for purposes of this permit reissuance, and no pollution prevention plan will be required for such storm water. In addition to the chemical specific monitoring required elsewhere in this permit, the permittee shall conduct an annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity, and determine whether any facility modifications have occurred which result in previously-treated storm water discharges no longer receiving treatment. If any such discharges are identified the permittee shall request a modification of this permit within 30 days after the inspection. Records of the annual inspection shall be retained by the permittee for the term of this permit and be made available to the Agency on request.

SPECIAL CONDITION 15.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. A storm water pollution prevention plan shall be developed by the permittee for the storm water associated with industrial activity at Outfall 006. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

B. The plan shall be completed within 180 days of the effective date of this permit. Plans shall provide for compliance with the terms of the plan within 365 days of the effective date of this permit. The owner or operator of the facility shall make a copy of the plan available to the Agency at any reasonable time upon request. [Note: If the plan has already been developed and implemented it shall be maintained in accordance with all requirements of this special condition.]

C. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this condition. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

D. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph G of this condition indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objective of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

E. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from storm water outfalls at the facility. The plan shall include, at a minimum, the following items:

   1. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

Special Conditions

2. A site map showing:

   i. The storm water conveyance and discharge structures;

   ii. An outline of the storm water drainage areas for each storm water discharge point;

   iii. Paved areas and buildings;

   iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

   v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

   vi. Surface water locations and/or municipal storm drain locations

   vii. Areas of existing and potential soil erosion;

   viii. Vehicle service areas;

   ix. Material loading, unloading, and access areas.

3. A narrative description of the following:

   i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

   ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

   iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

   iv. Industrial storm water discharge treatment facilities;

   v. Methods of onsite storage and disposal of significant materials;

4. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

5. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

6. A summary of existing sampling data describing pollutants in storm water discharges.

F. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

1. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

2. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

3. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

4. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

5. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

   i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

   ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

   iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

   iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

   v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

   vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

6. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

7. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

8. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

G. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

H. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

I. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

J. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

NPDES Permit No. IL0004316

Special Conditions

READABLE

Construction Authorization

K. Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee there upon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as part of the storm water management practice shall be included in the SWPPP.

4. Construction activities which result from treatment equipment installation, including clearing, grading and excavation activities which result in the disturbance of one acre or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding the required permit(s).

REPORTING

L. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part G of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).

M. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

N. Annual inspection reports shall be mailed to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Annual Inspection Report
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

O. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

SPECIAL CONDITION 16. Once per month, an eight hour composite sample shall be collected at outfalls 002 and 005 for boron. Flow shall be measured at each outfall during this eight hour period.

The daily maximum effluent limitation for boron at outfall 005 is 9.0 mg/l. The daily maximum effluent limitation for boron at outfall 002 shall be calculated utilizing the following formula:

$$\text{Limit 002:} \quad \frac{(9.0\ \text{mg/l}\ (\text{Flow 005} + \text{Flow 002})) - (\text{Flow 005})(\text{Conc. 005})}{\text{Flow 002}}$$

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Special Conditions

RELEASABLE

Where:
- Limit 002: Calculated daily maximum effluent limitation for boron at outfall 002
- Flow 002: Measured effluent flow rate at outfall 002 during 8 hour composite sample period
- Conc. 005: Measured boron effluent concentration at outfall 005 from 8 hour composite sample period
- Flow 005: Measured effluent flow rate at outfall 005 during 8 hour composite sample period
- 9.0 mg/l: Stream standard for boron set forth in Illinois Pollution Control Board Adjusted Standard (AS 92 - 10) dated July 1, 1993

Measured boron effluent concentrations at both outfalls from the eight hour composite sample shall be reported on the DMR form. Calculations for the effluent limitation for boron at outfall 002 shall be attached to the DMR form.

SPECIAL CONDITION 17. Pursuant to provisions of 35 IAC Section 309.157, the Permittee may gather data in support of determining a site-specific copper translator. Should the Permittee choose to gather such data, a minimum of twelve (12) effluent and twelve (12) downstream samples shall be taken within a minimum of one week in between samples. Such samples shall be consistent with "The Metals Translator: Calculating a Total Recoverable Permit Limit for Dissolved Criterion."

The IEPA may modify the Permit to include the revised copper limits only if such permit modification is consistent with 35 IAC Section 309.157 and with 40 CFR 122.44(l).

SPECIAL CONDITION 18. Daily Outfall sampling of 002 and 005 (if flowing) for iron and copper shall commence from the first day of use of boiler clean wastewater in the scrubber, and shall continue for seven days following the conclusion of the use of boiler clean wastewater in the scrubber. These sampling results shall be reported in the monthly reports. The applicant shall derive limits using the formula defined in 40 CFR 403.6(l) for the discharges from the outfalls during this period. The calculation used to derive limits shall be submitted with DMR form.

SPECIAL CONDITION 19. Sample frequency for Mercury at outfall(s) 002 and 005 shall be once a month until twelve samples have been collected; after which and upon written notification to the Agency, the sampling may cease, unless the Agency modifies the permit to require continued sampling at some frequency. Monitoring shall be performed using USEPA analytical test method 1631 or equivalent.

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Attachment H
Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24 Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8 Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) Duty to comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(2) Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) Duty to mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) Permit actions. This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) Duty to provide information. The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit.

(9) Inspection and entry. The permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) Monitoring and records.

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. This period may be extended by request of the Agency at any time

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) Signatory requirement. All applications, reports or information submitted to the Agency shall be signed and certified.

(a) Application. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

(b) Reports. All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

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(c) **Changes of Authorization.** If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

(12) **Reporting requirements.**

(a) **Planned changes.** The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility.

(b) **Anticipated noncompliance.** The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) **Compliance schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(d) **Monitoring reports.** Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(e) **Twenty-four hour reporting.** The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit to be reported within 24 hours.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

(f) **Other noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs (12)(c), (d), or (e), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12)(e).

(g) **Other information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Transfer of permits.** A permit may be automatically transferred to a new permittee if:

(a) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;

(b) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage and liability between the current and new permittees; and

(c) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(14) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6 dinitrophenol; and one milligram per liter (1 mg/l) for antimony.

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(15) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharger which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(16) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(a) User charges pursuant to Section 204(b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;

(b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(17) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(18) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(19) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(20) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.

(21) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(22) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit shall, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(23) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(24) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(25) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board.

(26) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

(Rev. 3-13-98)

Electronic Filing: Received, Clerk's Office 01/13/2023

EXHIBIT

AA

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTHERN ILLINOIS POWER CO-OPERATIVE

Route 4 • Box 607
Marion, Illinois 62959

Telephone
(618) 964-1448

July 22, 1993

RECEIVED
JUL 26 1993

Mr. Gary C. Wolf
Illinois E.P.A.
Division of Water Pollution Control
Industrial Unit – Permit Section
2200 Churchill Road
Springfield, IL 62794–9276

Re: Southern Illinois Power Cooperative
NPDES Permit #IL0004316

Dear Mr. Wolf:

Pursuant to our telephone conversation of July 14, 1993, the following letter and attachments are submitted in order to clarify SIPC's concerns toward effective water pollution control and to secure our N.P.D.E.S. permit renewal.

The cross–hatched area on the attached outfall map shows where dredging efforts are currently underway to expand the scrubber sludge drainage and fly ash settling pond areas. Current discharge from Ash Pond #3 will be directed toward this expanded treatment area, and Outfall 001 will be eliminated. At the present time, Outfall 001 is listed to have a total flow of 0.557 MGD (001 flow is actually lower). Flow from Outfall 002 is listed as 5.036 MGD. Therefore, the addition of Outfall 001 will only account for about 10% of the new total from 002. After settling occurs throughout its gravity flow via the sludge storage area, the effluent will be pumped to Pond #4 which discharges through Outfall 002. We also request permission to pump the effluent from the sludge storage area to Pond B3 at certain times in order to better regulate the pH of that pond. It is our position that by eliminating Outfall 001 in this manner, special Condition #13 will not be necessary.

Further, sampling was performed on July 9, 1993, and these samples were analyzed for cadmium, chromium (hexavalent), chromium (total), copper, and silver. The tests were run using minimum detection limits of 0.003 mg/l, 0.05 mg/l, 0.05 mg/l, 0.005 mg/l and 0.003 mg/l respectively. The results of these tests are enclosed and show that monthly testing for these elements is not necessary. For this reason, we request deletion of Special Condition #14.

Additionally, we request permission to continue to sample Outfall 003 for total residual chlorine on a weekly basis rather than on a daily basis as stated on the draft permit. It is felt

that weekly samples are sufficient, over time, to develop accurate chlorine concentration curves. In our opinion, daily sampling would cause us unnecessary burden and expense.

Also, attached is a copy of the Pollution Control Board ruling granting us an adjusted boron standard. This should eliminate the need for Special Condition #12.

Finally, we will be forwarding information regarding stormwater runoff from our plant. We are in the process of gathering this information.

Thank you for your assistance in this matter. Should you have questions or concerns regarding the above, please call.

Respectfully,

Leonard F. Hopkins, P.E.
Environmental & Safety Coordinator

LFH/sma

Attachments

Electronic Filing: Received, Clerk's Office 01/13/2023

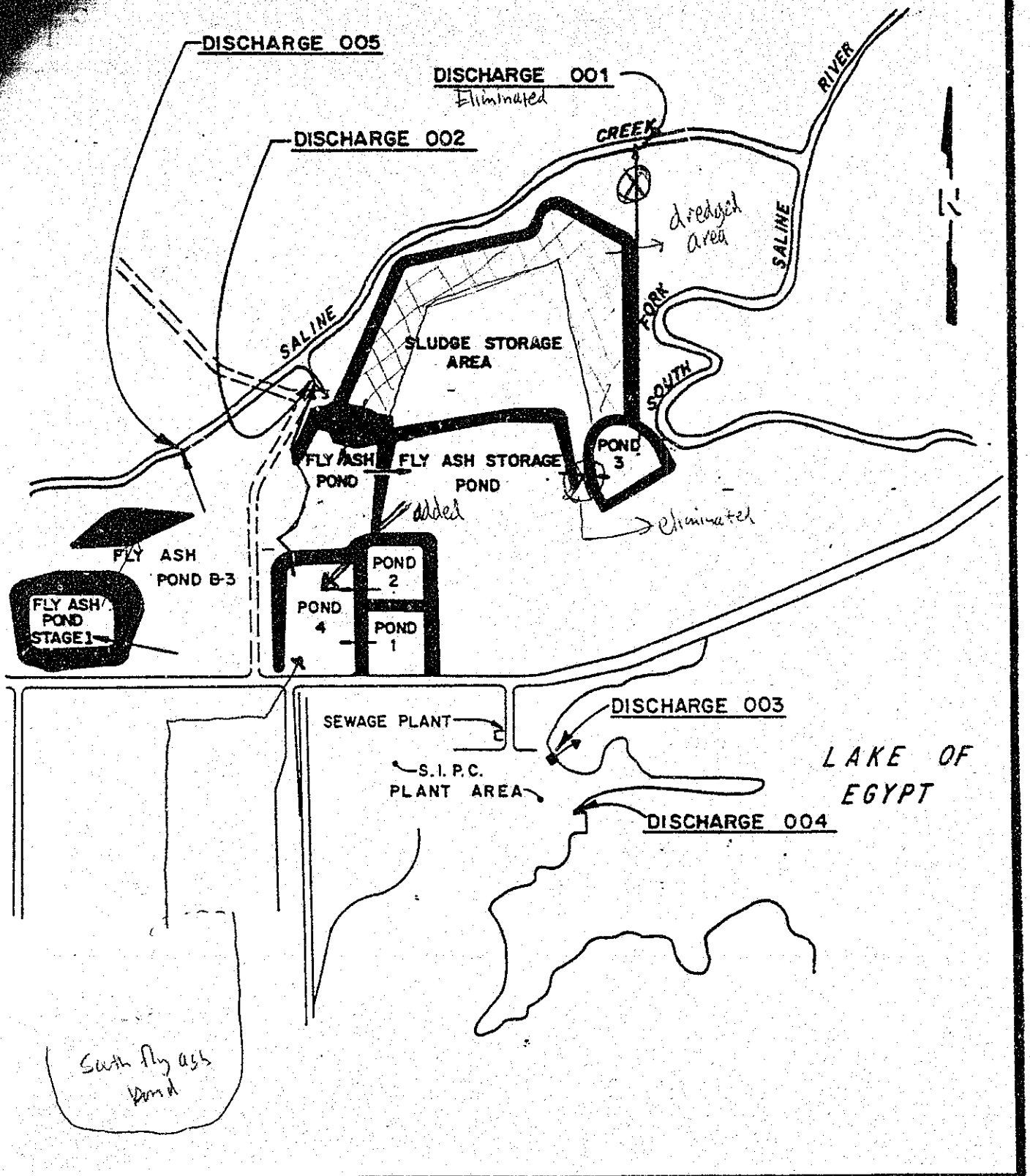

Figure – MAP SHOWING OUTFALLS - MARION STATION

SOURCE: SOUTHERN ILLINOIS POWER CO-OP INC. 1989
MARION, ILL.

SOUTHERN ILLINOIS POWER CO-OPERATIVE, INC.
NPDES PERMIT
IL 0004316

Electronic Filing: Received, Clerk's Office 01/13/2023

EXHIBIT

BB

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State of Illinois
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY **MEMORANDUM**

IW1998600002

DATE: November 22, 2017

TO: Jim Miles, Manager BOW/DWPC/FOS

FROM: Brian Rodely, BOW/DWPC/FOS - Marion

SUBJECT: Williamson County – Southern Illinois Power Cooperative (SIPCO) IL0004316
September 6 and October 12, 2017 Focused Inspection of Outfall 005

I conducted a focused inspection of SIPCO outfall 005 and associated settling basins at the request of Jason McLaurin (Environmental Coordinator) on September 6, 2017 and October 12, 2017.

Holding and settling for outfall 005 consisted of a 6.6-acre impoundment with a storage capacity of 72,600 cubic yards. The system controlled scrubber sludge slurry water, floor and equipment drains, yard drains, miscellaneous plant blow downs, and coal pile runoff. However, most of the water controlled by the system is stormwater.

September 6, 2017: The last reported discharge for outfall 005 occurred in October 2016 and only 6 reportable discharges have been reported in the last 3 years. It appears that all affected storm water from the facility has been directed to other settling basins away from outfall 005. Sludge has been dredged from the bottom of the 005 settling basin for and spread out to dry. McLaurin said that the dark sludge has been sampled to determine the presence of metals and contaminants and they believe that the material could be used for fill. McLaurin requested that the sludge and sidewalls of basin 005 be used to form the reclaimed topography of the area and that outfall 005 be eliminated. I recommended to McLaurin that the facility should follow their reclamation plan for closure of the basin and outfall 005. Additionally, all "sludge" should be removed and properly disposed or land applied with a land application permit from the Agency. It was also recommended to remove more material from the bottom of basin 005 where dark sludge remained. Finally, I told McLaurin that if any water remaining in or passing through the basin should meet general use Water Quality Standards. McLaurin said that he would present the recommendations to management and will remove the sludge.

October 12, 2017: I met with McLaurin at basin 005 and observed that all discolored sludge has been removed. McLaurin said that the sludge was removed and hauled to a landfill. I observed that outfall 005 has been removed and some site reclamation has occurred. I recommended that SIPCO acquire a Storm Water Construction Permit to complete the reclamation activities at the site.

Summary: Outfall 005 has been removed and all affected water has been directed to other settling basins with permitted outfalls. All sludge appears to be removed from the site and final reclamation grading will commence in accordance with the site reclamation plan.

Termination of control structures and outfall 005 from permit is recommended.

BER:11/22/2017

Original: BOW/DWPC/FOS/Marion
cc: BOW/DWPC/RU

IEPA-DIVISION OF RECORDS MANAGEMENT
RELEASABLE

AUG 20 2018

REVIEWER: JKS

Electronic Filing: Received, Clerk's Office 01/13/2023

EXHIBIT

CC

Electronic Filing: Received, Clerk's Office 01/13/2023

Electronic Filing: Received, Clerk's Office 01/13/2023

PERMIT/PLAN/SPECIFICATION
MICROFILM "JACKET" INFORMATION

1. Division Code W
2. FIPS County Code 199
3. City/Township Code 055
4. Governing Body Code L626A
5. PERMITTEE NAME (File Subject)

SOUTHERN_ILL_POWER_CO-OP-MARION_FAC

6. File Division OY
7. IEPA Permit Number 198_EN2226-2

CROSS-REFERENCE INFORMATION

8. Governing Body Name

SOUTHERN_ILLINOIS_POWER_CO-OP_

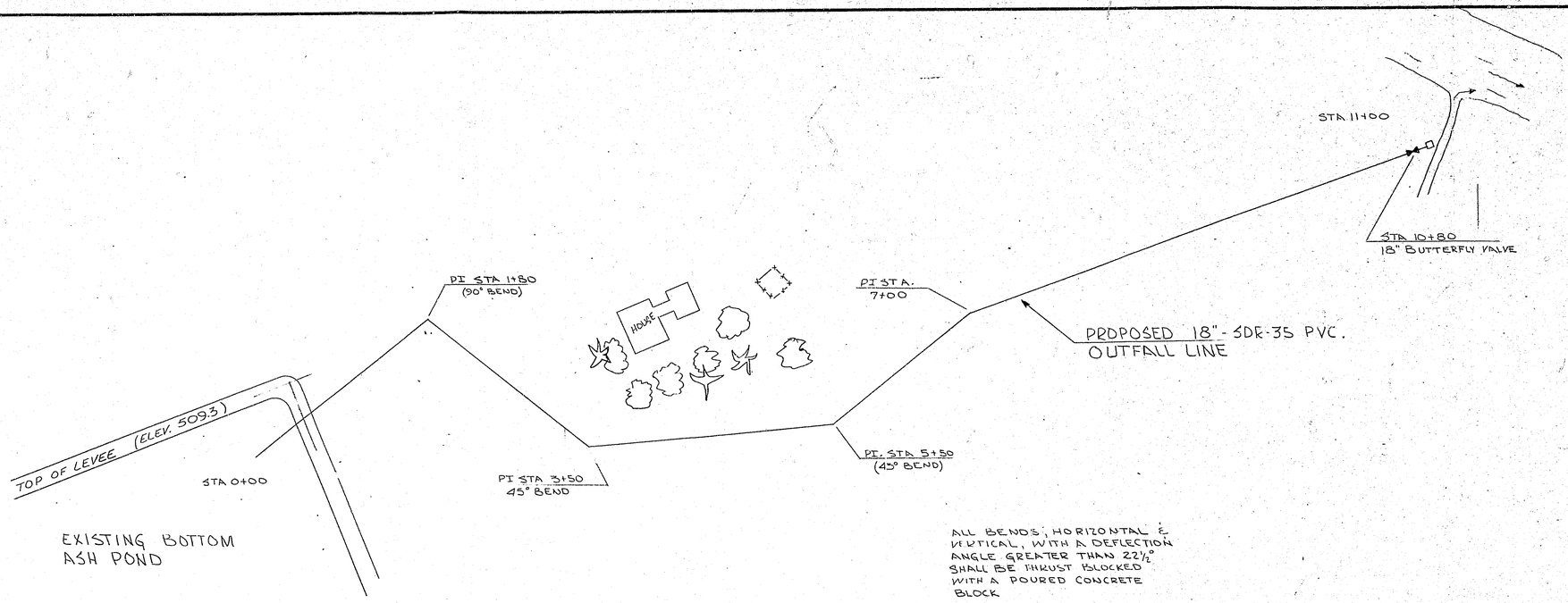
9. F/S/P Code _____
10. NPDES Number IL00_____

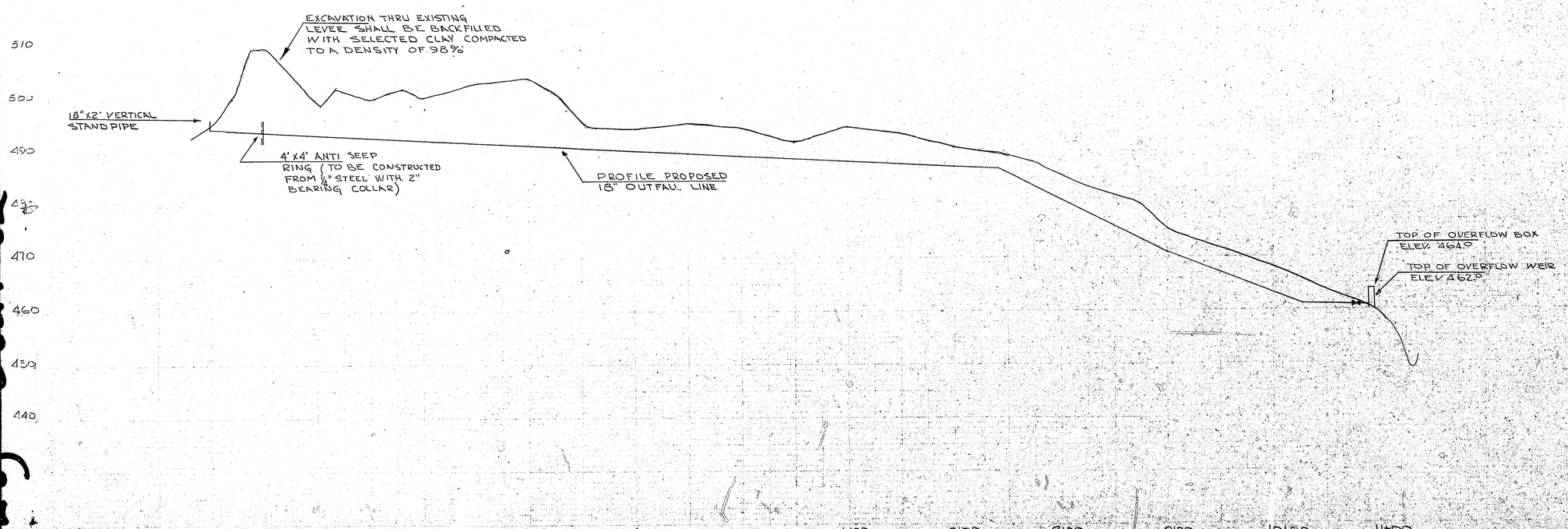
DWPC Records Unit
ADM 1081 8/78 3M

1303000281

Electronic Filing: Received, Clerk's Office 01/13/2023

Southern Ill. Power Co-op; Permit #1981-EN-2776-2
Log # 0821-82





0821-82
RECEIVED
JUL 30 1982
Environmental Protection Agency
WPC — Permit Log In

NO.	DESCRIPTION	BY	DATE
1	AS CONSTRUCTED	SBS	3-23-82

	BY	DATE
DESIGNED		
DRAWN		
CHECKED		

FLYASH STORAGE POND EXTENSION
SOUTHERN ILLINOIS POWER CO-OP
PLAN AND PROFILE - POND #3 OUTFALL

CRAWFORD AND WHITESIDE, P.C.
CIVIL ENGINEERS, LAND SURVEYORS
CARTERVILLE, ILLINOIS

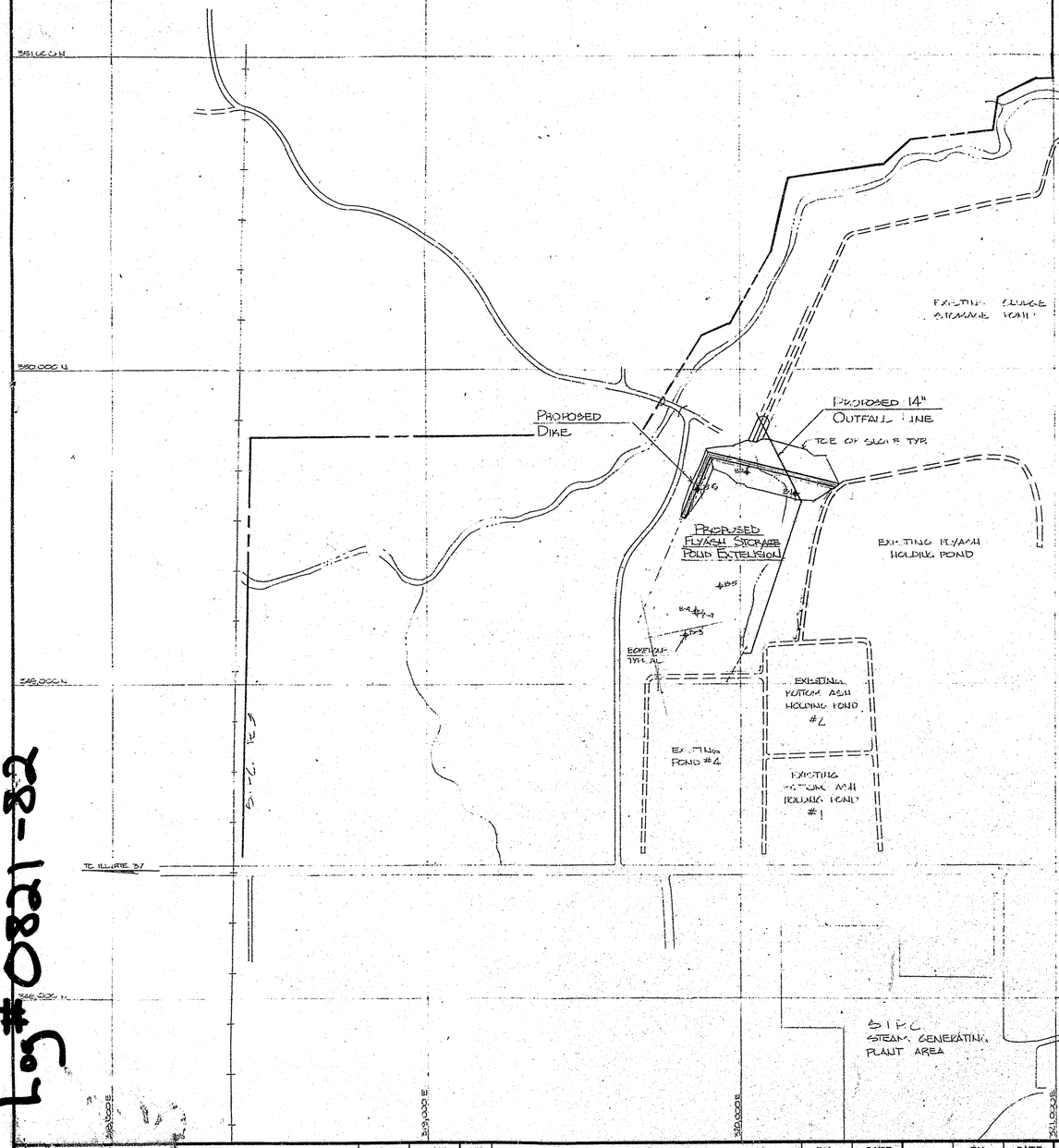
SHEET NO.	
5A	
ISSUE	DATE
1	3/23/82

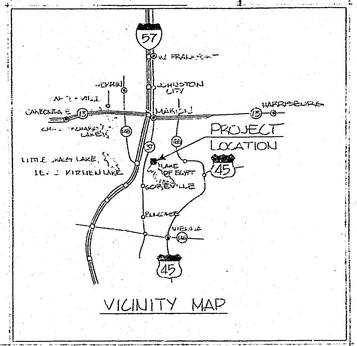
13630660292

E-98.6

Electronic Filing: Received, Clerk's Office 01/13/2023

Southern Ill. Power Co-op
Permit # 1981-EN-2762
Log # 0821-82





VICINITY MAP

0821-82
RECEIVED
JUL 30 1982
Environmental Protection Agency
IEPC—Permit Log In

NO.	DESCRIPTION	BY	DATE	NO.	DESCRIPTION	BY	DATE

	BY	DATE
DESIGNED		
DRAWN	WE	8-21-81
CHECKED	D.H.C.	8-21-81
SCALE	1"=200'	

FLYASH STORAGE POND EXTENSION
SOUTHERN ILLINOIS POWER CO-OP
GENERAL LAYOUT

CRAWFORD AND WHITESIDE, P.C.
CIVIL ENGINEERS, LAND SURVEYORS
CARTERVILLE, ILLINOIS

SHEET NO.	
1/5	
ISSUE	DATE
1	9-4-81

E-98.1

13630000253

Electronic Filing: Received, Clerk's Office 01/13/2023

Southern Ill. Power Co-Op; Permit # 1981-EN-2762
Log # 0821-82

S.I.P.C PROPERTY LINE

78+86 PI

FLOATING INTAKE

3" PUMP

PROPOSED 3" DISCHARGE LINE - To Discharge Horizonally Into Flyash Pond

PROFILE LINE "B" SEE SHEET 3

SLUDGE STORAGE AREA

0C+00
1B+00

PROFILE LINE "C" SEE SHEET 2

DISCHARGE TO GEOTEK GROUND CLOTH COVERED WITH RIP RAP, SEALED TIGHT AROUND EXIST. DISCHARGE PIPE.

11C+27
12A+52

FL ELEV. DISCHARGE VALVE 461.17

INVERT ELEV. 466.18

0A+00

0A+84
0B+00

DIKE EL 493

PROFILE LINE "A" SEE SHEET 2

6" PUMP

FLOATING INTAKE

12"-BCP @ ELEV. 466.38

PROPOSED 8" DISCHARGE LINE To Flyash Storage Pond

FLYASH POND

FLYASH STORAG. POND

POND # 3
Area = 8.2 Ac.

4+00
3+00
2+00
0+00

0B+30
13D+20

PI 90+86

FLYASH STOCKPILE

SLUDGE CONVEYOR

PROFILE LINE "D" SEE SHEET 4

PI 6D+45

DIKE EL 509.7

POND # 4
Area = 6.4 Ac.

4+00 18" CMP @ ELEV. 504.86
3+00
2+00
1+00
0+00

S.E.I.E.C.

0D+00

PI 30+50

COUNTY HIGHWAY 3 DAM

PIPE

S.I.P.C. MAIN GATE

S.I.P.C. PLANT

NOTE: CONTOURS REFLECT EXISTINGING EARTH ELEVATIONS BELOW PRESENT FLYASH

EXTEND PIPE TO WITHIN 4 FEET OF TOP DAM AND VALVE INTAKE. BUILD PLATFORM TO VALVE HANDLE EXTENSION.

PLATFORM

VALVE

PIPE EXTENSION

4"

EXISTING PIPE

SECTION X-X
NO SCALE
Detail A-85.3

SPILLWAY

0821-82
RECEIVED
JUL 30 1982
Environmental Protection Agency
WPC—Permit Log In

E-100.1A

CLARIDA ENGINEERING CO.
308 South [illegible]

S.I.P.C. ASH PONDS
PROPOSED MODIFICATION

1"=200'

15030060254

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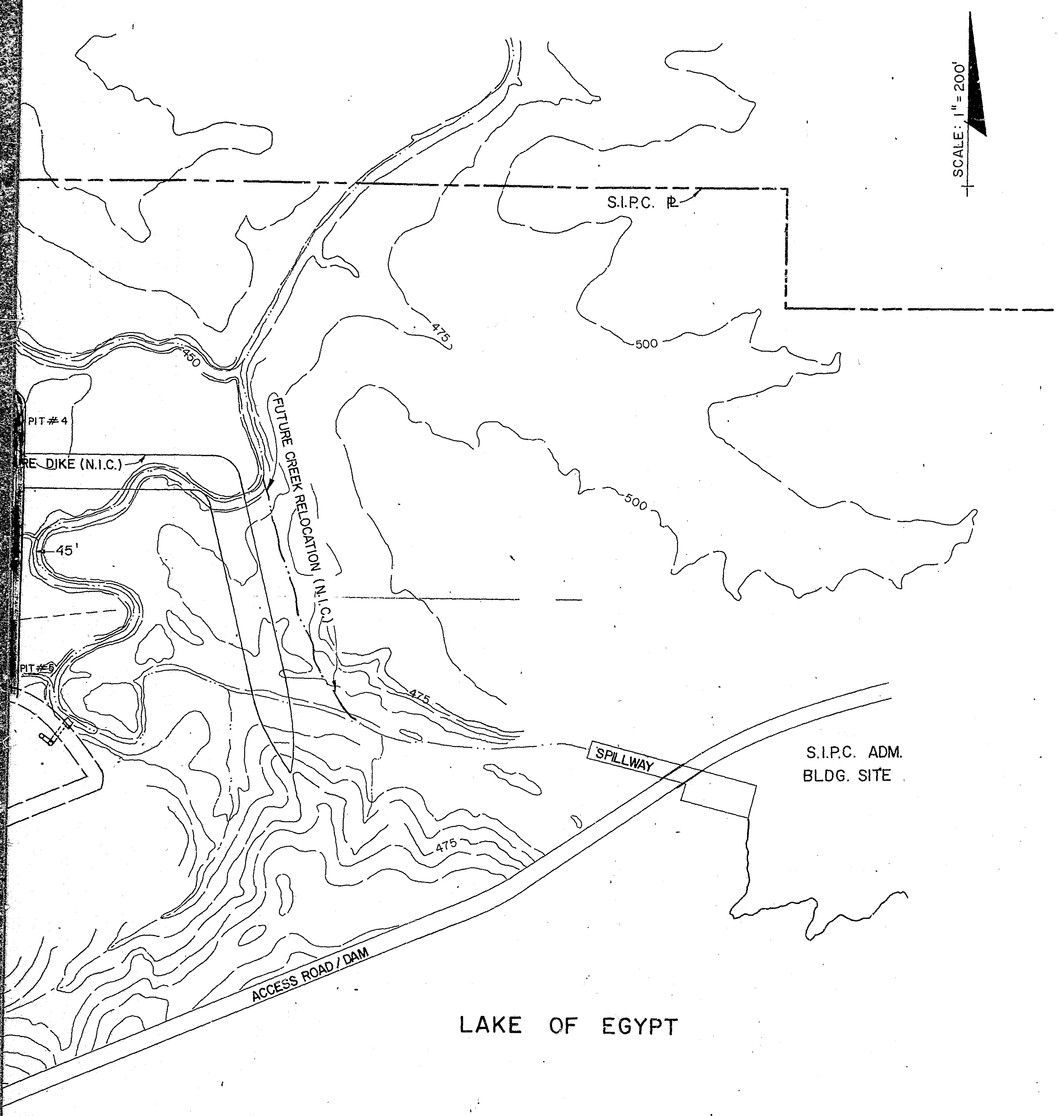
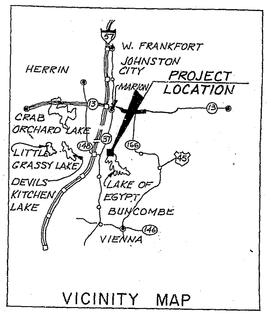
Southern Ill. Power Coop.; Permit # 1981-EN-2976-2
Log # 0821-82





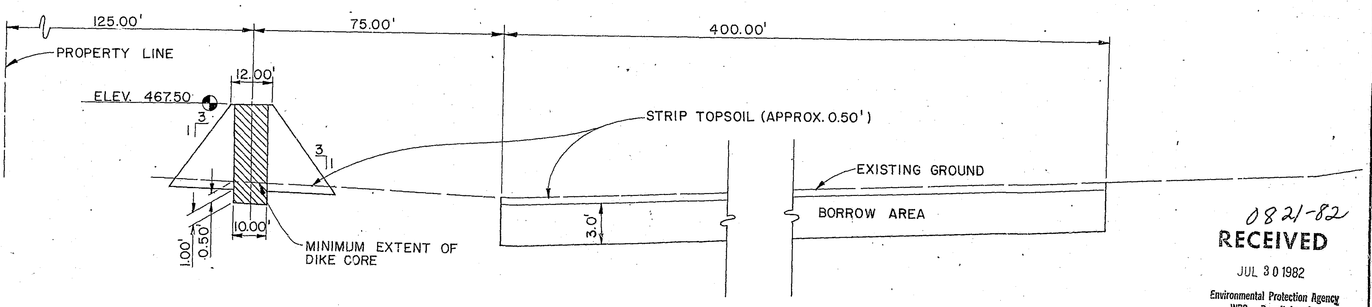
VICINITY MAP

NOTES:

- BORROW AREA SHOWN ON THE DRAWINGS SHALL BE APPROXIMATELY 300 FEET BY 600 FEET OR AS NECESSARY FOR REQUIRED FILL QUANTITY AND QUALITY. DEPTH OF EXCAVATION SHALL NOT EXCEED 35 FEET AS SHOWN.
- SITE CLEARING SHALL BE ACCOMPLISHED IN BORROW AREA AND WITHIN LIMITS OF NEW DIKE.

LEGEND

A-154	SOIL BORINGS
462.5	EXISTING ELEVATION
475	EXISTING CONTOUR
	PROPERTY LINE
	OVERHEAD POWER LINE
	LIMITS OF NEW DIKE



SECTION "A-A"
SCALE: 1" = 5' VERT.
1" = 20' HORIZ.

NOTE: EMERGENCY DRAWDOWN OF CONTAINMENT AREA, IF REQUIRED, WILL BE ACCOMPLISHED BY MEANS OF PORTABLE PUMPING EQUIPMENT.

0821-82
RECEIVED
JUL 30 1982
Environmental Protection Agency
WPC — Permit Log In

F-194

SITE PLAN, DIKE SECTION AND VICINITY MAP

SOUTHERN ILLINOIS POWER COOPERATIVE INC.
MARION UNIT No.4
SLUDGE RUNOFF CONTAINMENT DIKE

DRAWN BY W.G.H.	REYNOLDS, SMITH AND HILLS ARCHITECTS • ENGINEERS • PLANNERS INCORPORATED JACKSONVILLE, FLORIDA	SHEET 1 OF 1
CHECKED BY J.T.H.		
DATE 4 AUG 80		FILE NO. 79192005

© 1980 REYNOLDS, SMITH AND HILLS, INC.

1.3030000295

1.3030000296

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EXHIBIT

DD

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REMAINDER

OF PERMIT BACKUP

CAN BE FOUND IN

BOW IMAGES

DOCUMENTS

FILE CABINET

W1998600002
Southern IL Power Coop-Marion
Cat: 16
IL 0004316
02/01/2007

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LEGEND

COLOR	LAYER NAME	DESCRIPTION
	CONTOUR	
	GRID	
	FOOTING	
	CONVEYOR	
	REFERENCE	
	ABANDONED	
	AIR	
	DW	DOMESTIC WATER
	BW	BEARING WATER
	CM	CONDENSATE MAKEUP
	CW	RAW CIRCULATING WATER
	RW	RECLAIM WATER (SCRUBBER MAKE-UP)
	PD	PLANT DRAIN
	FM	PLANT FIRE PROTECTION
	SD	STORM DRAIN
	SS	SANITARY SEWER
	SL	SLURRY
	BA	BOTTOM ASH
	FA	FLYASH
	FO	FUEL OIL
	SP	SPARE PIPE
	DB	ELECTRICAL DUCTBANK
	EC	ELECTRICAL CONDUIT
		GROUNDING
	GT	GAI-TRONICS TELEPHONE
		TELEPHONE
	COMPUTER_NW	(CNW)

NOTE:
SEE DRAWING F-248 FOR P&ID.

002 DISCHARGE
INVERT EL. 462.0
CONTROL VALVE & WEIR
FOR DETAILS SEE DWG. E-98.8

005 DISCHARGE
INVERT EL. 490.0
30" CMP RISER W.L. EL 493
FOR DETAILS SEE DWG. G-455.5

B.M. EL. 468.72 □ CUT IN
N.E. CORNER CURB GUARD
OF BRIDGE

POND S-6
SLUDGE SETTLING OVERFLOW HOLDING
16 ACRE FEET
WATER EL.463.5

POND S-5
SLUDGE HOLDING
61 ACRE FEET
WATER
EL. 485.0

POND S-4
SLUDGE HOLDING
64 ACRE FEET
WATER
EL. 485.0

POND S-3
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-2
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-1
SLUDGE HOLDING
71 ACRE FEET
WATER
EL. 505.0

POND 3
SLUDGE SETTLING
20 ACRE FEET
WATER
EL. 470.8

POND 3A
CLARIFIED WATER
20 ACRE FEET
WATER
EL. 470.8

POND 2
BOTTOM ASH HOLDING
15 ACRE FEET
WATER
EL.502.0

POND 1
BOTTOM ASH HOLDING
9 ACRE FEET
WATER
EL.504.2

POND 4
DISPOSAL SETTLING
55 ACRE FEET
WATER
EL.502.0

POND B-3
FLY ASH SETTLING
45 ACRE FEET
W.L. EL. 495
WATER
EL.494.6

POND A-1
FLY ASH HOLDING
32 ACRE FEET
WATER
EL.515.2

PUMP STATION
PUMP PD-1
PUMP PD-2

PUMP STATION
PUMP RW-1WW

VALVE STATION 1
VALVE STATION 2
VALVE STATION 3

TO SIU BUILDING (1)1"EC (2)2"EC

TO PONDS 2" EC, 1" EC (5)2" EC
BUILDING (1)1½" EC, 1" EC
MANHOLE (8)2" EC (1)1" EC
TO PLANT

SL-SLURRY CONTRATE & WASTE SLURRY LINE

LAKE OF EGYPT ROAD

RELEASABLE

Southern Illinois Power Cooperative
MARION, ILLINOIS

NORTH POND DISPOSAL AREA SITE PLAN UNDERGROUND UTILITIES

SCALE 1"=80'	W.O.	REVISION	DATE 9-20-97
DRAWN SBS	REF. AS BUILT	A	SHEET OF H-100
APPROVED H.M.			
REV. DATE 03-17-03			

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LEGEND

COLOR	LAYER NAME	DESCRIPTION
	CONTOUR	
	GRID	
	FOOTING	
	CONVEYOR	
	REFERENCE	
	ABANDONED	
	AIR	
	DW	DOMESTIC WATER
	BW	BEARING WATER
	CM	CONDENSATE MAKEUP
	CW	RAW CIRCULATING WATER
	RW	RECLAIM WATER (SCRUBBER MAKE-UP)
	PD	PLANT DRAIN
	FW	PLANT FIRE PROTECTION
	SD	STORM DRAIN
	SS	SANITARY SEWER
	SL	SLURRY
	BA	BOTTOM ASH
	FA	FLYASH
	FO	FUEL OIL
	SP	SPARE PIPE
	DB	ELECTRICAL DUCTBANK
	EC	ELECTRICAL CONDUIT
	GROUNDING	
	GT	GAI-TRONICS TELEPHONE
	TELEPHONE	
	COMPUTER_NW	(CNW)

NOTE:
SEE DRAWING F-248 FOR P&ID.

002 DISCHARGE
INVERT EL. 462.0
CONTROL VALVE & WEIR
FOR DETAILS SEE DWG. E-98.8

005 DISCHARGE
INVERT EL. 490.0
30" CMP RISER W.L. EL. 493
FOR DETAILS SEE DWG. G-455.5

B.M. EL. 468.72 □ CUT IN N.E. CORNER CURB GUARD OF BRIDGE

N 350,000

E 320,000

POND S-6
SLUDGE SETTLING OVERFLOW HOLDING
16 ACRE FEET
WATER EL.463.5

POND S-5
SLUDGE HOLDING
61 ACRE FEET
WATER
EL. 485.0

POND S-4
SLUDGE HOLDING
84 ACRE FEET
WATER
EL. 485.0

POND S-3
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-2
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-1
SLUDGE HOLDING
71 ACRE FEET
WATER
EL. 505.0

POND 3
SLUDGE SETTLING
20 ACRE FEET
WATER
EL. 470.8

POND 3A
CLARIFIED WATER
20 ACRE FEET
WATER
EL. 470.8

POND 2
BOTTOM ASH HOLDING
15 ACRE FEET
WATER
EL.502.0

POND 1
BOTTOM ASH HOLDING
9 ACRE FEET
WATER
EL 504.2

POND 4
DISPOSAL SETTLING
55 ACRE FEET
WATER
EL 502.0

POND B-3
FLY ASH SETTLING
45 ACRE FEET
W.L. EL. 495
WATER
EL.494.6

POND A-1
FLY ASH HOLDING
32 ACRE FEET
WATER
EL.515.2

PUMP STATION
PUMP PD-1
PUMP PD-2

PUMP STATION
PUMP RW-1HW

VALVE STATION 1
VALVE STATION 2
VALVE STATION 3

TO SIU BUILDING

TO PONDS
TO PLANT
MANIFOLD
BUILDING

LAKE OF EGYPT ROAD

RECEIVED
MAR 25 2003
Environmental Protection Agency
WPC-Permit Log In

RELEASABLE

Southern Illinois Power Cooperative
MARION, ILLINOIS

NORTH POND DISPOSAL AREA SITE PLAN UNDERGROUND UTILITIES

SCALE 1"=80'	W.O.	REVISION	DATE 9-20-27
DRAWN SBS	REF.		SHEET OF
APPROVED TKM	AS BUILT		

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EXHIBIT

EE

W1990551676A SOUTHERN ILL POWER-NEW ASH POND 03 T977EN5732 1

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PERMIT/PLAN/SPECIFICATION
MICROFILM "JACKET" INFORMATION

1. Division Code W
2. FIPS County Code 199
3. City/Township Code 055
4. Governing Body Code 1676A
5. PERMITTEE NAME (File Subject)

SOUTHERN ILL POWER-NEW ASH POND

6. File Division 03
7. IEPA Permit Number 1977-0732-

CROSS-REFERENCE INFORMATION

8. Governing Body Name

SOUTHERN ILLINOIS POWER COOP

9. ~~F/S/P Code~~ B1525
10. NPDES Number IL00

2020614

DWPC Records Unit

IL 532-0486
ADM 1081 8/78

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file

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NO.: 1977-EN-5732

DATE ISSUED: November 14, 1977

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS PREPARED BY: Burns and McDonnell

LOG NUMBERS: 5732-77

SUBJECT: SOUTHERN ILLINOIS POWER CO-OP, INC. - New Ash Pond (Marion)

PERMITTEE TO CONSTRUCT AND OWN
Southern Illinois Power Cooperative, Inc.
Route 4
Box 255
Marion, Illinois 62959

Permit is hereby granted to the above designated permittee(s) to construct and/or operate water pollution control facilities described as follows:

Installation of a 5 million cu. ft. fly ash holding pond and all necessary appurtenances, designed to treat approximately 34,500 gallons of average daily flow from the power pl[illegible] The treated water will be discharged to the Saline River via the existing discharge #001.

This Permit is issued subject to the following Special Condition(s). If such Special Condition(s) require(s) additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for issuance of a Supplemental Permit.

SPECIAL CONDITION #1: Embankments shall be seeded from the outside toe to 1 foot above the high water line on the dikes, measured on the sloped.

SPECIAL CONDITION #2: The existing fly ash holding pond shall be abandoned and covered as indicated on the submitted plan. The top soil shall be seeded to prevent erosion.

SPECIAL CONDITION #3: This permit covers construction only. Operation is covered by NPDES Permit IL0004316.

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE OF THIS PERMIT (PAGE 1a) MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:CCH:sh1064/1
cc: EPA - Region 5
Burns & McDonnell

DIVISION OF WATER POLLUTION CONTROL

[redacted]
Manager, Permit Section

2023013 - 5 - 6 - 0

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READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

1. If any statement or representation is found to be incorrect, this permit may be revoked and the permittee thereupon waives all rights thereunder.

2. During or after the construction or the installation of the facilities covered by this permit any agent duly authorized by the Illinois Environmental Protection Agency shall have the right to inspect such facilities and its operation.

3. The issuance of this permit (a) shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located; (b) does not release the permittee from any liability for damage to person or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (c) does not take into consideration the structural stability of any units or parts of the project; and (d) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or with applicable local laws, regulations or ordinances.

4. Treatment works will be operated or supervised by a duly qualified treatment works operator certified under the Regulations of the Illinois Environmental Protection Agency.

5. The facilities covered by this permit shall be constructed and operated in compliance with the provision of the Illinois Environmental Protection Act and Chapter 3 of the Rules and Regulations as adopted by the Illinois Pollution Control Board.

6. Final plans, specifications, application and supporting documents as submitted by the person indicated on Page 1 as approved shall constitute part of this permit and are identified in the records of the Illinois Environmental Protection Agency, Division of Water Pollution Control by the permit number and log number(s) designated in the heading of Page 1.

7. This Permit may be assigned or transferred without a new permit from the Illinois Environmental Protection Agency.

8. There shall be no deviations from the approved plans and specifications unless revised plans, specifications and application shall first have been submitted to the Illinois Environmental Protection Agency and a supplemental permit issued.

9. The installation shall be made under the supervision of an inspector, who is familiar with the approved plans and specifications provided by and approved by the owner, and said inspector shall require that construction complies with the plans and specifications approved by this Agency.

10. Unless otherwise stated by Special Condition, construction must be completed in three years for treatment works and two years for sewers and wastewater sources.

11. Discharges into the sanitary sewer(s) constructed under this permit shall consist of wastewater only. Storm waters shall not be permitted to enter the sanitary sewer(s). Roof and footing drains shall not be connected to the sanitary sewer(s) constructed under this permit.

12. If any Special Conditions are indicated on Page 1 which require additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for the issuance of a supplemental permit.

1932016

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FOR IEPA USE: 3/1/78
LOG # 3732-77
DATE RECEIVED:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

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OCT 19 1977
IEPA-DWPC-Records - SPFD

APPLICATION FOR PERMIT OR CONSTRUCTION APPROVAL

WPC-PS-1

1. NAME AND LOCATION:

Name of project: Southern Illinois Power Cooperative, Inc.

Municipality or Township 8 miles south of Marion County Williamson

2. BRIEF DESCRIPTION OF PROJECT: Abandonment of existing fly-ash holding pond and construction of new impoundment. Said impoundment to discharge to existing discharge 001 (Il.NPDES 0004316)

3. DOCUMENTS BEING SUBMITTED: If the project involves any of the items listed below, submit the corresponding schedule, and check the appropriate spaces.

PROJECT

Private Sewer Connection	A___	Spray Irrigation	H___
Public Sewer Extension	B___	Septic Tanks	I___
Sewer Extension Construct Only	C___	Industrial Treatment or Pretreatment	J X
Sewage Treatment Works	D___	Deepwell Injection	K___
Excess Flow Treatment	E___	Cyanide Acceptance	L___
Lift Station/Force Main	F___	Updating Cyanide Acceptance Form	M___
Sludge Disposal	G___	Waste Characteristics	N X

Plans: Title Flyash Wastewater Contr.. System Modifications

Number of Pages

Specifications: Title Impoundment (Flyash Holding)

Number of Books/Pages

Other Documents (Please Specify) SIPC Dwg. G-212 Ash Pond Area

4. This is an Application for: Construction Permit___, Operating Permit___, Joint Construction and Operating X, Cyanide Acceptance Permit___.

5. CERTIFICATIONS AND APPROVAL

5.1 Certificate by Design Engineer

I hereby certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete and accurate.

ENGINEER E. T. Stinson (NAME) 52-32609 (REGISTRATION NUMBER)

FIRM Burns & McDonnell

ADDRESS 2600 E. 63rd St. - P. O. Box 173

Kansas City, Missouri 64141 PHONE NUMBER 816-333-4375

SIGNATURE E. T. Stinson

7-160-0230-1

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5.2 Certificate by Applicant(s)

I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application.

I/We hereby agree to conform with the Standard Conditions and with any other Special Conditions made part of the Permit.

5.2.1 NAME OF APPLICANT FOR PERMIT TO CONSTRUCT Southern Illinois Power Cooperative, Inc.

Route 4 Box 255 (STREET) Marion, (CITY) Illinois (STATE) 62959 (ZIP CODE)

SIGNATURE _____ DATE _____

TITLE Executive Vice President and General Manager

5.2.2 NAME OF APPLICANT FOR PERMIT TO OWN AND OPERATE Southern Illinois Power Cooperative, Inc.

Route 4 - Box 255, (STREET) Marion, (CITY) Illinois (STATE) 62959 (ZIP CODE)

SIGNATURE _____ DATE _____

TITLE Executive Vice President and General Manager

5.3 Attested (Units of Government) N/A

DATE _____ SIGNATURE _____ TITLE _____

(CITY CLERK, VILLAGE CLERK, SANITARY DISTRICT CLERK, ET CETERA)

5.4 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or his duly authorized representative.

5.5 Certificate by INTERMEDIATE SEWER OWNER N/A

I hereby certify that the sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3 of the Regulations as adopted by the Illinois Pollution Control Board.

Name of sewer system to which this project will be tributary:

_____

NAME OF SEWER SYSTEM OWNER _____

_____

STREET CITY STATE ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

5.6 Certificate by Waste Treatment Works Owner N/A

I hereby certify that the treatment works to which this project will be tributary have adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3 of the Regulations as adopted by the Illinois Pollution Control Board.

Name and location of waste treatment works to which this project will be tributary: _____

_____

TREATMENT WORKS OWNER _____

_____

STREET CITY STATE ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

1932016

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

SCHEDULE J INDUSTRIAL TREATMENT WORKS CONSTRUCTION OR PRETREATMENT WORKS

1. NAME AND LOCATION:

1.1 Name of project Southern Illinois Power Cooperative, Inc. Marion Plant

1.2 Plant Location

1.2.1	Quarter Section	Section	Township	Range	P.M.
	N.E.	26	10S	2E	3

1.2.2 Latitude 37 ° 37 ' 31 "North
Longitude 88 ° 57 ' 00 "West

1.2.3 Name of USGS Quadrangle Map (7.5 or 15 Minutes) Goreville (15) Marion (15)

2. NARRATIVE DESCRIPTION AND SCHEMATIC WASTE FLOW DIAGRAM: (see instructions)

Discharge 001 - Flyash Pond #3 discharge. This is the flyash holding basin and is directly upstream and in tandem to the discharge pond (001). Function is to settle solids out and let water flow to 001.

2.1 PRINCIPAL PRODUCTS: electricity

2.2 PRINCIPAL RAW MATERIALS: coal

3. DESCRIPTION OF TREATMENT FACILITIES:

3.1 Submit a flow diagram through all treatment units showing size, volumes, detention times, organic loadings, surface settling rate, weir overflow rate, and other pertinent design data. Include hydraulic profiles and description of monitoring systems.

3.2 Waste Treatment Works is: Batch x, Continuous ____; No. of Batches/day /, as required No. of Shifts/day 3

3.3 Submit plans and specifications for proposed construction.

3.4 Discharge is: Existing x; Will begin on ____

4. DIRECT DISCHARGE IS TO: Receiving Stream x Municipal Sanitary Sewer ____, Municipal storm or municipal combined sewer ____. If receiving stream or storm sewer indicated complete the following:

Name of receiving stream South fork of Saline River, tributary to Saline River;
tributary to Ohio River; tributary to Mississippi River.

5. Is the treatment works subject to flooding? If so, what is the maximum flood elevation of record (in reference to the treatment works datum) and what provisions have been made to eliminate the flooding hazard? no

6. APPROXIMATE TIME SCHEDULE: Estimated construction schedule:

Start of Construction October 1, 1977 Date of Completion November 30, 1977
Operation Schedule Not applicable; Date Operation Begins immediately after construction
100% design load to be reached by year 1978

WPC-158

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7. DESIGN LOADINGS

7.1 Design population equivalent (one population equivalent = 100 gallons per day sewage flow containing 0.17 pounds of BOD_5 and 0.20 pounds of suspended solids;

BOD N/A ; Suspended Solids N/A ; Flow N/A .

7.2 Design Average Flow Rate Flow is intermittent. Pond acts as surge MGD.

7.3 Design Maximum Flow Rate 2.9 basin so that control can be maintained. MGD.

7.4 Design Minimum Flow Rate 0.0 MGD.

7.5 Minimum 7-day, 10-year low flow 0.0 cfs 0.0 MGD.

Minimum 7-day, 10-year flow obtained from U.S.D I Geological Survey Report for Il. Water Resources Data. Data taken from Gauging Sta. located 4-1/2 miles S.W. of Carrier Mills, Il. on Hwy. 45 (SW 1/4 of NE1/4 of Sec. 20, T105, R3E Min. Daily Discharge 29-30 July 66 = 0.6 cfs Max. Daily Discharge 28 April 66 = 2940 cfs

7.6 Dilution ratio N/A ; .

8. FLOW TO TREATMENT WORKS (if existing):

8.1 Flow (last 12 months)

8.1.1 Average Flow 0.335 MGD *

8.1.2 Maximum Flow 0.452 MGD *

8.2 Equipment used in determing above flows Pumping times and ISCO Model 1700 Flow meter w/rectangular weir.

9. Has a preliminary engineering report for this project been submitted to this Agency for Approval?

YES ___ NO X If so, when was it submitted and approved. Date Submitted

Certification#

Dated

10. List Permits previously issued for the facility: Permit #1969-EB-707 (Discharge 001) NPDES IL 0004316

11. Describe provisions for operation during contingencies such as power failures, flooding, peak loads, equipment failure, maintenances shut-downs and other emergencies. This pond will be used for back up treatment only. The existing flows will be discontinued because of the SO_2 scrubber which will produce a stable product. It will contain our flyash, bottom ash, and spent limestone slurry cake from the SO_2 scrubber. When the scrubber malfunctions ashes must be sluiced in the conventional manner as we are doing now.

12. Complete and submit Schedule G if sludge disposal will be required by this facility.

13. WASTE CHARACTERISTICS: Schedule N must be submitted.

14. TREATMENT WORKS OPERATOR CERTIFICATION: List names and certification numbers of certified operators:

Carl M. Stafford, Industrial Sewage Treatment Works Operator

* Values given are actual. These values taken from Daily Monitoring Reports over past 8 months.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

SCHEDULE N WASTE CHARACTERISTICS Discharge 001

1. Name of Project Southern Illinois Power Cooperative, Inc. (Marion Station)

2. FLOW DATA

	EXISTING	PROPOSED-DESIGN
2.1 Average Flow (gpd)	320,000	34,500
2.2 Maximum Daily Flow (gpd)	500,000	2,900,000

2.3 TEMPERATURE

Time of year	Ave. Intake Temp. F	Avg. Effluent Temp. F	Max. Intake Temp. F	Max. Effluent Temp. F	Max. Temp. Outside Mixing Zone F
SUMMER	75	76.0	80	81	82
WINTER	45	46.0	48	49	50

2.4 Minimum 7-day, 10-year flow: 0.0 cfs 0.0 MGD.

2.5 Dilution Ratio: N/A ;

2.6 Stream flow rate at time of sampling N/A cfs N/A MGD.

3. CHEMICAL CONSTITUENT Existing Permitted Conditions X ; Existing conditions ; Proposed Permitted Conditions X .

Type of sample: grab (time of collection); X composite (Number of samples per day)

(see instructions for analyses required)

All effluent quality parameters are to be in accordance with N.P.D.E.S. Permit Il. #0004316 (NTF=Not Treated For)

Constituent	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l)	Max.	UPSTREAM SAMPLES (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Ammonia Nitrogen (asN)					
Arsenic (total)					
Barium					
Boron		2.0	5.0	< 1	0.1
BOD_5		NTF	NTF	NTF	
Cadmium					
Carbon Chloroform Extract					
Chloride					
Chromium (total hexavalent)		NTF	NTF		
Chromium (total tribalent)		NTF	NTF		
Copper		NTF	NTF		
Cyanide (total)					
Cyanide (readily released @150°F & pH 4.5)					
Dissolved Oxygen					
Fecal Coliform					

I 2 9 - 0 0 2 3 6 1

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	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l)	Max.	UPSTREAM (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Fluoride					
Hardness (as $CaCO_3$)					
Iron (total)			2.0	0.6	0.4
Lead					
Manganese				0.40	0.12
MBAS					
Mercury					
Nickel					
Nitrates (asN)					
Oil & Grease (hexane solubles or equivalents)			15.0		
Organic Nitrogen (as N)					
pH			6.0-9.0	7.5	7.3
Phenols					
Phosphorous (as P)					
Radioactivity					
Selenium					
Silver					
Sulfate					
Suspended Solids			15.0	36	
Total Dissolved Solids			*	200	110
Zinc					
Others					

* Total Dissolved Solids will not be increased more than 750mg/L above the background T.D.S.

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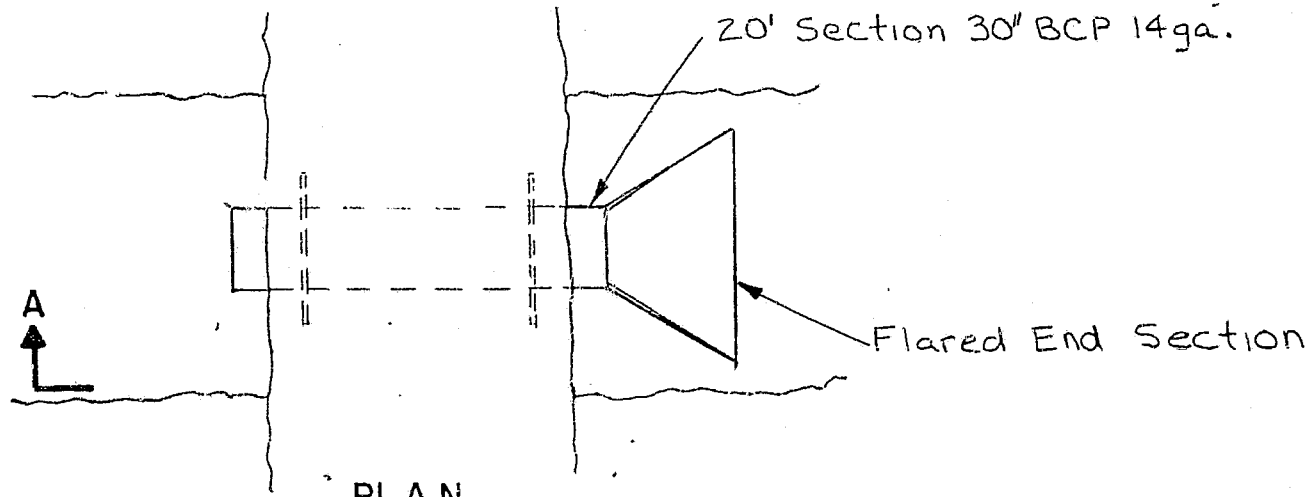
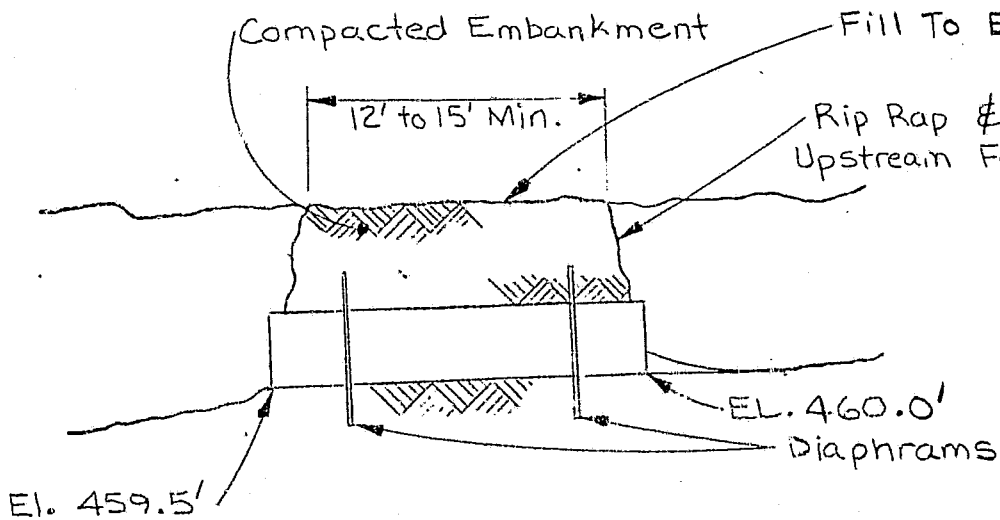


PLAN



SECTION A—A

BG

SO. ILLINOIS POWER CO-OP MARION, ILL.		
DRAINAGE DETAIL CONTRACTORS ACCESS ROAD		
SCALE 1" = 10'	W.O. 77-1644	DATE 10-13-77
DRAWN SBS		DWG. NO. A-264

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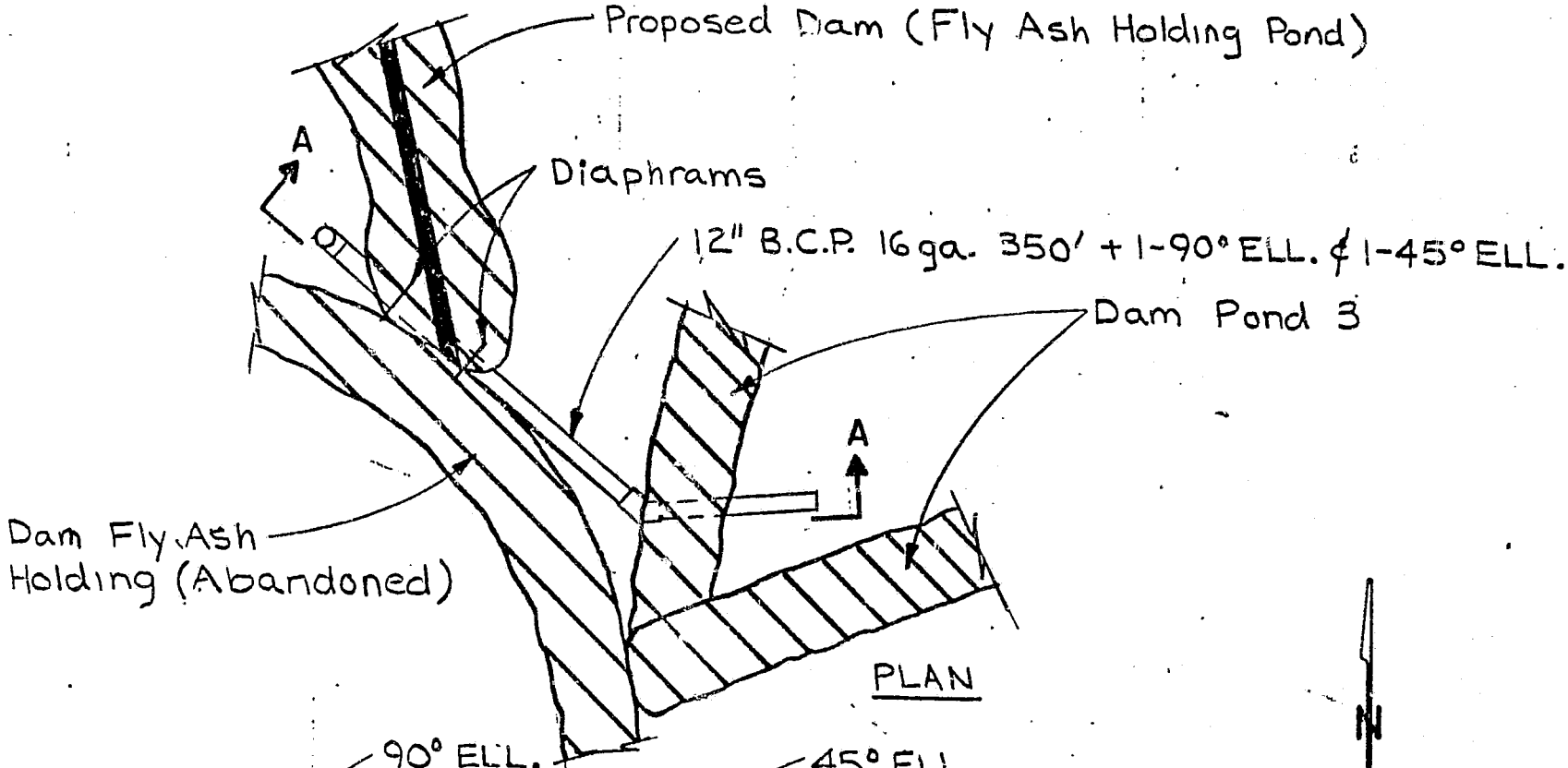
1932021624



BG

SO. ILLINOIS POWER CO-OP
MARION, ILL.

DRAINAGE DETAIL PROPOSED FLY ASH HOLDING

SCALE None	W.O. 77-1644	DATE 10-13-77
DRAWN SBS		DWG. NO. A-263

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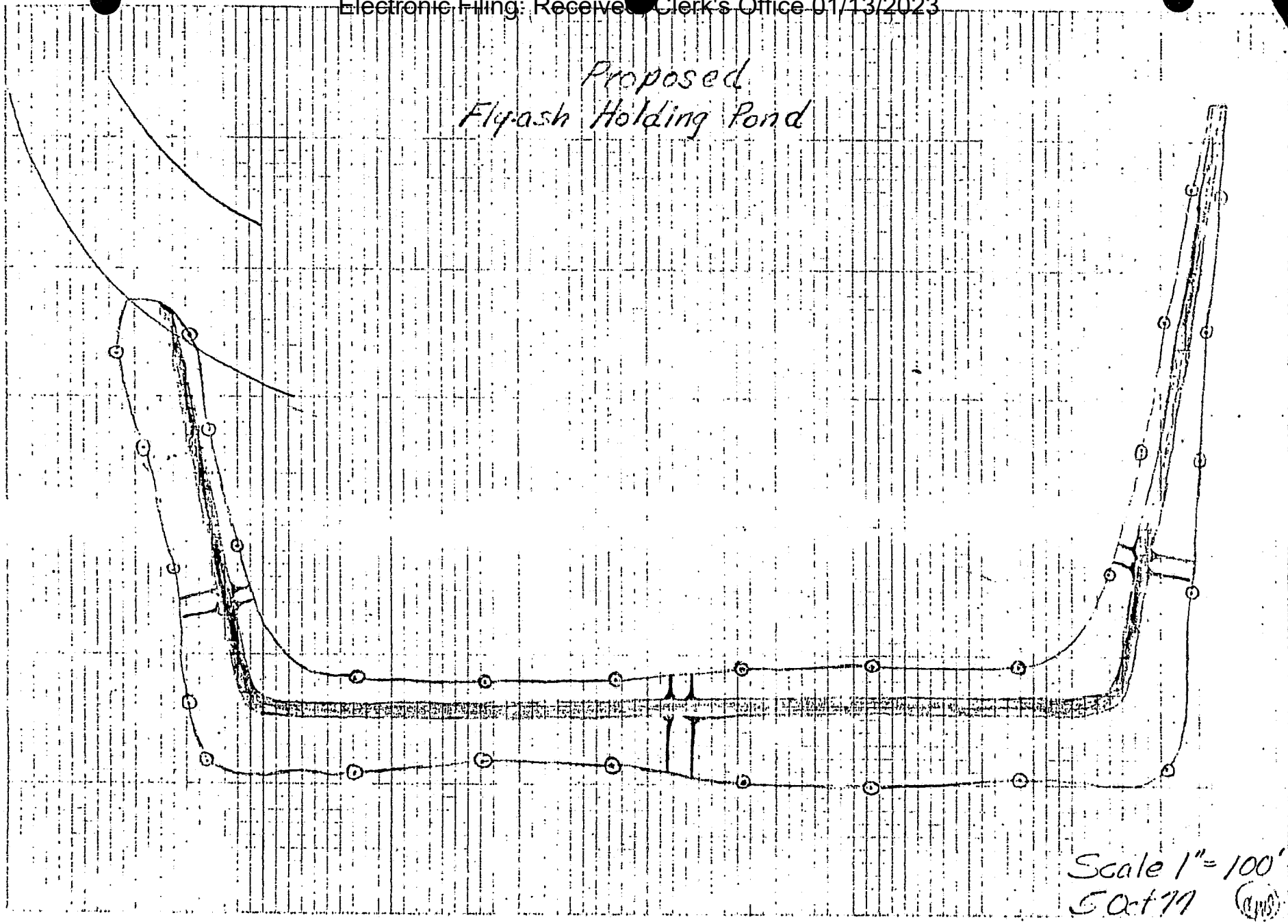
19320001625



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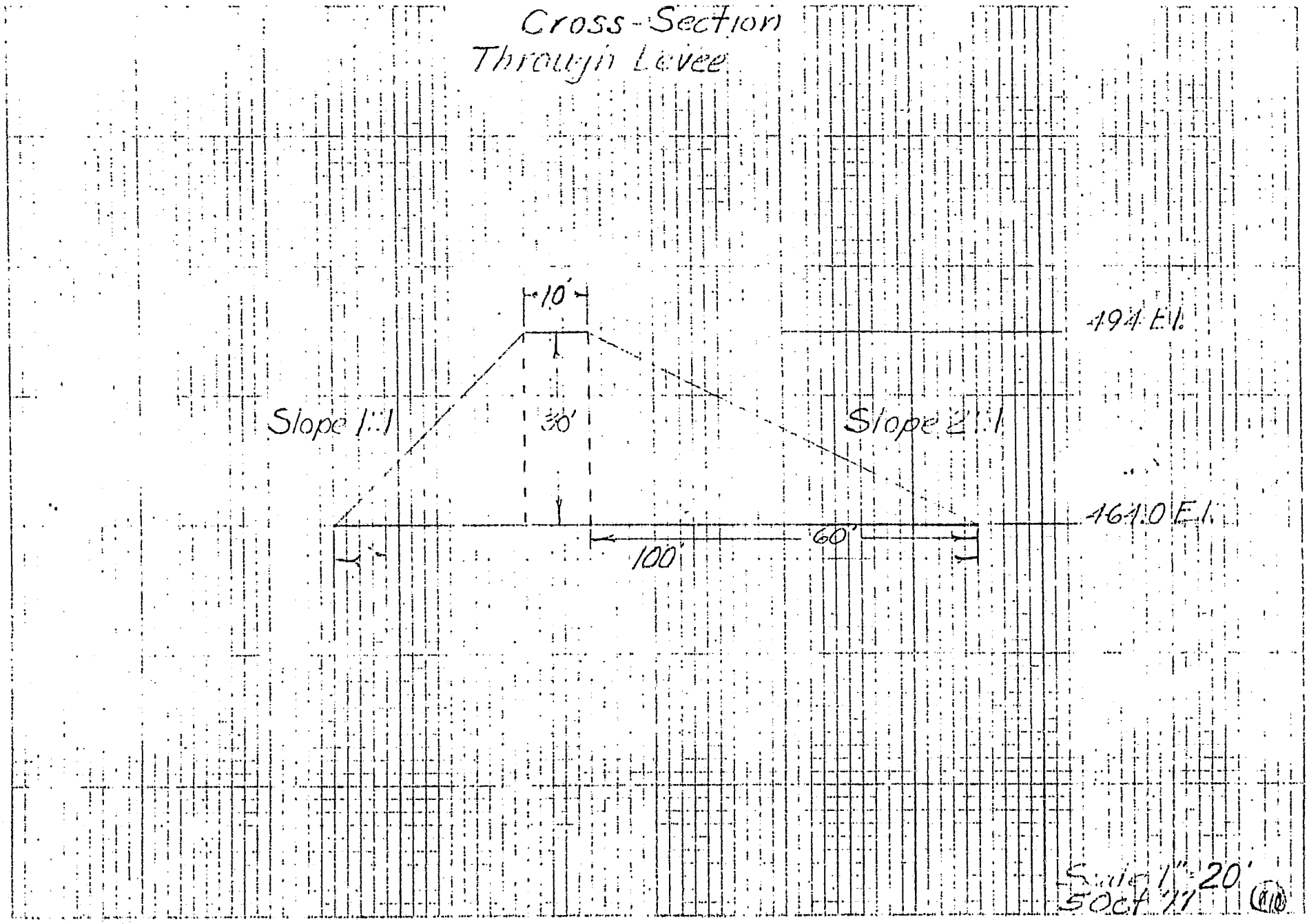

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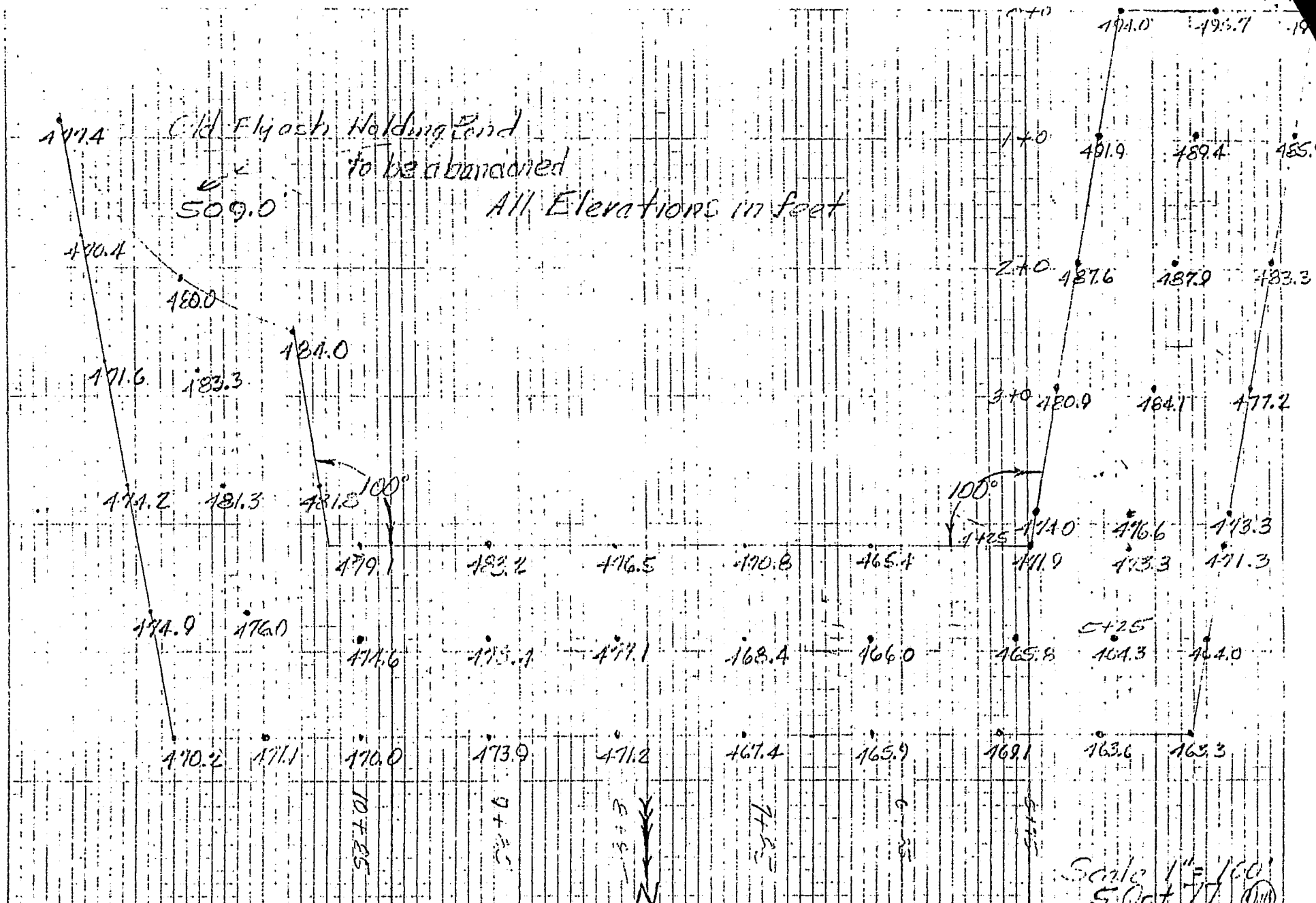

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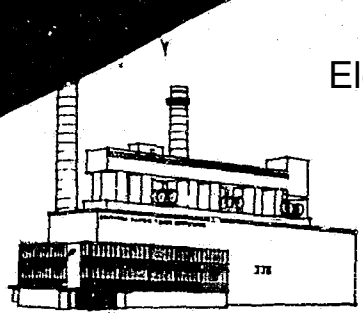

SOUTHERN ILLINOIS POWER CO-OP.

RT. 4 - BOX 255 • MARION, ILLINOIS 62959 • AREA CODE 618 / ~~993-8123~~ 964-1448

October 17, 1977

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OCT 19 1977
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
STATE OF ILLINOIS

Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section
2200 Churchill Road
Springfield, Illinois 62706

Gentlemen:

Enclosed please find our application for permit to construct and operate an impoundment. Please note the necessary forms have been completed and enclosed along with our Drawing G-212.

If there are any questions please do not hesitate to contact me.

Very truly yours,

Thomas Clevenger
Executive Vice President and
General Manager

TC/vw

Enclosures

5732-17

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2016032600139

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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

IEPA - DIVISION OF RECORDS MANAGEMENT
RELEASABLE

APR 06 2021

REVIEWER: RDH

10D

1990555005
Southern Illinois Power
10825 Lake of Egypt Rd.
Marion, IL 62959

On-Site Permit Exempt "815" Facility
2020 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, 2021** and covers the period of January 1, 2020 thru December 31, 2020.

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)

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

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EXHIBIT

GG

WI99860167GA SOUTHERN ILL POWER-FLY ASH PND 03 1981EN2776 1

W1990551676A SOUTHERN ILL POWER CO-OP-FLY ASH 15 1981EN2776 1

W1990551676A SOUTHERN ILL POWER CO-OP-FLY ASH 15 1981EN2776 2

Electronic Filing - Received, Clerk's Office, 01/10/2020

Electronic Filing: Received, Clerk's Office 01/13/2023

PERMIT/PLAN/SPECIFICATION
MICROFILM JACKET INFORMATION

1. DIVISION CODE W
2. FIPS COUNTY CODE 199
3. CITY/TOWNSHIP CODE 860
4. GOVERNING BODY CODE 1676A
5. PERMITTEE NAME (FILE SUBJECT)
   SOUTHERN ILL POWER-FLY ASH PND
6. FILE DIVISION 03
7. IEPA PERMIT NUMBER 1981EN27761

CROSS REFERANCE INFORMATION

8. GOVERNING BODY NAME
   SOUTHERN ILLINOIS POWER COOP
9. F/S/P/ CODE B1525A
10. NPDES NUMBER IL0004316

2023012500196

Electronic Filing: Received, Clerk's Office 01/13/2023

RU

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NO.: 1981-EN-2776-1 DATE ISSUED: October 13, 1981

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS PREPARED BY: Southern Illinois Power Cooperative

LOG NUMBERS: 3052-81

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE -- Marion Facility -- Supplemental Permit to the Fly Ash Storage Pond Extension

PERMITTEE TO CONSTRUCT, OWN AND OPERATE
Southern Illinois Power Cooperative
Route 4 -- Box 255
Marion, Illinois 62959

Supplemental permit is hereby granted to the above designated permittee(s) to construct and/or operate water pollution control facilities, which were previously approved under Permit #1981-EN-2776 dated September 29, 1981. These facilities have been revised as follows:

During the construction of the fly ash storage pond extension, the treated bottom ash discharge from Pond #4 (outfall 002) is to be temporarily diverted to the existing fly ash holding pond, which discharges into Pond #3. In addition, the fly ash discharge line is to be temporarily diverted from the existing fly ash holding pond to an adjacent abandoned fly ash storage pond, which discharges into Pond #3. The combined bottom ash/fly ash discharge will be released from Pond #3 through outfall 001.

All Special Conditions on the original permit issued are also applicable to this permit unless specifically deleted or revised in this permit.

This Permit is issued subject to the following Special Condition(s). If such Special Condition(s) require(s) additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for issuance of a Supplemental Permit.

SPECIAL CONDITION 1: The combined bottom ash/fly ash discharge through outfall 001 shall comply with the conditions of NPDES permit number IL0004316.

SPECIAL CONDITION 2: This temporary diversion of the bottom ash line and the fly ash line is only permitted during the construction of the fly ash storage pond extension. Upon completion of the fly ash storage pond extension, the placement of the bottom ash line and the fly ash line will be as permitted by Water Pollution Control Permit 1981-EN-2776.

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:DEU:jk/2081c,1
cc: EPA - Region 7

DIVISION OF WATER POLLUTION CONTROL

Thomas G. McSwiggin, P.E.
Manager, Permit Section

WPC-146 (Rev. 11-79)

2190203

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year after date of issuance unless construction or development on this project has started on or prior to that date. In any event, construction must be completed in three years for treatment works and two years for sewers and wastewater sources, unless otherwise stated by special condition.
2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.
4. The permittee shall allow any agent duly authorized by the Agency upon the presentation of credentials:
   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit.
   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit.
   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit.
   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants.
   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit
   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;
   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;
   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;
   d. does not take into consideration or attest to the structural stability of any units or parts of the project;
   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the Agency before the facility or equipment covered by this permit is placed into operation.
7. These standard conditions shall prevail unless modified by special conditions.
8. The Agency may file a complaint with the Board for suspension or revocation of a permit:
   a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed; or
   b. upon finding that any standard or special conditions have been violated; or
   c. upon any violation of the Environmental Protection Act or any Rule or Regulation effective thereunder as a result of the construction or development authorized by this permit.

5219000031

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

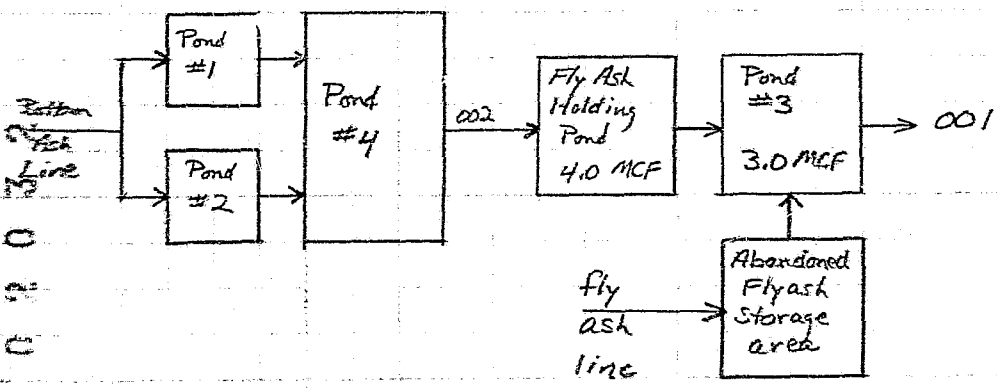
Subject Southern Illinois Power Co-op

Data Log # 3052-81

Reviewed by DEH Date 10-7-81

Application to temporarily divert the effluent from Pond #4 (final bottom ash pond) to the existing fly ash holding pond and then to Pond #3 (final fly ash pond); and the temporary diversion of the fly ash sluice water to an abandoned fly ash pond prior to discharge to pond #3.

Flow Diagram



Diversion is expected only to last only 3-4 weeks. Current flow estimations by SIPCO indicate that the discharge from Pond #3 will only be increased by 1.5 MGD by the addition of the bottom ash discharge. Since the bottom ash discharge into Pond #3 should be ≤ 15.0 mg/l because of its treatment in the previous ash ponds and since the fly ash discharge will receive treatment in the abandoned fly ash area, discharge 001 should remain in compliance.

Roger Cruse of CAS had no objections to the above flow scheme. Dick Myott of SIPC stated that the discharge from 001 would be closely monitored during this 3-4 week period to maintain compliance.

Action ⇒ Permit

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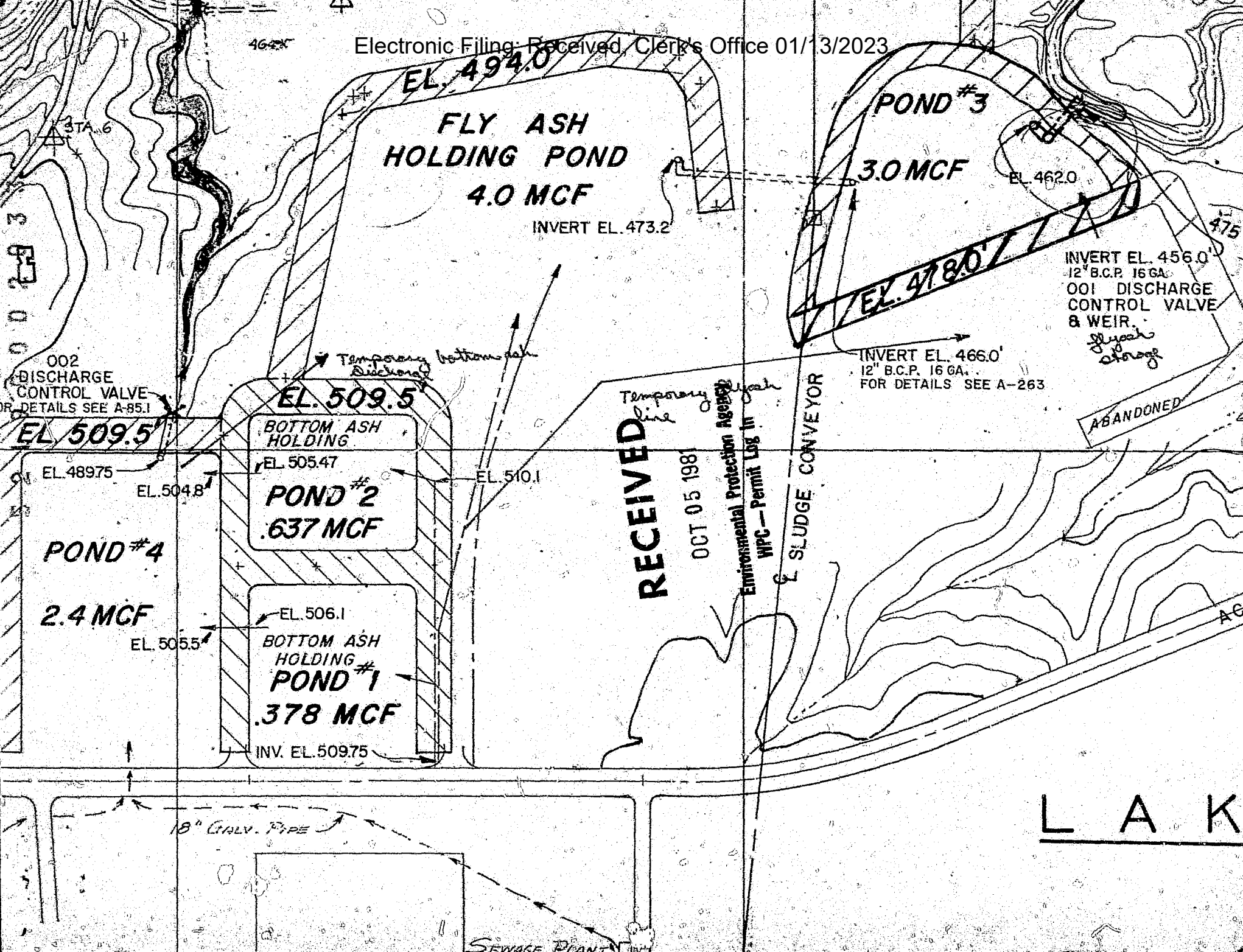

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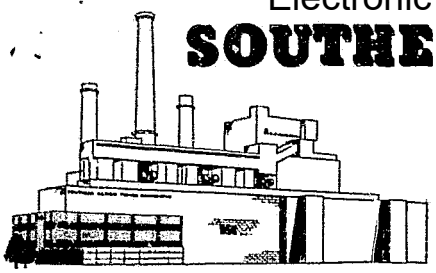


SOUTHERN ILLINOIS POWER CO-OP.

ROUTE 4 – BOX 255 • MARION, ILLINOIS 62959
AREA CODE 618/964-1448

October 1, 1981

3052-81

RECEIVED
OCT 05 1981
Environmental Protection Agency
WPC—Permit Log In

Mr. Thomas McSwiggin
Illinois EPA
2200 Churchill Road
Springfield, Il. 62706

Re: NPDES permit number IL0004316

Dear Mr. McSwiggin:

As you know, we were recently issued a water pollution control permit (No. 1981-EN-2776) to allow construction of a flyash storage pond extension.

To allow our continued operation during the construction of this project, we are requesting your approval of two temporary diversions.

As we detailed in our previous letter, we have reached the end of our storage in the existing flyash pond. As a temporary measure while the extension is being built, we are using a previously abandoned containment as a settling pond (see attached print). The wastewater is still being routed through pond #3 and discharged through outfall 001.

The second modification involves discharging the water which normally goes to outfall 002 through outfall 001. This action would assist the contractor in removing the unstable material and in laying the pipeline. At present we are in our fall outages, so the amount of water thus transfered would be on the order of one to one and 1/2 million gallons per day.

We trust that these temporary modifications will meet with your approval.

Very truly yours,

Richard Myott

Richard G. Myott
Environmental Department Manager

RGM/mp

Enclosure

Electronic Filing: Received, Clerk's Office 01/13/2023

EXHIBIT

HH

Electronic Filing: Received, Clerk's Office 01/13/2023

INFORMATION TO BE CONTAINED ON NPDES MICROFILM JACKET

OWNERSHIP CODE: PRI FACILITY TYPE: 0

1. DIVISION CODE: W

2. FIPS COUNTY CODE: 199

3. CITY/TOWNSHIP CODE: 860

4. GOVERNING BODY CODE: 1670A

5. PERMITTEE NAME (FILE SUBJECT)

SOUTHERN ILL POWR COOP-MARION / 0385

6. FILE DIVISION: 16

7. NPDES NUMBER: IL0004316

OTHER INFORMATION NECESSARY FOR CROSS-REFERENCING

8. GOVERNING BODY NAME
SOUTHERN ILLINOIS POWER COOP

F/S/P CODE: 3-1525-A- - - - - - - - - -

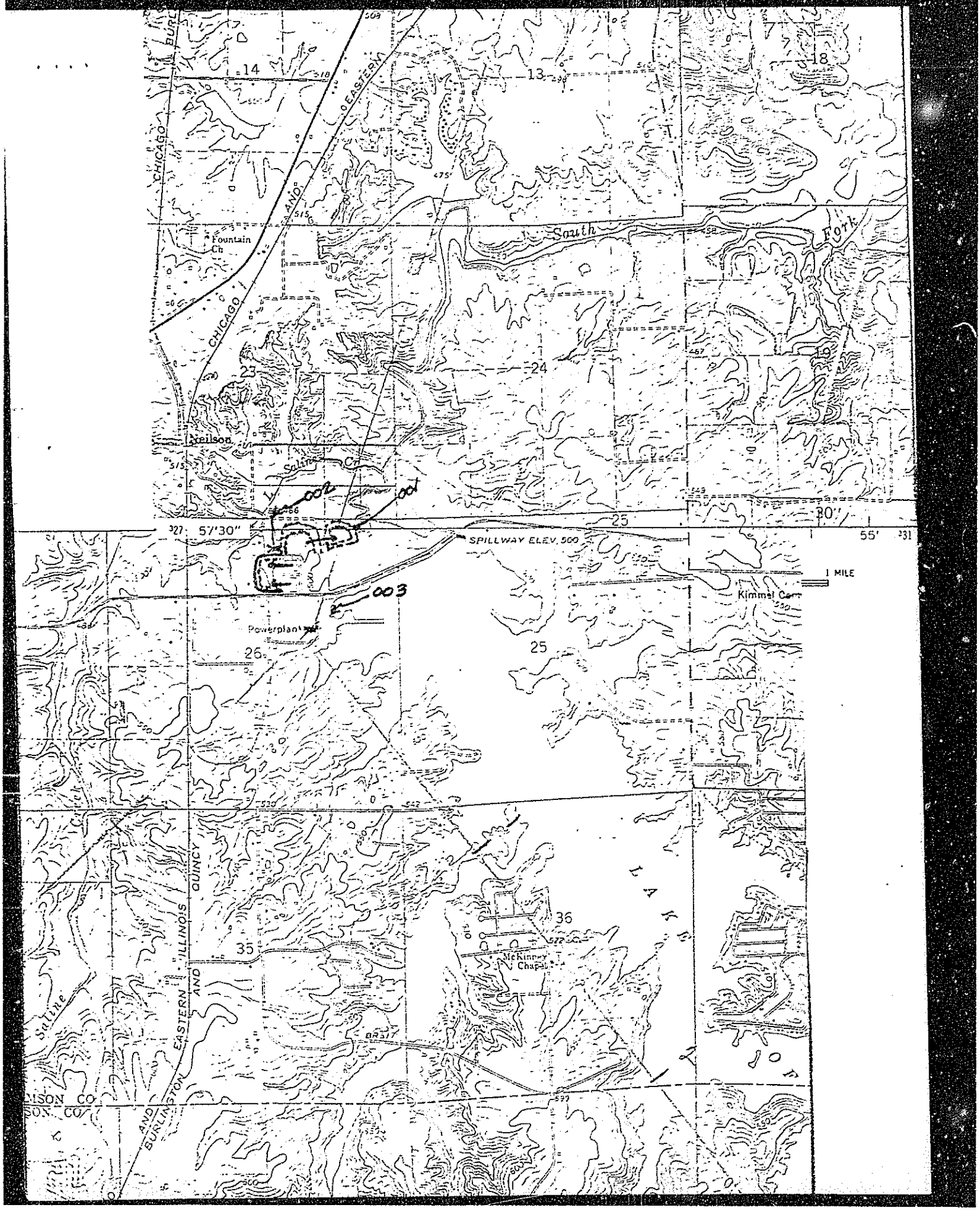
10. DATE IDENTIFIED IN THE FIELD REFERS TO:

A. PERMIT ISSUE DATE: 03-29-85

B. PERMIT CANCELLATION DATE: - - - - - -

C. NO PERMIT REQUIRED DATE: - - - - - -

11. PERMIT EXPIRATION DATE: 11-01-89


CHICAGO, BURLINGTON AND QUINCY
EASTERN ILLINOIS
Fountain Ch
South Fork
Neilson
Salt Fork
001
002
003
SPILLWAY ELEV. 500
57'30"
1 MILE
Kimmel Cem
Powerplant
McKinney Chapel
LAKE
14
13
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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
NPDES UNIT PERMIT SECTION
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706
217/782-0610

Date Received by IEPA

RENEWAL OF NPDES APPLICATION

WPC-PS-3

1. Name of Applicant — Southern Illinois Power Cooperative

2. Address of Applicant — Rt. 4 - Box 255, Marion, IL 62959

   Telephone Number — (618)964-1448

3. Name of Facility — Southern Illinois Power Cooperative

4. Existing NPDES Permit #IL — IL0004316

   Date of Issuance — May 25, 1977

   Expiration Date — June 25, 1980

5. The map described in Item 3 of the instructions must accompany any renewal request unless it was submitted pursuant to the October 24, 1977 memorandum or the application will be deemed to be incomplete. — Map already submitted? x Yes ___ No

A. Indicate the following both here and on the map described in item 5 above.

   Specific location where effluent samples are taken. (See instructions for examples.) — See enclosed maps

B. Specific location where influent samples are taken. (See instructions for examples.) — See enclosed maps

6. Has a substantial change in flow rates, production changes, degree of treatment or effluent quality taken place since the last NPDES Permit was issued? ___ Yes x No.

7. I/We hereby request renewal of the NPDES Permit as indicated above.

Signature [signature]

Printed Name of Person Signing — Thomas Clevenger

Title — Executive Vice President and General Manager

Dated — 12/24/79

FORM APPROVED
OMB No. 158-R0100

FOR AGENCY USE

9. All Facility Discharges and other Losses; Number and Discharge (see instructions) Volume. Specify the number of discharge points and the volume of water discharged or lost from the facility according to the categories below. Estimate average volume per day in thousand gallons per day.

		Number of Discharge Points		Total Volume Used or Discharged, Thousand Gal/Day
Surface Water	109a1	3	109a2	131,419.4
Sanitary wastewater transport system	109b1	--	109b2	0.7
Storm water transport system	109c1	--	109c2	--
Combined sanitary and storm water transport system	109d1	--	109d2	0.7
Surface impoundment with no effluent	109e1	--	109e2	--
Underground percolation	109f1	--	109f2	--
Well injection	109g1	--	109g2	--
Waste acceptance firm	109h1	--	109h2	--
Evaporation	109i1	--	109i2	34.7
Consumption	109j1	--	109j2	--
Other*	109k1		109k2	4,599.0
Facility discharges and volume Total Item 9.	109l1		109l2	131,419.4
*If there are discharges to 'other,' specify.	109m1	Wastewater for ash sluicing		

10. Permits, Licenses and Applications
List all existing, pending or denied permits, licenses and applications related to discharges from this facility (see instructions).

110	Issuing Agency	For Agency Use	Type of Permit or License	ID Number	Date Filed YR/MO/DA	Date Issued YR/MO/DA	Date Denied YR/MO/DA	Expiration Date YR/MO/DA
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1.	IEPA		Operating	199856AAC	79-05-11	79-08-07	NA	81-08-03
2.	USEPA		N.P.D.E.S	0004316	74-07-30	77-05-25	NA	80-06-25
3.								

11. Maps and Drawings
Attach all required maps and drawings to the back of this application (see instructions)

12. Additional Information

112 Item Number	Explanation
	NONE

FORM APPROVED
OMB No. 158-R0109

STANDARD FORM C — MANUFACTURING AND COMMERCIAL

FOR AGENCY USE

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each discharge indicated in Section I, Item 9, that is to surface waters. This includes discharges to municipal sewerage systems in which the wastewater does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. SEPARATE DESCRIPTIONS OF EACH DISCHARGE ARE REQUIRED EVEN IF SEVERAL DISCHARGES ORIGINATE IN THE SAME FACILITY. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name		
a. Discharge Serial No. (see instructions)	201a	001
b. Discharge Name Give name of discharge, if any. (see instructions)	201b	Fly Ash Pond Discharge
c. Previous Discharge Serial No. If previous permit application was made for this discharge (see Item 4, Section I), provide previous discharge serial number.	201c	NA
2. Discharge Operating Dates		
a. Discharge Began Date If the discharge described below is in operation, give the date (within best estimate) the discharge began.	202a	63 10 (YR MO)
b. Discharge to Begin Date If the discharge has never occurred but is planned for some future date, give the date (within best estimate) the discharge will begin.	202b	NA (YR MO)
c. Discharge to End Date If discharge is scheduled to be discontinued within the next 5 years, give the date (within best estimate) the discharge will end.	202c	NA (YR MO)
3. Engineering Report Available Check if an engineering report is available to reviewing agency upon request. (see instructions)	203	☒
4. Discharge Location Name the political boundaries within which the point of discharge is located.		Agency Use
State	204a	Illinois — 204d
County	204b	Williamson — 204e
(if applicable) City or Town	204c	8 miles South of Marion — 204f
5. Discharge Point Description Discharge is into (check one): (see instructions)		
Stream (includes ditches, arroyos, and other intermittent watercourses)	205a	☒ STR
Lake		☐ LKE
Ocean		☐ OCE
Municipal Sanitary Wastewater Transport System		☐ MTS
Municipal Combined Sanitary and Storm Transport System		☐ MCS

EPA Form 7550-23 (7-73)

This section contains 9 pages.

DISCHARGE SERIAL NUMBER

001

FORM APPROVED
OMB No. 158-R0100

FOR AGENCY USE

13. Activity Description Give a narrative description of activity producing this discharge.(see instructions)

213a Fly ash disposal system consists of two (2) holding ponds in tandem. Each pond has inverted drain which skims waste water from the surface only and allows fly ash to precipitate. Waste water control is good and well within the permit guidelines. These ponds when full cannot be cleaned readily and since there is no demand presently for the material must be covered and abandoned.

14. Activity Causing Discharge For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production.(see instructions)

a. Raw Materials NA

214a	SIC Code (1)	Name (2)	Maximum Amount/Day (3)	Unit (See Table I) (4)	Shared Discharges (Serial Number) (5)

b. Products

214b	SIC Code (1)	Name (2)	Maximum Amount/Day (3)	Unit (See Table I) (4)	Shared Discharges (Serial Number) (5)
	4931	Electricity	6.55	1000 MWD	None
	4961	Steam	45.82	10^6#	

DISCHARGE SERIAL NUMBER

001

FOR AGENCY USE

15 Waste Abatement:

a. Waste Abatement Practices: Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a Narrative: (See A-85 and 213a) As fly ash fills up primary receiving pond (1 ft.) sections of pipe are added to keep inverted drain skimming the surface water only. Before pond is full a new pond is built and an inverted drain installed and piped to the secondary pond. If an air heater is water washed in the plant, hydrated lime is fed concurrently for PH control.

b. Waste Abatement Codes: Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b (1) PSEDIM, (2) CPHADJ, (3) _____,
(4) _____, (5) _____, (6) _____,
(7) _____, (8) _____, (9) _____,
(10) _____, (11) _____, (12) _____,
(13) _____, (14) _____, (15) _____,
(16) _____, (17) _____, (18) _____,
(19) _____, (20) _____, (21) _____,
(22) _____, (23) _____, (24) _____,
(25) _____.

DISCHARGE SERIAL NUMBER

002

FORM APPROVED
OMB No. 158-R0109

FOR AGENCY USE

13. Activity Description Give a narrative description of activity producing this discharge.(see instructions)

213a

Bottom Ash Disposal System consists of two (2) holding ponds in tandem. Each pond has inverted drain which skims waste water from the surface only and allows bottom ash to be precipitated. Waste water control is excellent. We have two (2) primary ponds. We use one and clean the other. There is presently a great demand for bottom ash. The State Highway Department uses it for skid control on icy roads. Contractors who construct sand filters for septic systems in areas where soil does not percolate. The cement industry is using it as an admixture to class 2 cement. We now need no land to dispose of this ash which comprises 75% of our ash.

14. Activity Causing Discharge For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the Instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production.(see instructions)

a. Raw Materials

N A

214a	SIC Code (1)	Name (2)	Maximum Amount/Day (3)	Unit (See Table I) (4)	Shared Discharges (Serial Number) (5)

b. Products

214b	SIC Code (1)	Name (2)	Maximum Amount/Day (3)	Unit (See Table I) (4)	Shared Discharges (Serial Number) (5)
	4931	Electricity	6.55	1000 MWD	None
	4961	Steam	45.82	10^6 #	

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DISCHARGE SERIAL NUMBER

002

FOR AGENCY USE

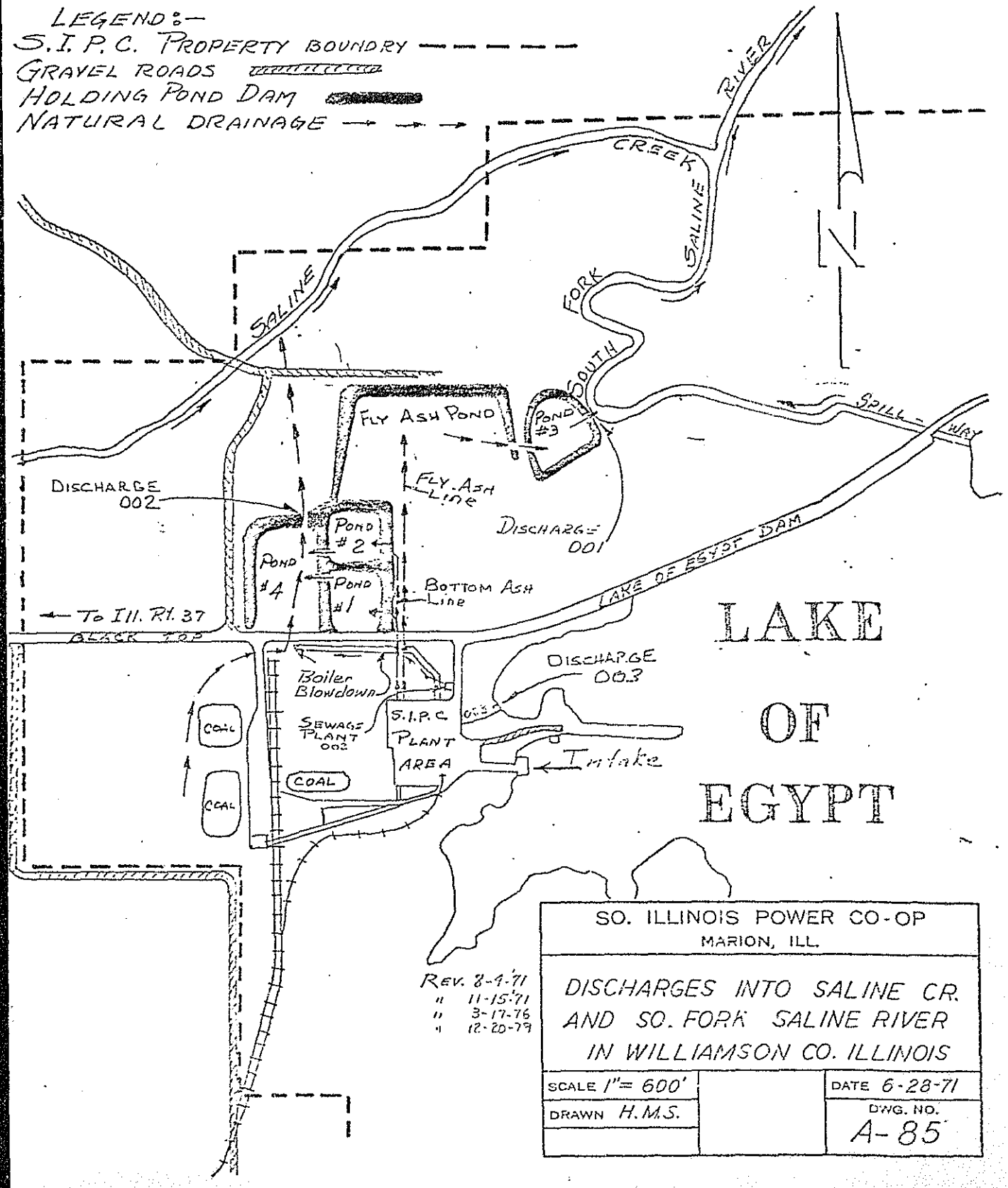
15 Waste Abatement:

a. Waste Abatement Practices Describe the waste abatement practices used on this discharge with a brief narrative. (see instructions)

215a Narrative: (See A-85 & 213a) We have two (2) primary bottom ash ponds in tandem with pond #4. We use one pond and clean the other. Control of waste water is excellent.

b. Waste Abatement Codes Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b (1) PSEDIM, (2) CPHADJ, (3) _____,
(4) _____, (5) _____, (6) _____,
(7) _____, (8) _____, (9) _____,
(10) _____, (11) _____, (12) _____,
(13) _____, (14) _____, (15) _____,
(16) _____, (17) _____, (18) _____,
(19) _____, (20) _____, (21) _____,
(22) _____, (23) _____, (24) _____,
(25) _____.



Rev. 8-9-71	
" 11-15-71	
" 3-17-76	
" 12-20-79	

SO. ILLINOIS POWER CO-OP
MARION, ILL.

DISCHARGES INTO SALINE CR. AND SO. FORK SALINE RIVER IN WILLIAMSON CO. ILLINOIS

SCALE 1"= 600'		DATE 6-28-71
DRAWN H.M.S.		DWG. NO. A-85

DISCHARGE SERIAL NUMBER

003

FORM APPROVED
OMB No. 158-R0100

FOR AGENCY USE

13. Activity Description Give a narrative description of activity producing this discharge.(see instructions)

213a

This is the non contact cooling water for steam condensing. The flows for 001 and 002 are tapped off this flow in the plant and are not returned to the Lake. The only pollution of this flow is thermal. This flow is also shot fed with liquid chlorine to prevent sliming in pumps and main steam condensers.

14. Activity Causing Discharge For each SIC Code which describes the activity causing this discharge, supply the type and maximum amount of either the raw material consumed (Item 14a) or the product produced (Item 14b) in the units specified in Table I of the instruction Booklet. For SIC Codes not listed in Table I, use raw material or production units normally used for measuring production.(see instructions)

a. Raw Materials

N A

	SIC Code (1)	Name (2)	Maximum Amount/Day (3)	Unit (See Table I) (4)	Shared Discharges (Serial Number) (5)
214a					

b. Products

	SIC Code (1)	Name (2)	Maximum Amount/Day (3)	Unit (See Table I) (4)	Shared Discharges (Serial Number) (5)
214b	4931	Electricity	6.55	1000 MWH	None
	4961	Steam	45.82	10^6 #	

DISCHARGE SERIAL NUMBER

003

FOR AGENCY USE

15 Waste Abatement

a. Waste Abatement Practices
Describe the waste abatement practices used on this discharge in a brief narrative. (see instructions

215a Narrative. (See 213a this document)

Liquid chlorine is fed to the suction of intake water pumps for slime control. Since these organisms do not thrive at temperatures of 55° F or less we do not chlorinate during January, February, March and December. During the other months chlorine is injected once each shift for ten minutes. The injection rate is adjusted to give 0.2 ppm maximum at the discharge 003.

b. Waste Abatement Codes
Using the codes listed in Table II of the Instruction Booklet, describe the waste abatement processes for this discharge in the order in which they occur if possible.

215b (1) CCLDIS, (2) _____, (3) _____,
(4) _____, (5) _____, (6) _____,
(7) _____, (8) _____, (9) _____,
(10) _____, (11) _____, (12) _____,
(13) _____, (14) _____, (15) _____,
(16) _____, (17) _____, (18) _____,
(19) _____, (20) _____, (21) _____,
(22) _____, (23) _____, (24) _____,
(25) _____.

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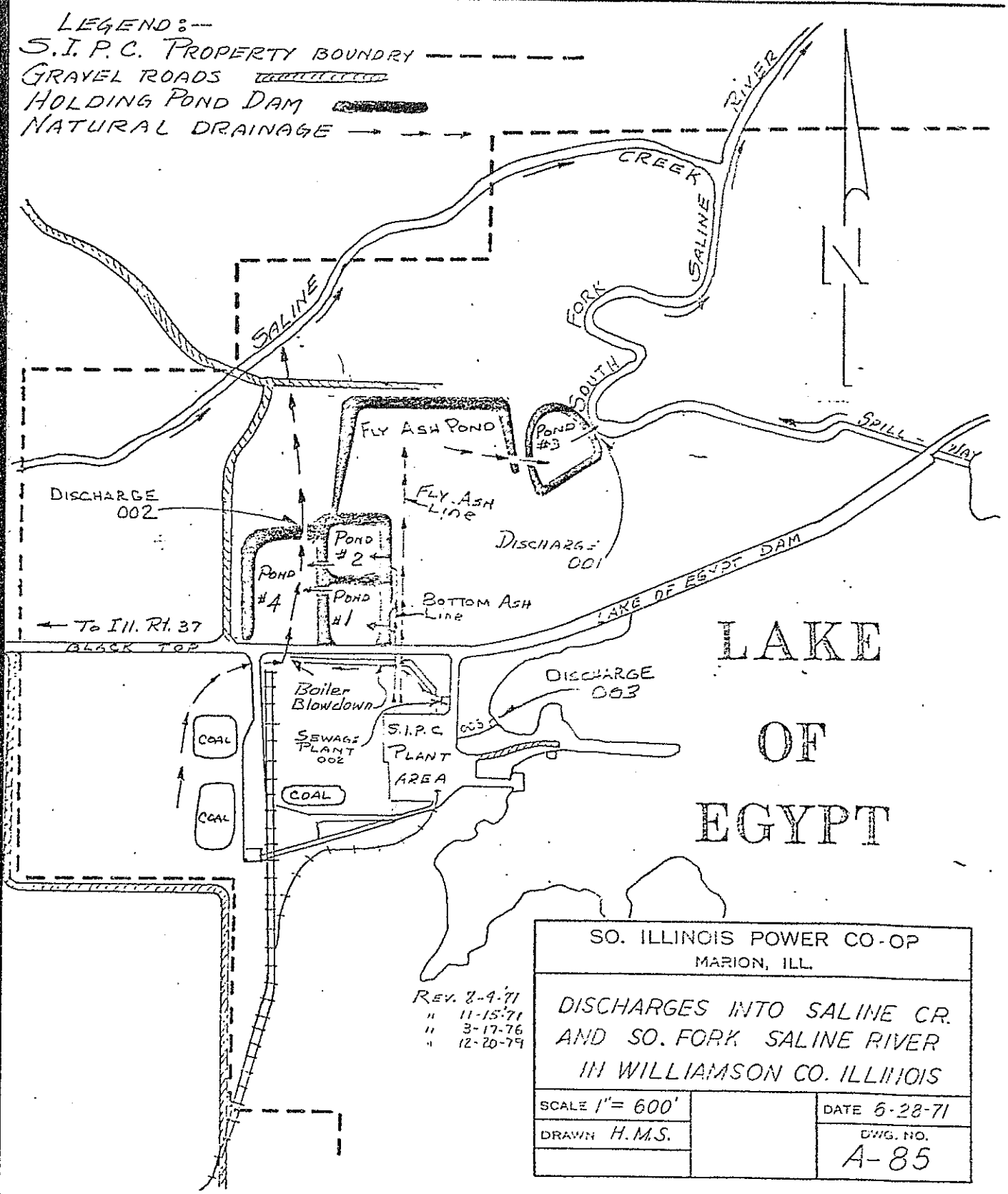

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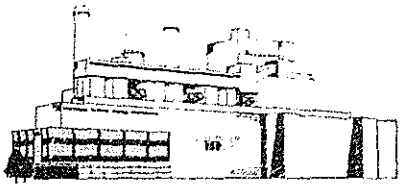
SOUTHERN ILLINOIS POWER CO-OP.



ROUTE 4 – BOX 255 • MARION, ILLINOIS 62959
AREA CODE 618/964-1448

May 22, 1980

Illinois EPA
2200 Churchill Road
Springfield, IL 62706

Attention: Manager, Permit Section

Dear Sir:

Southern Illinois Power Cooperative's Marion Unit #4 operated 6,745 hours during 1979. The period from January 1, 1979 to May 30, 1979 was covered by a variance from the Illinois Pollution Control Board excluding the unit from the regulations governing the emission of SO_2.

Of the 6,745 hours of operation, the FGD system was operated only 1,992 hours in 1979 or was available for service only 29.53% of the time. The great portion of this unavailability is attributed to the sludge disposal system (five conveyor belts, the pugmill, the sludge pumps, thickener and centrifuges).

During the months of January, February and March of 1980 the scrubber and its auxiliaries ran every day that the weather was above 30°F, which atributes the unavailability to the conveyor belts, which steadfastly refused to run in freezing weather.

Southern Illinois Power Cooperative is reviewing alternate methods to modify the present disposal system, one of which is by pumping the thickener underflow straight to the flyash holding pond, thus by-passing the centrifuges, the pug mill and the conveyor belts. This would greatly improve the wintertime operation of the FGD system and also the overall reliability.

It is our belief and intention that all parameters of NPDES IL 0004316 can and will be met as they now stand.

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The modified system would be operated only in freezing weather or when the present system malfunctions.

We have discussed this modification with several members of the Agency who have inspected the operation here, and by this letter respectfully request permission to make this proposed modification.

Very truly yours,

James R. Chapman
Assistant General Manager

JRC/ms

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EXHIBIT

II

Form CCR 1

Illinois Environmental Protection Agency
CCR Surface Impoundment Permit Application
Form CCR 1 – General Provisions

Bureau of Water ID Number:
W1998600002

CCR Permit Number:
2020-EA-65428

Facility Name:
Marion Power Plant

For IEPA Use Only

SECTION 1: FACILITY, OPERATOR, AND OWNER INFORMATION (35 Ill. Adm. Code 845.210(b))

Facility, Operator, and Owner Information

1.1	Facility Name		
	Marion Power Plant		
1.2	Illinois EPA CCR Permit Number (if applicable)		
	2020-EA-65428		
1.3	Facility Contact Information		
	Name (first and last): Wendell Watson	Title: Director of Environmental Services	Phone Number: 618-964-5078
	Email address: wwatson@sipower.org		
1.4	Facility Mailing Address		
	Street or P.O. box: 11543 Lake of Egypt Road		
	City or town: Marion	State: Illinois	Zip Code: 62959
1.5	Facility Location		
	Street, route number, or other specific identifier: 11543 Lake of Egypt Road		
	County name: Williamson	County code (if known):	
	City or town: Marion	State: Illinois	Zip Code: 62959
1.6	Name of Owner/Operator		
	Southern Illinois Power Cooperative		

			☐	Attached written description
			☐	Attached written description
			☐	Attached written description
			☐	Attached written description

SECTION 5: CHECKLIST AND CERTIFICATION STATEMENT

Checklist and Certification Statement

5.1 In Column 1 below, mark the sections of Form 1 that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing.

Column 1		Column 2	
Section 1: Facility, Operator, and Owner Information	☑	w/attachments	☐
Section 2: Legal Description	☑	w/attachments	☐
Section 3: Publicly Accessible Internet Site Requirement	☑	w/attachments	☐
Section 4: Impoundment Identification	☑	w/attachments	☑

5.2 **Certification Statement**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (print or type first and last name) of Owner/Operator	Official Title
Wendell Watson	Director
Signature	Date Signed 10/27/21

Form CCR 2OE

Illinois Environmental Protection Agency

CCR Surface Impoundment Permit Application

Form CCR 2OE – Initial Operating Permit for Existing or Inactive CCR Surface Impoundment Where an Agency-approved Closure Has Been Completed Before July 30, 2021

Bureau of Water ID Number:
W1998600002

CCR Permit Number:

Facility Name:

For IEPA Use Only

SECTION 1: CONSTRUCTION HISTORY (35 Ill. Adm. Code 845.220 and 35 Ill. Adm. Code 845.230)

Construction History

1.1	CCR surface impoundment name.
	Former Emery Pond
1.2	Identification number of the CCR surface impoundment (if one has been assigned by the Agency).
	W1998600002-10
1.3	Describe the boundaries of the CCR surface impoundment (35 Ill. Adm. Code 845.210 (c)).
	SW1/4 of the NE1/4 of Section 26, Township 10S, Range 2E, Williamson County, Illinois
1.4	State the purpose for which the CCR surface impoundment is being used.
	Closure by removal was completed for the former Emery Pond on April 5, 2021. The former Emery Pond was primarily used for stormwater management.
1.5	How long has the CCR surface impoundment been in operation?
	The former Emery Pond was in operation for approximately 30 years until closure in April 2021.
1.6	List the types of CCR that have been placed in the CCR surface impoundment.
	Runoff from the adjacent flue-gas desulfurization loadout area, stormwater runoff from the plant area yard drains and partial coal yard, air heater wash water, fly ash load out area wash water, flue-gas desulfurization decant excess wastewater from a three-stage settling and clarification process. Additional information is provided in Section 2.2 of the attached Application.
1.7	List the name of the watershed within which the CCR surface impoundment is located.
	South Fork Saline/ Lake of Egypt
1.8	What is the size in acres of the watershed within which the CCR surface impoundment is located?
	94,000
1.9	Check the corresponding boxes to indicate that you have attached the following:
	☐ A description of the physical and engineering properties of the foundation and abutment materials on which the CCR surface impoundment is constructed.

Construction History		☐	A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR surface impoundment.
		☐	A statement of the method of site preparation and construction of each zone of the CCR surface impoundment.
		☑	A statement of the approximate dates of construction of each successive stage of construction of the CCR surface impoundment.
		☑	Drawings satisfying the requirements of 35 Ill. Adm. Code 845.220(a)(1)(F).
		☑	A description of the type, purpose, and location of existing instrumentation.
		☐	Area Capacity Curves for the CCR Impoundment.
		☐	A description of each spillway and diversion design features and capacities and provide the calculations used in their determination.
		☐	The construction specifications and provisions for surveillance, maintenance, and repair of the CCR surface impoundment.
	1.10.1	Is there any record or knowledge of structural instability of the CCR surface impoundment?	
		☐ Yes	☐ No
	1.10.2	If you answered yes to Item 1.10.1, provide detailed explanation of the structural instability.	

SECTION 2: ATTACHMENTS

Attachments	2.1	Check the corresponding boxes to indicate that you have attached the following:	
		☑	Evidence that the permanent markers required by 35 Ill. Adm. Code 845.130 have been installed.
		☐	Documentation demonstrating that the CCR surface impoundment, if not incised, will be operated and maintained with one of the forms of slope protection specified in 35 Ill. Adm. Code 845.430.
		☐	Emergency Action Plan and accompanying certification required by 35 Ill. Adm. Code 845.520(e).
		☐	Written post-closure care plan, if applicable (see 35 Ill. Adm. Code 845.780(d)).
		☑	History of known exceedances of the groundwater protection standards in 35 Ill. Adm. Code 845.600, and any corrective action taken to remediate the groundwater.

SECTION 3: GROUNDWATER MONITORING

	3.1	Check the corresponding boxes to indicate whether you have attached the following groundwater monitoring information:	
		☑	A hydrogeologic site characterization meeting the requirements of 35 Ill. Adm. Code 845.620.

Groundwater		☑	Design and construction plans of a groundwater monitoring system meeting the requirements of 35 Ill. Adm. Code 845.630.
		☑	A groundwater sampling and analysis program that includes section of the statistical procedures to be used for evaluating groundwater monitoring data, required by 35 Ill. Adm. Code 845.640.
		☑	Proposed groundwater monitoring program that includes a minimum of eight independent samples for each background and downgradient well, required by 35 Ill. Adm. Code 845.650(b).

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GOLDER
MEMBER OF WSP

APPLICATION

Southern Illinois Power Cooperative Initial Operating Permit Application

Former Emery Pond

Submitted to:

Illinois Environmental Protection Agency

DWPC- Permits MC#15
Attn: Part 845 Coal Combustion Residuals Rule Submittal
1021 North Grand Avenue East
Springfield, IL 62794-9276

Submitted by:

Golder Associates Inc.

670 North Commercial Street, Suite 103, Manchester, NH 03101

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21467997

October 2021

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APPENDICES

Appendix A Boring Logs

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Appendix G Corrective Action and Selected Remedy Plan

Appendix H Proof of Permanent Marker Installation

Appendix I Groundwater Monitoring Plan

Appendix J Groundwater Monitoring Plan Addendum # 1

Appendix K Statistical Methods Certification

ACRONYMS

ACM	Assessment of Corrective Measures
B-R	Bouwer and Rice
CCR	Coal Combustion Residual
cm/s	centimeters per second
CSM	Conceptual Site Model
FGD	Flue-Gas Desulfurization
ft amsl	feet above mean sea level
ft bgs	feet below ground surface
ft/day	feet per day
GMZ	Groundwater Management Zone
GPD	gallons per day
GPS	Groundwater protection standards
IAC	Illinois Administrative Code
IEPA	Illinois Environmental Protection Agency
KGS	Kansas Geological Survey
mg/L	milligrams per liter
MW	Megawatt
NPDES	National Pollutant Discharge Elimination System
PVC	Polyvinyl Chloride
SIPC	Southern Illinois Power Cooperative
SSD	Statistically Significant Decrease
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
STATSGO	Illinois State Soil Geographic Database

1.0 INTRODUCTION

Southern Illinois Power Cooperative (SIPC) owned and operated a coal combustion residuals surface impoundment, the former Emery Pond, at Marion Power Plant. The former Emery Pond is subject to the 40 Code of Federal Regulations (CFR) Part 257 (until the United States Environmental Protection Agency (USEPA) approves the Illinois CCR program to operate in lieu of Part 257), and the corresponding Illinois Environmental Protection Agency (IEPA) 35 Illinois Administrative Code (IAC) Part 845. By October 30, 2021, newly effective 35 Illinois Administrative Code (IAC) Part 845 requires submittal of an initial operating permit application in accordance with 35 IAC § 845.230 for existing coal combustion residual (CCR) surface impoundments that have not completed Part 845 requirements. SIPC completed an Illinois Environmental Protection Agency (IEPA) approved closure by removal for the former Emery Pond, prior to July 30, 2021, thereby allowing it to close under the more limited initial operating permit application requirements of 35 IAC § 845.230(d)(3). As the closure was by removal, no post-closure care requirements apply (35 IAC 845.780(a)(2)). However, because SIPC has not yet completed the required post-closure groundwater monitoring, SIPC understands it to be IEPA's view that an operating permit is still required. Therefore, in accordance with the applicable provisions of 35 IAC § 845.230(d)(3), on behalf of SIPC, Golder Associates Inc. (Golder), a *Member of WSP*, prepared this "Southern Illinois Power Cooperative Initial Operating Permit Application" (Application) for SIPC's closed former CCR impoundment, former Emery Pond.

1.1 Background Information

Former Emery Pond was located near the northwestern shore of Lake of Egypt on the site of SIPC's Marion Power Plant, 11543 Lake of Egypt Road, Marion, IL (Site, Figure 1). SIPC has owned and operated a coal-fired power plant at the Site since 1963. The Marion Power Plant property includes the Lake of Egypt, which it developed in 1962 to supply cooling water for plant operations. In the fall of 2020, SIPC closed Unit 4, an approximately 180-megawatt (MW) coal-fired unit. The Marion Power Plant still operates a smaller coal-fired unit (approximately 100-MW) and two natural gas units, both of which have limits of 1000 hours of operation per year.

Emery Pond was a less-than-1-acre impoundment situated near the south side of the main stack at the power plant (Figure 2). When operating, the impoundment received CCR and non-CCR materials in waste streams and in runoff that flowed by gravity to the pond (e.g., air heater wash, stormwater runoff, and other miscellaneous boiler and precipitator wastes). In the fall of 2020, SIPC began closure of the impoundment and adjacent flue-gas desulfurization (FGD) Loadout Area by removal of all CCR. A new structure, designated as the Storm Water Basin, was then constructed within the footprint of the former Emery Pond pursuant to an IEPA issued construction permit. The Storm Water Basin collects local drainage and receives no regulated CCR containing wastes. The Storm Water Basin has a composite liner system, and is permitted and operated as a water treatment device under 35 IAC 309, Subpart B. A permanent dewatering system around the base of the basin liner system, installed to provide protection from hydraulic uplift pressures to the liner system, collects groundwater in the vicinity of the new basin. Plant waters, perimeter drain groundwater, and stormwater runoff collected in the Storm Water Basin are discharged via Outfall 002 to Little Saline Creek in accordance with its National Pollutant Discharge Elimination System (NPDES) Permit No. IL0004316.

1.2 Application Organization

Consistent with the provisions of 35 IAC § 845.230(d)(3), the Application has been prepared to address all applicable regulatory requirements of the initial operating permit for the former Emery Pond. Because the former Emery Pond no longer exists, and CCR that was once present in the former pond has already been removed,

many Part 845 requirements do not apply. For those that do, the application and supporting materials have been tailored accordingly to this situation. Following this introduction, Section 2.0 summarizes key background information about the former Emery Pond primarily relative to its former operation as a CCR management unit including:

- Construction, historical and current operations, and current conditions;
- Overview of CCR and non-CCR wastes formerly managed therein;
- High-level summary of the historical and current CCR groundwater monitoring programs, including current Federal CCR Rule monitoring phase; and
- Timeline of closure including dates associated with redirection of waste streams, dewatering, excavation, and completion of closure activities as well as earlier submitted, IEPA approved closure and corrective action plans.

Section 3.0 provides the history of construction specified in 35 IAC § 845.220(a)(1). Section 4.0 provides information related to groundwater monitoring including the hydrogeologic site characterization required by 35 IAC § 845.620 and identification of nearby receptors, as follows:

- Regional and site geologic conditions;
- Description of geologic layers to 100 feet below land surface;
- Description of site hydrogeology including stratigraphic cross-sections;
- Description of the upper most aquifer;
- Potentiometric surface maps characterizing the direction of groundwater flow accounting for seasonal variations;
- Identification of potential receptors and potential groundwater migration pathways;
- Identification of nearby surface water bodies and drinking water intakes, nearby pumping wells, and nearby nature preserves; and
- Illinois groundwater classification.

Section 5.0 provides groundwater monitoring results and related information including:

- Description of existing groundwater monitoring network designed and installed in accordance with 40 CFR § 257.91 and 35 IAC § 845.630;
- Well construction diagrams;
- Federal CCR Rule monitoring program status;
- Tabulated groundwater monitoring data for each monitoring well;
- Description of relevant groundwater standards and historical exceedances;
- The completed corrective measure assessment in accordance with 40 CFR § 257.96; and

- Progress reports on remedy selection and design and the final remedy selection as required by 40 CFR § 257.97(a).

Section 6.0 is a compilation of, or description of inapplicability of, any additional documentation for the initial operating permit including:

- Permanent marker installation in accordance with 40 CFR § 257.73(a)(1) and 35 IAC § 845.130;
- Slope protection in accordance with 35 IAC § 845.430;
- Emergency action plan in accordance with 40 CFR § 257.73(a)(3) and 35 IAC § 845.520;
- Design and construction plans for a groundwater monitoring program in accordance with 40 CFR § 257.91 and 35 IAC § 845.630;
- Groundwater sampling and analysis program including statistical procedures in accordance with 40 CFR § 257.93 and 35 IAC § 845.640;
- Proposed groundwater monitoring program in accordance with 40 CFR § 257.98(a)(1) and 35 IAC § 845.650(b); and
- Written post-closure plan in accordance with 35 IAC § 845.780(d).

2.0 DESCRIPTION OF THE CCR UNIT

This section of the permit application provides unit-specific details about the former Emery Pond including a background discussion of its construction and operation; a summary of the source, type, and volumes of waste streams historically managed in Emery Pond prior to and during its operation as a CCR Rule regulated unit; an overview of the CCR Rule-required groundwater monitoring well network and monitoring phases/status; and a discussion of key activities related to closure-by-removal.

2.1 Construction and Operation

The former Emery Pond was constructed in the late 1980s for storage of stormwater drainage from the Marion Power Plant. The impoundment was incised on the north, west, and south sides, with a wide berm separating it from nearby Lake of Egypt to the east. The berm, which remains in place following the closure of the former Emery Pond, is approximately 140 feet in width at the crest, with a height of approximately 10 feet. The impoundment was unlined and had a maximum volume of 6.6 acre-feet. The original impoundment footprint was reduced around 2009 when a FGD gypsum belt dewatering loadout facility was built on the western end of the existing pond. The approximate historical limits of the former Emery Pond are shown on Figure 2. As operating conditions dictated, an electric pump was used to pump aqueous contents to the plant's south fly ash pond and occasional dredging removed accumulated sediment carried into the pond via various plant effluent and rainfall runoff streams. Prior to 2015, dredged soils were placed in the on-Site landfill; however, no dredging/on-Site disposal was completed since October 16, 2015.

2.2 Overview of Waste Streams Managed

The former Emery Pond was primarily designed and operated to manage stormwater on Site, although incidental amounts of CCR waste were discharged into the impoundment until the shutdown of Unit 4 in 2020. Until cessation of CCR discharge, the impoundment received precipitator, air heater, boiler and scrubber material

intermittently from washes during plant outages. Specifically, the following CCR and non-CCR waste streams were intermittently managed in the former Emery Pond:

- Runoff from the FGD load out area.
- Stormwater runoff from the plant area yard drains and partial coal yard.
- Air heater wash resulting in about 120,000 gallons of wash water containing small amounts of salts and de minimis amounts of ash materials. The air heater washes occurred approximately twice a year.
- Fly ash load out area wash water.
- FGD decant excess wastewater from a three-stage settling and clarification process in which most water was reused in the FGD system. Water that was not reused flowed to the former Emery Pond.

Following the shutdown of Unit 4, all process water discharges to the former Emery Pond ceased. The storm water basin newly constructed in the location of the former Emery Pond receives only waste streams that are not regulated under the CCR Rule, primarily storm water runoff.

2.3 CCR Rule Groundwater Monitoring

In 2017, following the installation of a groundwater monitoring system, groundwater monitoring at the Site was completed to evaluate background water quality consistent with 40 CFR § 257.90. In March 2018, the first round of Detection Monitoring was completed pursuant to the requirements of 40 CFR § 257.94. The results of Detection Monitoring required the transition to Assessment Monitoring. The first Assessment Monitoring sampling event was completed in August 2018. The results of Assessment Monitoring initiated an Assessment of Corrective Measures which was originally completed in March 2019 and revised in March 2021. The selected remedy, closure by removal, was completed in April 2021. The former Emery Pond is currently in Corrective Action Monitoring.

The former Emery Pond has five groundwater monitoring wells including one upgradient well (EBG) and four downgradient monitoring wells (EP-1, EP-2, EP-3, and EP-4). In October 2021, three additional wells were installed to evaluate groundwater at the limits of the groundwater management zone (EP-5, EP-6, and EP-7). The monitoring well network is shown on Figure 2 and the monitoring well logs are included in Appendix A.

2.4 Cessation of Operation and Closure

The former Emery Pond ceased receipt of CCR materials in the fall of 2020. Notice of intent to close the unit was posted to the public website in December 2020. Closure construction activities began in late 2020. The former Emery Pond, and the adjacent FGD storage area, were dewatered and excavated. The removal and decontamination of Emery Pond was completed April 5, 2021 and the final inspection was completed May 28, 2021. The Closure Plan completed by Hanson Professional Services, Inc. (Hanson) in March 2019, and revised in April 2021 (Hanson, 2021b), is attached in Appendix B. The Decontamination Certification and Closure Completion Certification is provided in Appendix C.

3.0 HISTORY OF CONSTRUCTION

This section includes the history of construction as specified in 35 IAC § 845.220(a)(1). The former Emery Pond is owned by Southern Illinois Power Cooperative, 11543 Lake of Egypt Road, Marion, Illinois 62959. The IEPA identification number is W1998600002-10. Although designed primary for stormwater management, it

intermittently received CCR and non-CCR waste streams including precipitator, air heater, boiler and scrubber material and some ash from boiler wash downs and wash downs of other equipment in the event of outages. The former Emery Pond was in the South Fork Saline/Lake of Egypt watershed which drains approximately 94,000 acres within southern Illinois (IEPA, 2008).

The former Emery Pond was less-than-1-acre in size with a maximum depth of 10 feet and a maximum volume of approximately 6.6 acre-feet. Detailed dimensional plan view and cross-section drawings completed prior to closure are included in Appendix B (Closure Plan; Hanson, 2021b). Emery Pond was constructed in the 1980s, however, the exact date is unknown and neither design nor as-built drawings exist. The impoundment, which was unlined and incised on three sides, was constructed directly on bedrock which consists of sandstone with imbedded limestone and shale. The bottom elevation of the impoundment varied between 510 to 502 feet above mean sea level (ft amsl). Additional details related to construction are unknown. Because Emery Pond has been closed by removal, there are no existing instrumentation; area-capacity curves; spillway or diversion design features; or specifications for surveillance, maintenance, and repair. There is no record or SIPC institutional knowledge of any structural instability associated with the former Emery Pond.

4.0 HYDROGEOLOGIC SITE CHARACTERIZATION

This section includes the hydrogeologic site characterization meeting the requirements of 35 IAC § 845.620. Golder compiled the hydrogeologic site characterization based on existing boring logs, groundwater monitoring reports, and publicly available information.

4.1 Regional Geology

The Marion Power Plant is located on the southern margin of the Illinois Basin in the Shawnee Hills section of the Interior Low Plateaus physiographic region. The Illinois Basin is a depositional and structural basin comprised of Cambrian to Permian age sedimentary rocks. The southern portion of the basin is heavily faulted with northeast-striking, high-angle reverse and normal faults and bears evidence of several tectonic episodes. Many of these faults contain commercial vein deposits of fluorite. This region contains gently rolling topography with a strip of rugged Mississippian and Pennsylvanian (Caseyville/Tradewater Formation) bedrock hills between Pleistocene glacial deposits in lowlands to the north and the Mississippi Embayment to the south. Mississippian rocks are composed of the Clore and Degonia Formations overlain by the Kinkaid Limestone (Nelson et al, 1991).

The stratigraphic sequence in the vicinity of the Site, from ground surface to depth, is as follows:

- The Caseyville/Tradewater Formation is 190 to 500 ft thick and consists of lenticular, vertically and horizontally intergraded beds of sandstone, siltstone, and shale underlying a relatively thin (i.e., $\leq$ 20 ft thick) layer of unconsolidated materials. There are also thin beds of coal and limestone interbedded with clastic sediments. The upper portion of the formation is laterally continuous, and it grades down into lenticular beds at the base.
- The Kinkaid Formation is 120 to 160 ft thick and consists of limestone, shale, claystone, and sandstone, which are separated from overlying Pennsylvanian rocks of the Caseyville Formation by a laterally extensive unconformity. The thickness of the Kinkaid varies because of erosion of the overlying Caseyville.
- The Degonia Formation is 20 to 64 ft thick and consists of thinly bedded, very fine-grained sandstone, siltstone, shale, and irregular chert beds. It is a clastic interval between limestones of the Clore and Kinkaid Formations that is generally composed of a thin shale bed at the base overlain by sandstone that grades upward to siltstone and shale. The Degonia-Kinkaid contact is sharp and conformable.

- The Clore Formation is 110 to 155 ft thick and consists of sandstone, shale, and limestone. The Clore contains three members, from deep to shallow, the Cora, Tygett, and Ford Station Members. The Cora is 35 to 70 ft thick and consists of partly calcareous shale and fine-grained, argillaceous limestone. The Tygett is 15 to 50 ft thick and is composed of fine-grained sandstone to the west that transitions eastwardly to shale and siltstone. The Ford Station contains 23 to 50 ft of interbedded shale and limestone beds less than 2 ft thick. The Clore sporadically outcrops at the surface.

4.2 Site Geology

The Site is underlain by glacially-derived deposits of the Illinoisan Stage overlying the Pennsylvanian Age Bedrock (Hanson, 2021d). Golder's interpretation of the Site geology is based on soil borings (Appendix A) and bedrock geology maps and includes:

- Fill Materials: Where present, the fill materials generally consist of light gray to yellowish brown gravel with some silt and clay, and trace amounts of sand and asphalt from the ground surface to as deep as 14 feet below ground surface (ft bgs).
- Silt (upper discontinuous silt layer): Yellowish brown silt with little clay and trace very fine-grained sand from the ground surface to as deep as 8 ft bgs.
- Clay: Yellowish brown to black clay with some silt, little sand, and trace gravel from ground surface to approximately 20 ft bgs.
- Silt (lower discontinuous silt layer): Black to yellowish brown silt with little clay and trace very fine-grained sand from approximately 14 ft bgs to 20 ft bgs.
- Bedrock: Yellowish brown, weathered, sandstone and shale. As described in Section 4.1, the upper bedrock layer is at least 190 feet thick. The depth to bedrock is approximately 20 ft bgs.

A representative cross-section of the geology in the vicinity of the former Emery Pond is shown in a cross-section in Figure 3. Additional cross-sections are included in the "Hydrogeologic Investigation Report" provided in Appendix D.

4.3 Structural Characteristics

There are principal structures in the area of the Cottage Grove Fault System, located north of the Site, and the Little Cache Fault Zone located southeast of the Site. The Cottage Grove Fault System presents right-lateral, strike-slip faulting and the Little Cache Fault Zone consists of high-angle normal vaults that follows the valley of Little Cache Creek in Johnson County (Nelson, 1995).

4.4 Soil characteristics

The predominate soil type in the vicinity of the Marion Power Plant are soils characterized as fine-grained and made up of silts and clays. According to the State Soil Geographic (STATSGO) database, soils on site are characterized as B/C hydraulic soil groups or soils with moderate runoff potential with K-Factors between 0.17 and 0.43 (IEPA, 2008).

4.5 Regional and Site Hydrogeology

The former Emery Pond was located within the South Fork Saline/Lake of Egypt watershed (IEPA, 2008). Regional groundwater flow is toward the Lake of Egypt which discharges into the South Fork Saline River.

Drinking water wells in the vicinity of the Marion Power Plant are 95-260 feet deep and screened in the shallow bedrock. These wells are capable of being pumped at 5-20 gallons per minute (gpm) to support domestic water use (ISGS, 2021a). A further discussion of identified drinking water wells in the vicinity of the former Emery Pond is provided in Section 4.6.

4.5.1 Description of the Uppermost Water Bearing Zone

The uppermost water bearing zone is a shallow, hydraulically "perched" zone comprised of fill and residuum (silts and clays) from the weathering of bedrock and is not considered a usable water source. No confining layer was identified. The unit has only 3-5 feet of saturated thickness. Because the former Emery Pond was constructed directly on top of the bedrock, following a conceptual site model (CSM) approach to understand where potential releases, if any, were most likely to occur and would be most likely to be detected, groundwater monitoring wells are screened at the unlithified/bedrock unit interface. This zone has a low hydraulic conductivity (<1E-04 centimeters per second [cm/s], see Section 4.5.2) and only a few feet of saturated thickness (5-10 ft; Hanson, 2019b).

Groundwater in the vicinity of the former Emery Pond generally flows east/northeast toward the Lake of Egypt. The average groundwater elevation varies between approximately 502 to 518 ft amsl with an average depth to groundwater of less than 8 ft. Figure 4 is an example of a wet season potentiometric surface map showing the groundwater elevations and groundwater contours from January 2020. Figure 5 is an example of a dry season potentiometric surface map showing the groundwater elevations and groundwater contours from June 2020. Generally, the change in groundwater elevation from the dry to wet seasons is less than 2 ft. Seasonally the groundwater flow direction varies slightly from east/northeast in the wet season to more easterly in the dry season (see Figure 4 and Figure 5). Groundwater elevation data is reported in the Annual Groundwater and Corrective Action Reports for the former Emery Pond (AECOM, 2018; Hanson, 2019a; Hanson, 2020; Hanson, 2021a).

4.5.2 Hydraulic Conductivity Testing

Hanson performed hydraulic conductivity testing in five monitoring wells at the Site (Hanson, 2019b). To obtain slug test data, Hanson used the Kansas Geological Survey (KGS) Model to calculate the hydraulic conductivity values. The KGS Model uses curve matching over the entire dataset and not just the second portion of the data curve as done with the Bouwer and Rice (B-R) Method. The slug test results, measurement data, and calculations are provided in Hanson's report, "Hydrogeologic Investigation Report", which is provided in Appendix D. Hanson also prepared a pump test model to further assess the characteristics of the aquifer (Hanson, 2019c). The model identified that the shallow groundwater in the unlithified unit cannot sustain a pumping rate of 150 gallons per day (GPD), a requirement of Class I groundwater (35 IAC § 620.210(a)(4)(A)). However, the shallow bedrock (below approximately 450 ft amsl) is capable of sustaining a 150 GPD pumping rate. Hanson's report describing the pump test model, "Hydrogeologic Investigation Addendum," is attached in Appendix E. A summary of the calculated hydraulic conductivities and averages are provided in the embedded table below. Hydraulic conductivity values range from 9.1×10^{-7} cm/s to 1.4×10^{-3} cm/s. The calculated hydraulic conductivity values appear to be consistent with anticipated values for fine glacial till deposits.

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Table 1: Slug Test Results

Well ID	Method	Falling Head ($cm^3/cm^2/s$)	Rising Head ($cm^3/cm^2/s$)	Average ($cm^3/cm^2/s$)
EBG	B-R	3.00×10^{-6}	9.10×10^{-7}	1.96×10^{-6}
EBR	Packer			1.72×10^{-5}
EP-1	B-R	2.80×10^{-5}	3.45×10^{-5}	3.13×10^{-5}
EP-1a	KGS	7.60×10^{-5}	7.50×10^{-6}	7.55×10^{-6}
EP-2	B-R	6.00×10^{-6}	8.40×10^{-6}	7.20×10^{-6}
EP-3	B-R	3.10×10^{-5}	2.50×10^{-5}	2.80×10^{-5}
EP-4	B-R	3.30×10^{-5}	3.25×10^{-5}	3.28×10^{-5}
EP-4	KGS	1.10×10^{-4}	9.10×10^{-6}	5.96×10^{-5}
EP-4a	KGS	1.40×10^{-3}	9.40×10^{-4}	1.17×10^{-3}

Depth of EBR Packer Test at 26.2 ft. is equivalent to the depth of the screen (in the sandstone) at EP-1.

EP-1a and EP-4a are test wells installed to confirm lithology and complete hydraulic conductivity testing.

4.5.3 Horizontal Component of Flow

Golder calculated the horizontal hydraulic gradient (i) for the unconfined aquifer in the vicinity of the former Emery Pond at 0.029 foot per foot as shown below using average groundwater elevation data for EP-1 and EP-2 from March 2017 through January 2020. The calculated horizontal hydraulic gradient ranges from 0.012 to 0.040 foot per foot. Horizontal gradients become steeper near Lake of Egypt (Hanson, 2018, 2019b, 2020, 2021c).

$$i = \left({}^{h_L}/_{L_H}\right)$$

Where: h_L = head loss (elevation difference – foot)

L_H = length (horizontal distance – foot)

Using an assumed effective porosity value of 40% (AECOM, 2018), the average hydraulic conductivity from slug tests of 2.6×10^{-4} cm/s or 7.5×10^{-1} feet per day (ft/day), and the calculated horizontal gradient, the average rate of horizontal groundwater flow (V_{gw}) in the overburden was calculated using the algorithm below.

$$V_{gw} = K\, i \left({}^{1}/_{n_e}\right)$$

Where:
V_{gw} = Groundwater velocity
K = Hydraulic conductivity
i = Hydraulic gradient
n_e = Effective porosity

V_{gw} = [(7.5E-01 ft/day) x (2.9E-02)] / 0.40
V_{gw} = 5.4E-02 ft/day, or 20 ft/year

As calculated above, the estimated horizontal rate of flow in the shallow aquifer is expected to be an average of 20 feet per year.

4.5.4 Vertical Components of Flow

Hanson collected thin-wall (Shelby) tube samples from borings near EP-1 (from 6.5-7 ft bgs) and EP-4 (from 7.5-8 ft bgs). The results of the laboratory testing following ASTM D5084 indicate an average vertical hydraulic conductivity of 6.91 x 10^{-8} cm/s and 5.52 x 10^{-8} cm/s for EP-1 and EP-4 locations, respectively (Hanson, 2019b). The low vertical hydraulic conductivity indicates limited vertical recharge or precipitation through the overburden materials. The vertical hydraulic conductivity is significantly lower than the horizontal hydraulic conductivity (approximately 3-orders of magnitude lower) indicating groundwater flow is primarily horizontal, and there is not a significant vertical component of flow (i.e., into the bedrock near the former Emery Pond).

4.6 Identification of Nearby Receptors

The following sections identify and describe nearby receptors, potential migration pathways, and the Illinois groundwater classification.

4.6.1 Identification of Nearby Water Uses and Other Potential Receptors

The Lake of Egypt is located approximately 250 feet downgradient of the former Emery Pond. The Lake of Egypt is primarily used for cooling water for the Marion Power Plant; however, the lake is open for public recreational use including boating, swimming, and fishing. The lake also provides drinking water for over 4,500 people residing in Williamson, Johnson, and Union counties. In 2019, Hanson collected five samples from the lake including one background sample, two samples near the shore closest to Emery Pond, and two samples downstream, including one sample in the vicinity of the public water supply intake. Sampling indicates no surface water standard exceedances due to groundwater impacts from the Site (Hanson, 2021c).

Golder reviewed public records and found five water wells located within a 1-mile radius of the approximate operating limits (ISGS, 2021a). The closest wells are identified on Figure 6. The nearest water well is located at the Lake of Egypt Country Club. This well is approximately 2,500 ft south/southeast (upgradient) of the former Emery Pond. This well is screened from 60-95 ft bgs in sandstone and has a pumping rate of 5 gpm (ISGS, 2021a). This well is on SIPC property.

There are no nature preserves located within the 1-mile radius of the approximate operating limits. According to Illinois State Geological Survey (ISGS), no active or abandoned mines exist within the town of Marion (ISGS, 2021b).

4.6.2 Identification of Potential Migration Pathways

In 2019, Hanson completed several direct push borings around Emery Pond to further characterize the nature and extent of potential groundwater impacts. In this assessment Hanson mapped preferential flow paths primarily based on the bedrock topography. The preferential flow paths are displayed in Figure 7. Groundwater flows east/northeast along these preferential flow paths toward the Lake of Egypt.

4.6.3 Groundwater Classification

The unlithified unit is classified as Class II groundwater because the unit does not contain a sand, gravel, or sand & gravel deposit greater than 5 ft thick and the slug test results (Table 1, Hanson, 2019b and 2019c) are generally less than 1 x 10^{-4} cm/s. Hanson calculated a hydraulic conductivity higher than 1 x 10^{-4} cm/s in test well EP-4 and EP-4a, however, both of these wells are screened in man-made or fill materials. The upper portion of the bedrock is classified as Class II because the unit contains less than 10 ft of sandstone, less than 15 ft of fractured carbonate rock, and the packer test results (Table 1, Hanson, 2019b) are less than 1 x 10^{-4} cm/s. The lower

bedrock unit is classified as Class I groundwater because the unit has two continuous segments of sandstone that exceed 10 ft in thickness.

Although groundwater in the unlithified and upper bedrock are classified as Class II groundwater, SIPC has agreed to monitor and conduct corrective action, as necessary and appropriate, for the purpose of achieving compliance with Class I standards.

5.0 GROUNDWATER MONITORING RESULTS

This section includes a description of the groundwater monitoring system, the CCR Rule monitoring program status, a discussion of the groundwater data, a summary of the Assessment of Corrective Measures, and a summary of the Selection of Remedy.

5.1 Monitoring System Design

The groundwater monitoring system was installed in 2017 to meet the requirements of the CCR Rule. The now-closed unit currently has one background monitoring well (EBG) located approximately 800 ft upgradient of the former Emery Pond. Four downgradient monitoring wells (EP-1, EP-2, EP-3, and EP-4) are located along the southern, eastern, and northeastern boundaries of the former Emery Pond. Three additional wells (EP-5, EP-6, and EP-7) were installed in October 2021 to evaluate groundwater at the limits of the groundwater management zone (GMZ) and located between the former Emery Pond and the Lake of Egypt (Figure 2). The wells consist of 2-inch diameter, schedule 40 polyvinyl chloride (PVC) pipe with 10-ft long, 0.010-inch slotted well screens. A silica sand (grain size 10/20) filter medium was used to construct the sand pack around each well screen. Bentonite chips were placed above the sand pack filling the borehole to 2-3 ft bgs or a minimum thickness of 2 ft. A steel protective outer casing was installed for each well with a concrete pad extending from ground surface to the top of the bentonite seal (AECOM, 2018). The monitoring wells are screened at the unlithified/bedrock unit interface. This zone has a low hydraulic conductivity (less than 1 x 10^{-4} cm/s, see Section 4.5.2) and only a few feet of saturated thickness (5-10 ft; Hanson, 2019b and 2019c). Because Emery Pond was constructed directly on top of the existing bedrock and following CSM reasoning in interpreting Site geologic/hydrogeologic conditions, these monitoring wells are appropriately screened to monitor groundwater quality at the former waste boundary.

5.2 Monitoring Program Status

In 2017, following the installation of a groundwater monitoring system, groundwater monitoring at the Site was completed to evaluate background water quality consistent with 40 CFR § 257.90. In March 2018, the first round of Detection Monitoring was completed pursuant to the requirements of 40 CFR § 257.94. The results of Detection Monitoring indicated statistically significant increases (SSIs) and triggered Assessment Monitoring in 2018.

The first Assessment Monitoring sampling event was completed in August 2018. The results of Assessment Monitoring indicated statistically significant levels (SSLs) which triggered the requirement for preparation of an Assessment of Corrective Measures. The Assessment of Corrective Measures was completed in March 2019. The selected remedy, closure by removal, was completed in 2021. The former Emery Pond is currently in Corrective Action Monitoring.

5.3 History of Known Exceedances

The former Emery Pond is subject to the groundwater protection standards (GPS) listed in 35 IAC § 845.600(a). The GPS is equal to the numeric standard listed in 35 IAC § 845.600(a), or the background concentration, whichever is higher.

As described above in Section 4.5.3, groundwater at the Site has been classified as Class II: General Resource Groundwater (35 IAC 620.240) in the Unlithified Unit and the upper (approximately 11 ft) of the Bedrock Unit; however, SIPC has agreed to monitor and conduct Corrective Action, as necessary and appropriate, for the purpose of achieving compliance with Class I groundwater quality standards. The calculated background concentrations, IEPA standards listed in 35 IAC § 845.600(a)(1), GPS, Class I groundwater standards, and Class II groundwater standards are all listed below in Table 4.

Table 2: Relevant Groundwater Standards

Parameter	Background	IEPA Part 845 Standard	GPS	Class I Standard	Class II Standard
Antimony	ND	0.006	0.006	0.006	0.024
Arsenic	ND	0.01	0.01	0.01	0.2
Barium	0.28	2	2	2	2
Beryllium	ND	0.004	0.004	0.004	0.5
Boron	0.14	2	2	2	2
Cadmium	ND	0.005	0.005	0.005	0.05
Calcium	63		63		
Chloride	86	200	200	200	200
Chromium	ND	0.1	0.1	0.1	1
Cobalt	0.018	0.006	0.018	1	1
Fluoride	0.64	4	4	4	4
Lead	ND	0.0075	0.0075	0.0075	0.1
Lithium	0.082	0.04	0.082		
Mercury	ND	0.002	0.002	0.002	0.01
Molybdenum	0.007	0.1	0.1		
pH	6.00-7.04 SU	6.5-9.0 SU	6.0-9.0 SU	6.5-9.0 SU	6.5-9.0 SU
Selenium	0.007	0.05	0.05	0.05	0.05
Sulfate	100.7	400	400	400	400
Thallium	ND	0.002	0.002	0.002	0.02
Total Dissolved Solids	591.1	1200	1200	1200	1200

Parameter	Background	IEPA Part 845 Standard	GPS	Class I Standard	Class II Standard
Radium 226 and 228 Combined	4.706 pCi/L	5 pCi/L	5 pCi/L	20 pCi/L*	

*Standard is for Radium 226 and Radium 228 individually
All standards are in mg/L unless otherwise indicated.
ND indicates the majority of the results in the background dataset are non-detect and a background limit was not calculated

The groundwater data collected to date as part of the CCR Rule sampling is provided in Appendix F. The following bullets summarize detections in downgradient well samples above the relevant standards for the Part 257, Appendix III parameters:

- Boron: The GPS and the Class I Standard are both 2 milligrams per liter (mg/L). Boron was detected above 2 mg/L in all groundwater samples collected to date from EP-4. All other boron samples collected to date from other downgradient monitoring wells are below 2 mg/L.
- Calcium: There are no health-based standards for calcium. The calculated background concentration is 63 mg/L. Calcium was detected above background in all samples collected from EP-1, EP-2, and EP-4 and intermittently from samples collected from EP-3.
- Chloride: The GPS and Class I Standard are both 200 mg/L. Chloride was detected above 200 mg/L intermittently from samples collected from EP-3 and most samples collected from EP-4.
- Fluoride: The GPS and Class I Standard are both 4 mg/L. Fluoride has not been detected above 4 mg/L in any downgradient monitoring well groundwater samples collected to date.
- pH: The GPS, in which the lower value is based on background data, is 6.0-9.0. The Class I groundwater standard is 6.5-9.0. With the exception of the May through August 2017 samples collected from EP-1, which were between 6.5 and 6.90, and the January 2020 sample from EP-1 which was above 6.90, all downgradient samples have pH results below 6.5. Additionally, pH has been measured intermittently below 6.0 in samples collected from EP-2 and EP-3 and in most samples collected EP-4.
- Sulfate: The GPS and Class I Standard are both 400 mg/L. Sulfate has been detected above 400 mg/L from all samples collected from EP-1, in most samples from EP-2 and EP-4, and intermittently in samples collected from EP-3.
- TDS: The GPS and Class I Standard are both 1200 mg/L. TDS has been detected above 1200 mg/L in most samples collected from EP-1, EP-2, and EP-4 and intermittently in samples collected from EP-3.

The following bullets summarize detections above the relevant standards for the Part 257, Appendix IV parameters:

- Antimony: The GPS and Class I Standard are both 0.006 mg/L. Antimony has not been detected above 0.006 mg/L in any groundwater samples collected to date.
- Arsenic: The GPS and Class I Standard are both 0.01 mg/L. Arsenic has been detected intermittently above 0.01 mg/L, in samples collected from EP-4.

- Barium: The GPS and Class I Standard are both 2 mg/L. Barium has not been detected above 2 mg/L in any groundwater samples collected to date.
- Beryllium: The GPS and Class I Standard is 0.004 mg/L. Beryllium has not been detected above 0.004 mg/L in any groundwater sample collected to date; however, some samples were analyzed with laboratory reporting limits above 0.004 mg/L.
- Cadmium: The GPS and Class I Standard is 0.005 mg/L. Cadmium was detected in one sample from EP-1 (0.006 mg/L) and one sample from EP-4 (0.0052 mg/L).
- Chromium: The GPS and Class I Standard are both 0.1 mg/L. Chromium has not been detected above 0.1 mg/L in any groundwater sample collected to date.
- Cobalt: The GPS is based on background concentrations and is 0.018 mg/L. The Class I Standard is 0.1 mg/L. Cobalt has been detected in all samples from EP-3 and EP-4 and intermittently in samples collected from EP-2 above the GPS. Cobalt has not been detected above the Class I Standard in any groundwater sample collected to date.
- Lead: The GPS and Class I Standard is 0.0075 mg/L. Lead has been intermittently detected above the GPS in samples collected from EP-4. Lead was not detected above 0.0075 mg/L.
- Lithium: The GPS is based on background and is 0.082 mg/L. There is no Class I Standard for lithium. Lithium was detected above 0.082 mg/L in three samples collected from EP-3, however, some samples were analyzed with reporting limits above 0.082 mg/L.
- Mercury: The GPS and Class I Standard are both 0.002 mg/L. Mercury has not been detected above 0.002 mg/L in groundwater samples collected to date.
- Molybdenum: The GPS is 0.1 mg/L. There is no Class I Standard for molybdenum. Molybdenum has not been detected above 0.1 mg/L in groundwater samples collected to date.
- Radium-226/228: The GPS is 5 pCi/L. The Class I standard for Radium-226 and Radium-228, individually, is 20 pCi/L. There is no Class I Standard for combined radium. Radium has not been detected above 5 pCi/L in groundwater samples collected to date.
- Selenium: The GPS and Class I Standard is 0.05 mg/L. Selenium has not been detected above 0.05 mg/L in groundwater samples collected to date.
- Thallium: The GPS and Class I Standard is 0.002 mg/L. Thallium has been detected above 0.002 mg/L in several samples collected from EP-4, however, the most recent two samples are non-detect. Thallium has not been detected above 0.002 mg/L in any other samples, however, some samples were analyzed with reporting limits above 0.002 mg/L.

5.4 Corrective Measures Assessment

The original Assessment of Corrective Measures (ACM) is required by 40 CFR 257.96 due to detections above the GPS. The ACM, included in the Corrective Action and Selected Remedy Plan, was originally completed in March 2019 and revised in March 2021. The complete Corrective Action and Selected Remedy Plan is attached in Appendix G.

5.5 Remedy Selection

The “Corrective Action and Selected Remedy Plan” (Hanson, Revised March 30, 2021), outlines the selection of a remedy to address 1) the 35 IAC Part 620 exceedances attributed to the Site as alleged in Illinois EPA’s Violation Notice No. 6364 issued on July 3, 2018, and 2) any additional Part 620 exceedances attributable to the Site. The selected remedy for impacted groundwater is also consistent with the federal CCR rule, including 40 CFR 257.97 and 40 CFR 257.98. SIPC’s selected remedy consisted of:

- closure of the Emery Pond and adjacent FGD storage area by removal;
- construction of a CCR-compliant composite liner system in the footprint of the former Emery Pond to continue storm water management functions;
- construction of a perimeter drain at the toe of the liner system to protect the liner from external hydrostatic pressure with the additional benefit of recovering contaminated groundwater; and
- installation of three new monitoring wells, continuing to monitor the natural attenuation of contaminants in groundwater, and the establishment of a GMZ.

Closure construction activities began in late 2020. Emery Pond, and the adjacent FGD storage area, were dewatered and excavated. The removal and decontamination of Emery Pond was completed April 5, 2021 and the final inspection was completed May 28, 2021. The Closure Plan completed by Hanson Professional Services, Inc. (Hanson) in March 2019, and revised in April 2021 (Hanson 2021b), is attached in Appendix B. The Decontamination Certification and Closure Completion Certification is provided in Appendix C. The complete Corrective Action and Selected Remedy Plan is attached in Appendix G.

6.0 REQUIRED DOCUMENTATION

The section includes a brief discussion of the other documentation required by 35 IAC § 845.230(d)(3) to be included in the Application.

6.1 Permanent Marker Installation

The permanent marker required by 35 IAC § 845.130 was installed on June 3, 2021. Photographic proof of the installation of the permanent marker is attached in Appendix H.

6.2 Documentation of Slope Protection

35 IAC § 845.230(d)(3) requires documentation that the CCR surface impoundment, if not incised, will be operated and maintained with one of the forms of slope protection specified in 35 IAC § 845.430; however, as described in Section 1.2, Emery Pond was closed by removal. Therefore, this requirement for CCR management units no longer applies.

6.3 Emergency Action Plan

35 IAC § 845.230(d)(3) requires the inclusion of the Emergency Action Plan certification; however, as described in Section 1.2, Emery Pond was closed by removal. Therefore, the preparation and certification of an Emergency Action Plan are no longer applicable requirements.

6.4 Groundwater Monitoring System Design and Construction

The groundwater monitoring system was designed and constructed according to the requirements of 35 IAC § 845.630. The certified design and construction plans are included in the March 24, 2021 revision of the "Groundwater Monitoring Plan" attached in Appendix I (Hanson, 2021d).

6.5 Groundwater Sampling and Analysis Program

The details of the groundwater sampling and analysis program are included in the "Groundwater Monitoring Plan" (Hanson, 2021b) and the corresponding Addendum # 1 (Golder, 2021) attached in Appendix I and Appendix J, respectively. The statistical methods used for evaluation of the data are included in Addendum # 1. The statistical methods certification is provided in Appendix K. The groundwater sampling and analysis program, including the statistical methods, meet the requirements of 35 IAC § 845.640.

As described in the United States Environmental Protection Agency's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (*Unified Guidance*), dated March 2009, during the Detection and Assessment monitoring phases, the goal of the statistical monitoring program is to identify SSIs relative to background or the established criteria, allowing the owner/operator to determine if a release(s) has occurred and to respond by implementing Corrective Action (i.e., a groundwater remedy), if necessary. Conversely, the goal of the post-remedy Corrective Action monitoring program is to demonstrate compliance with the GPS. Thus, the goal of the statistical analysis procedures being employed is to analyze the data to determine when groundwater concentrations are consistently below the established criteria, which the *Unified Guidance* refers to as "statistically significant decreases" (SSDs). In order to calculate SSDs, the statistical methods in Addendum #1 propose confidence intervals to be calculated on a well-constituent pair basis for each constituent in 35 IAC §845.600. A minimum of four values are required to calculate a confidence interval. Closure by removal of the former Emery Pond was completed on April 5, 2021 with the first post-closure groundwater monitoring event completed in May 2021. Thus, the first Corrective Action statistical analysis will be completed following the first quarter 2022 monitoring event, which will be the fourth Corrective Action monitoring event following the completion of the closure by removal.

6.6 Groundwater Monitoring Program

The groundwater monitoring program was designed according to the requirements of 35 IAC § 845.650. A description of the monitoring program is included in the "Groundwater Monitoring Plan" (Hanson, 2021b) and the corresponding Addendum # 1 (Golder, 2021) attached in Appendix I and Appendix J, respectively.

To meet the requirements of 35 IAC § 845.610(b)(3) SIPC will:

1) Conduct groundwater monitoring according to the "Groundwater Monitoring Plan" (Hanson, 2021b) and the corresponding Addendum # 1 (Golder, 2021) attached in Appendix I and Appendix J, respectively;

2) Determine compliance with the GPS (calculate SSDs) starting after the fourth post-closure monitoring event; and

3) Submit all groundwater data collected and calculated SSDs to the IEPA within 60 days of completing each quarterly sampling event.

6.7 Post-Closure Plan

A post-closure plan is not required for the former Emery Pond because according to 35 IAC § 845.780(d), this requirement is not applicable for units that have closed by removal.

7.0 CLOSING

This operating permit will be maintained until completion of the groundwater monitoring required under 35 IAC § 845.740(b), three years after groundwater monitoring does not show an exceedance of the groundwater protection standard. According to 35 IAC § 845.230(e), this operating permit will be renewed on or before October 31, 2026.

8.0 REFERENCES

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Figures

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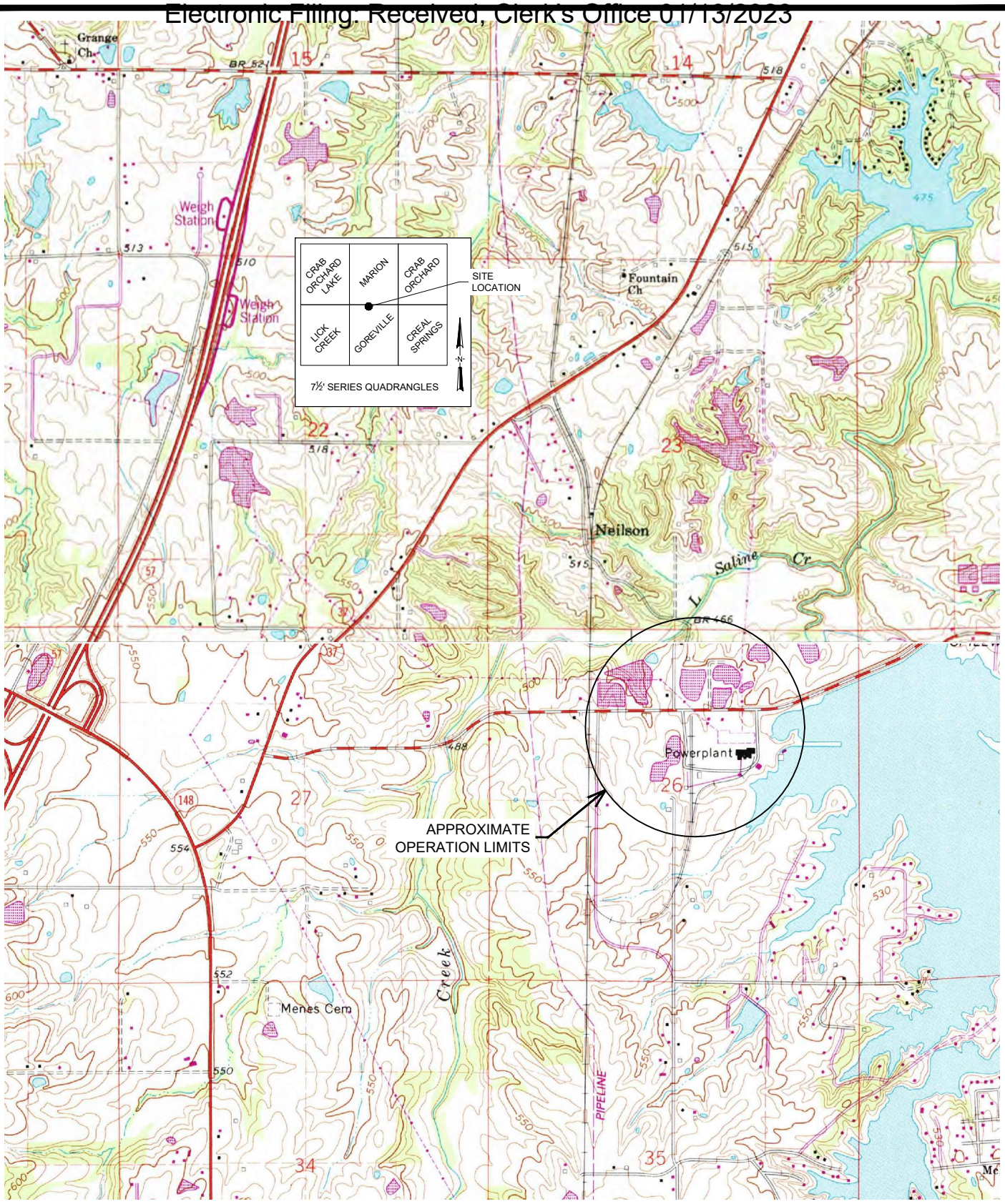

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SCALE

2,000 0 2,000 4,000

1 inch = 2,000 feet Contour interval = 10 feet

Approximate Site Location: n½ of Section 26; T10S., R2E.

SITE LOCATION MAP

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 1

MAR 15, 2019 10:01 AM HASEN01154
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LEGEND

- Background Monitoring Well
- Downgradient Monitoring Well
- Approximate Limits of the Former Emery Pond

PRIVILEGED AND CONFIDENTIAL:
PREPARED AT THE REQUEST OF COUNSEL

0 100 200
1 " = 100 Feet Feet

NOTE(S)

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 STATEPLANE ILLINOIS EAST FIPS 1201 FEET
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
3. MONITORING WELL LOCATION DATA RECEIVED FROM SOUTHERN ILLINOIS POWER COOPERATIVE

CLIENT

SOUTHERN ILLINOIS POWER COOPERATIVE

PROJECT

OPERATING PERMIT APPLICATION
MARION POWER PLANT

TITLE

MONITORING WELL LOCATION MAP

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-27
DESIGNED	DPJ
PREPARED	TBH
REVIEWED	DFS
APPROVED	MAH

PROJECT NO.	CONTROL	REV.	FIGURE
21467997	-	-	2

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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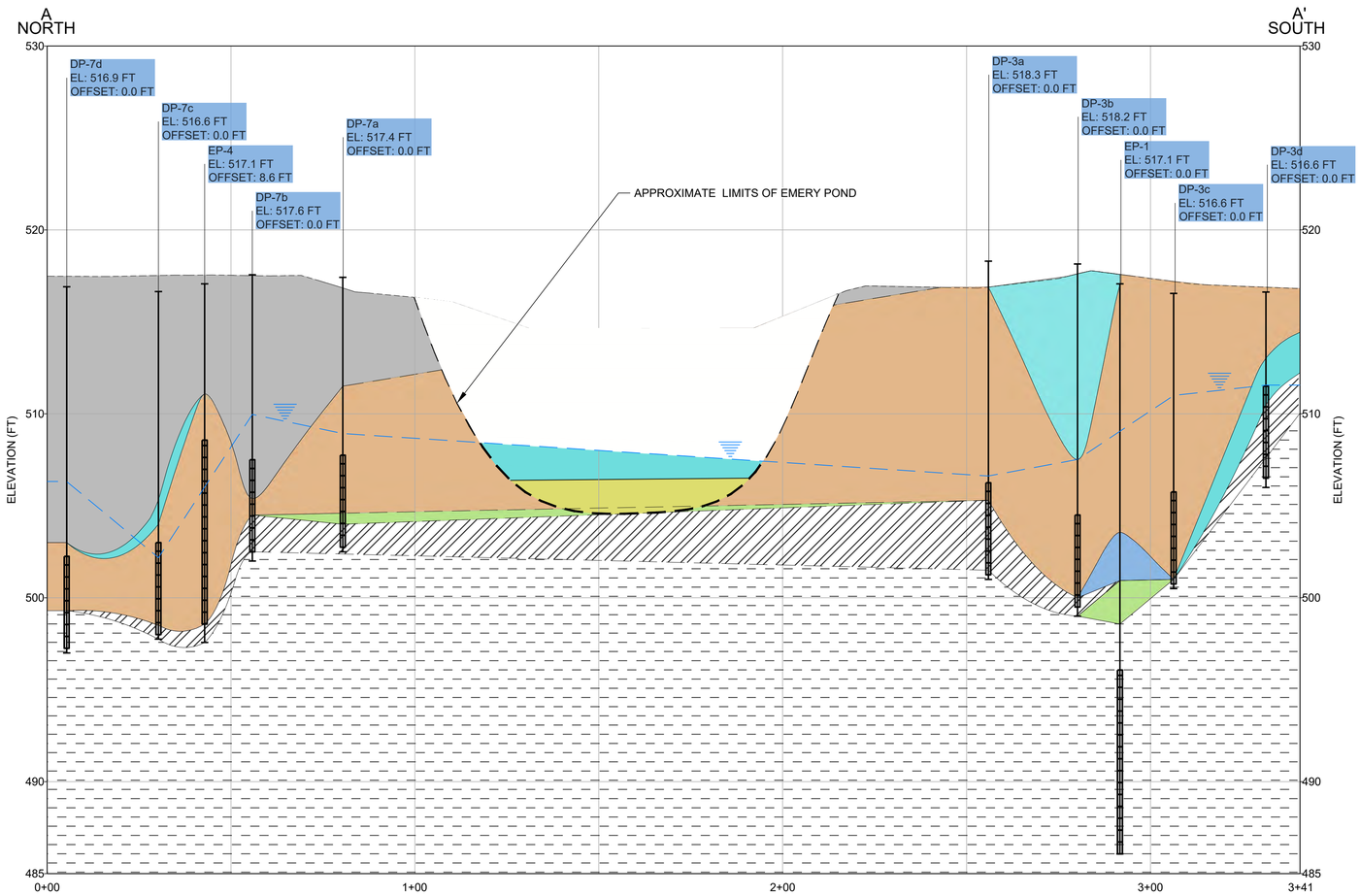

KEY MAP

LEGEND

- GROUNDWATER
- WATER
- FILL CONTAINING COAL COMBUSTION RESIDUAL
- FILL, ASPHALT AND/OR GRAVEL
- BLACK TO YELLOWISH BROWN SILT
- BROWNISH TAN TO ORANGE CLAYEY SILT
- BROWN SILTY CLAY
- RED/ORANGE FINE SAND
- YELLOWISH BROWN WEATHERED SANDSTONE
- YELLOWISH BROWN WEATHERED SHALE

GAMW-06 = WELL I.D.
EL: 624.4 FT = GROUND SURFACE ELEVATION
OFFSET: 33.5 FT = OFFSET DISTANCE
C/L = CENTERLINE

= GROUNDWATER ELEVATION (10/15/18)
= WELL SCREEN
= END OF BORING LOCATION

NOTE(S)

1. GEOLOGIC CONTACTS ILLUSTRATED BETWEEN AND BELOW BORINGS ARE INFERRED AND SHOULD NOT BE INTERPRETED AS EXACT INDICATORS OF GEOLOGIC CONDITIONS AT, BETWEEN, OR BELOW BORINGS.
2. GOLDER DEVELOPED THE GEOLOGIC CROSS-SECTIONS USING BORINGS LOGS COMPLETED BY AECOM IN 2017 AND HANSON 2019.

REFERENCE(S)

1. HANSON PROFESSIONAL SERVICES INC, "CLOSURE PLAN", REVISED APRIL 15, 2021.
2. AECOM, "2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT COAL COMBUSTION RESIDUAL (CCR) RULE", JANUARY 2018.

0 20 40
1" = 20' FEET

CLIENT
SOUTHERN ILLINOIS POWER COOPERATIVE

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-07-06
DESIGNED	MKS
PREPARED	AAZ
REVIEWED	DFSC
APPROVED	MAH

PROJECT
OPERATING PERMIT APPLICATION
MARION POWER PLANT

TITLE
INTERPRETED SUBSURFACE PROFILE A

PROJECT NO.	CONTROL	REV.	FIGURE
21467997	0001	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

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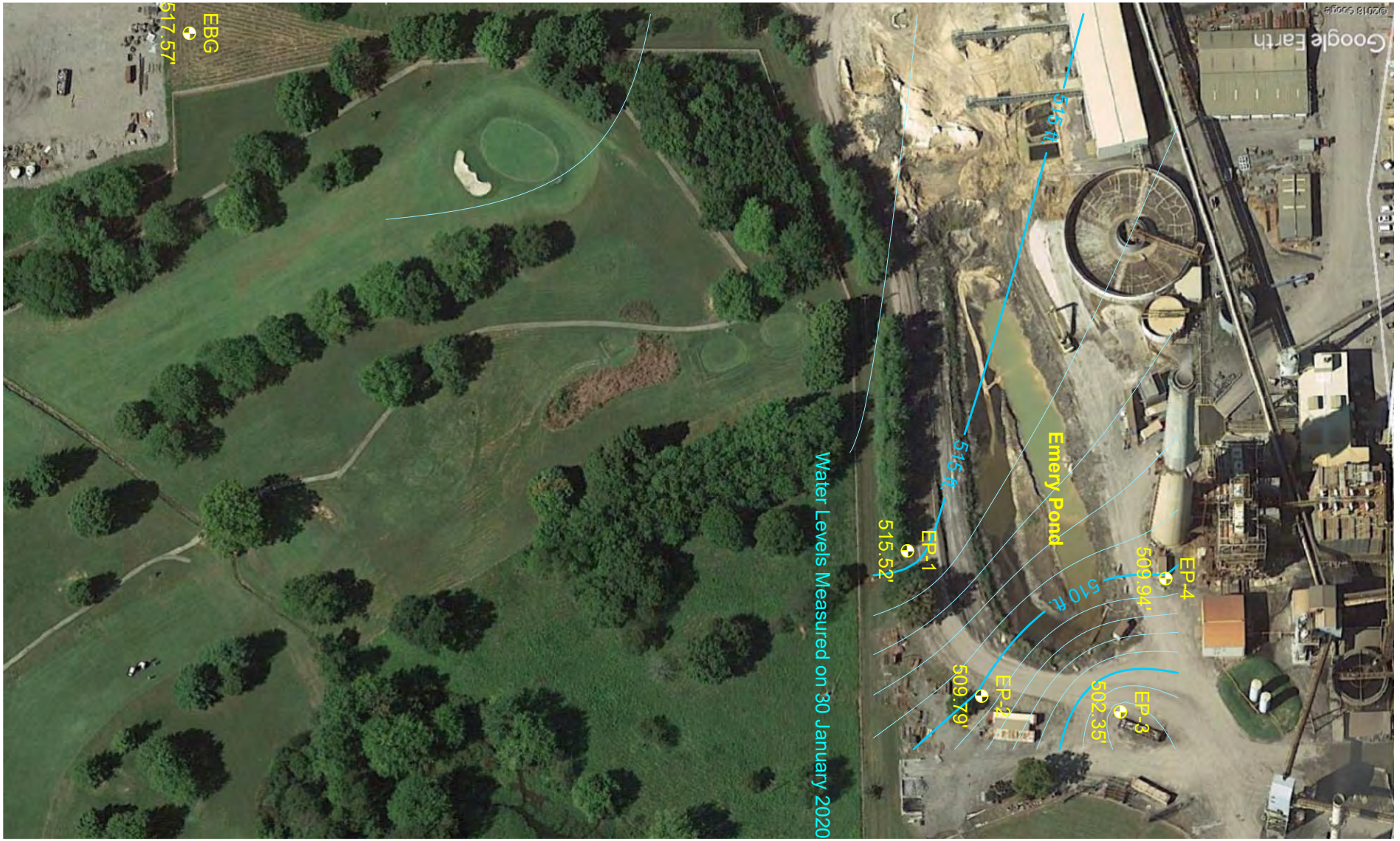

©Hanson Professional Services Inc., 2020

SCALE: 1 in. = 135 ft.

0 ft. 100 ft. 200 ft. 300 ft. 400 ft.

CONTOUR INTERVAL = 1 ft.

HANSON
Hanson Professional Services Inc.

POTENTIOMETRIC SURFACE MAP

2019 ANNUAL GROUNDWATER REPORT
EMERY POND - MARION POWER PLANT
MARION, WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 20E0006 FIGURE NO. B-1

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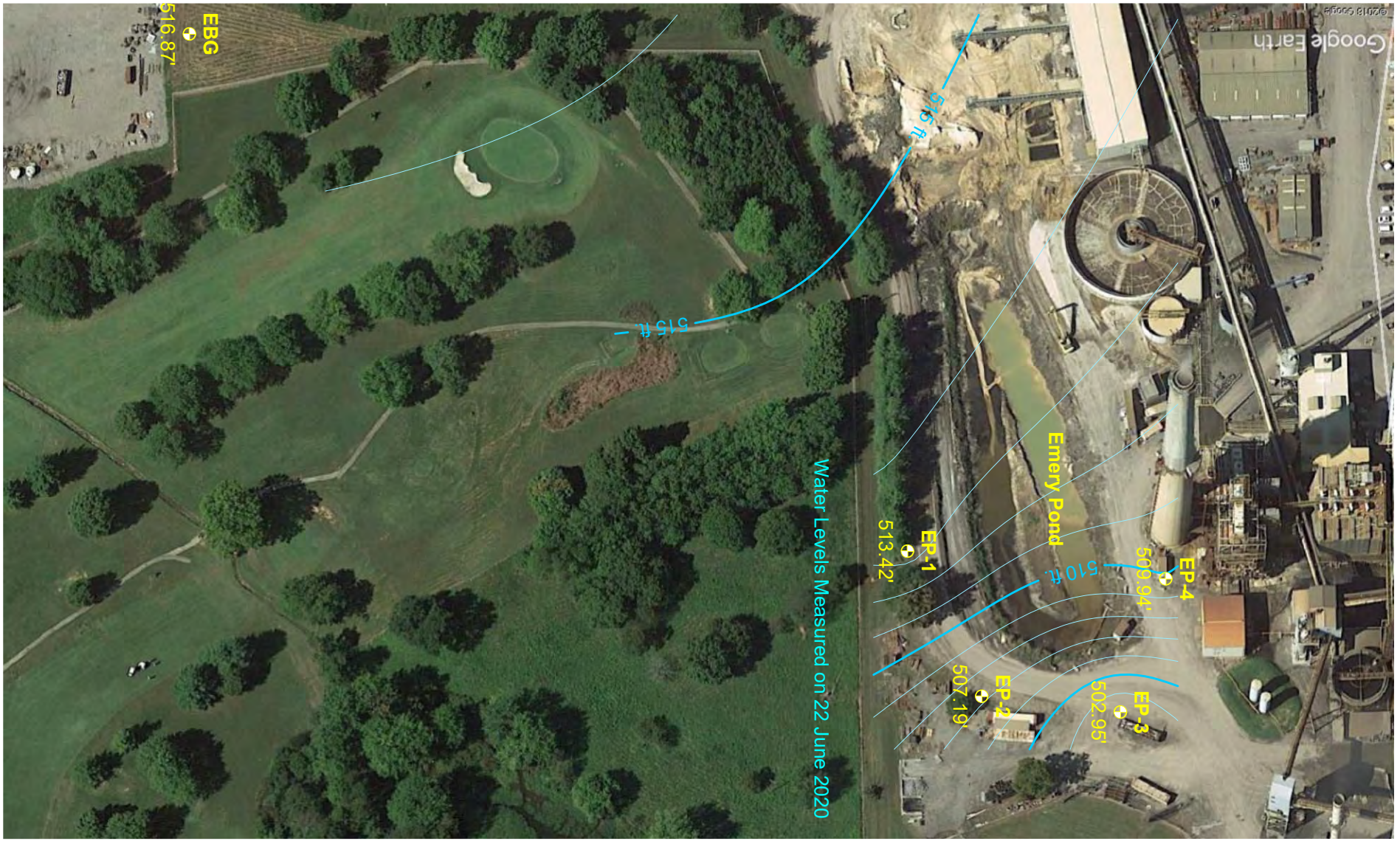

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SCALE: 1 in. = 135 ft.

0 ft. 100 ft. 200 ft. 300 ft. 400 ft.

CONTOUR INTERVAL = 1 ft.

HANSON
Hanson Professional Services Inc.

POTENTIOMETRIC SURFACE MAP

2019 ANNUAL GROUNDWATER REPORT
EMERY POND - MARION POWER PLANT
MARION, WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 20E0006 FIGURE NO. B-2

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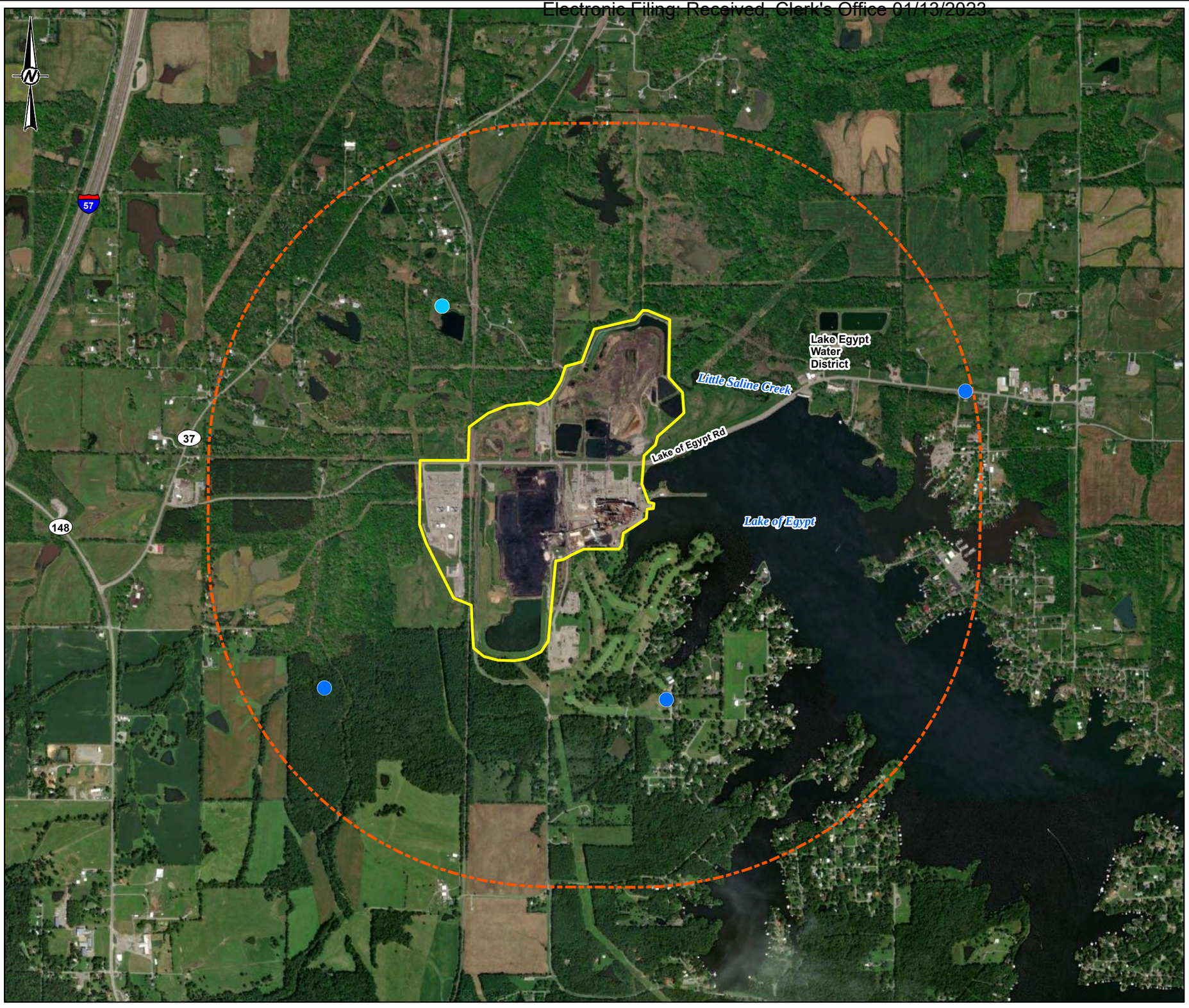
Electronic Filing: Received, Clerk's Office 01/13/2023



LEGEND

Water Well Location and Frequency

- Single Water Well Location
- 2 Overlapping Water Well Locations
- 1 Mile Buffer
- Approximate Operating Limits

KEY MAP

PRIVILEGED AND CONFIDENTIAL:
PREPARED AT THE REQUEST OF COUNSEL

0 1,500 3,000

1 " = 1,500 Feet Feet

FIGURE NARRATIVE

THIS FIGURE SHOWS GROUNDWATER WELL LOCATIONS NEAR THE MARION POWER PLANT BASED ON THE ILLINOIS WATER AND RELATED WELLS DATASET FROM THE ILLINOIS STATE GEOLOGICAL SURVEY AND THE PRAIRIE RESEARCH INSTITUTE. COLOR FLOODING REPRESENTS MULTIPLE WELL RECORDS AT ONE LOCATION. GOLDER DID NOT FIELD VERIFY ANY OF THE WELL LOCATIONS, WHICH SHOULD ONLY BE USED FOR QUALITATIVE PURPOSES. DATA ARE CURRENT AS OF JULY 6, 2021. ADDITIONAL WELLS MAY BE PRESENT.

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 STATEPLANE ILLINOIS EAST FIPS 1201 FEET
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
3. WELL DATA DOWNLOADED FROM ILLINOIS WATER AND RELATED WELLS BY THE ILLINOIS STATE GEOLOGICAL SURVEY AND THE PRAIRIE RESEARCH INSTITUTE ON JULY 6TH 2021

CLIENT

SOUTHERN ILLINOIS POWER COOPERATIVE

PROJECT

OPERATING PERMIT APPLICATION
MARION POWER PLANT

TITLE

IDENTIFICATION OF NEARBY WATER WELLS AND SURFACE WATER

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-10-27
DESIGNED	DFS
PREPARED	TBH
REVIEWED	DFS
APPROVED	MAH

PROJECT NO.	CONTROL	REV.	FIGURE
21467997	-	-	6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in

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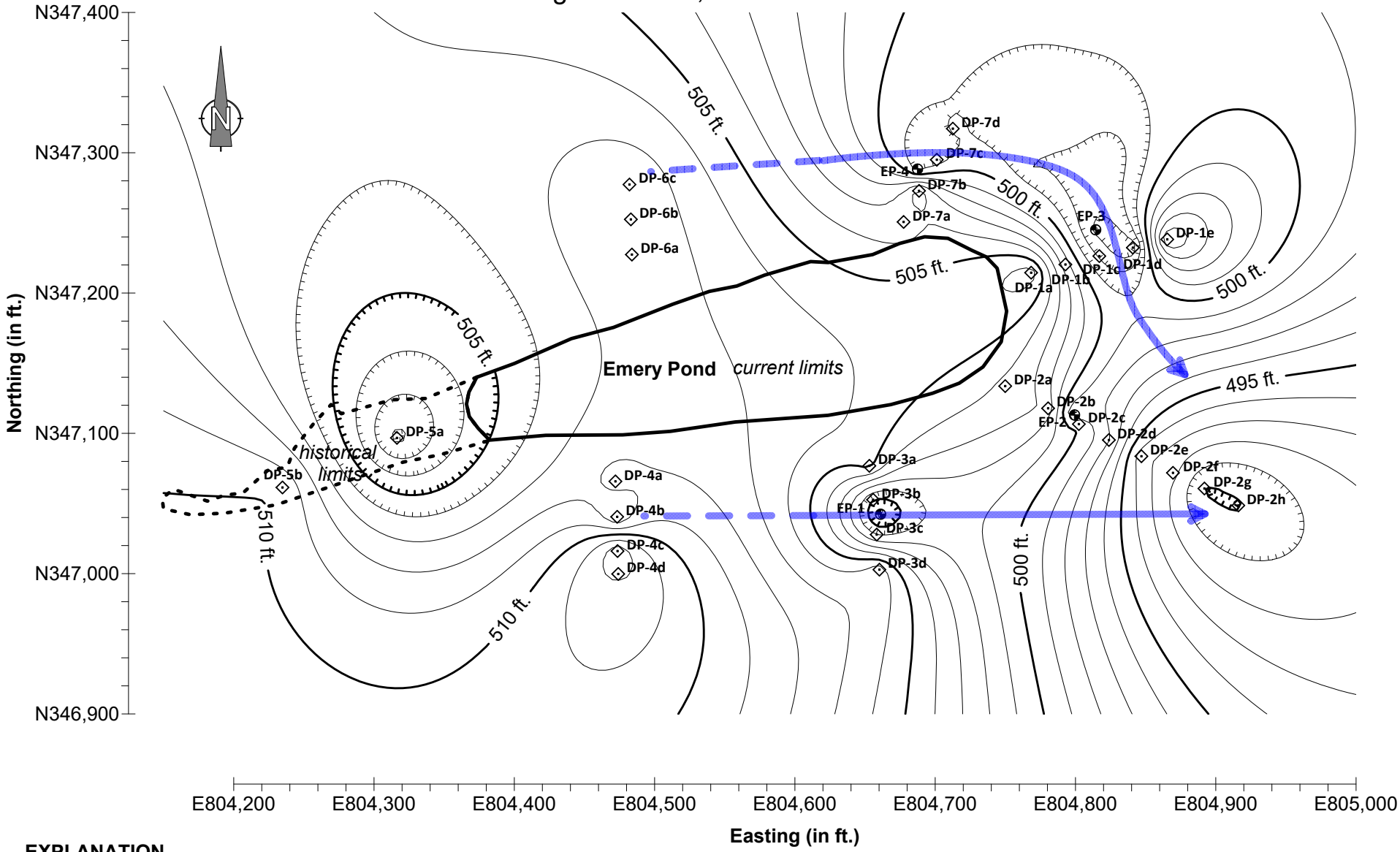

EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 1 foot
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

© Hanson Professional Services Inc. 2023

HANSON
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Preferential Flow Paths (Bedrock Surface)

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 4

APPENDIX A

Boring Logs

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-1

Sheet 1 of 1

Date(s) Drilled and Installed	**2/7/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**31.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**519.72 ft, msl** **517.07 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347042.306 ft** **804661.174 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
	0		NR	Topsoil		Black TOPSOIL, moist
			NR	CL		Brownish tan silty CLAY, moist, medium plasticity (CL)
	5		NR			
510			NR			becomes orangish with trace coarse sand and gravel, with rust colored mottles
	10		NR			becomes very stiff
			NR			becomes medium-stiff, low plasticity
	15		NR	ML		Brownish tan to oragne clayey SILT, trace gravel and rust colored mottles, stiff, non-plastic, moist (ML)
500			NR	SP		Red orange SAND with orange-brown silty clay, moist (SP)
	20		NR	SNDSTN		SANDSTONE, with interbedded limestone and shale
			NR			
	25		NR			
490			NR			
	30		NR			
	35					Boring terminated at 31.0 ft. bgs on 2/7/2017. Monitoring well installed to 31.0 ft. bgs on 2/7/2017. NR = Not Recorded

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- Filter Sand
- 2.0" diameter SCH 40 PVC Riser
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-2

Sheet 1 of 1

Date(s) Drilled and Installed	**2/7/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**15.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**513.79 ft, msl** **511.15 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347113.029 ft** **804799.408 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	SAMPLES: Sample Interval	SAMPLES: % Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
510	0		NR	Fill		Asphalt and GRAVEL (FILL)
			NR	CL		Brown to tan silty CLAY, medium stiff, moist (CL)
			NR	CL		brown to tan silty CLAY, soft to medium, medium to high plasticity, moist (CL)
	5		NR			medium plasticity, with rust color oxidation, trace sand and gravel
			NR			
	10		NR			
500			NR	ML		Tan clayey SILT, stiff, low plasticity, moist (ML)
	15		NR	SNDSTN		SANDSTONE
490	20					Boring terminated at 15.0 ft. bgs on 2/7/2017. Monitoring well installed to 15.0 ft. bgs on 2/7/2017. NR = Not Recorded
	25					
480	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- 2.0" diameter SCH 40 PVC Riser
- Filter Sand
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Electronic Filing: Received, Clerk's Office 01/13/2023

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-3

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**26.5 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**518.95 ft, msl** **518.95 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347245.08 ft** **804814.534 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
	0		NR	Fill		GRAVEL (FILL)
			NR	ML		Brown clayey SILT, moist (ML)
			NR	CL		Olive green to gray silty CLAY, trace sand, medium, low to medium plasticity, moist (CL)
	5		NR			
			NR			
510			NR			2 inch layer of cinders, clay becomes tan-brown
	10		NR			becomes loose, moist, brown/gray/tan, with gravel, some sand and cinders
			NR			
			NR	ML		Light gray to tan clayey SILT, stiff, low plasticity, moist (ML)
	15		NR	ML		Gray SILT, trace clay, stiff, non-plastic, moist (ML)
500			NR	CL		Gray silty CLAY with yellow-gold gypsum, moist to wet (CL)
	20		NR	SNDSTN		SANDSTONE
			NR			
	25		NR			
			NR			
490						Boring terminated at 26.5 ft. bgs on 2/8/2017. Monitoring well installed to 26.5 ft. bgs on 2/8/2017. NR = Not Recorded
	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- 2.0" diameter SCH 40 PVC Riser
- Bentonite Chips
- Filter Sand
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

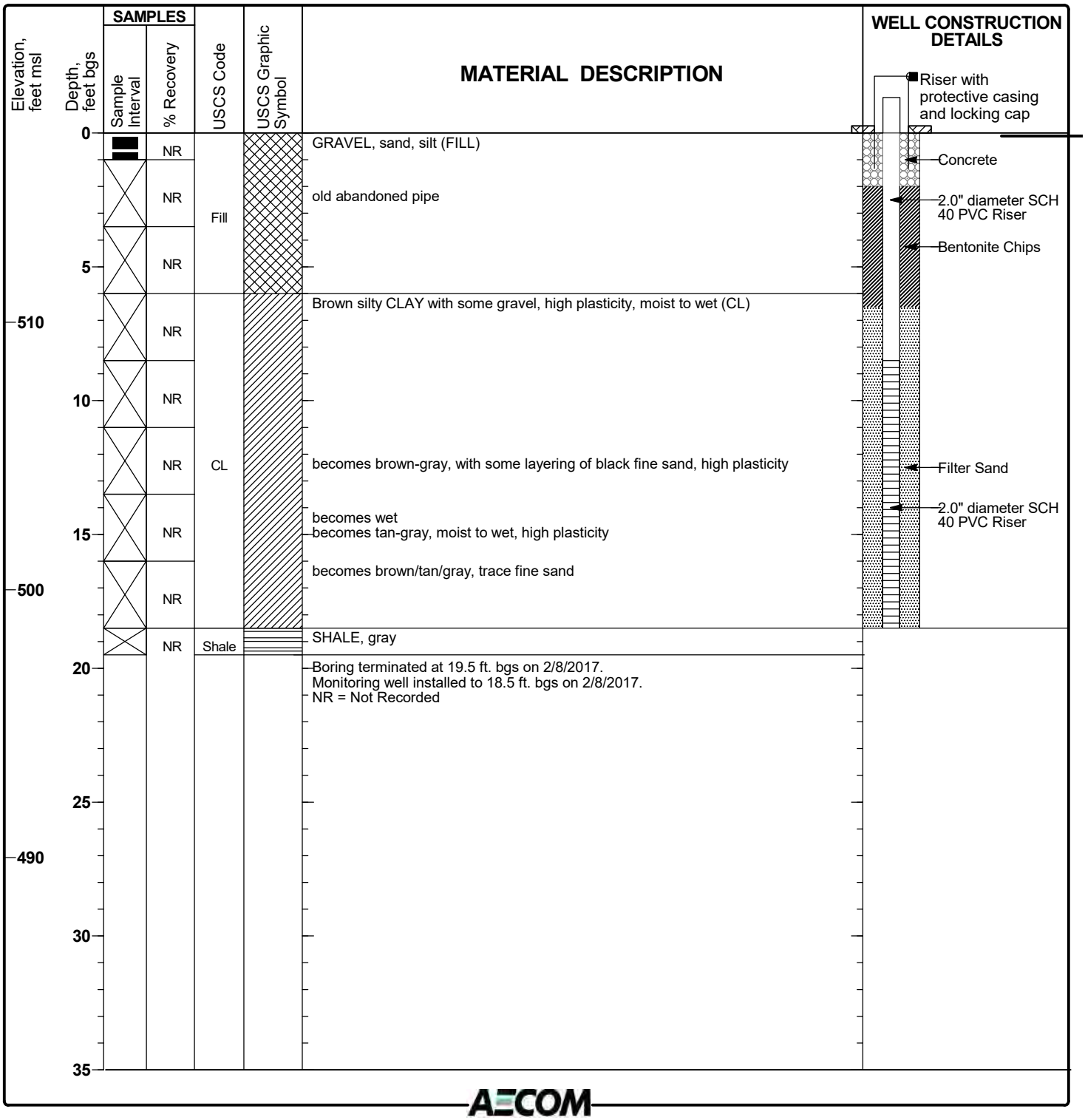
AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-4

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**18.5 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**519.74 ft, msl** **517.07 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347288.297 ft** **804687.527 ft**
Seal or Backfill	**Bentonite Chips**				



SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EBG

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**25.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**524.87 ft, msl** **521.74 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**346358.14 ft** **804168.155 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
520	0		NR	ML		Brownish tan, clayey SILT, stiff, non-plastic, moist (ML)
	5		NR	CL		Brownish tan silty CLAY, very soft, medium to high plasticity, moist (CL)
			NR			becomes low to medium plasticity
	10		NR			with black fines
510			NR			becomes brown/orange/gray, trace black fines, low plasticity
	15		NR			trace rust colored oxidation with red mottling
			NR	SHALE		SHALE, gray
	20		NR			
500			NR			
	25		NR			Boring terminated at 25.0 ft. bgs on 2/7/2017. Monitoring well installed to 25.0 ft. bgs on 2/7/2017. NR = Not Recorded
490	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- 2.0" diameter, SCH 40 PVC Riser
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen
- Filter Sand

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

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KEY TO SYMBOLS

Hanson Professional Services Inc.
1525 S. Sixth Street
Springfield, Illinois 62703
(217) 788-2450

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

ASPHALT	ASHPALT		MH	ELASTIC SILT
BASALT	BASALT		ML	SILT
BLDRCBBL	BOULDERS AND COBBLES		OH	HIGH PLASTICITY ORGANIC SILT
BRECCIA	BRECCIA		OL	LOW PLASTICITY SILT
CH	HIGH PLASTICITY CLAY		PT	PEAT
CL	LOW PLASTICITY CLAY			SANDSTONE
COAL	COAL		SC	CLAYEY SAND
CONC.	CONCRETE			SHALE
FILL	FILL			SILTSTONE
GC	CLAYEY GRAVEL		SM	SILTY SAND
GM	SILTY GRAVEL		SP	POORLY GRADED SAND
GPS	SANDY GRAVEL		SW	WELL GRADED SAND
GP	POORLY GRADED GRAVEL		TILL	GLACIAL TILL
GW	WELL GRADED GRAVEL			TOPSOIL
LIMESTONE				

SAMPLER SYMBOLS

- GRAB / AUGER CUTTINGS HAND AUGER [AUG or HA]
- SPLIT SPOON / SPT [SS]
- SHELBY TUBE [SH]
- ROCK CORE [RC]
- CONTINUOUS OR MACROSAMPLER [CS or DP]
- BLIND DRILL [BD]
- MODOFIED CALIFORNIA SAMPLER [MC]

WELL SYMBOLS

- CONCRETE SURFACE SEAL
- HIGH-SOLIDS BENTONITE GROUT
- BENTONITE CHIP SEAL
- SAND PACK W/SOLID RISER
- SAND PACK W/SCREEN

ABBREVIATIONS

LL	-	Liquid Limit (%)	NP	-	Non-Plastic
PL	-	Plastic Limit (%)	Qu	-	Unconfined Compressive Strength (tsf)
woh	-	Weight of Hammer	Qp (P)	-	Pocket Penetrometer
wor	-	Weight of Rods	TV	-	Torvane
MaxGS	-	Maximum Grain Size	PID	-	Photoionization Detector
<#200	-	Percent Passing No. 200 Sieve	ppm	-	Parts per Million

GROUNDWATER LEVELS

- Level during drilling, or as indicated
- Level after 24 hours, or as indicated
- Level as indicated

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Storm Water Basin Monitoring Wells
Location: Marion Power Station, Marion, IL
Project: 21E0079
DATES: **Start:** 10/5/2021
Finish: 10/5/2021
WEATHER: Foggy, cool (low 60's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: Bobcat T630 with auger attachment
Drilling Method: 3¼" Hollow Stem Auger
FIELD STAFF: **Driller:** J. Carter
Helper: J. Taylor
Eng/Geo: R. Hasenyager

BOREHOLE ID: EP-5
Well ID: EP-5
Surface Elev: 524.64 ft. MSL
Completion: 16.32 ft. BGS
Station: 347,001.63N
804,473.78E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S; **Range** 2E

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = Dry - at completion
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	0/60 *0%*	AGR					0			524	
							2			522	
							4			520	
							6			518	
	0/60 *0%*	AGR					8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		516	
							10			514	
	0/60 *0%*	AGR					12			512	
							14			510	
	0/16 *0%*	AGR					16	Yellowish brown (10YR5/8), weathered SANDSTONE.			

EOB = 16.3 ft.

NOTE(S): Boring drilled adjacent to DP-4d.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Storm Water Basin Monitoring Wells
Location: Marion Power Station, Marion, IL
Project: 21E0079
DATES: **Start:** 10/4/2021
Finish: 10/4/2021
WEATHER: Sunny, mild (high 70's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 550X
Drilling Method: 3¼" Hollow Stem Auger with split spoon
FIELD STAFF: **Driller:** J. Carter
Helper: J. Taylor
Eng/Geo: R. Hasenyager

BOREHOLE ID: EP-6
Well ID: EP-6
Surface Elev: 502.08 ft. MSL
Completion: 13.62 ft. BGS
Station: 347,034.68N
804,941.94E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S; **Range** 2E

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 13.00 - at completion
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	0/12 0%	BD									
2A	17/24 71%	SS	5-7 7-5 N=14	18.7		3.5	2	Yellowish brown (10YR5/4) mottles, moist, medium, SILT with few clay and trace sand.		500	
3A	24/36 67%	SS	2-2 4-4 N=6	24.6		1.5	4	Gray (10YR5/1) with 10% Yellowish brown (10YR5/6) mottles, moist, medium, CLAY with some silt and trace sand.		498	
4A	23/24 96%	SS	1-1 4-4 N=5	20.7		3.5	6	Yellowish brown (10YR5/6) wuth 20% Gray (10YR6/1) mottles, moist, medium, SILT with few clay, trace sand, and trace gravel.		496	
5A	27/36 75%	SS	7-8 13-13 N=21	12.1		4.0	8			494	
							10	Strong brown (7.5YR5/8), moist, dense, very fine- to coarse-grained SAND with some silt.		492	
6A	21/21 100%	SS	4-10 27-60/3" N=37	15.0		4.0	12	Strong brown (7.5YR5/8) with 10% gray (7.5YHR5/1) mottles, moist, hard, weathered SHALE.		490	
	0/10 0%	BD					▼				

EOB = 13.6 ft.

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Storm Water Basin Monitoring Wells
Location: Marion Power Station, Marion, IL
Project: 21E0079
DATES: **Start:** 10/4/2021
Finish: 10/4/2021
WEATHER: Sunny, mild (low 70's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 550X
Drilling Method: 3¼" Hollow Stem Auger with split spoon
FIELD STAFF: **Driller:** J. Carter
Helper: J. Taylor
Eng/Geo: R. Hasenyager

BOREHOLE ID: EP-7
Well ID: EP-7
Surface Elev: 512.49 ft. MSL
Completion: 18.50 ft. BGS
Station: 347,219.28N
804,890.26E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S; **Range** 2E

WATER LEVEL INFORMATION:
▼ = 13.00 - during drilling
▼ = 16.00 - at completion
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	0/12 0%	BD						Light bluish gray (5PB8/1), moist, dense, GRAVEL with some sand and some silt.		512	
2A	15/24 63%	SS	2-2 3-3 N=5	14.6		1.0	2	Black (10YR2/1), moist, loose, very fine- to coarse-grained SAND with some silt and trace gravel (Bottom Ash).		510	
3A				17.3		2.0		Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.			
	32/36 89%	SS	2-5 13-7 N=18				4			508	
4A				21.4		1.0	6			506	
	16/24 67%	SS	2-1 2-1 N=3					Grayish brown (10YR5/2) with 15% yellowish brown (10YR5/6) mottles, moist, medium CLAY with some silt, trace sand, and trace gravel.			
5A				21.8		1.0	8			504	
	17/36 47%	SS	1-2 2-3 N=4								
6A				24.0			10			502	
	15/24 63%	SS	woh-1 3-4 N=4			1.0	12	Pale brown (10YR6/3), moist, soft, SILT with few clay and trace sand.		500	
7A				26.2			▼				
	27/36 75%	SS	1-2 2-3 N=4			0.5	14	Yellowish brown (10YR5/4), moist, soft, CLAY with some silt and trace sand.		498	
								Gray (10YR5/1), moist, soft, SILT with few clay and trace sand.			
8A				24.3			▼ 16			496	
	20/24 83%	SS	woh-1 4-5 N=5			0.5		Yellowish brown (10YR5/4), moist, soft, CLAY with some silt dand trace sand.			
	0/6 0%	BD					18	Yellowish brown (10YR5/8), moist, dense, very fine- to medium-grained SANDSTONE.		494	

EOB =18.5 ft.

NOTE(S):

APPENDIX B

Closure Plan

Electronic Filing: Received, Clerk's Office 01/13/2023

Emery Pond

Closure Plan

Marion Power Plant
Southern Illinois Power Cooperative
Marion, Williamson County, Illinois

March 29, 2019
revised April 15, 2021

HANSON
Engineering | Planning | Allied Services

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Appendix A Construction Quality Assurance Program Forms
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Abbreviations

BGS – below ground surface
CCR – Coal Combustion Residuals
CFR – Code of Federal Regulations
FGD – Flue-Gas Desulphurization
IAC – Illinois Administrative Code
SWPPP – Storm Water Pollution Prevention Plan

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1. Introduction

The pond at issue, Emery Pond, is located near the northwestern shore of Lake of Egypt on the site of Southern Illinois Power Cooperative's (SIPC) power plant near Marion, Illinois (Site). SIPC has owned and operated a coal-fired power plant at the Site since 1963.

The Emery Pond is a less-than-1-acre detention pond located on the south side of the main stack at the power plant facility. The pond has received coal combustion residuals (CCR) and other non-CCR material in waste streams and in runoff that flows by gravity to the pond, particularly air heater wash, and other miscellaneous boiler and precipitator wastes. The pond is occasionally dredged due to the ongoing sediment carried into the pond via various plant and natural effluent streams. The pond is incised on the north, west and south sides, with a wide berm separating the pond from nearby Lake of Egypt to the east. This berm is approximately 140 feet in width at the crest, with a height of approximately 10 feet. The pond has a maximum volume of approximately 6.6 acre-feet. The pond is unlined and, therefore, does not meet the liner design criteria of the federal CCR Rule, 40 CFR 257.71.

Emery Pond is a significant hazard potential classification CCR surface impoundment, according to 40 CFR 257.73. The pond is exempt from the structural stability assessment and safety factor assessment requirements of 40 CFR 257.73 due to an impoundment height of less than 20 feet and impoundment volume of less than 20 acre-feet.

The original pond footprint was reduced around 2009 when a Flue-Gas Desulphurization (FGD) gypsum belt dewatering loadout facility was built on the western end of the existing pond. Direct push borings collected at the site indicate that the previous footprint beneath the FGD Loadout Area contains approximately 7,200 cubic yards of bed ash material. Direct push boring logs and a map of the boring locations are included in Appendix E.

In the fall of 2020, SIPC plans to commence closure of the pond and adjacent FGD Loadout Area by removal of existing CCR. A new pond, designated as Storm Water Basin, will replace Emery Pond within the existing footprint. Construction activities are summarized as follows:

- The area currently occupied by Emery Pond will be closed to meet current Federal and State of Illinois regulations, and at Illinois EPA's request this plan, and related plans have been prepared to align with the state CCR surface impoundment rule as currently proposed. For instance, Section 3.8 below addresses CCR transportation and management during closure activities in a manner consistent with the proposed state CCR rule. CCR materials currently contained in the pond will be removed and disposed of off-site. This closure plan will be implemented in connection with ongoing discussions between SIPC and Illinois EPA regarding resolution of claims that Emery Pond has caused exceedances of state groundwater standards. In that regard, it is expected that the closure activities described herein will decontaminate the source of such alleged exceedances, and thus contribute toward achieving relevant groundwater standards. See also the Corrective Action and Selected Remedy Plan submitted contemporaneously herewith.
- A new Storm Water Basin will be constructed within the existing footprint of Emery Pond to collect local drainage. Though it has been designed to meet the requirements of 40 CFR 257, the new basin will not meet the definition of a regulated CCR unit because it will no longer receive CCR. Nonetheless, the basin will be designed to meet the liner criteria for new CCR surface impoundments of 40 CFR 257.72 and the structural integrity criteria of 40 CFR 257.74. The basin will be constructed with a composite liner system meeting the federal requirements of

40 CFR 257.71. The Storm Water Basin will be permitted and operated as a water treatment device under 35 IAC 309, Subpart B.

- The FGD Loadout Area will be closed by removing surface FGD material and bed ash deposits. The area will be filled with compacted clean soil material and surfaced with crushed aggregate. This area, if closed in place, would have require approximately 5,900 square yards of final cover.
- The installation of a permanent dewatering system around the base of the basin liner system will provide protection from hydraulic pressures to the liner system and will collect groundwater in the vicinity of the new basin.
- Although SIPC maintains that an NPDES permit modification and construction permit are not needed with respect to the closure of Emery Pond and installation of the new Storm Water Basin, SIPC has submitted an NPDES permit modification application and a construction permit application to Illinois EPA per Illinois EPA request.

2. Definitions

Closed means placement of CCR in a CCR unit has ceased, and the owner or operator has completed closure of the CCR unit in accordance with applicable state and/or federal regulation and has initiated post-closure care.

Coal combustion residuals (CCR) means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

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 unit treats, stores, or disposes of CCR.

CCR unit means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the context of the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified.

Dewatering means removal of freely drained pore water from CCR sediments or soil.

Operator means the person(s) responsible for the overall operation of a CCR unit.

Qualified person means a person or persons trained to recognize specific appearances of structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit by visual observation and, if applicable, to monitor instrumentation. Qualified professional engineer means an individual who is licensed by a state as a Professional Engineer to practice one or more disciplines of engineering and who is qualified by education, technical knowledge, and experience to make the specific technical certifications required under this subpart. Professional engineers making these certifications must be currently licensed in the state where the CCR unit(s) is located.

Recognized and generally accepted good engineering practices means engineering maintenance or operation activities based on established codes, widely accepted standards, published technical reports, or a practice widely recommended throughout the industry. Such practices generally detail approved ways to perform specific engineering, inspection, or mechanical integrity activities.

Unwatering means removal of surface (free) water from a site.

3. CCR Removal Activities

Major removal activities include dewatering, contaminated riprap removal, CCR sediment removal, and minor re-grading. CCR removal will be performed in accordance with the construction quality assurance procedures described in Appendix A and documented by an Illinois-licensed professional engineer. Figures showing the Emery Pond Closure and Storm Water Basin design are included in Appendix B and an estimated construction schedule is included in Appendix C.

3.1 CCR Removal

Completion of the activities described below will result in closure of the Emery Pond through removal of CCR sediment. This closure plan includes construction quality assurance (CQA) procedures consistent with the construction requirements for permitted CCR units in Illinois.

In addition to CCR material contained within Emery Pond, FGD material on the ground surface and bed ash and other deposits buried beneath the FGD Loadout Area and within Emery Pond will be excavated and transported to one or more of the following permitted disposal facilities:

- Perry Ridge Landfill, Inc.
- Southern Illinois Regional Landfill, Inc.
- West End Disposal Facility

3.2 Erosion and Sediment Control Measures

Best management practices (BMPs) consisting of interim and permanent stabilization and structural features will be implemented at the site for erosion and sediment control. Perimeter control measures such as silt filter fences and/or storm drain inlet protection will be installed prior to excavation activities. Permanent stabilization practices include gravel surfacing of perimeter roadways. Permanent stabilization practices will be initiated as soon as practicable in portions of the site where construction activities have permanently ceased, or within seven days in portions of the site where construction activities have temporarily ceased (unless construction activity on those portions of the site will resume within 14 days). The gravel surfacing mixture described in Section 3.11 will be used for permanent stabilization.

Structural features include floating suction strainers (for dewatering pumps), silt filter fences, storm drain inlet protection, rock outlet protection, and rolled excelsior, straw bales, or aggregate ditch checks.

BMPs will be implemented and maintained until construction activities are completed and the site is stabilized. SIPC's Storm Water Pollution Prevention Plan (SWPPP) has been included in Appendix D**Error! Reference source not found.**. Note that the construction contractor will need to prepare and file their own SWPPP.

3.3 Emery Pond Unwatering

Emery Pond must be unwatered for CCR sediment removal to be accomplished using conventional earthmoving equipment. Unwatering will be done using an existing pump station at the east end of the pond. This pump station transfers water from Emery Pond to the South Fly Ash Pond for discharge through NPDES Outfall 002.

Once the pond is substantially unwatered, additional methods may be required to dewater the remaining sediment deposits. These options include various combinations of temporary sump pits and/or drainage trenches. The option selected must result in sufficient dewatering in a manner that minimizes re-entrainment of solids and erosion at the discharge location(s). All dewatering activities must be conducted using appropriate best management practices (BMPs) for, and in compliance with the conditions of the Construction Permit. Installation of a permanent dewatering system is described in Section 3.9.

Unwatering of the Emery Pond is estimated to be completed within two (2) days. This is based on a total pumping volume and rate of 195 thousand gallons (at a pond operating water surface elevation of 509.0) and 120 thousand gallons per day, respectively.

3.4 CCR Sediment Dewatering

Dewatering of excavated CCR will be performed by laying out the wet material on perched drying pads within the pond and FGD storage area. Free water that drains out of the material will be directed to drain back into the pond for collection and pumping. The estimated dewatering volume is 587,000 gallons, assuming a free water volume of 25% within the CCR material. The CCR material will be hauled for disposal once sufficient free liquids have discharged to meets the Paint Filter Liquids Test criteria outlined in Section 3.5.

3.5 CCR Sediment Sampling

CCR sediment from the Emery Pond will be transported to a permitted facility for disposal. The sediment will be sampled and tested as necessary to satisfy disposal prequalification requirements. Sampling activities will be conducted in accordance with the construction quality assurance procedures in Section 4.4 of this Plan. Dewatering of sediment must be conducted such that the transported materials do not contain “free liquids” as defined by the Paint Filter Liquids Test (as referenced in 35 IAC 811.107(m)(3)(A)), prior to placement or transport.

3.6 Riprap Excavation

Stone riprap was placed in the Emery Pond to protect the side slopes from wave action and minimize erosion near the inlets and outlet. A total of approximately 600 cubic yards of riprap is present around the perimeter of the Emery Pond. It is visually apparent that CCR sediment has settled in, and adhered to, the portions of the riprap in contact with the pond water.

The riprap will be excavated and transported to a permitted facility for disposal.

3.7 CCR Sediment Excavation

Based on sampling activities, the CCR sediment material is a brown to gray color, loose to very loose consistency, non-cohesive silt to sand size ash and/or FGD material that is often cemented to various degrees. The underlying pond subgrade material is bedrock consisting of weathered shale or weathered sandstone. Bedrock depths measured at the Emery Pond site are found in Appendix E.

The CCR sediment is to be excavated using conventional earthmoving equipment such as a tracked excavator or loader. An estimated 3,500 cubic yards of sediment must be removed to reach the underlying subgrade surface. Sediment excavation will be conducted in accordance with the construction quality assurance procedures as directed by the site CQA Officer or his designee. Upon completion, removal will be certified as described in Section 5.3.

3.8 CCR Management During Closure and Transportation

CCR removed from the Site will be responsibly handled and transported in accordance with draft rule 35 IAC 845.740 as follows:

1) When transporting CCR by motor vehicle, manifests must be carried as specified in 35 IAC 809.
2) The Contractor transporting CCR off-site shall develop, and submit a CCR transportation plan for Owner approval, which shall include:
   a) the frequency, time of day, and routes of CCR transportation;
   b) measures to minimize noise, traffic, and safety concerns caused by the transportation of the CCR;
   c) measures to limit fugitive dust from any transportation of CCR;
   d) installation and use of a vehicle washing station;
   e) a means of covering the CCR for any mode of CCR transportation, including conveyor belts; and
   f) a requirement that, for transport by motor vehicle, the CCR is transported by a permitted special waste hauler pursuant to 35 IAC 809.201.
3) The Contractor must develop and implement on site dust controls, which must include:
   a) A water spray or other commercial dust suppressant to suppress dust in CCR handling areas and haul roads; and
   b) CCR must be handled to minimize airborne particulates and offsite particulate movement during any weather event or condition.
4) The Contractor must provide the following public notices:
   a) signage must be posted at the property entrance warning of the hazards of CCR dust inhalation; and
   b) when CCR is transported off-site, a written notice explaining the hazards of CCR dust inhalation, the transportation plan and tentative transportation schedule must be provided to units of local government through which the CCR will be transported.
5) The Contractor must take measures to prevent contamination of surface water, groundwater, soil, and sediments from the removal of CCR, including but not limited to the following:
   a) CCR removed from the surface impoundment must be stored in a CCR storage pile.
   b) CCR storage piles shall:
      i) be tarped or constructed with wind barriers to suppress dust and to limit stormwater contact with storage piles;
      ii) be periodically wetted or have periodic application of dust suppressants;
      iii) have an impervious storage pad or geomembrane liner that is properly sloped to allow appropriate drainage;
      iv) be tarped over the edge of the storage pad where possible;
      v) be constructed with fixed and mobile berms where appropriate to reduce run-on and run-off of stormwater to and from the storage pile and minimize stormwater-CCR contact.
   c) The Contractor shall incorporate general housekeeping procedures such as daily cleanup of CCR, tarping of trucks, maintaining the pad and equipment, and good practices during unloading and loading.
   d) The Contractor must minimize the amount of time the CCR is exposed to precipitation and wind.

3.9 Permanent Dewatering System

Once the CCR Sediment Excavation is complete, earthwork to establish the base grade may commence. A permanent dewatering system (also referred to as the perimeter toe drain) will be installed around the perimeter of the excavated area to control groundwater levels prior to and during construction of the Storm Water Basin base grade (see Sheets C303, C304, and C305 in Appendix B for details and materials). The lowered groundwater elevation will facilitate construction by eliminating seeps and reducing hydraulic pressure during structural fill placement and soil liner construction. The dewatering system will be composed of a gravel-filled trench with a perforated pipe all wrapped with a geotextile filter. The piping system will drain to collection riser pipes placed at low points in the system, as dictated by bedrock elevations. Water will be pumped from the collection riser pipes to an existing pond discharge structure, where it will then be pumped to the South Fly Ash Pond for discharge through NPDES Outfall 002.

The permanent dewatering system will remain in operation for the life of the new Storm Water Basin to prevent soil liner uplift.

3.10 FGD Loadout Area

CCR material will be excavated and removed from the FGD Loadout Area and removal will be deemed complete upon visual inspection/certification by the CQAO. The excavation will be backfilled with compacted clean soil material. The surface will receive a layer of crushed limestone for the plant to utilize for non-CCR related purposes. The entire FGD Loadout Area will be sloped to drain toward the proposed Storm Water Basin to prevent surface water run-off.

3.11 Permanent Stabilization of Disturbed Areas

The perimeter roadway currently surrounding Emery Pond will be permanently stabilized with gravel surfacing. Gravel surfacing material will be crushed limestone coarse aggregate placed on disturbed areas to minimize wind and water erosion. The coarse aggregate mixture will be Illinois Department of Transportation (IDOT) Gradation CA-6. The perimeter roadway will be graded to drain toward the pond at a slope between 2 and 4 percent.

4. Construction Activities

Major construction activities include establishing the base grade, installation of a composite liner system and structural modifications to the pond discharge structure. Construction activities will be performed in accordance with the construction quality assurance procedures described in a subsequent section of this plan and documented by an Illinois-licensed professional engineer.

Figures showing the proposed Storm Water Basin design are included in Appendix B. In accordance with Appendix C, construction activities are scheduled to conclude in November.

4.1 Description

The new Storm Water Basin pond will not be used for CCR treatment, storage, or disposal. In that regard, SIPC and Illinois EPA have agreed that the expected waste streams to the new basin, as described in connection with the application for a construction permit under 35 IAC 309, Subpart B (water treatment device), are not regulated CCR waste streams. Nonetheless, as a compromise and as part of the resolution of the asserted groundwater claims, the new basin will be designed to meet the

CCR impoundment requirements of 40 CFR 257.100. The proposed Storm Water Basin will be constructed by re-grading the pond base and side slopes and installing a composite liner system.

4.2 Base Grading

The base grade for the Storm Water Basin will be constructed using the following design criteria. The bottom surface of the pond will be established by removal of the upper 2 feet of weathered bedrock material to create a stable base. The interior slopes of the pond will be constructed using compacted earth fill materials to create uniform side slopes with a maximum slope of 2.5H:1V.

4.3 Composite Liner System

After completion of the base grade, a composite liner system will be installed. The composite liner will consist of two components; an upper component consisting of, at a minimum, a 60-mil high density polyethylene (HDPE) geomembrane liner (GM), and a lower component consisting of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} centimeters per second (cm/sec). The GM or upper liner component will be installed in direct and uniform contact with the compacted soil or lower liner component. Construction of the composite liner system is expected to take two weeks.

Existing drainage piping that discharge into Emery Pond will be inspected for integrity and repaired and/or extended as necessary to match the proposed basin geometry. The pipes will be sealed where they intersect the liner system using generally accepted engineering practices.

4.4 Discharge Structure Rehabilitation

The existing sump discharge structure that currently pumps water from Emery Pond to the South Fly Ash Pond will remain in place. The structure will be inspected after CCR sediment excavation is complete. Any structural deficiencies noted during the inspection will be repaired and the existing wing-walls will be modified to conform with the proposed pond geometry. An intake extension will be installed into the structure to facilitate free drainage and stable pond side slopes. The extension will be constructed of precast box culvert sections which will be integrated to the existing open face of the pump station structure. The composite liner system will be mechanically connected to the discharge structure using batten strips to attach the HDPE geomembrane.

4.5 Operation and Maintenance

The Storm Water Basin will not operate as a CCR surface impoundment. Soil sediment, though, may accumulate within the new pond over time. Cleanout of the new pond using mechanical equipment could compromise that composite liner system, therefore the pond will be periodically cleaned using suction dredging or other non-damaging means.

5. Construction Quality Assurance Procedures

Closure of Emery Pond and construction of the Storm Water Basin will be monitored and documented in accordance with the requirements of the construction quality assurance (CQA) procedures described in the following sections. Performance of CQA activities will confirm that the construction activities are conducted in accordance with the plan through documenting that specified procedures are followed.

5.1 Personnel

Prior to initiation of construction activities, SIPC will designate an independent third-party CQA Officer (CQAO). The CQAO will be a professional engineer registered in the State of Illinois, who is a person other than the contractor or an employee of SIPC, and who will supervise and be responsible for all inspection, testing, and other activities required to be implemented as part of the CQA procedures. The CQAO will also be responsible for, and will provide direct supervision to, other engineers and/or engineering technicians (inspectors) who will perform the inspections, sampling, and testing required by the CQA program. The CQAO will assume responsibility for the performance of the inspections, sampling, and testing, as described more specifically below. The CQAO or his designated representative will be on-site full-time for all the activities specified herein.

5.2 Construction Management Activities

The General Contractor may, after exercising due diligence to locate required information, request from the Construction Manager, clarification, or interpretation of the contract documents. The General Contractor will make specific reference to the contract document in question and include estimates of any schedule or cost impacts that could possibly be associated with the request for information (RFI).

The General Contractor will initiate the RFI in a timely manner using Form CQAP1 - Request for Information. The Construction Manager will, with reasonable promptness, respond to the RFI on the same form and return a copy of the completed form to the party making the request as final disposition of the matter.

5.3 Inspection Activities

The CQAO or his designated representative will be present to observe and document the following activities:

- CCR Sediment Excavation
- Base Grade Earthwork
- Composite Liner System Installation
- Booted liner penetrations of the composite liner system
- Discharge Structure Modifications

As part of these inspection activities, the CQAO will certify that the CCR sediment excavation has been completed using the following language:

> *I hereby certify, as a Professional Engineer in the State of Illinois that to the best of my knowledge the removal of CCR was completed at the existing CCR surface impoundment known as Emery Pond, in general accordance with applicable state and/or federal regulations. The removal and final inspection were complete as of Month Day, 202x.*

5.4 Sampling and Analysis/Testing

Representative CCR sediment material will be sampled and analyzed for the criteria on the Illinois EPA Bureau of Land Special Waste Preacceptance Form (LPC 680). This activity must be completed prior to transportation of the material to a permitted facility. Additional samples will be analyzed if the CQAO or the landfill operator identify or suspect any significant change in material. An independent laboratory will be responsible for the analyses.

Custody of samples and transfer from the sampling location to the independent laboratory will be established and documented using Form CQAP2 - Chain of Custody Record. The sampling party will enter sample descriptions (including proposed use), sampling dates and times, and types/quantities of samples on the form, including methods or types of testing to be carried out, and relinquish custody of the samples to the laboratory by signing and dating the form at the bottom. The samples will be shipped or delivered to the laboratory with a copy of the form. The sampling party will retain a copy for its records.

The independent laboratory will document receipt of the samples by signing and dating the form at the bottom and retaining a copy for its records. The laboratory will return a copy of the form to the sampling party and the CQAO with the submittal of test results.

The General Contractor will be responsible for the Paint Filter Liquids Testing prior to transport of the sediment to a permitted facility in accordance with IAC requirements. This testing can be completed in the field and will be observed and documented by the CQAO or designee. The CQAO or his designee will select the specific locations for sampling and testing exercising professional judgment to ensure that sampling and testing fairly represent the material. The results of the sampling and testing will be documented by the CQAO or his designated representative on Form CQAP3 - Daily Summary Report.

5.5 CCR Sediment Excavation

The CQAO or his designee will make observations necessary to identify areas requiring sediment removal. Those areas will be determined solely on these observations based on the previously described physical properties of the sediment and foundation materials. The CQAO will inform the General Contractor of areas requiring sediment removal. Upon removal of the sediment, the CQAO or his designee will attach appropriate documentation for the work to Form CQAP3 - Daily Summary Report.

5.6 Base Grade Construction

The CQAO or his designee will observe earth excavation and fill activities during the establishment of the Storm Water Basin base grade. Compaction of fill materials will be conducted to verify moisture and density.

Following base grade earthwork, the CQAO or the Construction Manager will direct a surveyor to record the grades. Elevations will be surveyed on a 100-foot grid pattern for the base grade. The points surveyed for side slopes will be at the top and toe. In addition, all breaks in grade will be surveyed. The points will be documented on record drawings furnished to the CQAO by the surveyor.

5.7 Composite Liner System Installation

The CQAO or his designee will observe placement of the compacted soil liner. Testing of fill materials will be conducted to verify moisture and density. Additional samples (thin wall tubes) will be obtained for verification of in place hydraulic conductivity.

The placement of the geomembrane and field testing of the welds will be observed by the CQAO. Destructive testing of geomembrane samples well be review for compliance with manufacturer’s specifications.

Following the compacted soil liner construction, the CQAO or the Construction Manager will direct a surveyor to verify that the actual grades are in accordance with the design. Elevations will be surveyed on a 100-foot grid pattern for the top of the compacted soil liner to verify thickness. The points

surveyed for side slopes will be at the top, midpoint, and toe. In addition, all breaks in grade will be surveyed. The points will be documented on record drawings furnished to the CQAO by the surveyor.

6. Documentation

SIPC's Project Manager and the CQAO will document that closure of the Emery Pond and construction of the Storm Water Basin are performed in accordance with the design. Documentation drawings depicting as-built conditions will accompany the documentation. All activities will be documented in accordance with the construction quality assurance procedures. CQA documentation will be retained by SIPC as part of the Storm Water Basin operating record. This operating record will be available for inspection by Illinois EPA upon request. The CQA documentation may also be submitted directly to Illinois EPA pursuant to regulation or permit requirements.

6.1 General

The CQAO will be responsible for the overall administration and control of the project CQA documents.

The CQAO will verify that a filing system is implemented that will include:

- Date,
- Copy of the Closure Plan, updated as necessary,
- Photographic documentation,
- Survey measurements,
- Field and laboratory testing results,
- Daily summary reports including appropriate documentation, and
- Deficiency, nonconformity, and corrective action information.

Files will be updated with new data as such data become available. Documentation will be transmitted by the CQAO to SIPC and to any other parties designated by SIPC.

6.2 Daily Summary Reports

Each day of activity will be documented by a daily summary report. The report will be prepared by the CQAO or his designated representative and contain the following information:

- Date,
- Summary of weather conditions,
- Summary of locations where activity is occurring,
- Equipment and personnel on the project,
- Summary of any meetings held and attendees, and
- Description of all materials used and references or results of inspections, sampling, and testing, and documentation.

6.3 Photographic Documentation

Construction documentation may be supported with photographs, as appropriate. Photographs may be utilized to document activities, project progress, and acceptability. Any photographs will be maintained by the CQAO. CQA personnel will note the location, date, time, and description of the activity for record photographs.

6.4 Acceptance Report

An acceptance report will be prepared. The acceptance report will provide written evidence that the CQA procedures were implemented as described and that the project proceeded in accordance with the design, plans, and specifications.

The following information will be included in the acceptance report:

- Documentation by the CQAO that the construction has been implemented in general accordance with the engineering design,
- Documentation drawings, and
- All daily summary reports.

The acceptance report will be prepared under the direction of the CQAO and will be forwarded to SIPC for distribution as SIPC deems appropriate.

6.5 Corrective Action Completion Report

Upon completing the closure activities described in 35 IAC 845.760 a Closure Completion Report and Certification, meeting the requirements of 35 IAC 845.760(e) will be prepared and submitted to Illinois EPA.

7. Licensed Professional Signature/Seal

As a qualified professional engineer as defined by 40 CFR 257 Subpart D, I have personally examined and am familiar with this closure plan. Based on my inquiry of those individuals immediately responsible for obtaining the information contained therein, I believe that the information is true, accurate and complete. I certify that The Closure Plan for Marion Power Station Emery Pond meets the requirements set forth in the applicable state and/or federal regulation.

David B. Hoots, P.E.
Hanson Professional Services Inc.
1525 South Sixth Street
Springfield, IL 62703-2886
(217) 788-2450
Registration No. 062-055737

Seal:

Expires 11/30/2021

Signature: David B. Hoots Date: 29 October 2020

8. References

US EPA, 2015. “Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule – 40 CFR Parts 257 and 261”, Environmental Protection Agency in Federal Register, April 17, 2015, Vol. 80, No. 74. US Government Printing Office, Washington, D.C., 201 pp.

US EPA, 2018. “Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One – 40 CFR Part 257”, Environmental Protection Agency in Federal Register, July 30, 2018, Vol. 83, No. 146. US Government Printing Office, Washington, D.C., 22 pp.

Appendix A

Construction Quality Assurance Program Forms

REQUEST FOR INFORMATION
(Form CQAP1 - Revision 1)

RFI #: C-_____-_____ **DATE:** _____

FROM: _____ **TO:** _____, CQA Officer
COMPANY: _____ **PHONE:** _____
PHONE: _____ **FAX:** _____
FAX: _____

RE: _____

CHECK CATEGORY:

☐ Information not shown on contract documents: Contract Drawing Reference: _____
Shop Drawing Reference: _____
☐ Interpretation Requirements Specification Reference: _____
☐ Conflict in Requirements Possible Cost Impact: _____
☐ Coordination Problem Possible Time Impact: _____
☐ Other Category Describe: _____

DESCRIPTION (Use Attached Sheets as Necessary)

_____

CC: RFI File **ATTACHMENTS:** ☐ Yes ☐ No
_____
_____
_____
_____

RESPONSE
(Use Attached Sheets as Necessary)

_____

DATE: _____ **RESPONSE BY:** _____

Electronic Filing: Received, Clerk's Office 01/13/2023

Chain of Custody Record

(Form CQAP2 - Revision 1)

Emery Pond Closure & Storm Water Basin Construction Plans
SIPC Marion Power Plant, Williamson Co., Illinois

Client	**Southern Illinois Power Company**											Remarks or Observations
Address	**11543 Lake of Egypt Road**											
City, State Zip Code	**Marion, IL 62959**											
Phone / Facsimile No.	**(618) 964-1448 / (618) 964-1867**											
Client Project												
Location												
Sampler(s) / Phone	/											
Turnaround Time	Standard [ ] Rush [ ] Date Required:											
P.O. # or Invoice To												
Contact Person												

Sample Description	Sampling		Sample Type[1]	# of Containers	Analysis and/or Method Requested						Remarks or Observations
	Date	Time									

(1) Sample Type: S = Soil; GM = Geomembrane; GT = Geotextile; GCL = Geosynthetic Clay Liner; DM = Drainage Media; O = Other

Relinquished By	Date	Time	Received By	Date	Time	Method of Shipment

Special Instructions:

Copies (circle one): Sampler - Testing Firm - CQA Officer

Electronic Filing: Received, Clerk's Office 01/13/2023

DAILY SUMMARY REPORT
(Form CQAP3 - Revision 1)

1. SUMMARY OF WEATHER CONDITIONS:

Date: _____

AM Conditions: _____

AM Temperature: _____

PM Conditions: _____

PM Temperature: _____

2. LOCATIONS WHERE CONSTRUCTION IS OCCURRING:

Location 1: East _____ North _____ **Location 2:** East _____ North _____

Location 3: East _____ North _____ **Location 4:** East _____ North _____

Other Description: _____

3. EQUIPMENT & PERSONNEL ON SITE:

Equipment: _____

Personnel: _____

Visitors: _____

4. SUMMARY OF MEETINGS HELD/ATTENDEES:

☐ **None** ☐ **See Sheet 2 of 2** ☐ **See Attached Meeting Minutes**

5. MATERIALS USED & TESTING OR OBSERVATION RESULTS:

Materials Used: ☐ Culvert Pipe ☐ Foundation Fill ☐ Stockpiled Soil ☐ Subgrade Soil

☐ Riprap ☐ Other: _____

Testing and/or Observation Results: ☐ None ☐ See Attached

Calibration Records for Equipment: ☐ None ☐ See Attached

Prepared By: _____

_____
(Signature of CQA Officer or Designated Representative)

_____

_____
(Signature)

Original Report/Attachments To: Document Controller

Copies to: _____

Electronic Filing: Received, Clerk's Office 01/13/2023

DAILY SUMMARY REPORT

ADDITIONAL NOTES:

Date: _____

_____

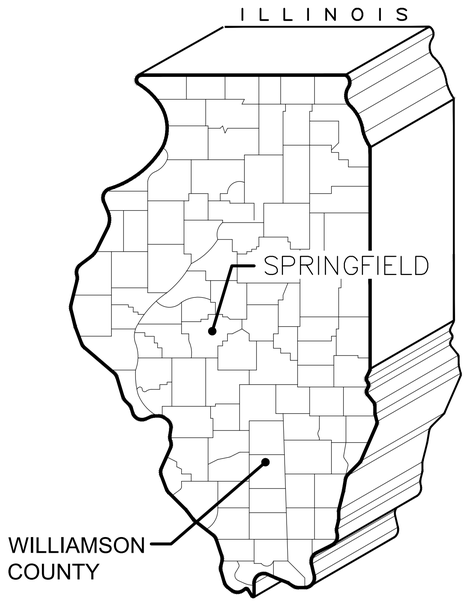
Appendix B

Closure Plan Figures

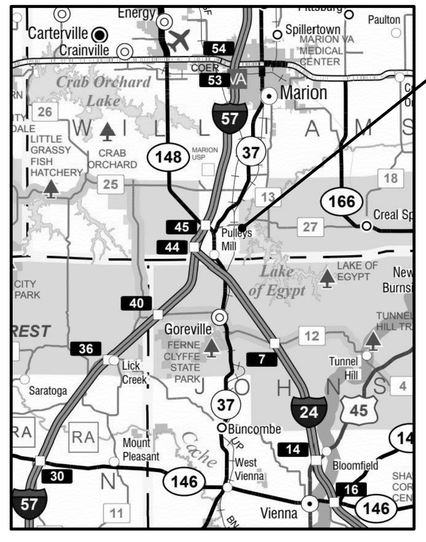
EMERY POND CLOSURE & STORM WATER BASIN CONSTRUCTION PLANS

MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

ISSUED FOR REVIEW - 07/14/2020



STATE MAP



VICINITY MAP

INDEX OF SHEETS

GENERAL
G001 COVER SHEET & INDEX OF SHEETS

CIVIL
C001 GENERAL CIVIL NOTES
C101 EMERY POND CLOSURE PLAN
C102 STORM WATER BASIN PLAN
C103 STORM WATER BASIN GRADING & LAYOUT PLAN
C104 FGD AREA GRADING & LAYOUT PLAN
C105 GRADING CONTROL POINTS
C301 EXCAVATION CROSS SECTIONS
C302 EXCAVATION CROSS SECTIONS
C303 GRADING CROSS SECTIONS
C304 GRADING CROSS SECTIONS
C305 TYPICAL SECTIONS & DETAILS
C306 PUMP STATION INTAKE EXTENSION

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EMERY POND CLOSURE & STORM WATER CONSTRUCTION PLANS

SOUTHERN ILLINOIS POWER COOPERATIVE SIPC

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

MARION POWER PLANT
WILLIAMSON CO.
ILLINOIS

MARK	DATE	DESCRIPTION DES	DRN	REV

ISSUE:	07-14-2020
PROJECT NO:	18E0022A
CAD FILE:	
DESIGN BY:	DBH
DRAWN BY:	SKB
REVIEWED BY:	JMH

SHEET TITLE

TITLE & INDEX OF SHEETS

G001

JUL 14, 2020 10:43 AM HOOTS01267
E:\18JOBS\18E0022A\CAD\SITE\MODEL\MODEL-IFP 2020_0715 CLOSURE PLAN SET.DWG

GENERAL NOTES

1. "IDOT STANDARD SPECIFICATIONS", WHERE REFERENCED IN THE PLANS OR TECHNICAL SPECIFICATIONS, REFERS TO THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" ADOPTED APRIL 1, 2016, PUBLISHED BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT).
2. ALL REINFORCEMENT BARS SHALL CONFORM TO ASTM A615, GRADE 60.
3. ALL SECTIONS, DETAILS, AND NOTES SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS ELSEWHERE, UNLESS OTHERWISE SHOWN.
4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE STARTING WORK. IF CONDITIONS VARY FROM THOSE INDICATED ON THE DRAWINGS, THE OWNER SHALL BE NOTIFIED AND NO WORK SHALL BE DONE IN THE AREA WITHOUT HIS APPROVAL.
5. SCALE FOR THE DRAWINGS IS FOR GENERAL INFORMATION ONLY. LOCATIONS AND DIMENSIONS SHALL BE TAKEN AS SHOWN AND NOT SCALED.
6. WHERE SPECIFIED, IDOT SPECIFICATIONS ARE SPECIFIED, THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", ADOPTED APRIL 1, 2016 SHALL APPLY.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN EXISTING FIELD CONDITIONS BEFORE BIDDING ON THIS PROJECT, ORDERING MATERIALS, OR BEGINNING CONSTRUCTION.
8. CONTRACTOR'S WORK ACTIVITIES SHALL BE RESTRICTED TO AREAS WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTOR'S ACTIVITIES AND VEHICLES SHALL NOT BE ALLOWED OUTSIDE OF THESE LIMITS UNLESS APPROVED BY THE OWNER.
9. ALL ROCK AND DEBRIS SHALL BE DISPOSED OF OUT OF THE EMERY POND AREA IN A LOCATION DESIGNATED ON THE PLANS.
10. DISTURBED EARTH SURFACES SHALL BE SEEDED PER THE PROJECT SPECIFICATIONS.
11. CONTRACTOR IS RESPONSIBLE FOR THE SITE RESTORATION WITHIN THE LIMITS OF CONSTRUCTION.
12. ALL HDPE GEOMEMBRANE SHALL BE TEXTURED.
13. CUSHION GEOTEXTILES SHALL MEET THE REQUIREMENTS OF GEOSYNTHETIC RESEARCH INSTITUTE (GRI) SPECIFICATION GRI-GT12(a) "TEST METHODS AND PROPERTIES FOR NONWOVEN GEOTEXTILES USED AS PROTECTION (OR CUSHIONING) MATERIALS FOR THE MASS/UNIT AREA SPECIFIED.ON THE PLANS. THE MINIMUM OVERLAP BETWEEN ADJACENT PANELS SHALL BE 24 INCHES.
14. TEMPORARY EROSION CONTROL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH IDOT STANDARD DRAWING 280001-07 TEMPORARY EROSION CONTROL SYSTEMS. AND ARTICLE 280 OF THE IDOT STANDARD SPECIFICATIONS.
15. PRECAST BOX CULVERTS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM C1577-SPECIFICATION FOR PRECAST REINFORCED CONCRETE MONOLITHIC BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS DESIGNED ACCORDING TO AASHTO LRFD. PRECAST BOX CULVERT SECTIONS SHALL HAVE PREFORMED RUBBER JOINTS IN ACCORDANCE WITH ASTM C 1677-11A STANDARD SPECIFICATION FOR JOINTS FOR CONCRETE BOX, USING RUBBER GASKETS.
16. PRECAST BOX CULVERTS SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 540 OF THE IDOT STANDARD SPECIFICATIONS, ALL SECTIONS SHALL BE MECHANICALLY TIED TOGETHER USING IDOT STANDARD 540-22 – MECHANICAL JOINTS FOR CONCRETE PIPE AND BOX CULVERTS. ALL BOX CULVERT SECTIONS SHALL BE EXTERNALLY WATERPROOFED WITH SEALING BANDS PER ASTM C 877-SPECIFICATION FOR EXTERNAL SEALING BANDS FOR CONCRETE PIPE, MANHOLES AND PRECAST BOX SECTIONS.
17. ALL OPEN EXCAVATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA 29 CFR 1926, SUBPART P- "EXCAVATIONS". THE SUBCONTRACTOR SHALL DESIGNATE A QUALIFIED "COMPETENT PERSON" AS DEFINED IN OSHA SECTION 1926.650(b) PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION ACTIVITIES.

SURVEY AND LAYOUT

1. THE DESIGN PLANS INCLUDED WERE BASED UPON A HORIZONTAL COORDINATE SYSTEM BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83), ILLINOIS STATE PLANE EAST ZONE AND VERTICAL ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING ANY PROPERTY MONUMENTS THAT BECOME DAMAGED OR DESTROYED DURING CONSTRUCTION ACTIVITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER ALIGNMENT (VERTICAL AND HORIZONTAL) AT ALL INTERFACES BETWEEN NEW AND EXISTING WORK TO ASSURE PROPER INSTALLATION AND USAGE.

NORTH

1 SITE LOCATION MAP
SCALE: 1" = 300'
0 300' 600'

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EMERY POND CLOSURE & STORM WATER CONSTRUCTION PLANS

SOUTHERN ILLINOIS POWER COOPERATIVE SIPC

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

MARION POWER PLANT
WILLIAMSON CO.
ILLINOIS

MARK	DATE	DESCRIPTION		
		DES	DRN	REV

ISSUE:	07-14-2020
PROJECT NO:	18E0022A
CAD FILE:	
DESIGN BY:	DBH
DRAWN BY:	SKB
REVIEWED BY:	JMH

SHEET TITLE

GENERAL CIVIL NOTES

C001

JUL 14, 2020 10:43 AM HOOTS01267
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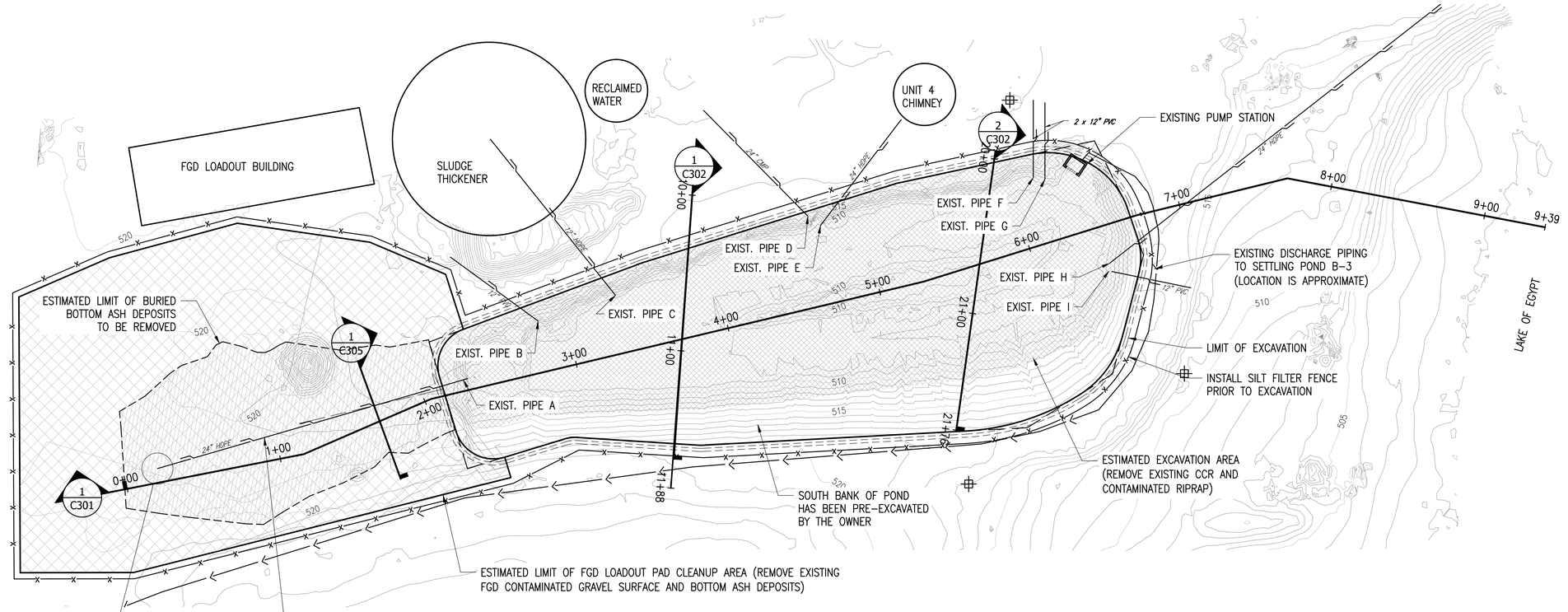
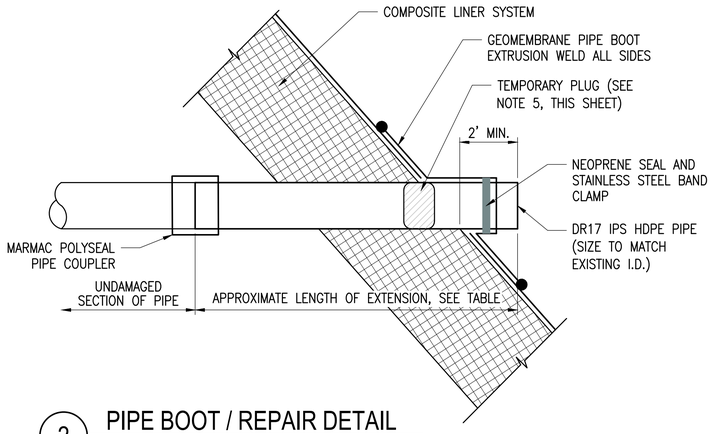


NORTH

1 EMERY POND CLOSURE PLAN

SCALE: 1" = 40'

PIPE BOOT REPAIR DATA			
PIPE ID	DIAMETER	MATERIAL	EXTENSION LENGTH
A	24"	HDPE	5.52 FT
B	12"	PVC	12.92 Ft
C	12"	HDPE	7.87 Ft
D	24"	CMP	20.02 FT
E	24"	HDPE	11.82 FT
F	12"	PVC	5.17 FT
G	12"	PVC	4.35 FT
H	24"	HDPE	9.90 FT
I	12"	PVC	5.92 FT



2 PIPE BOOT / REPAIR DETAIL

NO SCALE

NOTES:

1. CONTOURS INDICATE THE TOP OF GROUND SURFACE.
2. SEE SHEET C305 FOR TYPICAL SECTIONS.
3. EXISTING INFLOW PIPES SHALL BE REPAIRED AND EXTENDED THROUGH THE PROPOSED COMPOSITE LINER PER DETAIL 2 OF THIS SHEET. DAMAGED PIPING THAT IS REMOVED SHALL BE DISPOSED OF IN A LEGAL MANNER AS CONTAMINATED CCR MATERIALS.
4. PROPOSED PIPES TO BE REPLACED AND PIPE EXTENSIONS SHALL MATCH THE GRADE OF THE EXISTING PIPING.
5. CONTRACTOR SHALL INSTALL TEMPORARY PLUGS INSIDE OF ALL INCOMING PIPES TO PREVENT DISCHARGE DURING CONSTRUCTION. CONTRACTOR SHALL MAINTAIN OPERATION OF THE PLUGS DURING THE DURATION OF THE PROJECT. THE TEMPORARY PLUGS SHALL BE REMOVED UPON COMPLETION OF THE PROJECT.
6. CCR MATERIAL EXCAVATED FROM EMERY POND MAY BE PILED ON THE EXISTING FGD STOCKPILE AREA FOR FINAL DEWATERING. ALL SURFACE WATER THAT COMES INTO CONTACT WITH THIS CCR MATERIAL SHALL BE DIRECTED BACK INTO EMERY POND DURING DEWATERING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION OF ANY TEMPORARY BERMS AND/OR GRADING REQUIRED TO MAINTAIN SURFACE WATER FLOW INTO EMERY POND.
7. THE PLANT MAY ELECT TO PARTIALLY EXCAVATE CCR MATERIAL PRIOR TO CONTRACTOR MOBILIZATION. CCR EXCAVATION AND DISPOSAL PERFORMED BY THE CONTRACTOR WILL BE DONE BASED ON A TIME AND MATERIALS BASIS.

LEGEND

- MONITORING WELL LOCATION
- EXISTING DRAINAGE OR PROCESS WATER PIPING
- EXISTING PUMP STATION DISCHARGE PIPING

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EMERY POND CLOSURE & STORM WATER CONSTRUCTION PLANS

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MARION POWER PLANT
WILLIAMSON CO.
ILLINOIS

MARK	DATE	DESCRIPTION		
		DES	DRN	REV

ISSUE:	07-14-2020
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REVIEWED BY:	JMH

SHEET TITLE

EMERY POND CLOSURE PLAN

C101

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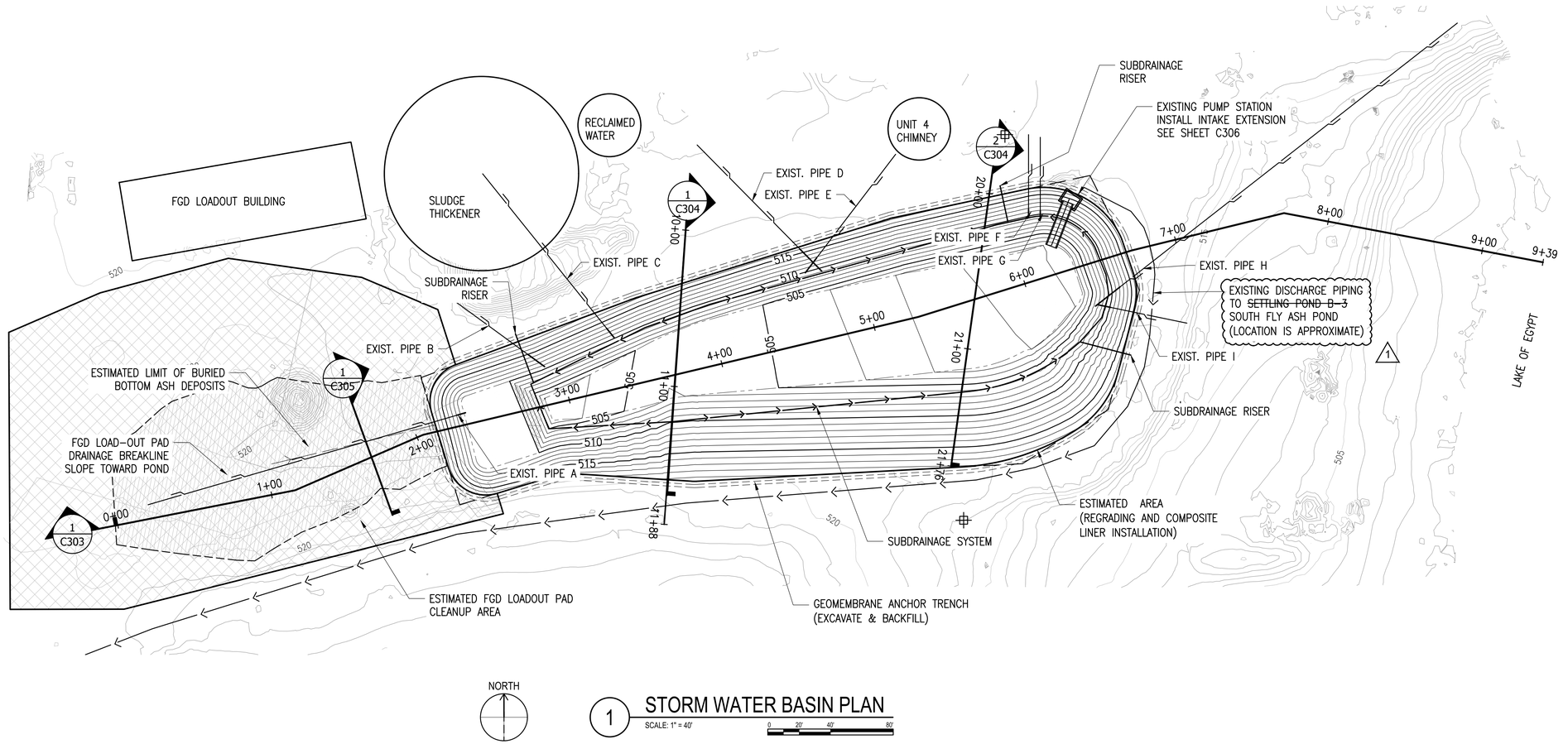

NORTH

1 STORM WATER BASIN PLAN

SCALE: 1" = 40'

0 20' 40' 80'

NOTES:

1. LIGHT CONTOURS INDICATE THE TOP OF GROUND SURFACE.
2. HEAVY CONTOURS INDICATE TOP OF BASE GRADE.
3. SEE SHEET C305 FOR TYPICAL SECTIONS.
4. SEE SHEET C103 AND C104 FOR GRADING CONTROL POINTS.

LEGEND

- MONITORING WELL LOCATION
- EXISTING DRAINAGE OR PROCESS WATER PIPING
- EXISTING PUMP STATION DISCHARGE PIPING
- TOE OF SLOPE
- SUBDRAINAGE SYSTEM PIPING

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WILLIAMSON CO.
ILLINOIS

MARK	DATE	DESCRIPTION		
		DES	DRN	REV
1	3/18/21	PERMIT REVISIONS		
		DBH	DBH	JMH

ISSUE:	07-14-2020
PROJECT NO:	18E0022A
CAD FILE:	
DESIGN BY:	DBH
DRAWN BY:	SKB
REVIEWED BY:	JMH

SHEET TITLE

STORM WATER BASIN PLAN

C102

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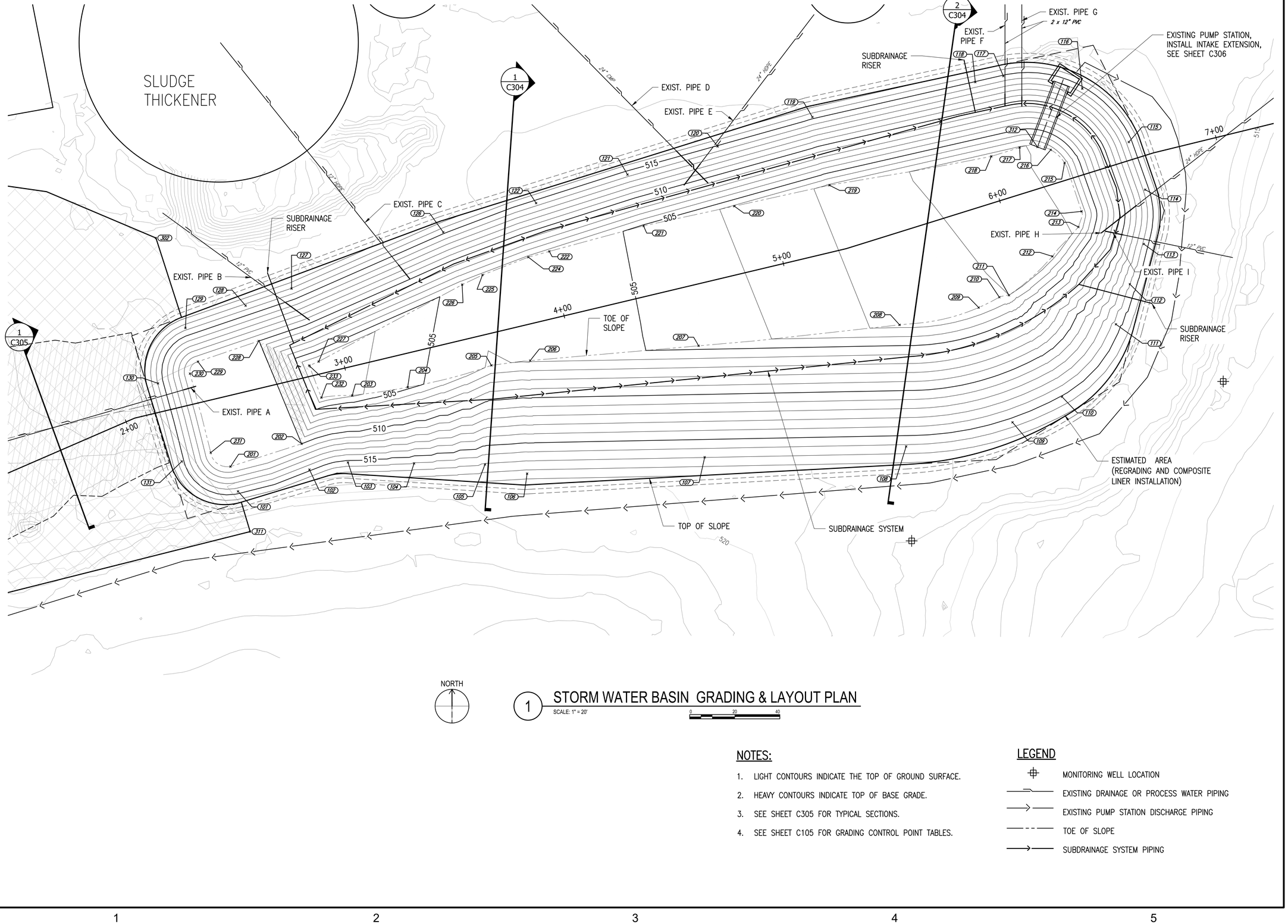

NORTH

1 STORM WATER BASIN GRADING & LAYOUT PLAN

SCALE: 1" = 20'

0 20 40

NOTES:

1. LIGHT CONTOURS INDICATE THE TOP OF GROUND SURFACE.
2. HEAVY CONTOURS INDICATE TOP OF BASE GRADE.
3. SEE SHEET C305 FOR TYPICAL SECTIONS.
4. SEE SHEET C105 FOR GRADING CONTROL POINT TABLES.

LEGEND

- MONITORING WELL LOCATION
- EXISTING DRAINAGE OR PROCESS WATER PIPING
- EXISTING PUMP STATION DISCHARGE PIPING
- TOE OF SLOPE
- SUBDRAINAGE SYSTEM PIPING

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EMERY POND CLOSURE & STORM WATER CONSTRUCTION PLANS

SOUTHERN ILLINOIS POWER COOPERATIVE SIPC

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MARION POWER PLANT
WILLIAMSON CO.
ILLINOIS

MARK	DATE	DESCRIPTION		
		DES	DRN	REV

ISSUE:	07-14-2020
PROJECT NO:	18E0022A
CAD FILE:	
DESIGN BY:	DBH
DRAWN BY:	SKB
REVIEWED BY:	JMH

SHEET TITLE

STORM WATER BASIN GRADING & LAYOUT PLAN

C103

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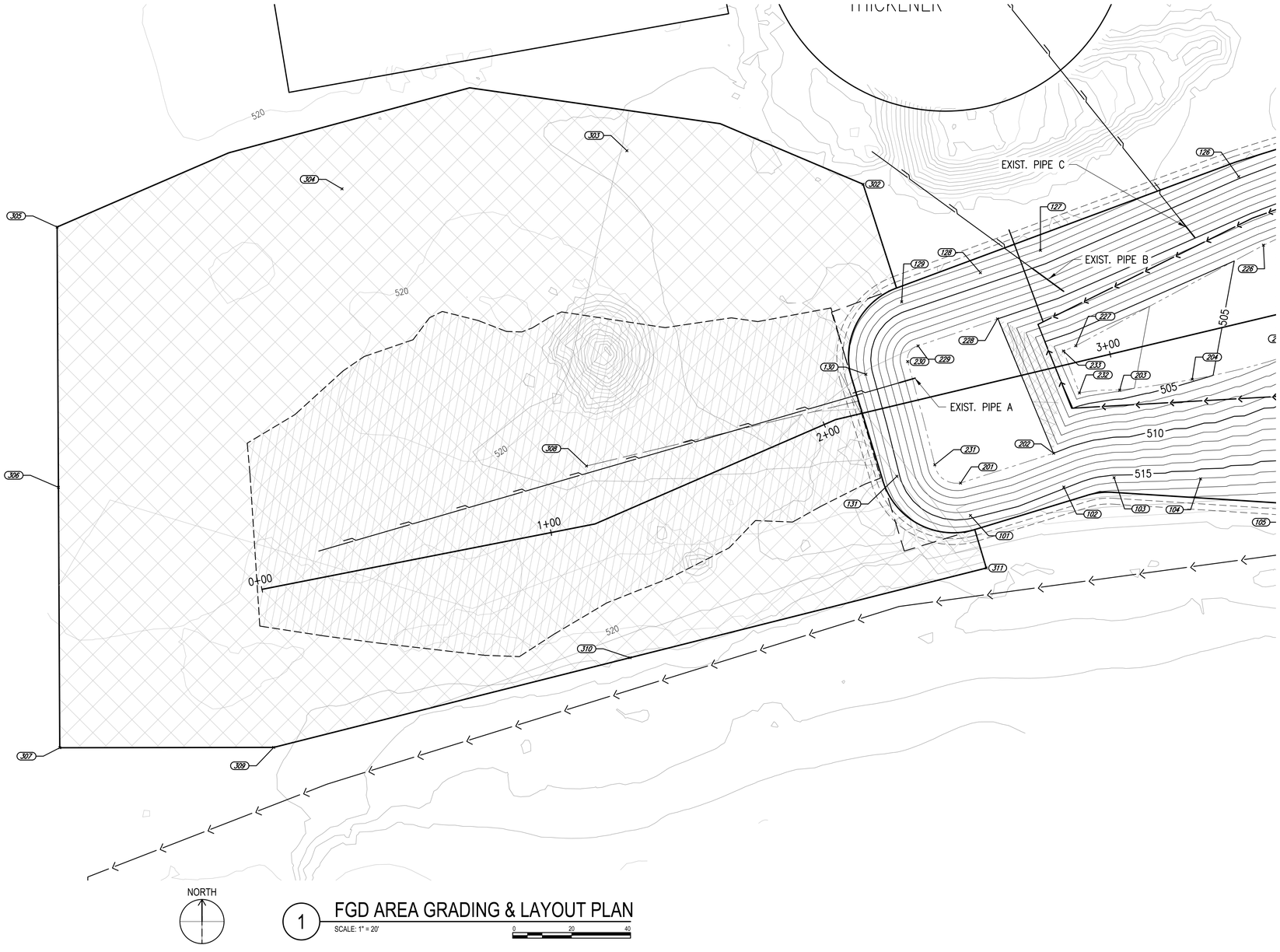

1 FGD AREA GRADING & LAYOUT PLAN

SCALE: 1" = 20'

0 20 40

NOTES:

1. LIGHT CONTOURS INDICATE THE TOP OF GROUND SURFACE.
2. HEAVY CONTOURS INDICATE TOP OF BASE GRADE.
3. SEE SHEET C305 FOR TYPICAL SECTIONS.
4. SEE SHEET C105 FOR GRADING CONTROL POINT TABLES.

LEGEND

- MONITORING WELL LOCATION
- EXISTING DRAINAGE OR PROCESS WATER PIPING
- EXISTING PUMP STATION DISCHARGE PIPING
- TOE OF SLOPE
- SUBDRAINAGE SYSTEM PIPING

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EMERY POND CLOSURE & STORM WATER CONSTRUCTION PLANS

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MARION POWER PLANT
WILLIAMSON CO.
ILLINOIS

MARK	DATE	DESCRIPTION		
		DES	DRN	REV

ISSUE:	07-14-2020
PROJECT NO:	18E0022A
CAD FILE:	
DESIGN BY:	DBH
DRAWN BY:	SKB
REVIEWED BY:	JMH

SHEET TITLE

FGD AREA GRADING & LAYOUT PLAN

C104

JUL 14, 2020 10:43 AM HOOTS01267
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Electronic Filing: Received, Clerk's Office 01/13/2023

GRADING CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
101	347064.26	804362.27	514.61	TOP OF SLOPE
102	347073.91	804393.97	514.79	TOP OF SLOPE
103	347077.11	804411.04	515.33	TOP OF SLOPE
104	347076.68	804440.38	516.09	TOP OF SLOPE
105	347076.21	804471.85	517.11	TOP OF SLOPE
106	347072.15	804490.55	518.41	TOP OF SLOPE
107	347079.40	804569.33	516.98	TOP OF SLOPE
108	347084.22	804658.72	516.20	TOP OF SLOPE
109	347094.89	804705.92	515.48	TOP OF SLOPE
110	347106.23	804727.89	515.11	TOP OF SLOPE
111	347138.39	804751.80	514.42	TOP OF SLOPE
112	347156.19	804757.99	513.97	TOP OF SLOPE
113	347174.00	804764.18	514.21	TOP OF SLOPE
114	347198.10	804764.74	514.35	TOP OF SLOPE
115	347219.25	804757.53	514.46	TOP OF SLOPE
116	347242.91	804736.88	514.66	TOP OF SLOPE
117	347248.51	804701.84	514.85	TOP OF SLOPE
118	347245.84	804689.41	514.92	TOP OF SLOPE
119	347230.32	804617.14	515.30	TOP OF SLOPE
120	347217.28	804575.08	514.85	TOP OF SLOPE

GRADING CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
121	347204.80	804535.09	514.35	TOP OF SLOPE
122	347192.14	804494.54	514.46	TOP OF SLOPE
126	347179.25	804453.34	515.26	TOP OF SLOPE
127	347154.25	804386.03	516.95	TOP OF SLOPE
128	347146.67	804365.63	516.70	TOP OF SLOPE
129	347136.75	804338.93	516.37	TOP OF SLOPE
130	347112.17	804326.76	515.94	TOP OF SLOPE
131	347077.56	804337.31	515.38	TOP OF SLOPE
201	347075.27	804358.92	510.00	TOE OF SLOPE
202	347085.38	804390.48	510.00	TOE OF SLOPE
203	347106.82	804412.94	503.81	TOE OF SLOPE
204	347110.47	804437.54	504.74	TOE OF SLOPE
205	347120.17	804474.67	506.10	TOE OF SLOPE
206	347122.29	804491.90	505.88	TOE OF SLOPE
207	347128.84	804566.66	504.60	TOE OF SLOPE
208	347138.14	804655.81	502.70	TOE OF SLOPE
209	347145.81	804690.91	502.19	TOE OF SLOPE
210	347150.42	804700.05	502.05	TOE OF SLOPE
211	347151.28	804704.35	502.00	TOE OF SLOPE
212	347168.51	804723.61	501.63	TOE OF SLOPE

GRADING CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
213	347181.56	804735.13	502.20	TOE OF SLOPE
214	347188.49	804736.55	502.43	TOE OF SLOPE
215	347210.03	804729.02	502.60	TOE OF SLOPE
216	347215.77	804722.89	502.46	TOE OF SLOPE
217	347216.83	804709.07	501.85	TOE OF SLOPE
218	347212.88	804696.48	501.43	TOE OF SLOPE
219	347200.07	804624.67	502.83	TOE OF SLOPE
220	347190.79	804582.48	503.84	TOE OF SLOPE
221	347182.03	804542.19	504.81	TOE OF SLOPE
222	347170.72	804500.39	505.59	TOE OF SLOPE
224	347168.18	804491.07	505.75	TOE OF SLOPE
225	347160.26	804470.75	505.66	TOE OF SLOPE
226	347155.99	804461.71	505.34	TOE OF SLOPE
227	347121.86	804398.06	503.13	TOE OF SLOPE
228	347130.97	804371.46	510.00	TOE OF SLOPE
229	347121.81	804344.48	510.00	TOE OF SLOPE
230	347116.50	804340.97	510.00	TOE OF SLOPE
231	347081.48	804350.18	510.00	TOE OF SLOPE
232	347105.85	804399.25	503.29	TOE OF SLOPE
233	347120.07	804393.82	503.00	TOE OF SLOPE

GRADING CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
302	347176.67	804325.84	518.84	FGD PAD LIMIT
303	347188.06	804245.66	518.76	FGD PAD LIMIT
304	347175.11	804148.95	519.13	FGD PAD LIMIT
305	347162.15	804052.24	519.50	FGD PAD LIMIT
306	347073.80	804052.69	519.86	FGD PAD LIMIT
307	346985.45	804053.14	520.23	FGD PAD LIMIT
308	347081.06	804231.94	519.45	FGD PAD BREAKLINE
309	346985.57	804125.78	520.78	FGD PAD LIMIT
310	347016.00	804246.71	521.29	FGD PAD LIMIT
311	347046.43	804367.65	521.80	FGD PAD LIMIT
312	347217.06	804716.99	505.57	INVERT, 6'W BOX CULVERT

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EMERY POND CLOSURE & STORM WATER CONSTRUCTION PLANS

SOUTHERN ILLINOIS POWER COOPERATIVE SIPC

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NOT FOR CONSTRUCTION

MARION POWER PLANT
WILLIAMSON CO.
ILLINOIS

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GRADING CONTROL POINTS

C105

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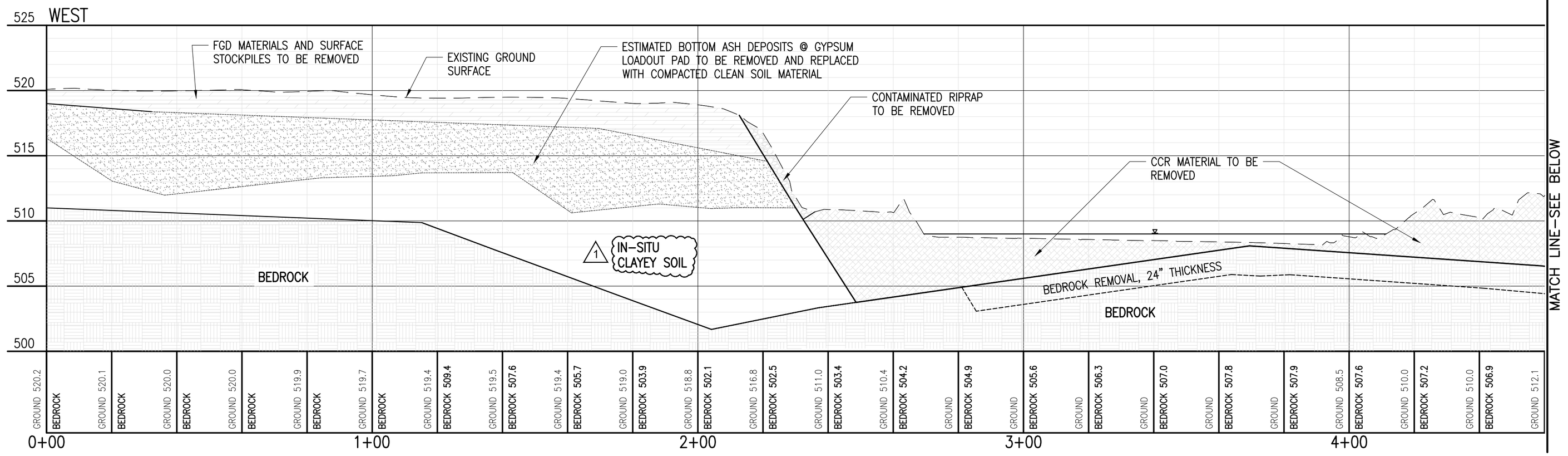

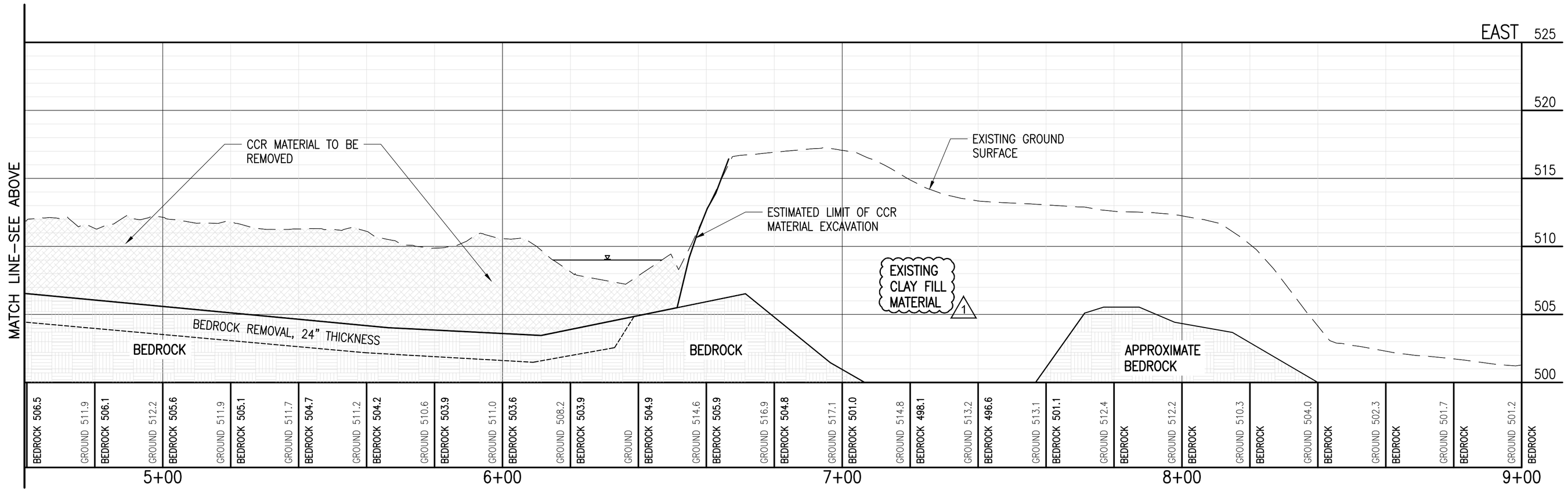

1 EXCAVATION CROSS SECTION

SCALES:

HORIZONTAL: 0 10' 20' 40'

VERTICAL: 0 5 10

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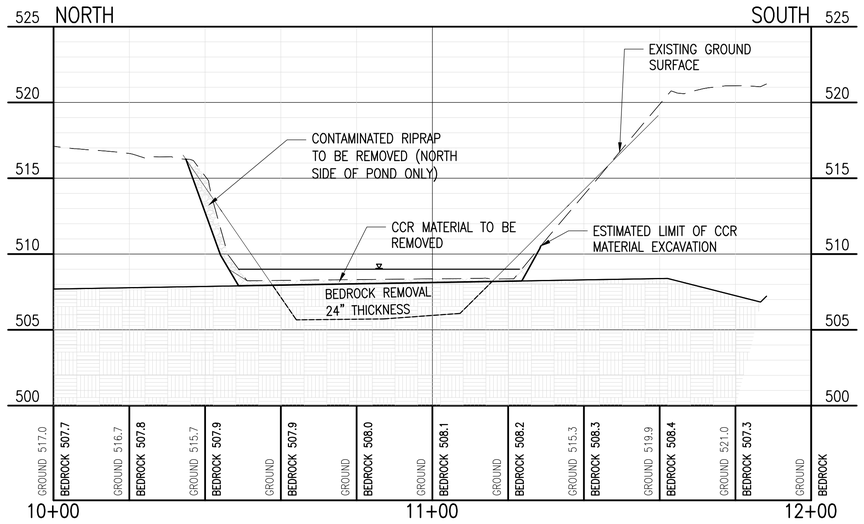

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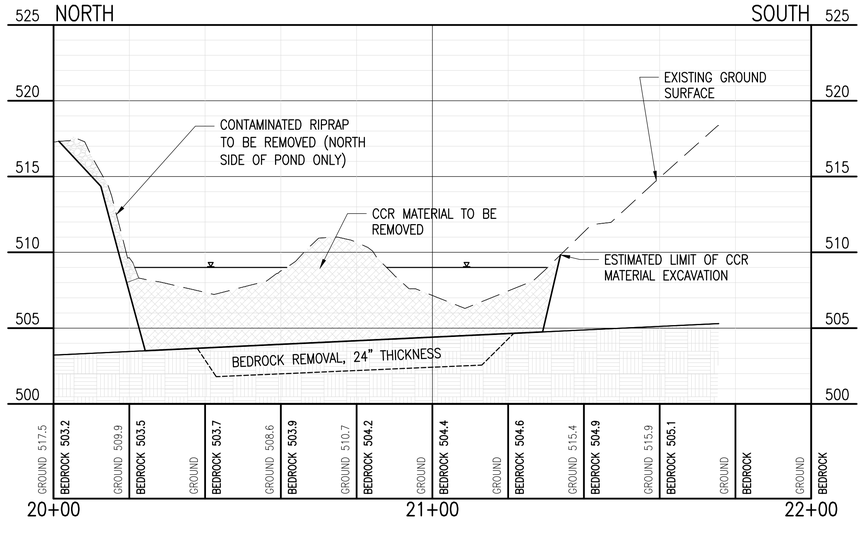

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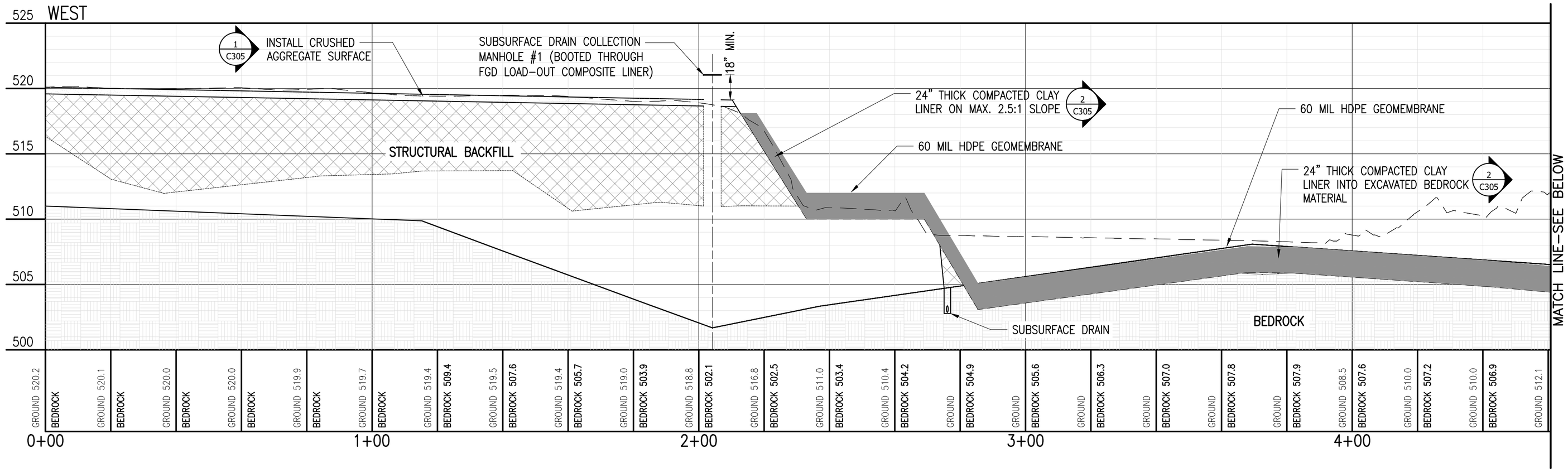

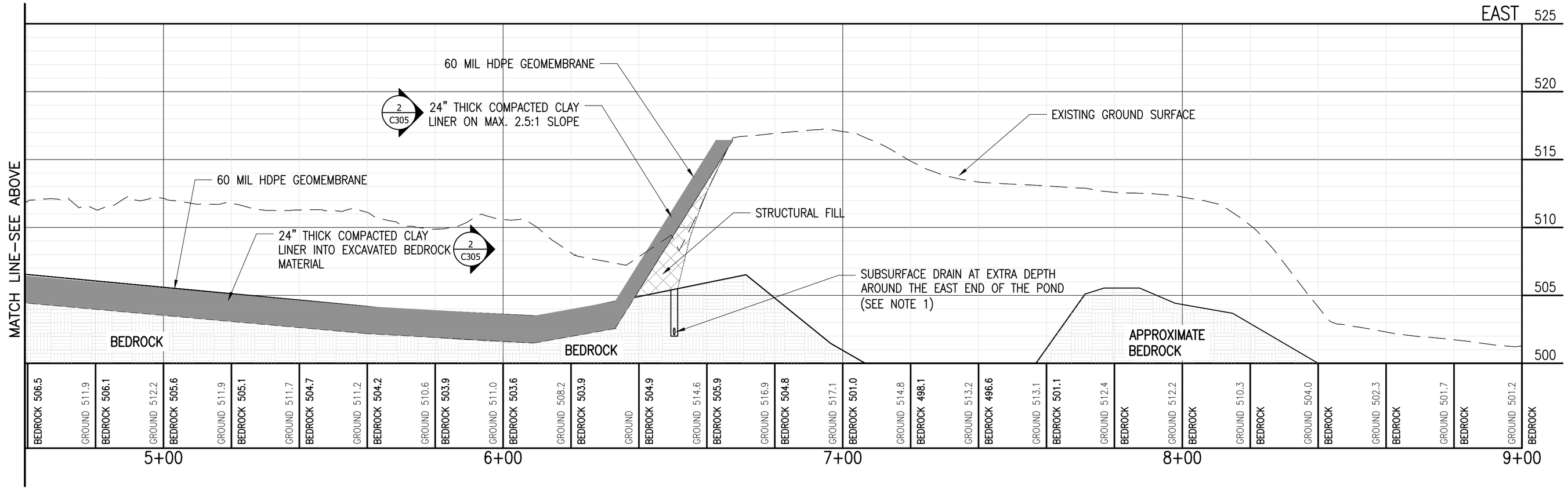

1 CROSS SECTION

SCALES:

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VERTICAL: 0 5 10

NOTES:

1. INSTALL SUBSURFACE DRAINS EAST OF STATION 6+12 AT EXTRA DEPTH TO PROVIDE POSITIVE DRAINAGE TOWARD SUBSURFACE DRAINAGE MANHOLE #2.
2. STRUCTURAL FILL SHALL NOT BE COMPOSED OF ANY TYPE OF CCR OR CCB.

1

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GRADING
CROSS SECTIONS

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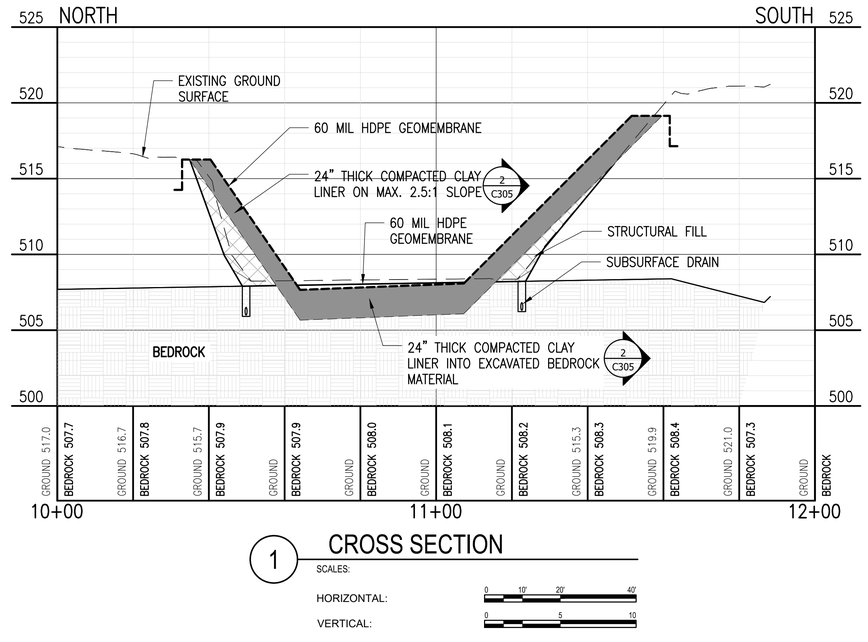

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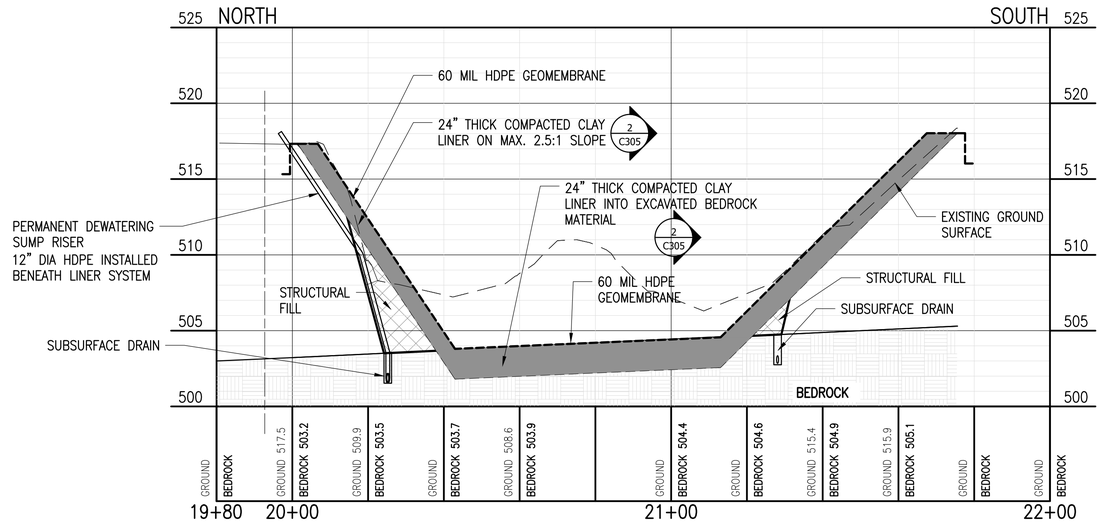

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SCALES:

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VERTICAL: 0 5 10

NOTES:

1. STRUCTURAL FILL SHALL NOT BE COMPOSED OF ANY TYPE OF CCR OR CCB.

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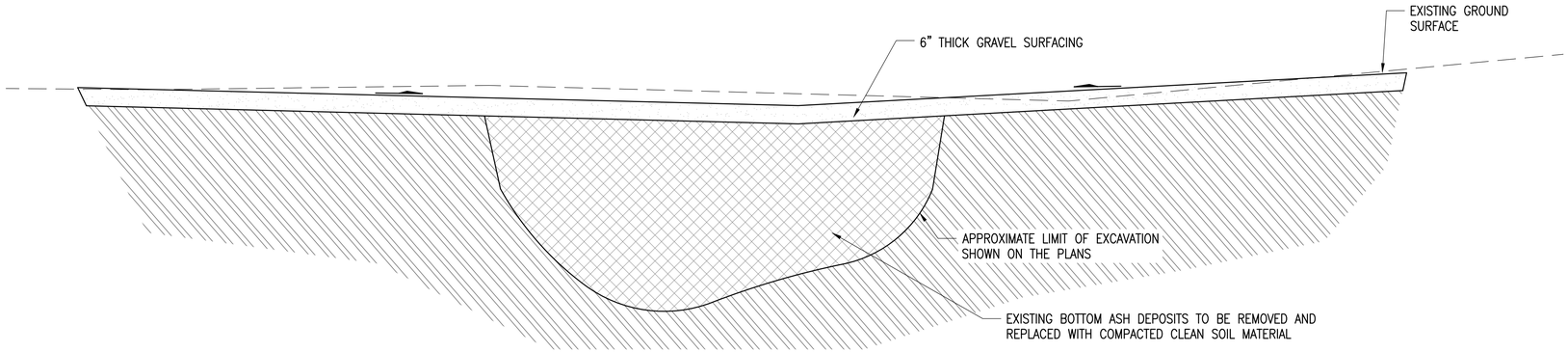

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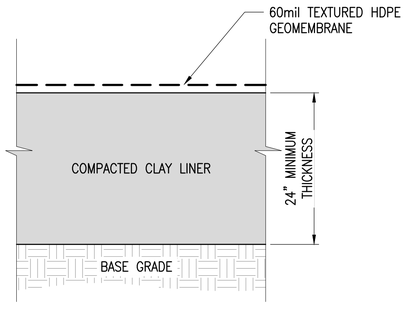

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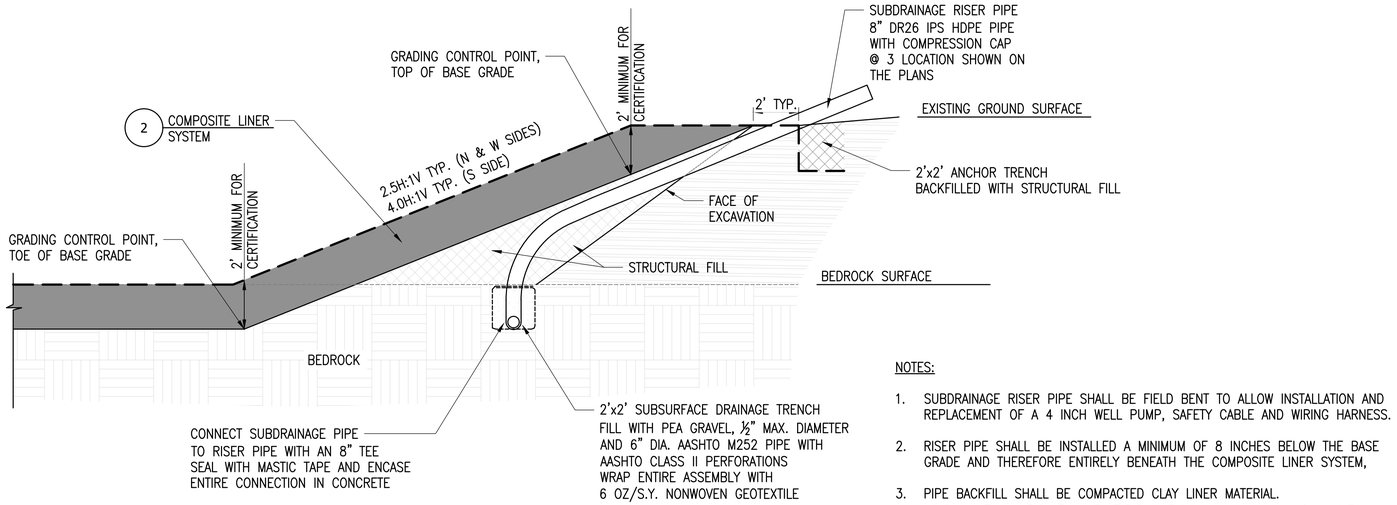

3 TYPICAL SECTION
NOT TO SCALE

NOTES:

1. SUBDRAINAGE RISER PIPE SHALL BE FIELD BENT TO ALLOW INSTALLATION AND REPLACEMENT OF A 4 INCH WELL PUMP, SAFETY CABLE AND WIRING HARNESS.
2. RISER PIPE SHALL BE INSTALLED A MINIMUM OF 8 INCHES BELOW THE BASE GRADE AND THEREFORE ENTIRELY BENEATH THE COMPOSITE LINER SYSTEM,
3. PIPE BACKFILL SHALL BE COMPACTED CLAY LINER MATERIAL.
4. STRUCTURAL FILL SHALL NOT BE COMPOSED OF ANY TYPE OF CCR OR CCB.

1

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TYPICAL SECTIONS

C305

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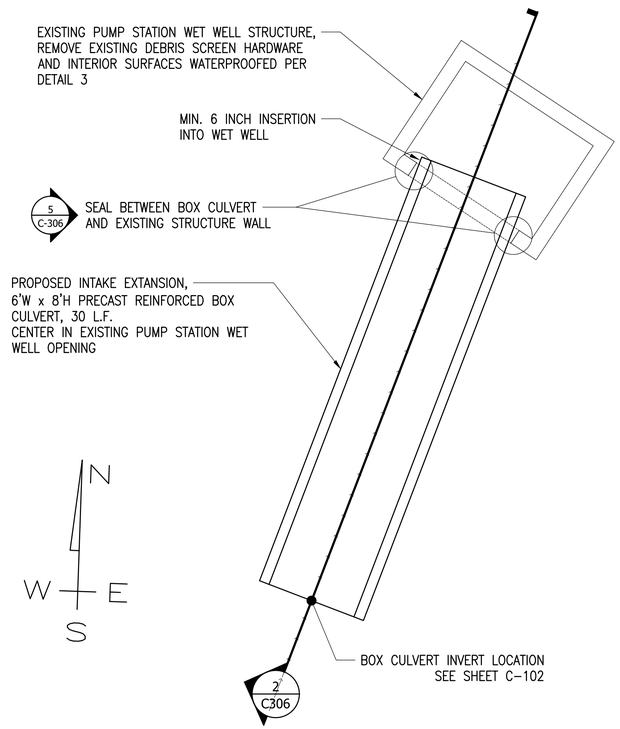
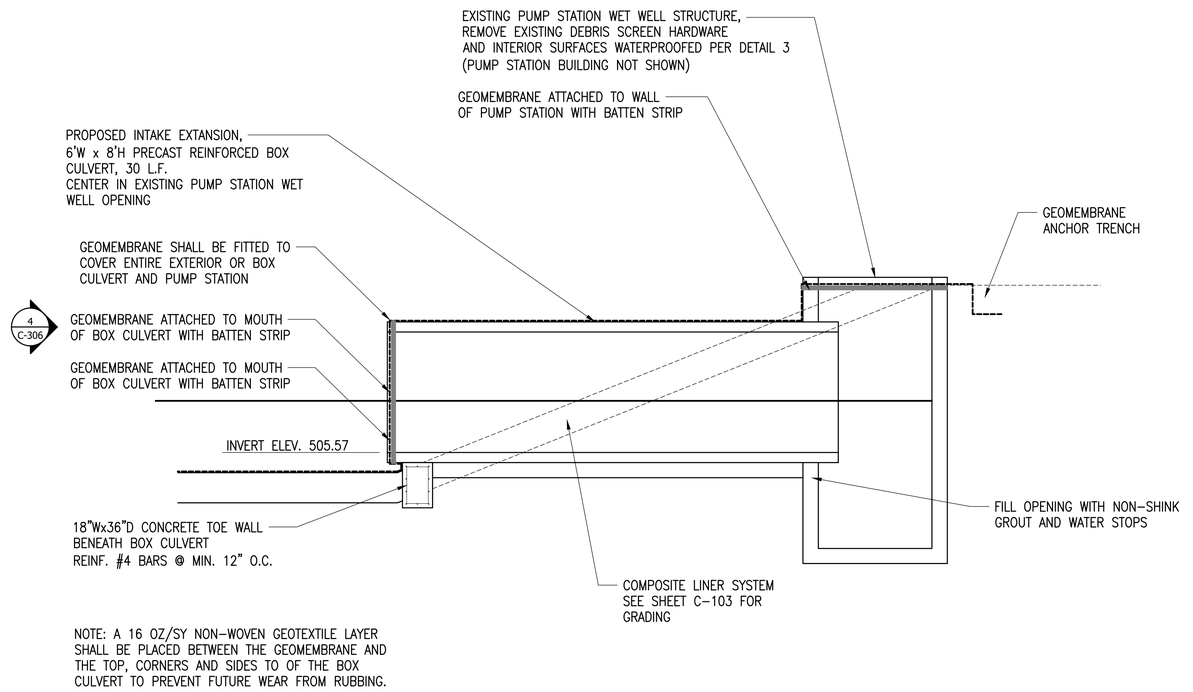


1 PUMP STATION INTAKE EXTENSION
PLAN - NOT TO SCALE



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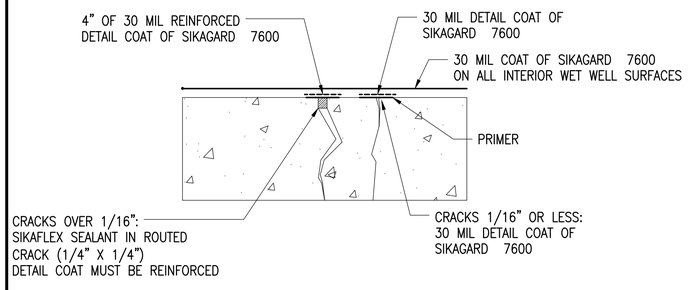
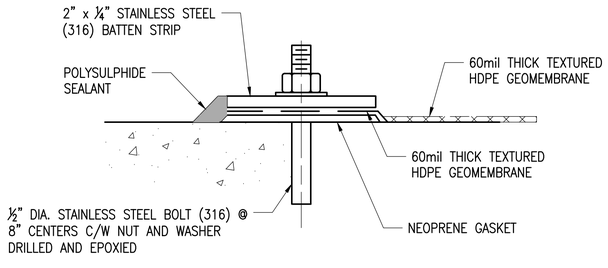


3 WET WELL WATERPROOFING
SECTION - NOT TO SCALE

ALL SURFACES OF WET WELL TO BE WATERPROOFED SHALL BE CLEANED AND PREPARED PER SIKAGARD MANUFACTURERS INSTRUCTIONS



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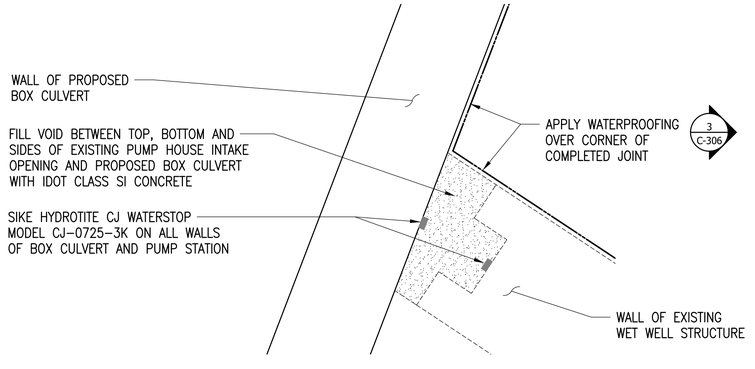

5 SEAL DETAIL
SECTION - NOT TO SCALE

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PUMP STATION INTAKE EXTENSION

C306

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Appendix C

Construction Schedule

Table C-1. Construction Schedule

	Activities	Week															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Submit notification to the Illinois Environmental Protection Agency	■															
2	Implement and Maintain BMP Erosion and Sediment Control Measures	■	■	■	■	■	■	■	■	■							
3	Unwater Emery Pond	■															
4	Continue unwatering/dewatering as necessary to conduct excavation activities		■	■	■	■	■	■	■	■							
5	Install process water and drainage bypass pumping system		■														
6	Sample CCB sediment			■													
7	Initial Dewatering			■													
8	Excavate riprap			■	■												
9	Excavate CCR sediment, FGD & Bottom Ash				■	■	■	■	■								
10	Install subsurface drainage system								■								
10	Earthwork to establish retrofitted pond base grade									■	■						
11	Install low permeability clay liner											■	■	■			
12	Install HDPE Geomembrane														■		
13	Conduct Construction Quality Assurance			■	■	■	■	■	■	■	■	■	■	■	■		
14	Finalize retrofit documentation															■	■

Appendix D

SIPC Storm Water Pollution Prevention Plan

Electronic Filing: Received, Clerk's Office 01/13/2023

Southern Illinois Power Cooperative
Storm Water Pollution Plan

Jason McLaurin
Effective: 8/20/2007
Reviewed: 8/17/2018

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- 1.1 General Overview of SIPC
- 1.2 Introduction
- 1.3 Objectives

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3.0 SIPC Storm Water System

4.0 Potential Sources of Storm Water Pollution
- 4.1 Site Map
- 4.2 Inventory of Exposed Materials
- 4.3 Summary of Sampling Data
- 4.4 Sediment and Erosion Control

5.0 Storm Management Practices
- 5.1 Non-Structural Control Measures
- 5.2 Structural Control Measures

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- 6.1 SWPPP Record Keeping
- 6.2 Annual Report and Inspection
- 6.3 Annual inspection Form

7.0 Certification Statement

GENERAL FACILITY INFORMATION

Name of Facility: Southern Illinois Power Cooperative

Facility Address: 11543 Lake of Egypt Road
Marion, Illinois 62959

Facility Contact:

Name: Jason McLaurin

Title: Environmental Coordinator

Telephone: 618-964-1448

Mailing Address: Same As Facility Address

Owner: Southern Illinois Power Cooperative

NPDES Permit Information:

Designated Name: Southern Illinois Power Cooperative

Permit Number: IL0004316

Effective Date of Coverage: 03-01-07

Number of Storm Water Outfalls: (1 Active)

Receiving Waters: Little Saline Creek
Lake of Egypt

1.0 OVERVIEW

1.1 GENERAL OVER VIEW OF SIPC

Southern Illinois Power Cooperative owns and operates a coal-fired, electric generating station at its Lake of Egypt site south of Marion, Illinois. Coal and Coal

combustion byproducts consisting of bottom ash, flyash, and scrubber sludge are routinely stored on the station's property. In addition, support products such as sulfuric acid, dibasic acid, sodium hydroxide, iron and steel, and petroleum-based products are routinely stored and used in such a manner that allows them to be exposed to rain water.

The amount of land in which SIPC owns in and around the Lake of Egypt Area is approximately 4,554 acres. However the amount of land the power plant uses for day-to-day operation is approximately 225 acres. Of those 225 acres, 2.2 % or 5 acres of them is either covered is some form or another by buildings, or is impervious by things such as concrete or pavement.

1.2 INTRODUCTION

This storm water pollution prevention plan (SWPPP) covers the operations at Southern Illinois Power Cooperative. It has been developed as required under Special Condition 15 of SIPC National Pollutant Discharge Elimination System (NPDES) general permit for storm water discharges and in accordance with good engineering practices. This SWPPP describes this facility and its operations, identifies potential sources of storm water pollution at the facility, recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff, and provides for periodic review of this SWPPP.

1.3 OBJECTIVES

The objective of this SWPPP is three-fold:

1. To identify potential sources of pollution at: Southern Illinois Power Cooperative.

2. To describe best management practices (BMPs), which are to be used at Southern Illinois Power Cooperative.

3. To provide other elements such as, but not limited to, a facility inspection program, site compliance evaluation program, and a record keeping and reporting program that will help Southern Illinois Power Cooperative comply with the terms and conditions of their storm water discharge permit

2.0 STORMWATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this SWPPP. The members of the team are familiar with the management and operations of Southern Illinois Power Cooperative.

The member(s) of the team and their primary responsibilities are as follows:

Name & Title	Responsibility
Wendell Watson-Environmental Services Manager	**Assure that SIPC complies with all environmental laws and regulations.**
Jason Mclaurin – Environmental Coordinator	**Oversee the required policies of this plan and SIPC NPDES permit.**
Company Lab technicians	**Retrieving and testing samples from the Power Plants outfalls.**
Coal Handling Department	**Help in the day-to-day maintenance of the stormwater system.**

3.0 SIPC STORM WATER SYSTEM

The storm water treatment system at the Marion station is the series of retention ponds shown on the attached maps. The ponds are used to balance pH, settle out solids, and assure a clean discharge into little Saline Creek. These ponds are used to treat the storm water as well as the process water from the plant. A few, non-industrial areas will discharge rainwater directly to the Lake of Egypt. The runoff from such areas is a sheeting runoff and does not lend itself to be sampled during a rain event. The other small percentage of storm water that leaves the plant boundaries without being captured by the NPDES system is typically sheeting rainfall passing over grassy fields owned by the plant.

4.0 POTENTIAL SOURCES OF POLLUTANTS

4.1 SITE MAP

The attached Maps present a site map of the facility showing the following features (as required by the permit):

- Property boundaries
- Buildings and other permanent structures
- Storage or disposal areas for significant materials
- Areas used for outdoor operations, including activities thet generate significant quantities of dust or particulates.
- Storm water discharge outfalls
- Location of storm water inlets contributing to each outfall
- Outlines of drainage areas contributing to each outfall
- Storm Water conveyance and discharge structures
- Location of NPDES permitted discharges other than storm water
- Structural runoff controls and storm water settling ponds
- Areas of vegetation
- Areas of exposed and/or eroding soils
- Impervious surfaces (roof tops, asphalt, concrete)
- Names and locations of receiving waters
- Locations where the following activities are exposed to storm water:
  - Fixed fueling operations
  - Vehicle and equipment maintenance and/or cleaning areas
  - Loading/unloading areas
  - Waste storage or disposal areas
  - Liquid storage tanks
  - Equipment operating areas
  - Storage areas

4.2 INVENTORY OF EXPOSED MATERIALS

The permit requires a general inventory of significant materials on site. For each significant material on site an evaluation is to be conducted to determine the potential for these materials to be contributed to the runoff being discharged from the facility. Such areas to focus on may include:

- Loading and unloading areas
- Material handling operations (fuel pumps, etc.)
- Outdoor storage areas
- Processes which generate dust or particulate matter
- Yard drains, stacks, and blowers
- Waste generating areas
- Waste disposal areas
- Maintenance and cleaning practices for vehicles and equipment
- Sites of environmental contamination
- Areas where spills of polluting materials have occurred in the past three years
- Any other areas deemed appropriate

Included are the ways in which these materials might be exposed to the storm water runoff. And the identified outfall from which the materials may be discharged if a release should occur.

Area/Process	Material	Method of Exposure	Outfall
Plant Yard Drains	OIL and Grease, metals	Storm water runoff, accidental release, Daily operations	002
Coal Pile Runoff	Metals	Storm water runoff	002
Floor drains and equipment drains	Oil and grease, metals, chemicals, solvents	Storm water runoff, accidental release, Daily operations	002
Process wastewater	Metals, oil and grease	Daily operations	002
Boiler Evaporations and Blowdowns	TSS, TDS	Daily operations	002
Bottom ash slurry	Metals, oil and grease	Storm water runoff	002
Slag storage pile runoff	Metals, oil and grease	Storm water runoff	002

Scrubber sludge disposal area runoff	Metals, oil and grease	Storm water runoff	002
Ammonia from SCR unit Operation	Ammonia	Accidental release	002
Chlorine from the chlorination process at intake screen of the plants circulating (cooling) water.	Chlorine	Accidental release	003
Equipment fueling locations	Diesel fuel	Accidental release	002
Equipment maintenance locations	Used oil, Fuel, Solvents, fuel conditioner, hydraulic oil	Spills, leaks	002
Accidental release from waste and oil contamination areas	Used oil	Accidental release	002
Sodium Formate from the sludge thickener and reclaimed water tank.	Sodium Formate	Accidental release	002

4.3 SUMMARY OF SAMPLING DATA

The following is a summary of the sampling data available for SIPC. The summary gives a list of the possible pollutants and the effected outfall number. For information on the frequency of testing required and concentration limits and parameters please see SIPC NPDES permit No. IL0004316.

Outfall	Analysis	Outfall	Analysis
002	PH-Daily max & min	005	PH-Daily max & min
002	Suspended solids	005	Suspended solids
002	Iron	005	Iron
002	Boron	005	Boron
002	Mercury	005	Mercury
002	Copper	005	Copper
002	Oil & Grease	005	Oil & Grease
002	Dissolved Solids	005	Dissolved Solids
002	Daily Flow	005	Daily Flow
002	Fluoride	005	Zinc
003	Max. Chlorine		
003	Water Temp		
003	Daily Flow		

4.4 SEDIMENT AND EROSION CONTROL

Sediment and erosion issues at SIPC are controlled by a settling pond system. Sedimentation is monitored by plant personnel through preventive maintenance such as cleaning ditches and ponds that handle rainwater. Such actions assure the proper diversion of rainwater to the NPDES settling ponds as outlined in our NPDES permit. Erosion has the potential to be an issue in very few areas at SIPC. The areas most vulnerable to erosion are the slopes and waterways in and around our settling pond area. These areas are inspected by plant personnel for erosion and other problem areas. Planting grass on slopes and the use of rock and riprap in waterways has controlled erosion in these areas. Traffic in these areas is also kept to a minimum to help prevent wear on the grass, ground rutting, and other damage that might alter ground water flow or accelerate ground erosion. Other areas around the plant where erosion could be at issue would include gravel roads within the plant that are used by plant personnel for plant operational issues. Again these roads are also subject to monitoring and preventive maintenance to insure they don't become a problem for our NPDES system. The Marion Station has a track hoe, dozer, and a fleet of end loaders that are used to accomplish these tasks.

5.0 STORM WATER MANAGEMENT PRACTICES

The following are the Storm water management controls, or best management practices (BMPs) that have been implemented or will be implemented to help reduce the amount of pollutants in the storm water discharge from Southern Illinois Power Cooperative.

- The Marion station uses a series of retention/settling ponds to reduce the amount of pollution in its storm water discharge.
- The retention/settling ponds are fed by the conveyance structures and grassy waterways that were built around the facility with the sole purpose of funneling all the rainwater that falls on the Power Stations grounds into the ponds.
- Berms and slopes of the retentions ponds are planted with grass to prevent soil erosion.

5.1 STRUCTURAL CONTROLS

In order to meet the objectives of the SWPPP and help maintain compliance with our NPDES permit SIPC will use structural controls. The structural controls listed will help meet one of three issues: (1) To insure all rainwater that falls on the Power Stations ground is properly funneled to the retention pond system, or (2) Prevent accidental or unnecessary contamination from the potential pollutants which had been identified (3) Decrease the amount of pollutants in the storm water discharge. Such structural controls include:

1. The use of berms and grass waterways to insure that the rainwater that falls onto the plant is conveyed into the retention pond system.

2. The Plant should periodically inspect this conveyance system to insure that it is functioning properly and all stormwater is being diverted as planned.

3. SIPC uses berms and levies to direct potentially polluted stormwater away from water bodies such as the Lake of Egypt.

4. SIPC has constructed berms, levies, or other secondary containment around outside fuel storage facilities to prevent against leaks and spills.

5. Use grading where applicable to divert storm water from high-risk areas.

6. The use of booms and oil absorbing pillows in the ponds to protect against accidental release.

7. Hazardous waste is stored in a proper containment area. The current waste area is located outside of warehouse C and can be located on the attached maps. The

waste that is accumulated is removed in a timely manner. This will prevent possible build up and decrease the potential for accidental contamination.

8. The plant uses covered storage for much of the equipment and materials.

* It should be noted that many of these structural controls are also considered Best Management Practices.

Best Management Practices used by SIPC

9. SIPC installed an oil / water separator at its combustion turbine site when it was constructed.

10. On a daily basis the plant uses a watering truck and a sprinkler system to help keep down dust and air borne particles during dry times of the year.

11. The plant keeps the yard in a clean and orderly fashion.

- **Other Controls**
  There are other control measures that can be used that may not fit into one of the previously mentioned categories. The use of such controls is encouraged. Additional controls that have to been used at the facility include sumps, oil/water separators, rock filters, vegetative filters, basins (collection, retention, detention), reduce, reuse, and recycle materials, etc.

Area	Material	Control Measure
Settling Ponds	50-lb rock filter	Decrease sedimentation to downstream pond
Settling Ponds	Sediment removal	Increase retention time of water in ponds

5.2 NON-STRUCTURAL CONTROLS

The following Non-Structural Controls are being used by SIPC:

- **Annual Inspections**

  The NPDES discharge system will be inspected by the Environmental Coordinator at least once per year. This inspection consists of checking of checking pond levels, checking the operability of all pumps, assuring that water sampling equipment is properly working, assuring that berms and levies are intact and not leaking, noting the coloration of the outfalls, and assuring that the security gates are locked. Berms or levy problems are reported to the grounds caretaker for repair. Eroded areas that are found during the inspection are repaired at the earliest opportunity. Other areas included in these inspections include all waste storage areas, oil storage areas, coal yard, and sludge storage area; all of which could be a site of possible pollution. Through these inspections, SIPC can assure that any problems with the NPDES and settling pond system, which controls the storm water, can be addressed in a timely fashion.

  The Environmental Coordinator will also inspect SIPC's hazardous waste emergency response equipment as it pertains to its SPCC plan. These inspections are to insure SIPC is prepared in case of accidental spill.

- **Good Housekeeping and Preventive Maintenance Practices**
  The following practices have been implemented to be used by SIPC in order to maintain an efficient stormwater discharge system.

Area / Equipment	Frequency
Preventive maintenance of ditches and ponds	As Required
Proper storage of waste and oil in containment areas	Daily
Removal or recycle of all waste and used oil in a timely matter	As Needed

Use of booms and pillows in ponds in case of accidental spill Checking of pumps, oil and water separators, and sampling equipment;	As Needed Weekly
Making sure ditch drains are free of debris and sedimentation	Daily
Covered storage of as much plant equipment as possible	Daily
Proper labeling of all significant materials	Always
Maintaining the plant as clean and orderly as possible	Daily
Training of employees of company policy, hazardous waste handling procedures, proper storage and labeling of hazardous waste, SPCC program, Waste Minimization, Good Housekeeping methods	Annually
Checking the emergency spill kits on-site in accordance with the companies SPCC plan	At Least Annually
Monitor performance of water pumps and sumps during a storm event	During One Rain Event

- **Spill Prevention and Response Procedures (SPCC PLAN)**

This SPCC plan specifies material handling procedures and storage requirements for significant materials. It specifies equipment and procedures necessary for cleaning up spills and preventing the spilled materials from being discharged have also been identified. All employees are trained to follow the procedures outlined in the plan. SIPC's SPCC plan is located in the Environmental Manager's office at the administration building of the SIPC facility. Described in this plan would be the location of emergency spill minimization materials; which happen to be in Warehouse A and D.

Area	Materials Present	Emergency Response Equipment Locations
Turbine Deck	Turbine oil	Warehouse A and D, Concrete curbed, inside building
Oil Storage Area	Lube Oils, Used Oil, Antifreeze	Warehouse A and D, inside building

Maintenance Shop	Used Oil	Warehouse A and D, inside building
Storeroom Area	Chemicals	Warehouse A and D, inside building
Boiler Areas	Lube Oil, Compressor Oil, Boiler Chemicals, Ammonia	Warehouse A and D, inside building, curbed concrete
Ammonia Storage and Handling Areas	Anhydrous Ammonia	Water mist, SCBA's located plant wide
Chlorine Handling & Storage areas	Chlorine	SCBA's located plant wide, Emergency alarms located in the chlorine bldg. alert the plants control room if a leak should occur, Warning light on top of Chlorine Bldg. Is activated once a leak is detected.
Coal Handling Area	Fuel, Oil, Antifreeze, Fuel Conditioners	Warehouse A and D
Used oil Area	Used Oil	Warehouse A and D, Inside Covered Concrete Basin

- **Employee Training**

The following is a description of the employee training programs that are conducted to inform personnel at all levels of their responsibility to carry out the components and goals of the SWPPP.

Topic	Frequency
Hazardous Waste	Yearly
SPCC	Yearly
Good Housekeeping	Yearly
Waste Minimization	Yearly
SWPPP	Yearly

6.0 RECORD KEEPING AND REPORTING

6.1 SWPPP RECORD KEEPING

The SWPPP for SIPC will be maintained on-site at the office of the Environmental Coordinator. The SWPPP will be revised and updated when changes are made at

SIPC that will impact the exposure of significant materials to stormwater or the overall effectiveness of the SWPPP. When an inspection determines that changes to the SWPPP are necessary, or when the SWPPP is ineffective in accomplishing the stated objectives, the Environmental Coordinator will make appropriate revisions to the SWPPP. In addition, the Environmental Coordinator will review the SWPPP at least annually, and the SWPPP will be revised as necessary.

The Environmental Coordinator will maintain a record of the results of site inspections (indicating implementation of BMPs) or identify any incident(s) of non-compliance.

The Environmental Coordinator will maintain a record of incidents of spills or leaks of significant materials that could impact stormwater runoff, along with corrective actions, surface water discharge (if any), and other relevant information. Records of inspection and maintenance activities such as cleaning and repairing stormwater control and treatment facilities will also be maintained.

Accompanying reports and changes to the SWPPP will be retained on-site for at least (3) years.

6.2 ANNUAL REPORT & INSPECTION

NPDES permit number IL 0004316 requires that Southern Illinois Power Cooperative conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations and the appropriate responses to the observations shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the IL Environmental Protection Agency as required by the reporting requirements of the SIPC NPDES permit. As part of the annual inspection report, the company will document any event (spill, treatment unit malfunction, etc,) that required an inspection, results of the inspection, and any corrective actions that followed.

In addition to the annual inspection, at least once per year, the Environmental Coordinator shall inspect the entire plant boundary during a rain event. During this inspection, the coordinator will look for storm water being discharged to lakes, ponds, streams, other bodies of water that do not flow through the facility's NPDES impoundments. If such water flows are found, the coordinator shall take a sample of the water and have it analyzed for all pertinent pollutants. Results of this analysis will be included in the annual submission to the IEPA.

6.3 Annual Inspection Form

This form will be used to check and document the facilities annual inspection. The form will also used to assign corrective actions if something is found during an inspection that requires a corrective action. This form will be kept on file in the Environmental Coordinator's Office for up to (3) years.

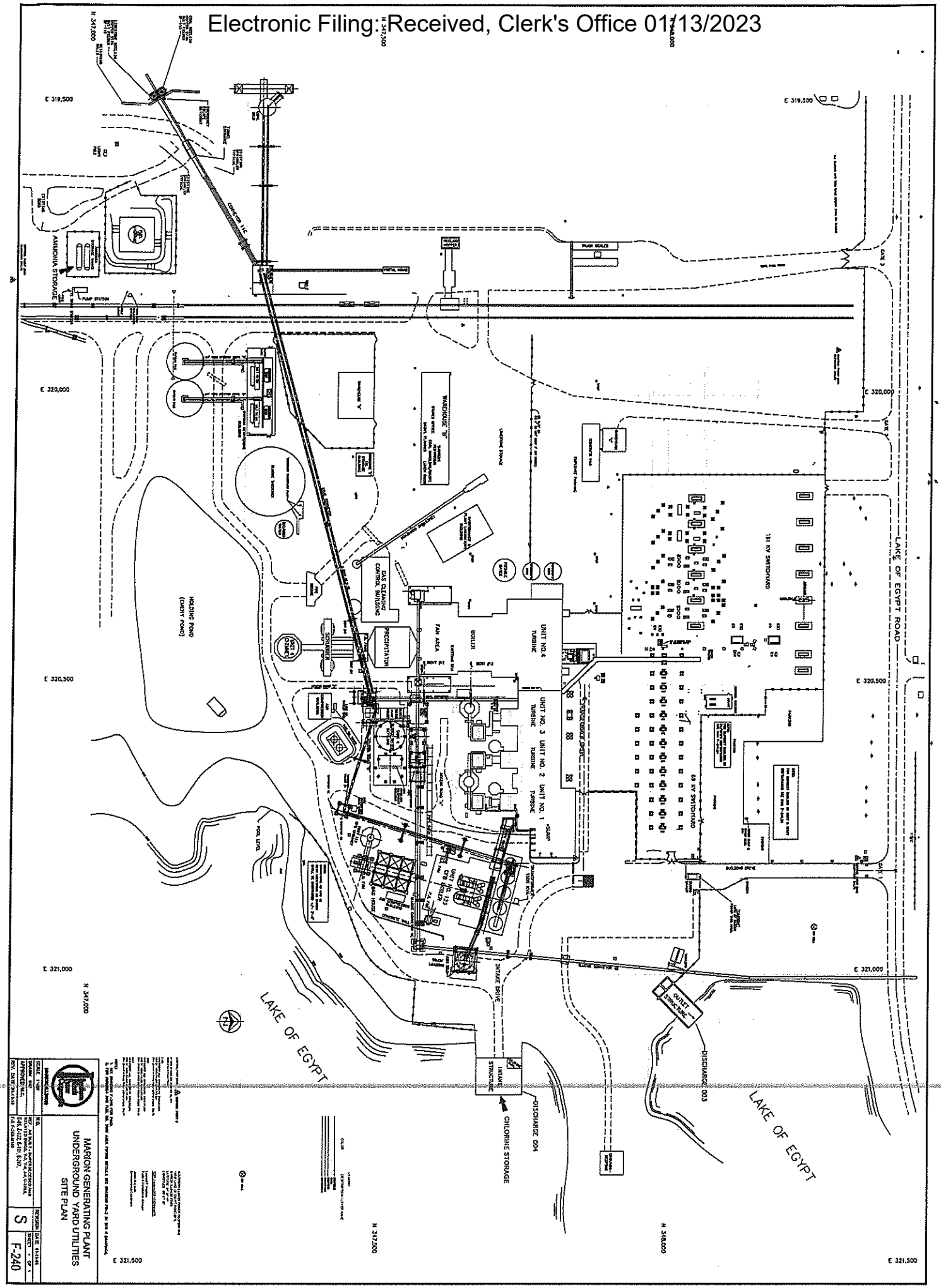
7.0 CERTIFICATION OF THE SWPPP

I certify under penalty of law that this SWPPP has been developed in accordance with good engineering practices. To the best of my knowledge and belief, the information submitted is true, accurate, and complete. In addition, at the time this plan was completed, no unauthorized discharges were present. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Jason A McLaurin (Signature of Certified Operator)	241-17-2063 (Certification Number)
JASON A MCLAURIN (Printed Name)	8/17/2018 (Date)
SAME AS ABOVE (Signature of Corporate Officer)	(Date)
(Printed Name)	(Title)

This SWPPP becomes effective as of August 20, 2007

Reviewed: August 18, 2018


MARION GENERATING PLANT
UNDERGROUND YARD UTILITIES
SITE PLAN
LAKE OF EGYPT
LAKE OF EGYPT ROAD
INTAKE DRIVE
INTAKE STRUCTURE
CHLORINE STORAGE
DISCHARGE 004
DISCHARGE 003
OUTLET STRUCTURE
AMMONIA STORAGE
HOLDING POND (ASH POND)
SCRUBBER
PRECIPITATOR
FAN AREA
BOILER
UNIT NO.4 TURBINE
UNIT NO. 3 TURBINE
UNIT NO. 2 TURBINE
UNIT NO. 1 TURBINE
161 KV SWITCHYARD
69 KV SWITCHYARD
E 319,500
E 320,000
E 320,500
E 321,000
E 321,500
N 347,000
N 347,500
N 348,000
S
F-240

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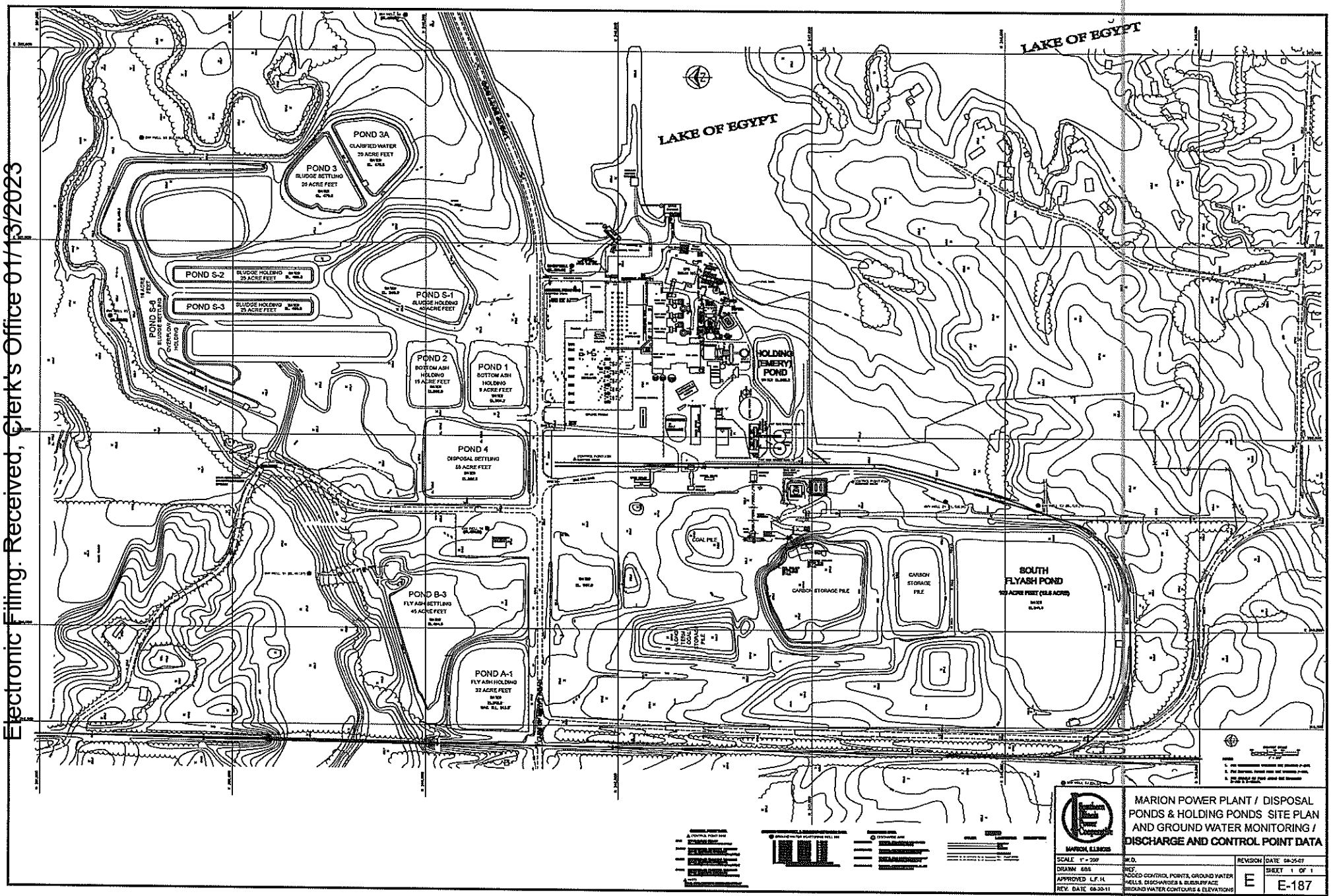
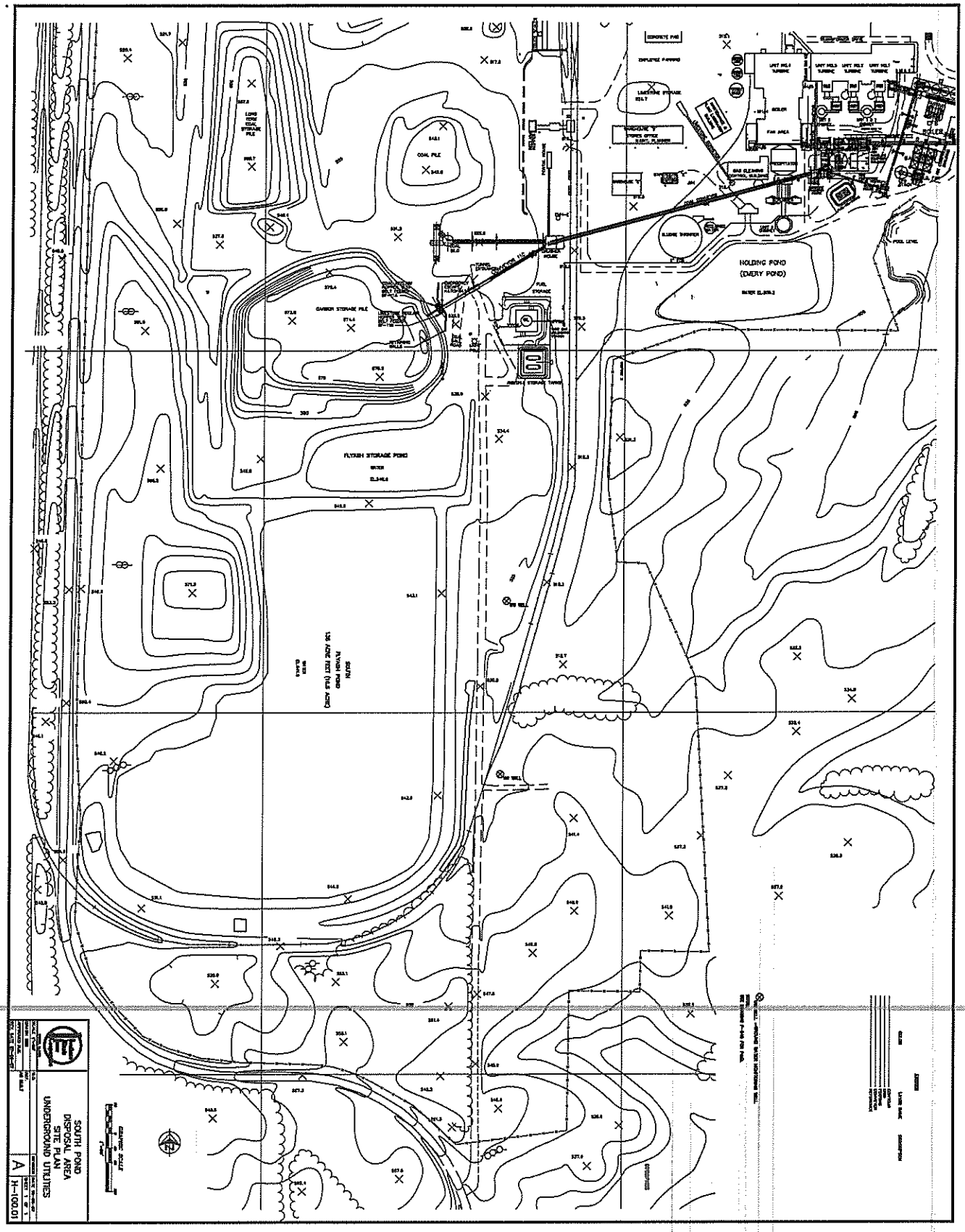


Southern Illinois Power Cooperative
MARION, ILLINOIS

MARION POWER PLANT / DISPOSAL PONDS & HOLDING PONDS SITE PLAN AND GROUND WATER MONITORING / DISCHARGE AND CONTROL POINT DATA

SCALE 1" = 200'	W.O.	REVISION	DATE 08-25-07
DRAWN GDS	REF. ADDED CONTROL POINTS, GROUND WATER WELLS, DISCHARGES & BUILDING FACE. GROUND WATER CONTOURS & ELEVATIONS	E	SHEET 1 OF 1
APPROVED L.F.H.			E-187
REV. DATE 08-30-11			


HOLDING POND
(EVERY POND)
FLYASH STORAGE POND
SOUTH POND
DISPOSAL AREA
SITE PLAN
UNDERGROUND UTILITIES
H-1900.01

Appendix E

Geotechnical Data

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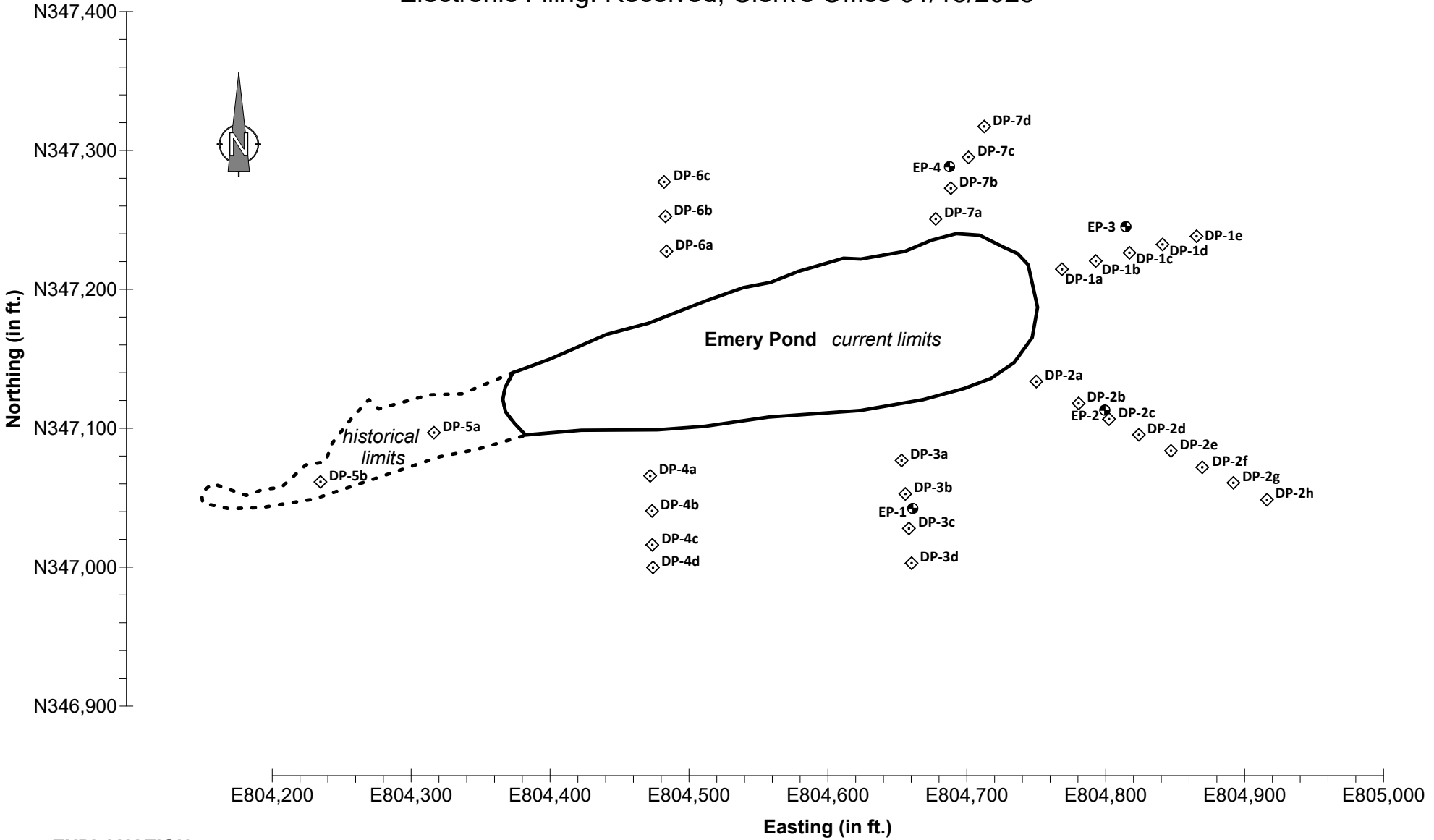

EXPLANATION

- Monitoring Well
- Direct Push Boring

Contour Interval = 1 foot

SCALE: 1 inch equals 100 feet

0 ft. 30 ft. 61 ft. 91 ft.

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HANSON
Hanson Professional Services Inc.

Boring Location Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE E-1

I:\18jobs\18E0022A\Admin\15-Field-Laboratory Data\BoringLocationMap-AppE_20210318.srf

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1a
Well ID: DP-1a
Surface Elev: 516.52 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,214.45N
804,768.52E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = Dry - 3/1/2019 @ 8:30
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	44/60 73%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
								Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		514	
							4				
										512	
	28/48 58%	DP					6	Dark yellowish brown (10YR4/4), moist, soft, CLAY with some silt and trace sand. (FILL)		510	
							8				
										508	
							10				
	32/48 67%	DP								506	
							12				
								Brownish yellow (10YR6/6), weathered SHALE.		504	
							14				
	40/48 83%	DP								502	
							16				
										500	

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1b
Well ID: DP-1b
Surface Elev: 517.05 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,220.35N
804,792.89E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 15.95 - 3/1/2019 @ 8:25
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								Black (10YR2/1) ASPHALTI. (FILL)			
								Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
	48/60 *80%*	DP					2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							4	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		512	
	42/48 *88%*	DP					6	Yellowish brown (10YR5/6) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		510	
							8	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		508	
	27/48 *56%*	DP					10	Gray (10YR5/1) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		506	
							12			504	
							14	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand.		502	
	32/48 *67%*	DP					▼ 16	Yellowish brown (10YR5/8), weathered SHALE.			

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1c
Well ID: DP-1c
Surface Elev: 514.27 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,226.27N
804,817.11E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.37 - 3/1/2019 @ 8:10
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in / N - Value / RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	38/60 63%	DP					0	Dark grayish brown (10YR4/2), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		514	
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)			
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, few bottom ash, and trace sand. (FILL)		512	
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)			
							4	Light yellowish brown (10YR6/4), moist, hard, weathered SHALE. (FILL)		510	
	38/48 79%	DP					6	Black (10YR2/1) mottled yellowish brown (10YR5/6) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		508	
							8	Dark yellowish brown (10YR4/4) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		506	
	40/48 83%	DP					10 ▼	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		504	
							12			502	
	42/48 88%	DP					14	Yellowish brown (10YR5/8), moist, soft, CLAY with some silt and trace sand.		500	
							16	Yellowish brown (10YR5/8), weathered SANDSTONE.		498	
	24/24 100%	DP					18	Brownish yellow (10YR6/8), weathered SHALE.		496	

End of Boring = 19.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1d
Well ID: DP-1d
Surface Elev: 513.11 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,232.30N
804,841.00E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.60 - 2/28/2019 @ 15.45
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 *100%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
							4	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
	48/48 *100%*	DP					6			506	
							8	Black (10YR2/1), moist, medium, CLAY with some silt, little sand, few bottom ash, and trace gravel.		504	
	37/48 *77%*	DP					10 ▼	Yellowish brown (10YR5/8), wet, soft, CLAY with some silt and trace sand.		502	
							12	Black (10YR2/1), wet, soft, CLAY with some silt and trace sand.		500	
	40/48 *83%*	DP					14	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		498	
							16				
								Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1e
Well ID: DP-1e
Surface Elev: 512.80 ft. MSL
Completion: 8.00 ft. BGS
Station: 347,238.19N
804,865.50E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 0.00 - 2/28/2019 @ 15:25
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in / N - Value / RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
							2	Dark yellowish brown (10YR4/4), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
	36/36 100%	DP					4	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		508	
							6			506	
							8	Yellowish brown (10YR5/6), SANDSTONE.			

End of Boring = 8.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2a
Well ID: DP-2a
Surface Elev: 516.53 ft. MSL
Completion: 13.50 ft. BGS
Station: 347,133.62N
804,750.03E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 14.26 - 2/27/2019 @ 8:15
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 *100%*	DP					0	Black (10YR2/1), moist, loose, medium- to very coarse-grained SAND, with some silt and trace gravel. (FILL)		516	
								Black (10YR2/1), moist, stiff, CLAY with some silt, little sand, and trace gravel.			
							2	Brownish yellow (10YR6/6), moist, stiff, CLAY with some silt and trace sand.		514	
							4	Brownish yellow (10YR6/6) with 30% gray (10YR6/1) mottles, moist, medium, CLAY with some silt and trace sand.		512	
	35/48 *73%*	DP					6			510	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		508	
	31/48 *65%*	DP					10			506	
							12	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		504	
	6/6 *100%*	DP						Yellowish brown (10YR5/6), weathered SHALE.			
								Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 13.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2b
Well ID: DP-2b
Surface Elev: 516.65 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,117.86N
804,780.56E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 9.38 - 2/27/2019 @ 8:35
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	31/60 *52%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
								Yellowish brown (10YR5/8) with 40% Black (10YR2/1) mottles, moist, medium CLAY with some silt and trace sand. (FILL)		514	
							4				
										512	
								Dark gray (10YR4/1), moist, medium, CLAY with some silt and trace sand.			
	34/48 *71%*	DP					6			510	
							8			508	
							▼				
							10	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
	35/48 *73%*	DP									
							12			504	
								Yellowish brown (10YR5/6), wet, soft, SILT with few clay and little very fine-grained sand.			
							14				
	36/36 *100%*	DP						Yellowish brown (10YR5/8), weathered SHALE.		502	
							16				

End of Boring = 16.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2c
Well ID: DP-2c
Surface Elev: 510.46 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,106.55N
804,802.49E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 7.34 - 2/27/2019 @ 8:55
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	40/60 *67%*	DP					0	Dark gray (10YR4/1) with 30% yellowish brown (10YR5/6) mottles, moist, medium, CLAY with some silt and trace sand.		510	
							2				
							4	Yellowish brown (10YR5/6) with 20% gray (10YR5/1) mottles, moist, medium, CLAY with some silt and trace sand.		508	
							6			506	
	43/48 *90%*	DP					▼ 7.34			504	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		502	
							10			500	
	41/48 *85%*	DP					12	Yellowish brown (10YR5/8), moist, hard, weathered SHALE		498	
							14			496	
	36/36 *100%*	DP					16	Yellowish brown (10YR5/8) SANDSTONE.			

End of Boring = 16.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2d
Well ID: DP-2d
Surface Elev: 508.64 ft. MSL
Completion: 15.50 ft. BGS
Station: 347,095.26N
804,823.89E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 13.00 - during drilling
▼ = 1.35 - 2/26/2019 @ 17:10
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	53/60 *88%*	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		508	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		504	
	42/48 *88%*	DP					6			502	
							8				
							10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		498	
	44/48 *92%*	DP					12	Yellowish brown (10YR5/8), weathered SHALE.		496	
							14	Yellowish brown (10YR5/8) SANDSTONE.		494	

End of Boring = 15.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2e
Well ID: DP-2e
Surface Elev: 507.37 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,083.66N
804,847.08E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 2.31 - 2/27/2019 @ 9:10
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in / N - Value / RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		507	
							2 ▼	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		506	
							4			504	
	39/48 81%	DP					6			502	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		500	
	48/48 100%	DP					10			498	
							12			496	
								Yellowish brown (10YR5/6), wet, soft, SILT with few clay and little very fine-grained sand.		494	
	27/36 75%	DP					14	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
								Yellowish brown (10YR5/8), weathered SHALE.		492	
							16	**End of Boring = 16.0 ft.**			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2f
Well ID: DP-2f
Surface Elev: 506.32 ft. MSL
Completion: 15.50 ft. BGS
Station: 347,071.83N
804,869.56E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 3.55 - 2/27/2019 @ 9:25
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		506	
							2	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		504	
							▼ 4			502	
	44/48 92%	DP					6	Yellowish brown (10YR5/6) with 20% gray (10YR5/1) mottles, moist, medium CLAY with some silt and trace sand.		500	
							8	Dark yellowish brown (10YR4/6), wet, medium dense, very fine- to medium-grained SAND with few clay and silt.		498	
	45/48 94%	DP					10	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		496	
							12			494	
	28/30 93%	DP					14	Light yellowish brown (10YR6/4) SANDSTONE.		492	

End of Boring = 15.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2g
Well ID: DP-2g
Surface Elev: 505.12 ft. MSL
Completion: 15.40 ft. BGS
Station: 347,060.68N
804,891.97E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 9.00 - during drilling
▼ = 11.60 - 2/26/2019 @ 17:30
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	46/60 *77%*	DP					0	Gray (10YR5/1), moist, loose, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		505	
							2	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		504	
							4	Yellowish brown (10YR5/6), medium CLAY with some silt and trace sand.		502	
	34/48 *71%*	DP					6	Gray (10YR5/1), moist, medium, CLAY with some silt, little sand, and trace gravel.		500	
							8			498	
	35/48 *73%*	DP					10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		496	
							12			494	
	29/30 *97%*	DP					14			492	
								Yyellowish brown (10YR5/8) SANDSTONE.		490	

End of Boring = 15.4 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2h
Well ID: DP-2h
Surface Elev: 503.54 ft. MSL
Completion: 15.00 ft. BGS
Station: 347,048.55N
804,916.15E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 7.00 - during drilling
▼ = -0.30 - 2/26/2019 @ 17:40
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in / N - Value / RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	45/60 75%	DP					0	Gray (10YR5/1), moist, loose, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		502	
							2				
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		500	
							6			498	
	33/48 69%	DP					▼				
							8	Gray (10YR6/1) with 20% yellowish brown (10YR5/6) mottles, wet, medium SILT with few clay and little very fine-grained sand.		496	
							10			494	
	42/48 88%	DP						Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt and trace sand.		492	
							12				
								Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt, little sand, and trace gravel.		490	
	24/24 100%	DP					14	Brownish yellow (10YR6/8) SANDSTONE.			

End of Boring = 15.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3a
Well ID: DP-3a
Surface Elev: 518.30 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,076.80N
804,653.12E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 11.68 - 2/26/2019 @ 8:55
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	49/60 *82%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		518	
							2			516	
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		514	
	30/48 *63%*	DP					6			512	
							8			510	
	32/48 *67%*	DP					10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
							12 ▼			506	
	36/48 *75%*	DP					14	Yellowish brown (10YR5/8), weathered SHALE.		504	
							16			502	
								Yellowish brown (10YR5/8), SANDSTONE.			
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3b
Well ID: DP-3b
Surface Elev: 518.15 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,052.67N
804,655.84E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.63 - 2/26/2019 @ 9:15
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Black (10YR2/1), moist, soft, CLAY with some silt and trace sand.		518	
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		516	
	48/48 100%	DP					4			514	
							6	Yellowish brown (10YR5/6), moist, medium, SILT with few clay, and trace very fine-grained sand.		512	
							8			510	
	39/48 81%	DP					10 ▼			508	
							12	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		506	
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
							14	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		504	
	42/48 88%	DP						Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
							16	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and few very fine-grained sand.		502	
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.			
	23/24 96%	DP					18	Light yellowish brown (10YR6/4) SANDSTONE.		500	
								Yellowish brown (10YR5/8), weathered SHALE.			
								End of Boring = 19.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3c
Well ID: DP-3c
Surface Elev: 516.55 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,027.84N
804,658.41E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 6.44 - 2/26/2019 @ 9:30
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 *100%*	DP					0	Very dark grayish brown (10YR3/2), moist, soft, CLAY with some silt and trace sand.		516	
							2				
								Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		514	
							4				
										512	
							6	▼			
	41/48 *85%*	DP								510	
							8				
										508	
							10				
	40/48 *83%*	DP						Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
							12				
										504	
							14				
	38/48 *79%*	DP								502	
							16	Brownish yellow (10YR6/8), weathered SANDSTONE.			

End of Boring = 16.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP3d
Well ID: DP3d
Surface Elev: 516.62 ft. MSL
Completion: 10.30 ft. BGS
Station: 347,002.83N
804,660.29E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 5.06 - 2/26/2019 @ 9:45
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	53/60 *88%*	DP					0	Very dark grayish brown (10YR3/2), moist, soft, CLAY with some silt and trace sand.		516	
							2	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		514	
							4	Yellowish brown (10YR5/6), moist, medium, SILT with few clay, and trace very fine-grained sand. ▼		512	
	36/48 *75%*	DP					6	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		510	
							8	Yellowish brown (10YR5/6), weathered SHALE.		508	
	16/18 *89%*	DP					10	Yellowish brown (10YR5/6), weathered SANDSTONE.			

End of Boring = 10.3 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4a
Well ID: DP-4a
Surface Elev: 520.39 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,065.72N
804,472.12E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 14.26 - 2/27/2019 @ 8:15
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	42/60 *70%*	DP					0	Brown (10YR5/3), moist, medium, CLAY with some silt, little sand, and trace gravel. (FILL)		520	
							1	Light gray (10YR7/1), moist, dense, medium- to coarse-grained GRAVEL with little sand and few silt. (FILL)			
							2			518	
							4			516	
	48/48 *100%*	DP					6	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		514	
							8			512	
	48/48 *100%*	DP					10			510	
							12	Yellowish brown (10YR5/8), weathered SANDSTONE.		508	
	48/48 *100%*	DP					14 ▼	Yellowish brown (10YR5/8), weathered SHALE.		506	
							16	Yellowish brown (10YR5/8), weathered SILTSTONE.		504	
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4b
Well ID: DP-4b
Surface Elev: 520.64 ft. MSL
Completion: 14.50 ft. BGS
Station: 347,040.46N
804,473.43E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 13.55 - 2/27/2019 @ 8:15
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0			520	
							2				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		518	
							4				
										516	
							6				
	46/48 96%	DP								514	
							8				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		512	
							10				
	37/48 77%	DP								510	
							12				
								Yellowish brown (10YR5/8), weathered SHALE.		508	
							▼				
	18/18 100%	DP					14				
								Brownish yellow (10YR6/6) SANDSTONE.			

End of Boring = 14.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4c
Well ID: DP-4c
Surface Elev: 523.14 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,016.05N
804,473.64E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 13.61 - 2/27/2019 @ 8:15
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Brown (10YR4/3), moist, soft, CLAY with some silt and trace sand.		522	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		520	
							6			518	
	46/48 96%	DP					8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		516	
							10			514	
	35/48 73%	DP					12			512	
							▼ 13.61	Yellowish brown (10YR5/8), weathered SHALE.		510	
							14				
	28/48 58%	DP					16			508	
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4d
Well ID: DP-4d
Surface Elev: 524.09 ft. MSL
Completion: 17.00 ft. BGS
Station: 346,999.74N
804,474.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 2.10 - 2/26/2019 @ 8:25
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Dark yellowish brown (10YR4/4), moist, soft, CLAY with some silt, little sand, and trace gravel.		524	
							2 ▼			522	
							4	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		520	
	46/48 96%	DP					6			518	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		516	
	37/48 77%	DP					10	Yellowish brown (10YR5/8), weathered SHALE.		514	
							12	Yellowish brown (10YR5/8), weathered SANDSTONE.		512	
	28/48 58%	DP					14	Yellowish brown (10YR5/8), weathered SHALE.		510	
							16			508	

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-5a
Well ID: DP-5a
Surface Elev: 518.48 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,096.77N
804,316.45E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 15.00 - during drilling
▼ = 6.62 - 2/26/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	40/60 *67%*	DP					0			518	
							2			516	
							4			514	
	48/48 *100%*	DP					6	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		512	
							8			510	
	48/48 *100%*	DP					10			508	
							12	Light brownish gray (10YR6/2), moist, dense, very fine-grained SAND with some silt. (FILL)		506	
							14	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		504	
	26/48 *54%*	DP					16	Very dark brown (10YR2/2), wet, dense, bottom ASH. (FILL)		502	
								Very pale brown (10YR7/4), weathered SANDSTONE			
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-5b
Well ID: DP-5b
Surface Elev: 519.57 ft. MSL
Completion: 9.80 ft. BGS
Station: 347,061.40N
804,234.84E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 7.02 - 2/26/2019 @ 8:05
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	49/60 *82%*	DP					0	Yellow, (10YR7/6) wet, soft, GYPSUM (FILL)		519.57	
							2			518	
							4	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		516	
	48/48 *100%*	DP					6			514	
							▼			512	
	8/8 *100%*	DP					8			510	
							9.8	Yellowish brown (10YR5/8), weathered SANDSTONE			

End of Boring = 9.8 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6a
Well ID: DP-6a
Surface Elev: 516.69 ft. MSL
Completion: 9.50 ft. BGS
Station: 347,227.38N
804,483.91E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 6.32 - 2/28/2019 @ 9:10
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	51/60 *85%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)			
							4	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.			
							6 ▼	Gray (10YR5/1), moist, soft, SILT with few clay and little very fine-grained sand.		510	
	34/48 *71%*	DP						Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.			
							8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
	6/6 *100%*	DP						Yellowish brown (10YR5/6), SANDSTONE.			

End of Boring = 9.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6b
Well ID: DP-6b
Surface Elev: 517.23 ft. MSL
Completion: 11.50 ft. BGS
Station: 347,252.51N
804,483.13E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.63 - 2/29/2019 @ 7:55
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	59/60 *98%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Black (10YR2/1), moist, dense, BOTTOM ASH. (FILL)			
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand. (FILL)		514	
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
							6	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.			
	31/48 *65%*	DP						Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		510	
							8	Dark gray (10YR4/1), moist, soft, SILT with few clay and little very fine-grained sand.		508	
	28/30 *93%*	DP					10	Yellowish brown (10YR5/8), weathered SHALE.			
								Yellowish brown (10YR5/8), SANDSTONE.		506	

End of Boring = 11.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6c
Well ID: DP-6c
Surface Elev: 516.49 ft. MSL
Completion: 8.00 ft. BGS
Station: 347,277.30N
804,482.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 1.00 - during drilling
▼ = 1.00 - 2/28/2019 @ 9:30
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail / Elevation ft. MSL / Remarks
	54/60 *90%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)	516
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)	514
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)	512
	26/36 *72%*	DP					6	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.	510
							8	Yellowish brown (10YR5/8), SANDSTONE.	

End of Boring = 8.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7a
Well ID: DP-7a
Surface Elev: 517.42 ft. MSL
Completion: 15.00 ft. BGS
Station: 347,250.66N
804,677.61E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 13.50 - during drilling
▼ = 8.49 - 2/28/2019 @ 8:00
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	43/60 72%	DP					0	Black (10YR2/1), moist, loose, SILT and very fine- to coarse-grained SAND with few clay and trace gravel. (FILL)			
							1	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)			
								Black (10YR2/1), wet, soft SILT with few clay and trace very fine-grained sand. (FILL)		516	
							2				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand and gravel. (FILL)		514	
							4				
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
	31/48 65%	DP					6				
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		510	
							8	▼			
										508	
	38/48 79%	DP					10				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
							12				
								▼		504	
	22/24 92%	DP					14	Black (10YR2/1), wet, medium loose, very fine- to medium-grained SAND with few silt and little clay.			
								Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 15.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7b
Well ID: DP-7b
Surface Elev: 517.56 ft. MSL
Completion: 15.50 ft. BGS
Station: 347,272.79N
804,688.58E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 13.00 - during drilling
▼ = 7.59 - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) / % Recovery	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	58/60 *97%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							6			512	
	26/48 *54%*	DP					8	Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt, little sand, and trace gravel. (FILL)		510	
							10			508	
	31/48 *65%*	DP					12	Light gray (10YR7/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)		506	
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
								Black (10YR2/1), wet, medium dense, weathered SANDSTONE.		504	
	30/30 *100%*	DP					14	Yellowish brown (10YR5/4), weathered SHALE.			
								Yellowish brown (10YR5/8) SANDSTONE.			
								End of Boring = 15.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7c
Well ID: DP-7c
Surface Elev: 516.65 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,294.97N
804,701.22E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 11.60 - during drilling
▼ = 14.47 - 2/28/2019 @ 14:55
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	46/60 *77%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							4				
										512	
								Light gray (10YR7/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)			
	35/48 *73%*	DP					6				
										510	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)			
										508	
							10				
	27/48 *56%*	DP								506	
								Gray (10YR6/1), moist, soft, CLAY with some silt, little sand, and trace gravel. (FILL)			
							▼ 12	Black (10YR2/1), wet, soft, SILT with few clay and trace very fine-grained sand.		504	
							14				
							▼	Dark gray (10YR4/1), moist, soft, CLAY with some silt and trace sand.		502	
	25/48 *52%*	DP									
							16				
								Light yellowish brown (10YR6/4), moist, medium, CLAY with some silt, little sand, and trace gravel.		500	
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.			
	20/24 *83%*	DP					18				
								White (10YR8/1), weathered SHALE.		498	

End of Boring = 19.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7d
Well ID: DP-7d
Surface Elev: 516.91 ft. MSL
Completion: 20.00 ft. BGS
Station: 347,317.15N
804,712.63E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.59 - 2/28/2019 @ 8:45
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	56/60 *93%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							6	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand. (FILL)		512	
	30/48 *63%*	DP					8	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand. (FILL)		510	
							10			508	
	48/48 *100%*	DP					12	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand. (FILL)		506	
								Gray (10YR5/1), moist, soft, SILT with few clay and trace very fine-grained sand. (FILL)		504	
							14	Gray (10YR5/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)			
	33/48 *69%*	DP						Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		502	
							16	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		500	
	29/36 *81%*	DP					18	Yellowish brown (10YR5/8), weathered SANDSTONE.		498	
							20				

End of Boring = 20.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

APPENDIX C

Decontamination Certification and Closure Completion Certification

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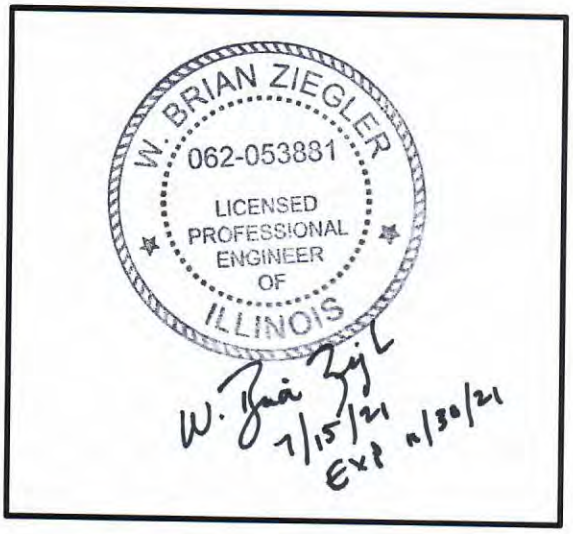
Decontamination Certification and Closure Completion Certification
Emery Pond

I am a Professional Engineer (P.E.) in the State of Illinois and President of Clarida & Ziegler Engineering Co. I am the P.E. with oversight for the Clarida & Ziegler Engineering Co. contract with Southern Illinois Power Cooperative for construction observation and oversight for the contract with 06 Environmental related to the closure of Emery Pond and the FGD Loadout Area at the Marion Power Station ("Emery Pond Site"). I have personal knowledge of the 06 Environmental Emery Pond Site closure activities and related documentation performed pursuant to the design documents produced by Hanson Professional Services, Inc. titled "Emery Pond Closure & Storm Water Basin Construction Plans," dated July 14, 2020, and included as Appendix B to the Emery Pond closure plan dated April 15, 2021.

I hereby certify that to the best of my knowledge, and based upon visual observation and other information, all CCR was removed from the Emery Pond Site in connection with the performed Emery Pond Site closure, and the CCR removal action at the Emery Pond Site was completed in general accordance with 35 Ill. Adm. Code 845.740(a) and with the Emery Pond Closure & Storm Water Basin Construction Plans dated July 14, 2020, and included as Appendix B to the Emery Pond closure plan. I further certify that to the best of my knowledge closure of the Emery Pond Site was completed in general accordance with those provisions of the Emery Pond closure plan that apply to the closure activities for which Clarida & Ziegler Engineering Co. had oversight responsibility or as to which SIPC has provided information, including documentation, confirming the work performed. [1]

The removal and decontamination of the Emery Pond Site was complete as of April 5, 2021, and final inspection was complete as of May 28, 2021.



W. Brian Ziegler, P.E.,

Printed Name

July 14, 2021

Date

CH2:25048737.3

[1] Clarida & Ziegler Engineering Co. was responsible for closure work oversight except for the following activities outlined in the Emery Pond Closure Plan produced by Hanson Professional Services, Inc., revision date April 15, 2021: Section 3.4 CCR Sediment Dewatering; Section 3.5 CCR Sediment Sampling; Section 3.8 CCR Management During Closure and Transportation; Section 3.10 FGD Loadout Area; and Section 5.4 Sampling and Analysis/Testing. SIPC has provided information, including documentation, confirming that CCR, including material from the FGD loadout area, was sampled, hauled off site and disposed of properly to meet the requirements of Sections 3.4, 3.5, 3.10 and 5.4 of the closure plan, as to which Clarida & Ziegler Engineering Co. did not have field oversight responsibility.

APPENDIX D

Hydrogeologic Investigation Report

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Emery Pond

Hydrogeologic Investigation Report

Marion Power Plant
Southern Illinois Power Cooperative
Marion, Williamson County, Illinois

March 29, 2019

HANSON
Engineering | Planning | Allied Services

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Abbreviations

ft. – feet
cm/s – centimeters per second
BGS – below ground surface
CFR – Code of Federal Regulations
IAC – Illinois Administrative Code

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1. Introduction

Marion Power Plant (Plant) is owned and operated by the Southern Illinois Power Cooperative (SIPC). The Emery Pond (Site), an active coal combustion residuals (CCR) impoundment at the Plant, has functioned from the late-1980's to the present as a storm water storage structure for drainage from the Marion Power Plant (Plant) area and the adjacent gypsum loadout area. Figure 1 shows the Site location on a USGS Topographic Map.

2. Project Background

2.1 Physical Setting

The site is located in the Shawnee Hills section within the Interior Low Plateaus (physiographic) Province (Leighton et al., 1948). Site geology consists of glacially-derived deposits of the Wisconsian and Illinoisan Stages overlying Pennsylvanian Age bedrock. The existing topography is a maturely eroded upland of gently sloping knolls and ridges (see Figure 2).

The "Berg Circular" indicates that the Site has less than 6 m (< 19.7 ft.) of loess overlying silty and sandy diamictons† of the Glasford Formation, overlying the Pennsylvanian Caseyville Formation (Berg et al., 1987).

2.2 Climate Data

Average climatic data was obtained from the Illinois State Water Survey. The data was recorded between 1990 and 2018 from Carbondale, Illinois, which is located approximately twenty miles northwest of the Site. The data includes monthly maximum and monthly minimum daily temperatures and average rainfall for each month calculated from daily values collected over the 28 year period. The data is summarized in Table 1.

Table 1: Average Monthly Temperature Extremes and Precipitation for Carbondale, IL

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Annual
Max Temp - °F	42.1	46.6	56.5	67.3	75.8	84.1	86.9	86.2	79.8	68.9	55.9	44.9	68.2
Min Temp - °F	24.2	27.5	35.5	44.9	54.8	63.5	67.0	64.5	56.1	45.1	35.5	27.7	45.5
Precip. - inches	3.09	2.96	4.37	5.23	4.43	3.92	3.68	3.07	3.24	3.35	4.35	3.74	45.4

Source: Water and Atmospheric Resources Monitoring Program. Illinois Climate Network. (2019). Illinois State Water Survey, 2204 Griffith Drive, Champaign, IL.

2.3 Bedrock Stratigraphy

The study area is located just north of the Mississippi Embayment. Hundreds of feet of sedimentary rock underlie this region. The bedrock in the study area dips gently northward toward the center of the Illinois Basin. The near-surface bedrock at the Site consists of primarily sandstones of the Caseyville Formation (Willman et al., 1995).

† **diamicton** (di-a-mic'-ton) A comprehensive, nongenetic term proposed by Flint et al. (1960) for a non-sorted or poorly sorted, non-calcareous, terrigenous sediment that contains a wide range of particle sizes, such as sand and/or larger particles in a muddy matrix.

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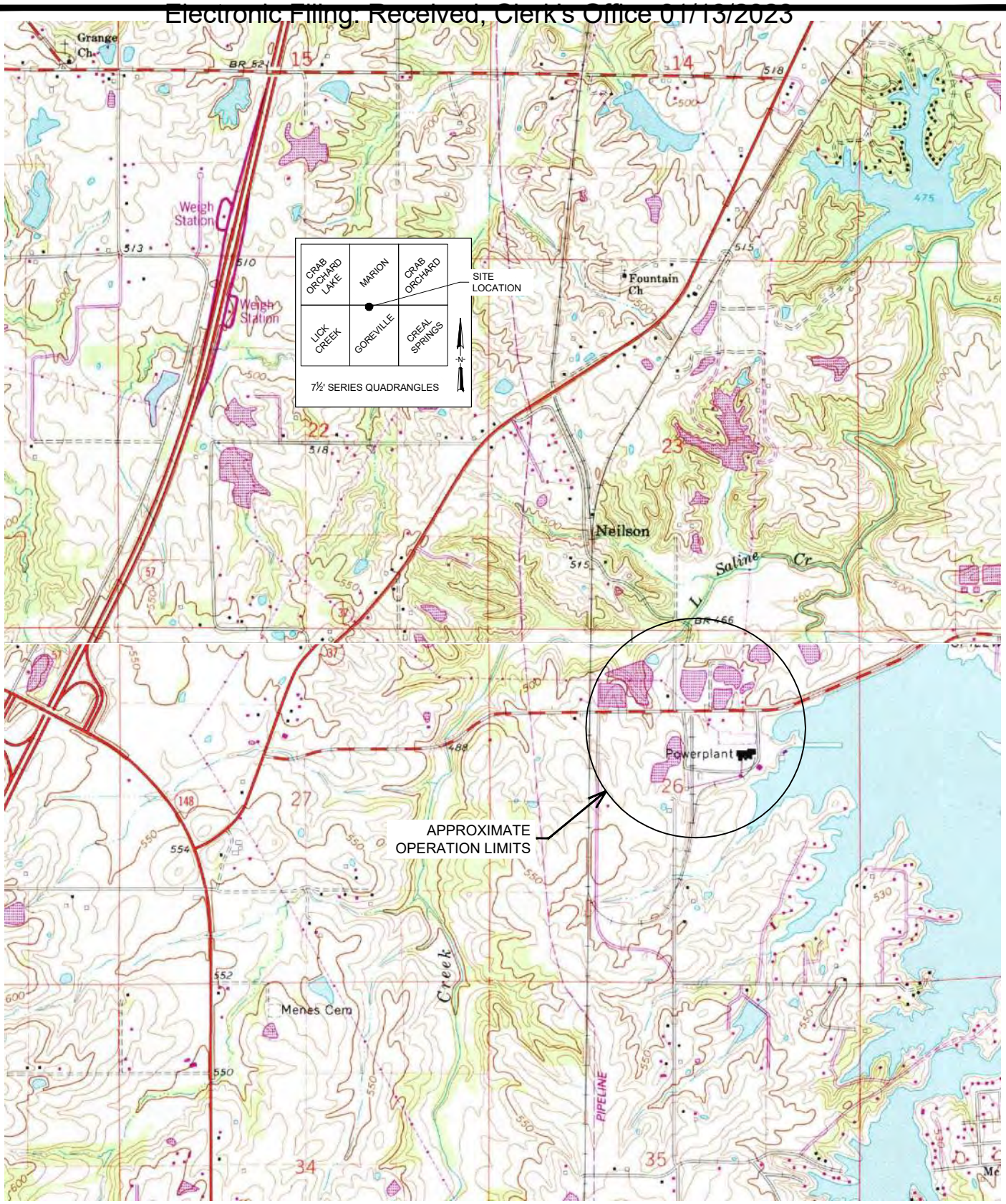

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SCALE

2,000 0 2,000 4,000

1 inch = 2,000 feet Contour interval = 10 feet

Approximate Site Location: n½ of Section 26; T10S., R2E.

SITE LOCATION MAP

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 1

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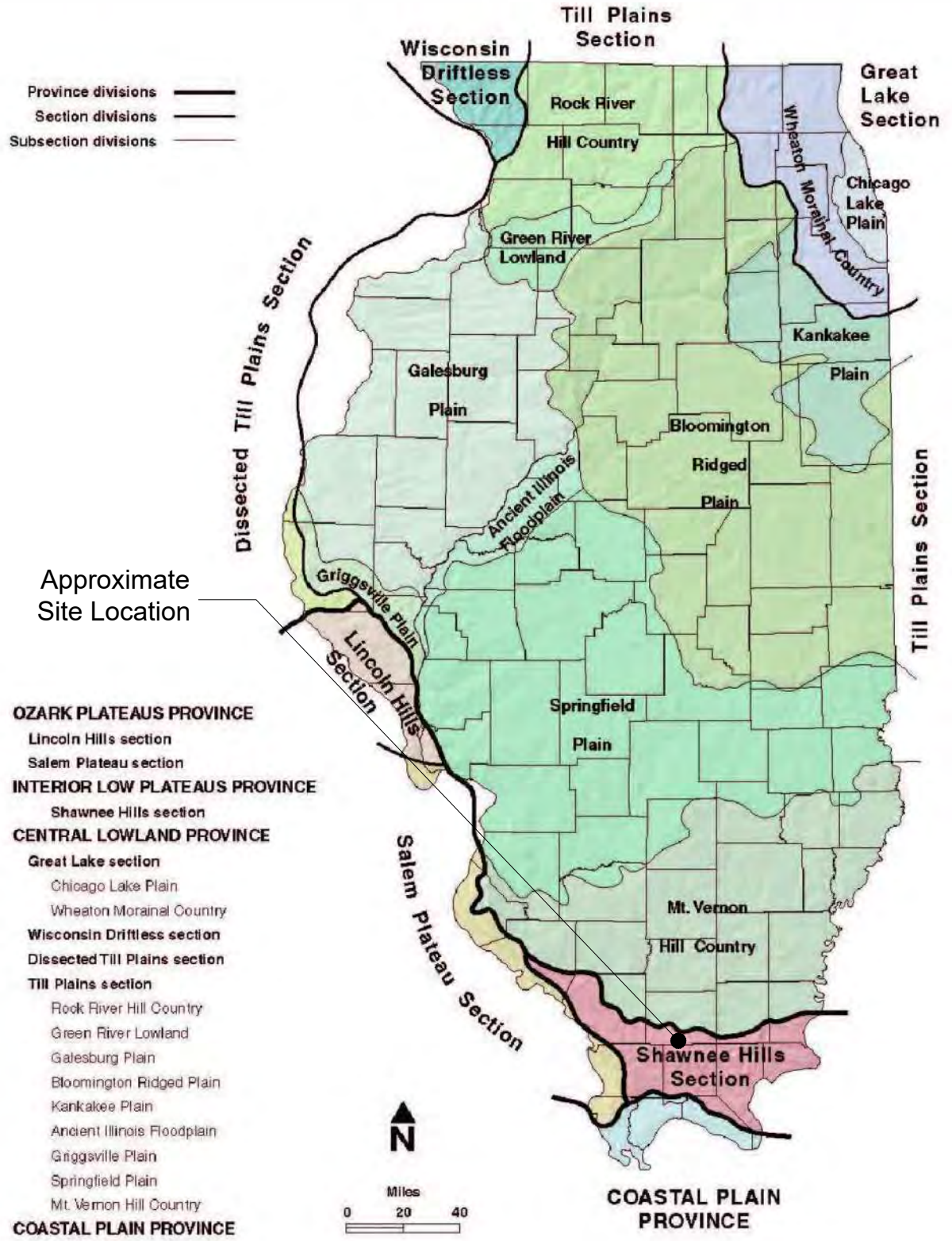

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after Leighton et al., 1948

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PHYSIOGRAPHIC DIVISIONS OF ILLINOIS

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A FIGURE 2

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2.4 Unlithified Deposits

Regionally, the unlithified deposits consist of a thin veneer of Roxana Loess overlying silty and sandy diamictons of the Glasford Formation. These deposits are generally thin (less than 20 feet). In the case of the Roxana Loess, it is found intermittently. The Glasford Formation is leached of carbonates and weathered to yellowish brown to strong brown in color (Jacobson, 1992).

2.5 Structural Geology

The regional structural geology of the area is presented on Figure 3. The principal structures in the area are the Cottage Grove Fault System, located north of the Site and the Little Cache Fault Zone located southeast of the Site. The Cottage Grove Fault System is a principal tectonic feature of Southern Illinois. It presents a classic pattern of right-lateral strike-slip faulting. The Little Cache Fault Zone consisting of high-angle normal faulting. There have been no Pleistocene displacements along faults in this part of Illinois (Nelson, 1995).

2.6 Seismic Risk

Earthquakes are formed when the stresses within the bedrock reach a point at which rupture or breakage of bedrock occurs. This breakage releases a tremendous amount of energy known as an earthquake. Williamson County is located adjacent to two seismic impact zones, the New Madrid and the Wabash Valley Seismic Zones. Records dating from 1811 and 1812 indicate that multiple earthquakes greater than a Richter Scale Magnitude 8.0 occurred along the New Madrid Seismic Zone. Away from the fault, earthquakes occur at random patterns across a large area and are often too small to detect except by instruments. Occasional earthquake events may attain a 5.0 to 6.0 magnitude. The earthquake epicenters appear to be the result of modern regional stress fields and are not related to the nearby inactive faults (Nelson, 1995).

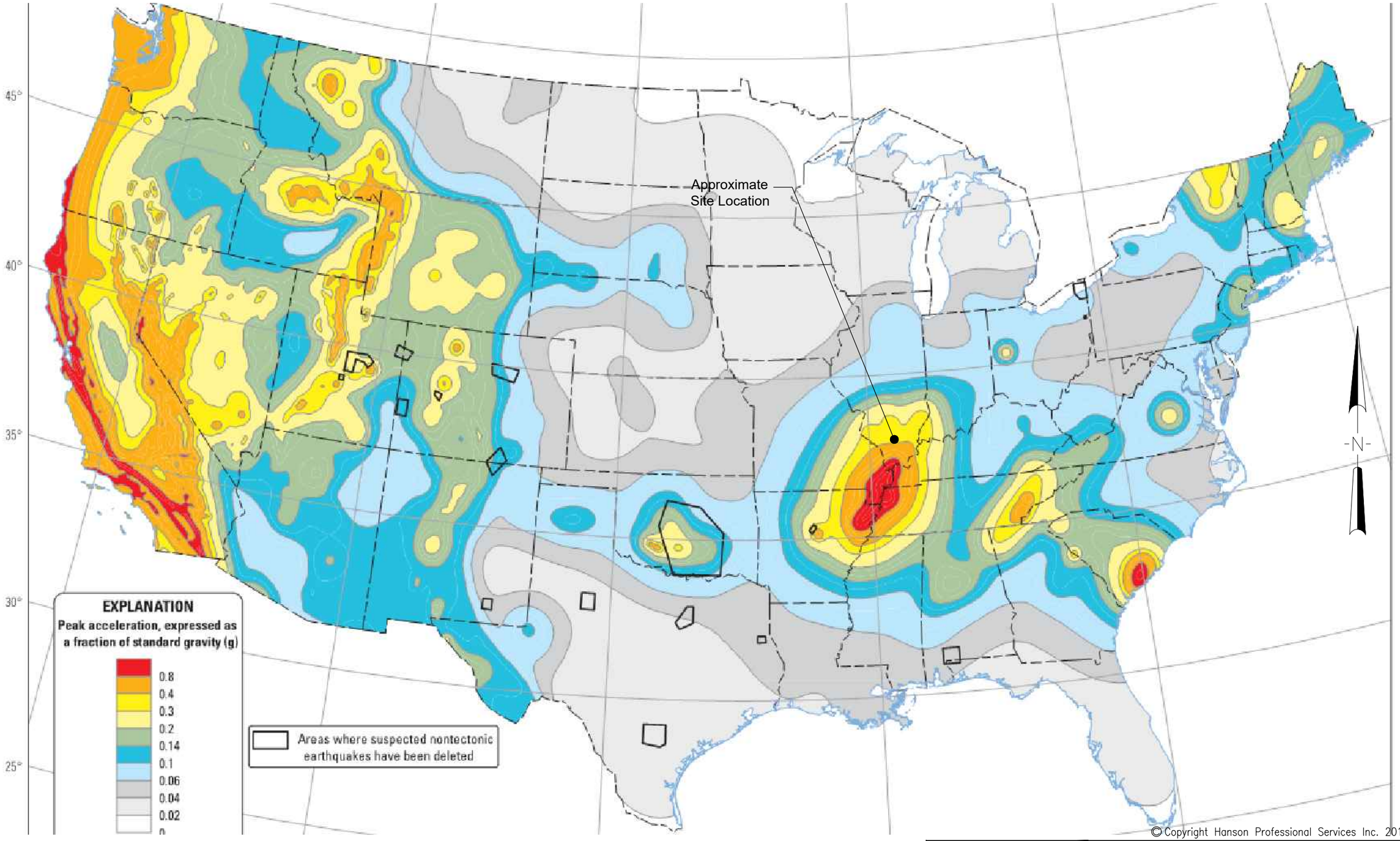
The Site is not located on an active fault, based on: 1) historical records of earthquakes felt in the area over the last 180 years and 2) observation of the bedrock profiles and the lack of displacement of Holocene Age deposits. However, there is possible seismic risk associated with the facility due to the Site's close proximity to the Cottage Grove Fault System and the more active New Madrid and Wabash Valley seismic zones. According to Nelson (1995) the Cottage Grove Fault System appears to have undergone only one major episode of movement, during the Appalachian Orogeny. Consideration has been given to the possible attenuation of the shear wave created by the maximum credible earthquake along any of the active faults in the regional area of the Site (see Figure 4).

2.7 Groundwater

2.7.1 Sole Source Aquifers

Pursuant to 35 IAC 811.302(b), no part of the facility is located over or within the recharge area of a US EPA designated sole source aquifer. The US EPA Sole Source Aquifer Protection Program web site‡ indicates 89 sole source aquifer exist within the continental United States, Hawaii and Guam. In March 2015, the US EPA designated the Mahomet Aquifer§ in east-central Illinois as a sole source aquifer, and is the closest sole source aquifer located approximately 165 miles north of the Site.

‡ https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b
§ https://www.epa.gov/il/mahomet-sole-source-aquifer



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PEAK GROUND ACCELERATION-2500 YEARS

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A FIGURE 4

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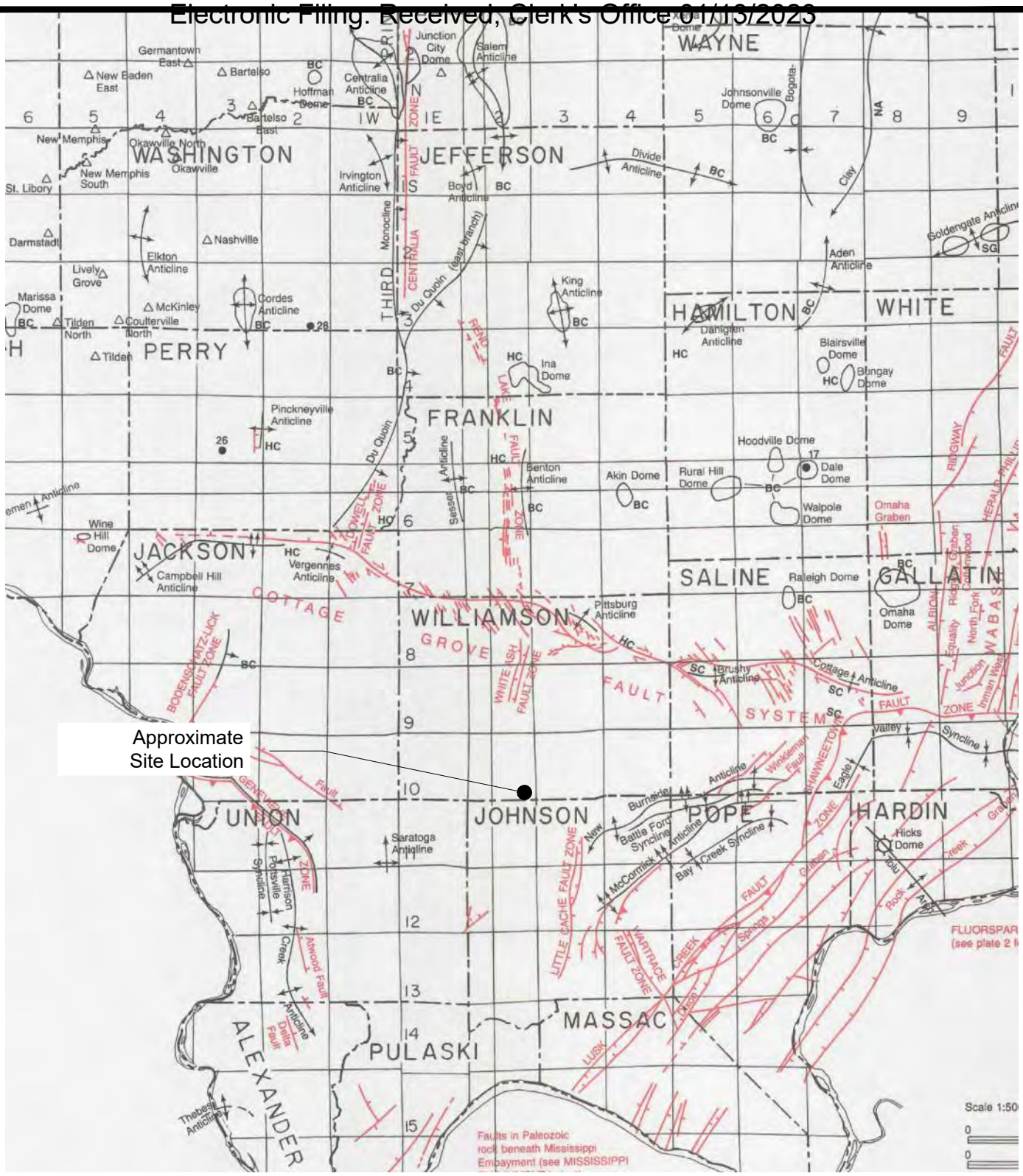

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Source: Nelson, W. J., 1993, "Structural Features in Illinois" ISGS Bulletin 100, Plate 1.

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PRINCIPAL STRUCTURAL FEATURES MAP

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A FIGURE 3

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2.7.2 Potable Well Water Setback Zones

Setback zones are regulated under Sections 14.2 and 14.3 of the Illinois Environmental Protection Act (the Act). The minimum setback for a potable water well (domestic or community) is 200 feet, but this distance is doubled for wells in more permeable zones [pursuant to 77 IAC 920.50(b)(2)]. The Act also specifies there is a 75 ft. setback for wells located on-site and owned by the owner of the primary or secondary source. There are no community water supply wells (with or without maximum setback zones) near the Site.

2.7.3 Local Well Records

The Illinois State Geological Survey water well database (ILWATER) was queried for the domestic water wells in the vicinity of the Site. Figure 5 illustrates the locations of the water wells. The depth of the well/boring is the numeric value adjacent to the feature symbol. The result of the review indicates potable water near the Site may be obtained from bedrock wells that are generally over 150 feet deep.

2.8 Mining Activities

The areas immediately surrounding the facility have never been mined. A review of the topographic maps show no quarry or mining symbols within three sections of the Site.

3. Hydrogeologic Investigation Methodology

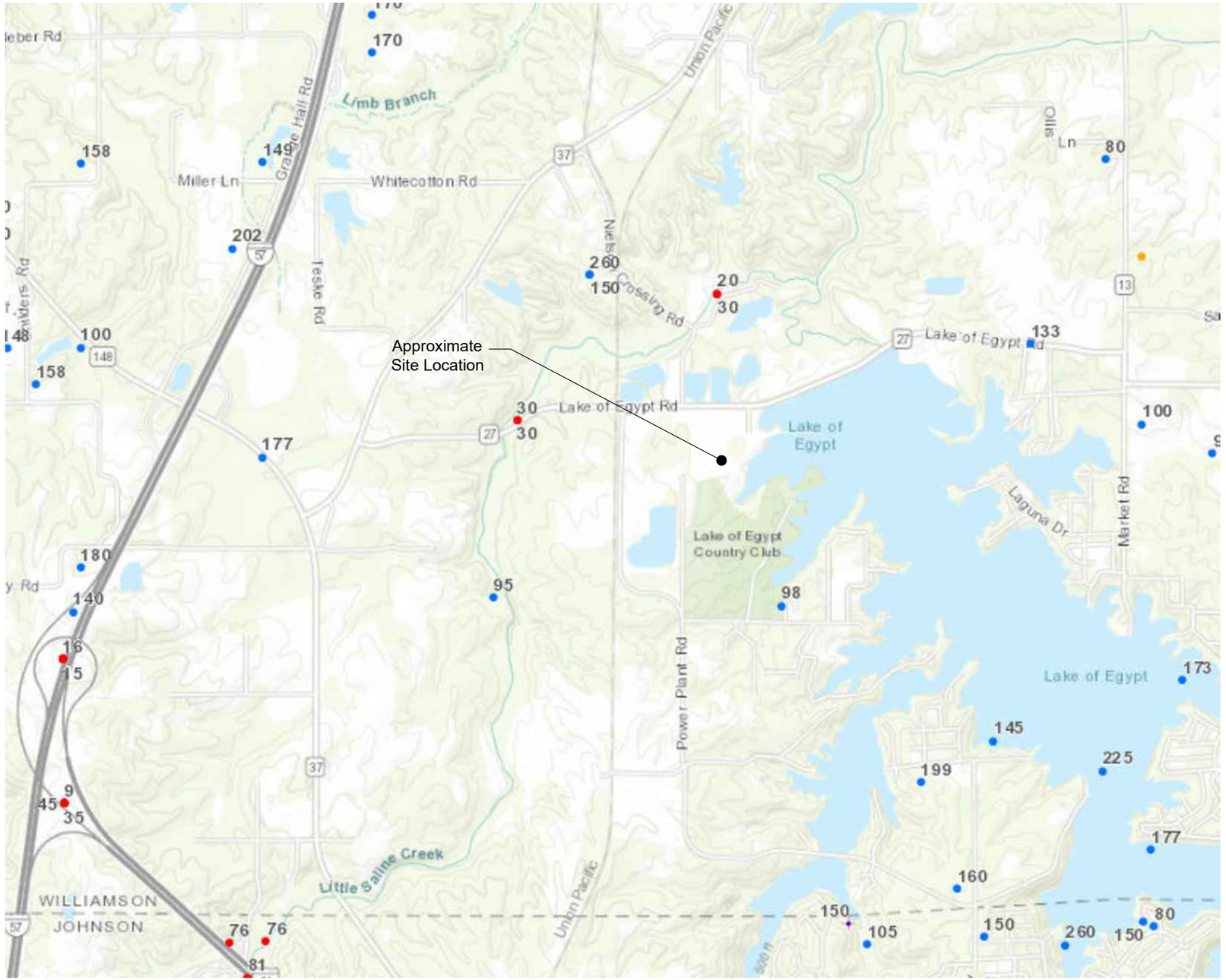
3.1 Drilling and Field Procedures

An experienced geologist or engineer under the direction of an Illinois Licensed Professional Geologist performed the field investigation. Prior to drilling, the location of each boring was determined and staked. For the bedrock boring, a Central Mine Equipment (CME) 750 drill mounted on an all-terrain (balloon tire) vehicle equipped with an NX wireline rock coring system was used for the investigation. For the extent of contamination study an AMS Power Probe 9500-VTR direct push drill mounted on an all-terrain (tracked) vehicle was used. The field staff maintained the daily drilling records and logged the soil and rock samples. The boring logs are included in Appendix A. Figure 6 shows the location of the monitoring wells and investigation borings.

3.2 Monitoring Well Installation

Five (5) monitoring wells were installed at five (5) boring locations around the facility by Holcomb Foundation Engineering Inc. in early-February 2017 under the direction of AECOM (2018). The wells consisted of 2-inch diameter, schedule 40 PVC pipe with 10-ft long, 0.010-inch slotted well screens. A silica sand (grain size 10/20) filter medium was used to construct the sand pack around each well screen. The depth of the screen and the depth to the top of the filter pack were measured and recorded in the field by the geologist. Bentonite chips were placed on top of the sand pack filling the borehole to 2 to 3 ft. below the ground surface or a minimum thickness of 2 ft.

A steel, locking, protective outer casing was installed for each well. A concrete monument was constructed around the outer casing with the concrete extending from the ground surface to the top of the bentonite seal. After installation, the locations and elevations of the wells were surveyed using the State Plane horizontal grid and elevation system. All surveying was performed under the direction of an Illinois Licensed Professional Land Surveyor.



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Water and Related Wells

- Water
- Dry
- Engineering
- Stratigraphic
- Observation
- Mineral Test
- Outcrop
- Mine-related
- Hazardous Waste
- Labels - Total Depth
- Aquifer Present

N

1:40,000

0 0.38 0.75 1.5 mi

0 0.5 1 2 km

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DOMESTIC WATER WELL (ILWATER) DATA

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A FIGURE 5

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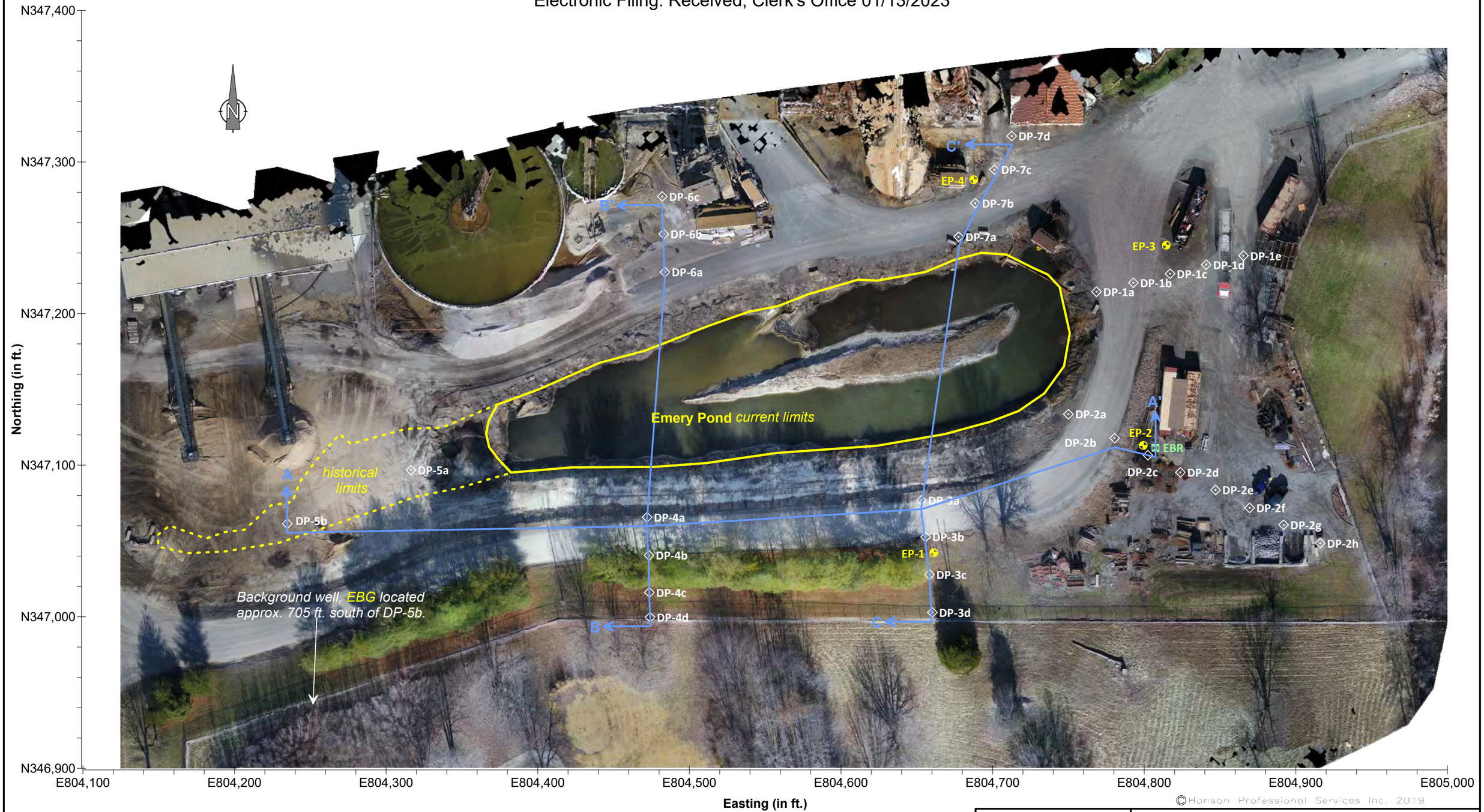

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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

SCALE: 1 inch equals 60 feet

0 ft. 60 ft. 120 ft. 180 ft. 240 ft.

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Boring Location Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE NO. 6

3.3 Field Hydraulic Conductivity Testing

Instantaneous change in head (slug) tests were performed to determine the hydraulic conductivity of the unlithified deposits at each monitoring well location. Packer tests were performed to determine the hydraulic conductivity of the lithified deposits at EBR. The testing procedures and test results are summarized below.

3.3.1 Single Well Aquifer Tests

Instantaneous change in head (slug) tests were performed on a total of five (5) monitoring wells. A slug test can be used to estimate the hydraulic conductivity of the formation in the immediate vicinity of a monitoring well. To perform a slug test, the water level is displaced (typically by inserting or removing a solid PVC "slug"), and the rate at which the water level falls or rises back to static conditions is measured. Such tests are referred to as falling head or rising head slug tests, respectively.

Falling head tests were performed by lowering a solid cylindrical section of PVC (nominal 4-ft by 1-inch OD) into a well which displaced the water level in the well approximately 2 ft. to 3 ft. above the static level. As the water level recovered to the static level, a data logger with a pressure transducer measured water levels at discreet time intervals. For wells which responded rapidly to the initial head change, a data logger was necessary to record the change in water level at small time increments (typically <2 seconds). After the falling head test was completed, the slug was removed, and water level data were collected using the data logger for a rising head test.

Water level displacement data were analyzed using the Bouwer and Rice Method (Bouwer and Rice, 1976; Bouwer, 1989). Slug test results and plots of water level displacement are provided in Appendix B. A summary of the test results is provided in Table 2.

Table 2: Single Well Hydraulic Conductivity Test Results

Well ID	Falling Head (cm/sec)	Rising Head (cm/sec)	Geometric Mean (cm/sec)	Solution Method
EBG	3.00×10^{-6}	9.10×10^{-7}	1.65×10^{-6}	Bouwer-Rice
EP-1	2.80×10^{-5}	3.45×10^{-5}	3.11×10^{-5}	Bouwer-Rice
EP-2	6.00×10^{-6}	8.40×10^{-6}	7.10×10^{-6}	Bouwer-Rice
EP-3	3.10×10^{-5}	2.50×10^{-5}	2.78×10^{-5}	Bouwer-Rice
EP-4	3.30×10^{-5}	3.25×10^{-5}	3.27×10^{-5}	Bouwer-Rice
Geometric Mean			1.27×10^{-5}	

3.3.2 Borehole Packer Tests

Borehole packer tests were performed at multiple intervals in bedrock boring EBR. A packer test evaluates horizontal hydraulic conductivity by pressurizing a layer of rock between two inflatable packers that seal the borehole above and below the test interval. Water is pumped under pressure into this interval and the volume of water taken up by the formation is recorded over a period of time. Each zone is evaluated over a range of pressures (typically 3), and then the pressures are backed off to see if the formation was damaged (hydraulically fractured) or if the bedding planes absorbed the water and released it as the pressure dropped. Packer test results are provided in Appendix C. A summary of the testing is provided in Table 3.

Table 3: Packer Test Hydraulic Conductivity Results

Test	Interval (ft. BGS)	Geometric Mean (cm/sec)	Test	Interval (ft. BGS)	Geometric Mean (cm/sec)
A	160.55	2.99×10^{-6}	H	87.70	1.04×10^{-5}
B	149.50	8.36×10^{-6}	I	77.55	1.84×10^{-7}
C	139.45	1.15×10^{-5}	J	67.20	6.35×10^{-7}
D	128.80	1.42×10^{-5}	K	56.70	2.03×10^{-7}
E	118.50	3.74×10^{-6}	L	46.25	5.44×10^{-5}
F	108.30	1.76×10^{-5}	M	37.75	3.00×10^{-5}
G	97.85	1.72×10^{-5}	N	26.20	1.68×10^{-5}

4. Interpreted Site Geology

The Site geology was characterized from the hydrogeologic investigation of the facility. Boring logs are provided in Appendix A. The results of the hydrogeologic investigation indicate three principal units are present at the Site. These include: 1) Glasford Formation (with intermittent Roxana Loess), 2) Fill Materials, and 3) Caseyville Formation (bedrock). Based upon our review of the regional stratigraphy previously described, these units are the principal geologic units of concern. Figure 7 provides a Generalized Stratigraphic Column of the Site geology.

Geologic cross sections were prepared from the hydrogeologic investigation and can be found in Appendix D. The location of the subsurface investigation borings and groundwater monitoring wells can be found on Figure 6. Geologic cross-section A-A' shows the east-west trend in the subsurface. Cross-sections B-B' and C-C' illustrate the north-south geology across the Site. A more detailed description of the site-specific geologic units is provided in the following sections.

4.1 Unlithified Deposits

Three principal unlithified deposits exist at the facility. These geologic units are the Roxana Loess and the Glasford Formation (combined for the Isopach and Structural Contour Map), but there are also significant amounts of Fill Materials (random soils, bottom ash, and sand/gravels). Elevations used to generate the Structural Contour Maps (surface elevation maps) and thicknesses used to produce the Isopach Maps (thickness maps) are found in Table 4.

4.1.1 Glasford Formation

The Glasford Formation was encountered throughout the Site. This unit consists of silt, sand, clay, and gravel. The Glasford Formation ranged in thickness from just over 1 ft. in Boring DP7b to 18.5 ft. in Boring EP-1. A structural contour and an isopach map, illustrating the top elevation and thickness of the Glasford Formation are provided in Figure 8 and Figure 9, respectively. For simplicity, the intermittently occurring Roxana Loess was included in the Glasford Formation maps.

4.1.2 Fill Materials

Fill Materials were found at various locations and thicknesses around the Site. The Fill Materials consisted of excavated Roxana Loess and Glasford Formation materials, bottom ash, and sand/gravel layers used for roadways, etc. Hanson believes these materials were used to provide level surfaces for construction of the Plant. Figure 10 shows the thickness of Fill Materials found during this investigation.

Table 4: Summary of Site Investigation Unit Thickness and Elevations

Boring ID	Ground Elevation	Fill Material Thickness	Top Elevation of Glasford Fm.	Glasford Fm. Thickness	Top Elevation of Caseyville Fm.
DP-1a	516.52	5.00	511.52	5.00	506.52
DP-1b	517.05	12.50	504.55	3.10	501.45
DP-1c	514.27	13.70	500.57	2.70	497.87
DP-1d	513.11	3.30	509.81	13.60	496.21
DP-1e	512.80	4.00	508.80	3.70	505.10
DP-2a	516.53	0.40	516.13	12.40	503.73
DP-2b	516.65	5.00	511.65	8.90	502.75
DP-2c	510.46	●	510.46	10.40	500.06
DP-2d	508.64	0.90	507.74	9.60	498.14
DP-2e	507.37	0.80	506.57	13.20	493.37
DP-2f	506.32	0.70	505.62	13.30	492.32
DP-2g	505.12	0.30	504.82	14.90	489.92
DP-2h	503.54	0.90	502.64	12.70	489.94
DP-3a	518.30	0.90	517.40	12.10	505.30
DP-3b	518.15	●	518.15	18.20	499.95
DP-3c	516.55	●	516.55	15.60	500.95
DP-3d	516.62	●	516.62	10.00	506.62
DP-4a	520.39	1.20	519.19	10.80	508.39
DP-4b	520.64	●	520.64	13.70	506.94
DP-4c	523.14	●	523.14	10.20	512.94
DP-4d	524.09	●	524.09	12.00	512.09
DP-5a	518.48	16.80	501.68	0.00	501.68
DP-5b	519.57	9.70	509.87	0.00	509.87
DP-6a	516.69	3.90	512.79	5.10	507.69
DP-6b	517.23	4.70	512.53	5.00	507.53
DP-6c	516.49	5.50	510.99	3.10	507.89
DP-7a	517.42	6.00	511.42	8.20	503.22
DP-7b	517.56	11.90	505.66	1.10	504.56
DP-7c	516.65	11.60	505.05	6.60	498.45
DP-7d	516.91	14.00	502.91	3.80	499.11
EBG	521.74	●	521.74	16.00	505.74
EP-1	517.07	●	517.07	18.50	498.57
EP-2	511.15	0.90	510.25	12.60	497.65
EP-3	516.24	12.00	504.24	6.50	496.74
EP-4	517.07	6.00	511.07	12.50	498.57

● Unit not encountered during drilling

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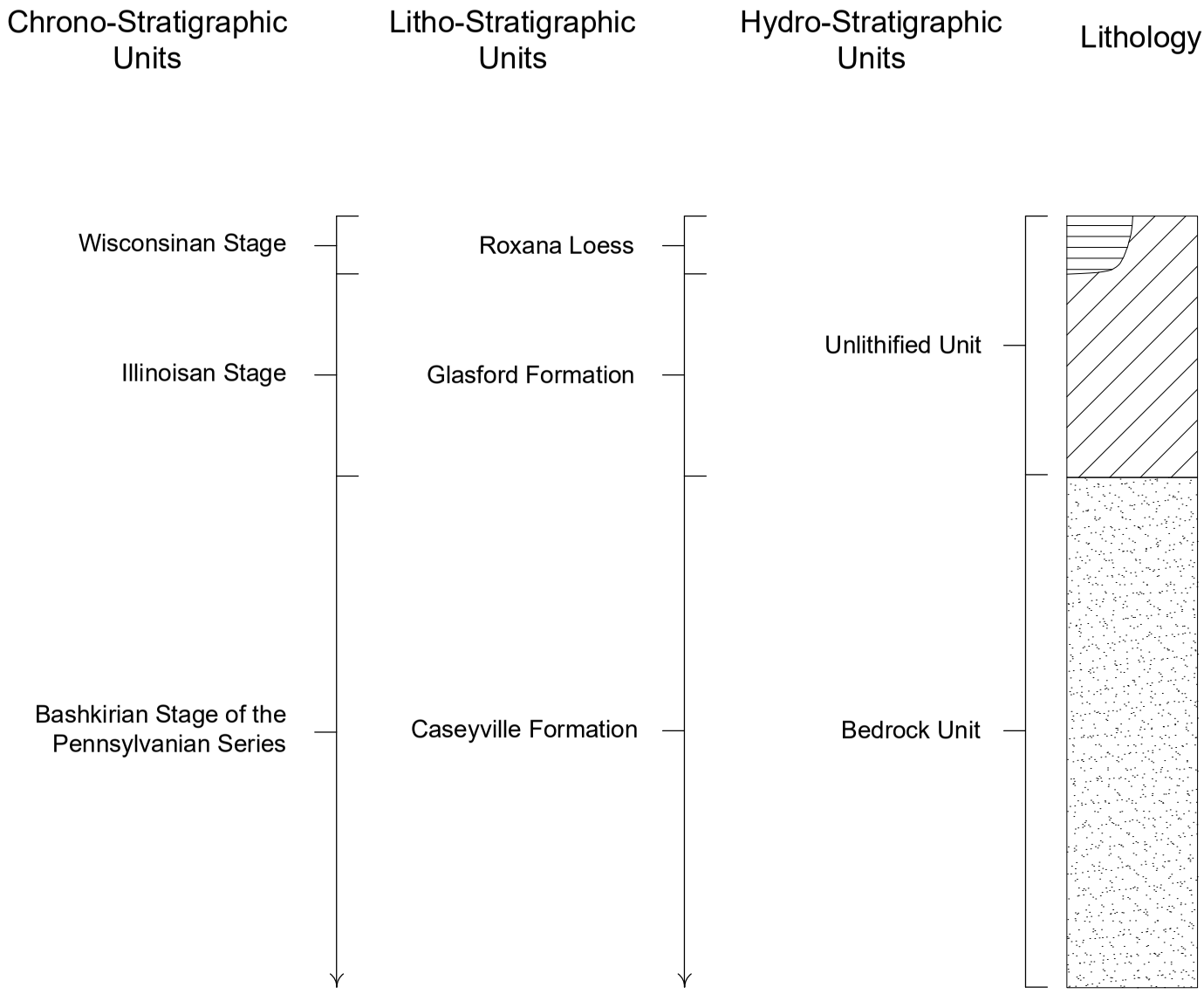

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GENERALIZED STRATIGRAPHIC COLUMN

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A FIGURE 7

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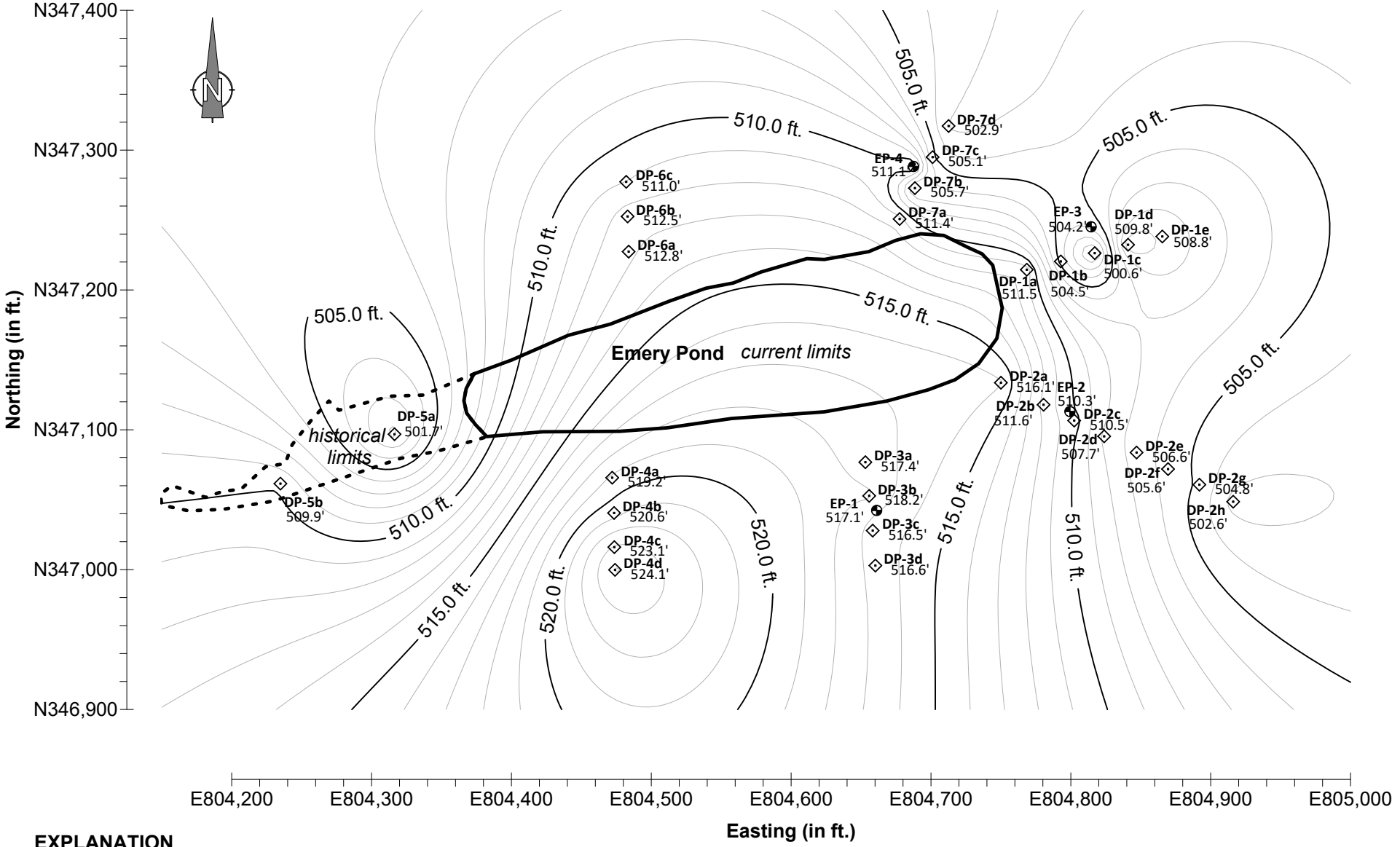

EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 1 foot

SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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Glasford Formation Sturctural Contour Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 8

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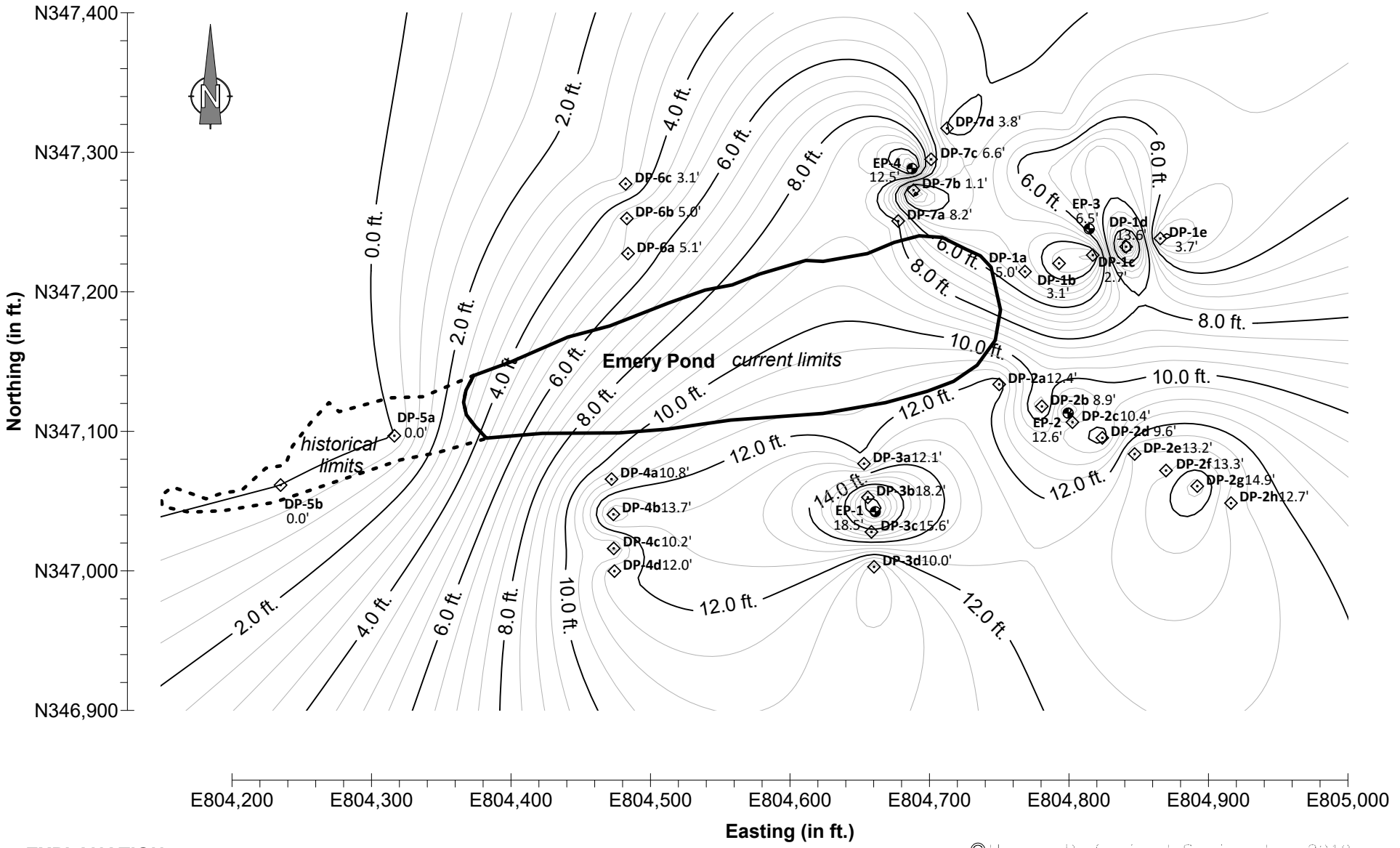

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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 1 foot
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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Glasford Formation Isopach Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 9

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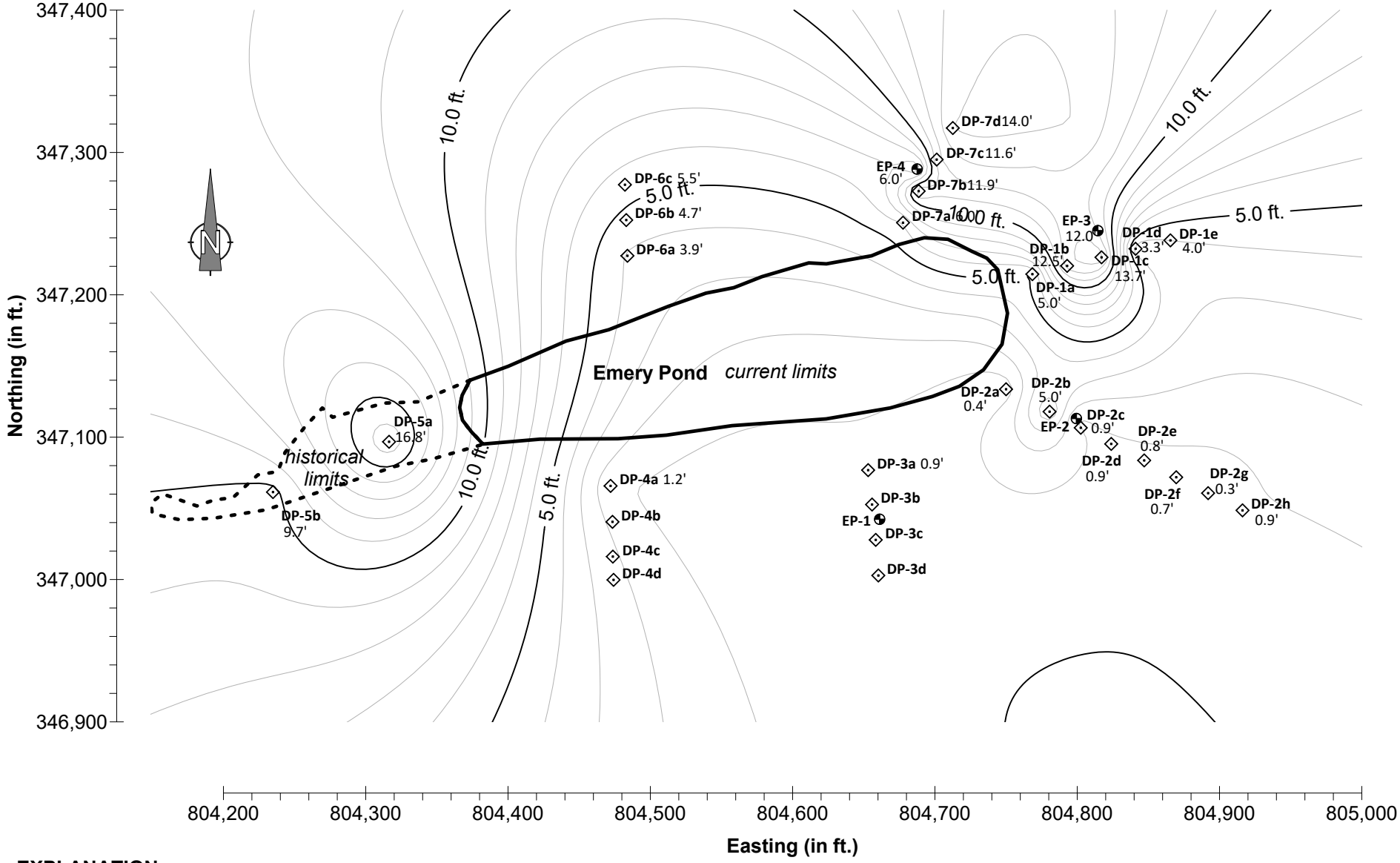

EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 1 foot
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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Fill Materials Isopach Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 10

4.2 Bedrock Stratigraphy

The bedrock stratigraphy at the facility has been characterized by borings drilled during the hydrogeologic investigation. The bedrock at the Site is the Caseyville Formation, consisting of primarily sandstone with intermittent shale beds. A map of the bedrock surface can be found as Figure 11.

5. Interpreted Site Hydrogeology

The results of the hydrogeologic investigation indicate the materials encountered at the Site display a rather narrow range of hydrogeologic characteristics. An overview of the potentiometric surface maps and horizontal groundwater flow characteristics are discussed in detail later in this section. An overview of the hydrogeologic characteristics encountered at the facility is provided in the following paragraphs.

5.1 Hydrogeologic Characteristics of the Units

The hydrogeologic characteristics of the units at the Site were evaluated based upon the results of laboratory testing, field testing, and field measurements. The unlithified deposits possess a narrow range of hydraulic conductivity values. The following paragraphs provide a description of the hydro-stratigraphic units encountered in each of the geologic units.

5.1.1 Unlithified Unit

The Unlithified Unit at the Site is associated with the Roxana Loess and Glasford Formation, which are clayey silt to silty clay units. The Unlithified Unit is generally unsaturated and is essentially a vertical percolation zone for shallow groundwater recharge. Horizontal hydraulic conductivity values ranged from the low-10^{-5} cm/s to the high-10^{-6} cm/s. Hanson believes that vertical hydraulic conductivities would be 1 to 2 orders of magnitude lower. This anisotropy is likely due to depositional processes that have been identified in various studies (Warren et al., 1996 and Berger & Belitz, 1997).

5.1.2 Bedrock Unit

The Bedrock Unit at the Site is associated with the Caseyville Formation. As previously noted, this formation is primarily sandstone with intermittent and variably thick shale layers. Like the Unlithified Unit, horizontal hydraulic conductivity values ranged from the low-10^{-5} cm/s to the high-10^{-7} cm/s. Hanson believes that vertical hydraulic conductivities would be 1 to 2 orders of magnitude lower. This anisotropy is likely due to depositional processes that have been identified in various studies (Warren et al., 1996 and Berger & Belitz, 1997).

5.1.3 Upper-most Aquifer

Hanson has concluded, based on the hydraulic conductivity test results that there is not an aquifer (as defined by 40 CFR 257.53 or 35 IAC 620.110) at the Site. It is unlikely that the Unlithified and Bedrock Units are capable of producing “usable” or “economically useful” quantities of water within the tested hydraulic conductivity ranges.

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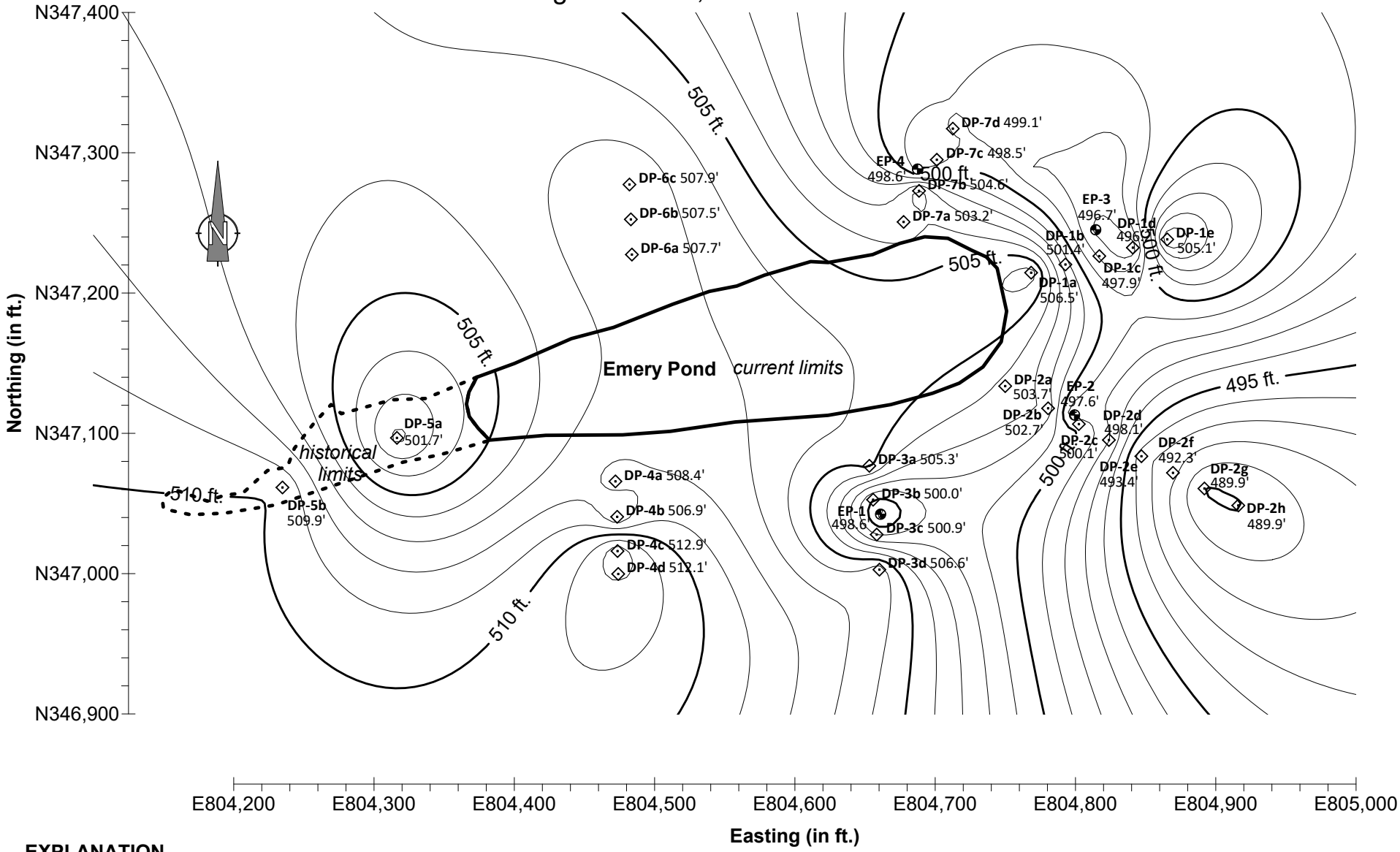

EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 1 foot
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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Caseyville Formation Structural Contour Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 11

5.1.4 Potentiometric Surface Maps

Potentiometric surface maps of the Unlithified Unit are presented for 2017, 2018 and this early-2019 investigation. Water elevations used to prepare the potentiometric surface maps are indicated adjacent to the monitoring well/boring location. The potentiometric surface maps indicate groundwater flow is generally toward the east beneath the Site.

Representative gradients were determined based on changes in water elevations between EP-1 and EP-2. Table 5 lists the calculated gradient values.

Table 5: Gradient Calculations (EP-1 to EP-2)

Date	Elev. @ EP-1 (in ft.)	Elev. @ EP-2 (in ft.)	Change in head (Δh in ft.)	Change in length (Δl in ft.)	Gradient (i)
March 24, 2017	512.42	508.89	3.53	155.28	0.0227
April 24, 2017	513.92	509.89	4.03	155.28	0.0260
May 25, 2017	512.72	509.29	3.43	155.28	0.0221
June 22, 2017	511.72	508.69	3.03	155.28	0.0195
June 29, 2017	511.52	508.79	2.73	155.28	0.0176
July 24, 2017	510.72	507.79	2.93	155.28	0.0189
August 3, 2017	509.42	507.39	2.03	155.28	0.0131
August 31, 2017	508.82	506.99	1.83	155.28	0.0118
March 22, 2018	513.42	509.19	4.23	155.28	0.0272
August 27, 2018	509.52	506.39	3.13	155.28	0.0202
March 1, 2019	513.72	508.79	4.93	155.28	0.0317
Average					0.0210

5.2 Groundwater Classification

Based on the requirements of 35 IAC 620.210, Hanson has concluded that shallow groundwater at the Emery Pond and its immediate vicinity (based on lithologies presented in the Stack Unit Map (Berg & Kempton, 1988)) is Class II: General Resource Groundwater and deep groundwater is Class I: Potable Resource Groundwater for the following reasons:

The Unlithified Unit is classified as Class II groundwater because:

1. The Unit does not contain a sand, gravel, or sand & gravel deposit greater than 5 ft. thick, and
2. The slug test results (see Table 2) are less than 1 x 10^{-4} cm/s.

The upper (approximately 11 ft.) of the Bedrock Unit is classified as Class II groundwater because:

1. The Unit contains less than 10 ft. of sandstone,
2. The Unit contains less than 15 ft. of fractured carbonate rock, and
3. The packer test results (see Table 3) are less than 1 x 10^{-4} cm/s.

The lower Bedrock Unit is classified as Class I groundwater because:

1. The Unit has two continuous segments of sandstone that exceed 10 ft. in thickness, although
2. The packer test results (see Table 3) are less than 1 x 10^{-4} cm/s.

6. Conclusion

A review of published literature and data was utilized to present an overview of the regional climate, geology, and hydrogeology. A hydrogeologic investigation of the Site was completed, testing was performed, and data was compiled to assess the range of site-specific information related to geotechnical, hydrogeological, and geochemical characteristics found at the facility. Based on the regional and site-specific data presented, the Site appears to be located in a hydrogeologic setting that cannot be classified as an aquifer. Hanson concluded that because of the hydraulic conductivity values found beneath the Site, there are not usable or economically useful quantities of groundwater available pursuant to the definition of an "aquifer" under both 40 CFR 257.53 and 35 IAC 620.110. Based on this investigation, groundwater is classified as Class II: General Resource Groundwater pursuant to 35 IAC 620.210 in the Unlithified Hydro-stratigraphic Unit and the upper (approximately) 11 ft. of the Bedrock Hydro-stratigraphic Unit. The remaining Bedrock Hydro-stratigraphic Unit is classified as Class I: Potable Resource Groundwater. The current monitoring wells at the Emery Pond are only screened in the Unlithified Unit and part of the Upper Bedrock Unit which contains Class II: General Resource groundwater.

7. Licensed Professional Signature/Seal

The geological work product contained in this document has been prepared under my personal supervision and has been prepared and administered in accordance with the standards of reasonable professional skill and diligence.

Rhonald W. Hasenyager, P.G.
Hanson Professional Services Inc.
1525 South Sixth Street
Springfield, IL 62703-2886
(217) 788-2450
Registration No. 196-000246

Seal:

Expires 31 March 2021

Signature: _____ Date: 29 March 2019

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Appendix A

Boring Logs

A.1

AECOM Monitoring Well Boring Logs

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EBG

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**25.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**524.87 ft, msl** **521.74 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**346358.14 ft** **804168.155 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
520	0		NR	ML		Brownish tan, clayey SILT, stiff, non-plastic, moist (ML)
	5		NR	CL		Brownish tan silty CLAY, very soft, medium to high plasticity, moist (CL)
			NR			becomes low to medium plasticity
	10		NR			with black fines
510			NR			becomes brown/orange/gray, trace black fines, low plasticity
	15		NR			trace rust colored oxidation with red mottling
			NR	SHALE		SHALE, gray
	20		NR			
500			NR			
	25		NR			Boring terminated at 25.0 ft. bgs on 2/7/2017. Monitoring well installed to 25.0 ft. bgs on 2/7/2017. NR = Not Recorded
490	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- 2.0" diameter, SCH 40 PVC Riser
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen
- Filter Sand

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-1

Sheet 1 of 1

Date(s) Drilled and Installed	**2/7/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**31.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**519.72 ft, msl** **517.07 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347042.306 ft** **804661.174 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
	0		NR	Topsoil		Black TOPSOIL, moist
			NR	CL		Brownish tan silty CLAY, moist, medium plasticity (CL)
	5		NR			
510			NR			becomes orangish with trace coarse sand and gravel, with rust colored mottles
	10		NR			becomes very stiff
			NR			becomes medium-stiff, low plasticity
	15		NR	ML		Brownish tan to oragne clayey SILT, trace gravel and rust colored mottles, stiff, non-plastic, moist (ML)
500			NR	SP		Red orange SAND with orange-brown silty clay, moist (SP)
	20		NR	SNDSTN		SANDSTONE, with interbedded limestone and shale
			NR			
	25		NR			
490			NR			
	30		NR			
	35					Boring terminated at 31.0 ft. bgs on 2/7/2017. Monitoring well installed to 31.0 ft. bgs on 2/7/2017. NR = Not Recorded

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- Filter Sand
- 2.0" diameter SCH 40 PVC Riser
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-2

Sheet 1 of 1

Date(s) Drilled and Installed	**2/7/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**15.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**513.79 ft, msl** **511.15 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347113.029 ft** **804799.408 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	SAMPLES: Sample Interval	SAMPLES: % Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
510	0		NR	Fill		Asphalt and GRAVEL (FILL)
			NR	CL		Brown to tan silty CLAY, medium stiff, moist (CL)
			NR	CL		brown to tan silty CLAY, soft to medium, medium to high plasticity, moist (CL)
	5		NR			medium plasticity, with rust color oxidation, trace sand and gravel
			NR			
	10		NR			
500			NR	ML		Tan clayey SILT, stiff, low plasticity, moist (ML)
	15		NR	SNDSTN		SANDSTONE
490	20					Boring terminated at 15.0 ft. bgs on 2/7/2017. Monitoring well installed to 15.0 ft. bgs on 2/7/2017. NR = Not Recorded
	25					
480	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- 2.0" diameter SCH 40 PVC Riser
- Filter Sand
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Electronic Filing: Received, Clerk's Office 01/13/2023

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-3

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**26.5 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**518.95 ft, msl** **518.95 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347245.08 ft** **804814.534 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
	0		NR	Fill		GRAVEL (FILL)
			NR	ML		Brown clayey SILT, moist (ML)
			NR	CL		Olive green to gray silty CLAY, trace sand, medium, low to medium plasticity, moist (CL)
	5		NR			
			NR			
510			NR			2 inch layer of cinders, clay becomes tan-brown
	10		NR			becomes loose, moist, brown/gray/tan, with gravel, some sand and cinders
			NR			
			NR	ML		Light gray to tan clayey SILT, stiff, low plasticity, moist (ML)
	15		NR	ML		Gray SILT, trace clay, stiff, non-plastic, moist (ML)
500			NR	CL		Gray silty CLAY with yellow-gold gypsum, moist to wet (CL)
	20		NR	SNDSTN		SANDSTONE
			NR			
	25		NR			
			NR			
490						Boring terminated at 26.5 ft. bgs on 2/8/2017. Monitoring well installed to 26.5 ft. bgs on 2/8/2017. NR = Not Recorded
	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- 2.0" diameter SCH 40 PVC Riser
- Bentonite Chips
- Filter Sand
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

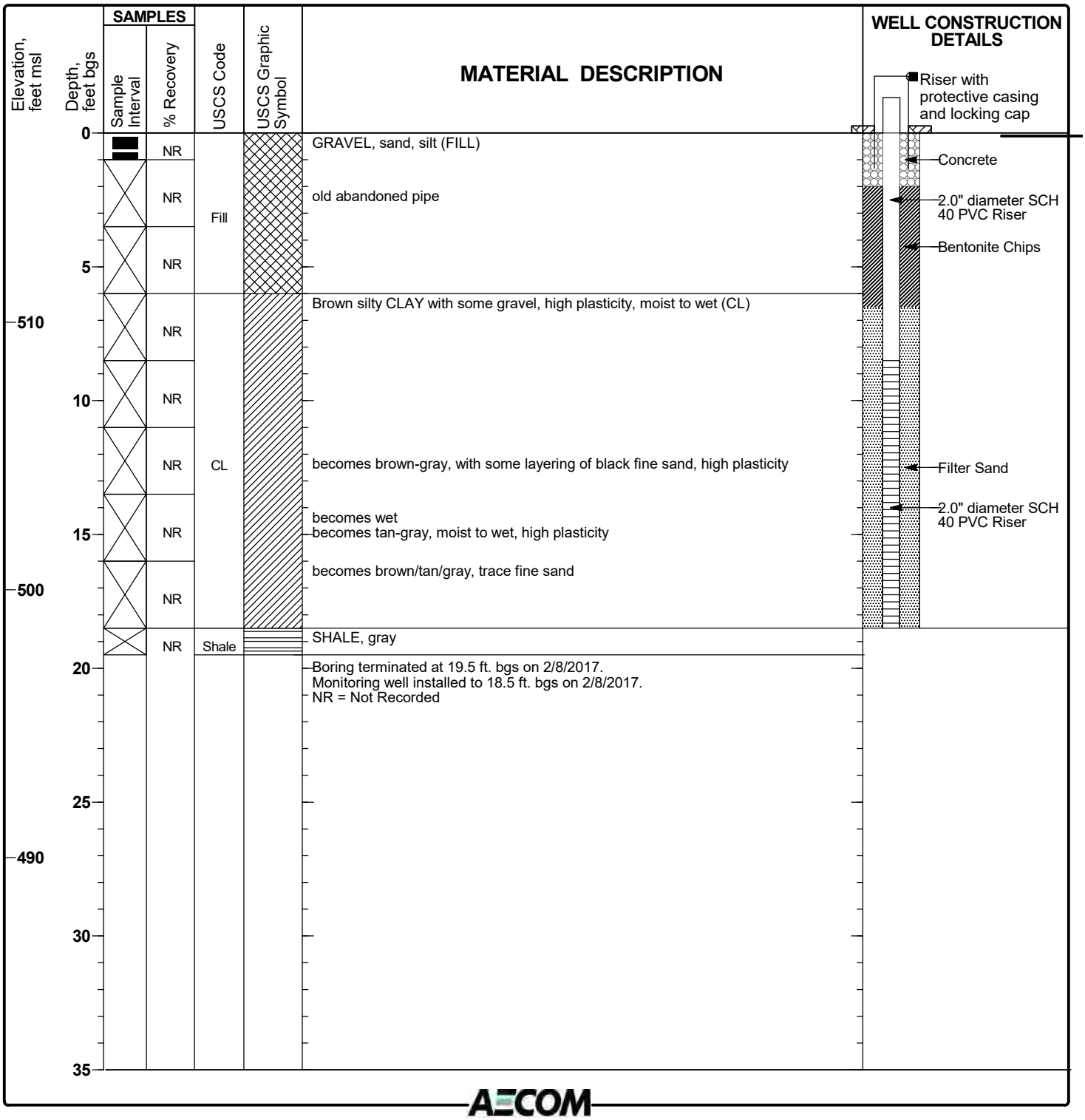
AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-4

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**18.5 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**519.74 ft, msl** **517.07 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347288.297 ft** **804687.527 ft**
Seal or Backfill	**Bentonite Chips**				



SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

A.2

Bedrock Boring Log

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	0/60 *0%*	BD					0	Dark gray (10YR4/1) with 30% yellowish brown (10YR5/6) mottles, moist, medium, CLAY with some silt and trace sand.		510	
							2				
							4	Yellowish brown (10YR5/6) with 20% gray (10YR5/1) mottles, moist, medium, CLAY with some silt and trace sand.		506	
							6			504	
	0/60 *0%*	BD					8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		502	
							10			500	
	0/55 *0%*	BD					12	Yellowish brown (10YR5/8), moist, hard, weathered SHALE		498	
							14			496	
								Brownish yellow (10YR6/8), weathered SANDSTONE.			
							16	Gray (10YR6/1), weathered SANDSTONE.		494	
	62/67 *93%*	RC					18	Gray (10YR6/1), LIMESTONE with sandstone partings.		492	
							20				

NOTE(S):

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING					
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								Gray (10YR6/1), LIMESTONE with sandstone partings. *[Continued from previous page]*		490	
								Gray (10YR5/1) SHALE.			
								Gray (10YR5/1) LIMESTONE.			
							22			488	
								Yellowish brown (10YR5/8), vuggy, SANDSTONE.			
	120/120 *100%*	RC					24			486	
							26			484	
								Yellowish brown (10YR5/8) with 35% dark yellowish brown (10YR4/4) mottles, massive, SANDSTONE.			
							28			482	
							30			480	
								Yellowish brown (10YR5/8) with 35% dark yellowish brown (10YR4/4) mottles, massive, SANDSTONE.			
							32			478	
								Yellowish brown (10YR5/8) with 35% dark yellowish brown (10YR4/4) mottles, vuggy, SANDSTONE.			
							34			476	
	120/120 *100%*	RC									
							36	Dark yellowish brown (10YR5/8), massive with some cross-beds, SANDSTONE.		474	
							38			472	
							40				

NOTE(S):

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							42	Dark yellowish brown (10YR5/8), massive with some cross-beds, SANDSTONE. *[Continued from previous page]*		470	
							44			468	
	120/120 *100%*	RC						Red (10R4/8), massive, SANDSTONE.		466	
							46			464	
							48	Dark yellowish brown (10YR4/4), massive, SANDSTONE.		462	
							50			460	
							52	Yellowish brown (10YR5/8), weathered (soft), SHALE.		458	
							54	Red (10R4/8), massive, SANDSTONE.		456	
	116/120 *97%*	RC									
							56			454	
							58	Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.		452	
							60				

NOTE(S):

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							60			450	
								Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings. *[Continued from previous page]*			
							62			448	
							64			446	
	116/120 *97%*	RC					66			444	
							68			442	
							70			440	
								Gray (10YR5/1), massive, micaceous, SANDSTONE with minor black (10YR2/1) shale partings.			
							72			438	
							74			436	
	118/120 *98%*	RC					76			434	
							78			432	
							80				

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							82			430	
										428	
							84				
	118/120 *98%*	RC						Gray (10YR5/1), massive, micaceous, SANDSTONE with minor black (10YR2/1) shale partings. *[Continued from previous page]*		426	
							86				
										424	
							88				
										422	
							90				
										420	
							92				
										418	
							94				
	119/120 *99%*	RC						Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.		416	
							96				
										414	
							98				
										412	
							100				

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							102			410	
								Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings. *[Continued from previous page]*		408	
							104				
	120/120 *100%*	RC								406	
							106				
										404	
							108				
										402	
								Gray (10YR5/1), massive, micaceous, SANDSTONE with minor black (10YR2/1) shale partings.			
							110			400	
							112	Gray (10YR5/1) SHALE.		398	
							114			396	
	120/120 *100%*	RC						Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.			
							116			394	
							118			392	
								Gray (10YR5/1), cross-bedded, SANDSTONE.			
							120				

NOTE(S):

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								Gray (10YR5/1), cross-bedded, SANDSTONE. *[Continued from previous page]*			
							122			388	
							124			386	
	120/120 *100%*	RC						Gray (10YR5/1), massive, SANDSTONE.			
							126			384	
							128			382	
							130			380	
							132	Gray (10YR5/1), cross-bedded, SANDSTONE.		378	
							134			376	
	120/120 *100%*	RC					136	Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.		374	
							138	Gray (10YR5/1), massive, SANDSTONE with more black (10YR2/1) shale partings.		372	
								Black (10YR2/1) SHALE.			
							140				

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								Black (10YR2/1) SHALE. *[Continued from previous page]*		370	
								Laminated gray (10YR5/1) SANDSTONE and black (10YR2/1) SHALE.			
							142			368	
							144			366	
	120/120 *100%*	RC						Gray (10YR5/1), massive, SANDSTONE.			
							146			364	
							148			362	
							150	Black (10YR2/1) SHALE.		360	
							152	Gray (10YR5/1), massive, SANDSTONE.		358	
							154			356	
	118/120 *98%*	RC									
							156			354	
								Black (10YR2/1) SHALE.			
							158			352	
							160				

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system
FIELD STAFF: **Driller:** C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	120/120 *100%*	RC					162	Black (10YR2/1) SHALE. *[Continued from previous page]*		350	
							164			348	
							166	Gray (10YR5/1), massive, SANDSTONE.		346	
								Black (10YR2/1) SHALE.		344	
							168	Laminated gray (10YR5/1) SANDSTONE and black (10YR2/1) SHALE.		342	
							170	Gray (10YR5/1), massive, SANDSTONE.			

NOTE(S):

A.3

Investigation Boring Logs

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1a
Well ID: DP-1a
Surface Elev: 516.52 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,214.45N
804,768.52E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = Dry - 3/1/2019 @ 8:30
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	44/60 *73%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
								Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		514	
							4				
										512	
	28/48 *58%*	DP					6	Dark yellowish brown (10YR4/4), moist, soft, CLAY with some silt and trace sand. (FILL)		510	
							8				
										508	
							10				
	32/48 *67%*	DP								506	
							12				
								Brownish yellow (10YR6/6), weathered SHALE.		504	
							14				
	40/48 *83%*	DP								502	
							16				
										500	

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1b
Well ID: DP-1b
Surface Elev: 517.05 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,220.35N
804,792.89E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 15.95 - 3/1/2019 @ 8:25
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							0	Black (10YR2/1) ASPHALTI. (FILL)		517	
								Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
	48/60 80%	DP					2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							4	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		512	
	42/48 88%	DP					6	Yellowish brown (10YR5/6) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		510	
							8	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		508	
	27/48 56%	DP					10	Gray (10YR5/1) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		506	
							12			504	
							14	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand.		502	
	32/48 67%	DP					▼ 16	Yellowish brown (10YR5/8), weathered SHALE.			

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1c
Well ID: DP-1c
Surface Elev: 514.27 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,226.27N
804,817.11E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.37 - 3/1/2019 @ 8:10
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	38/60 *63%*	DP					0	Dark grayish brown (10YR4/2), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		514	
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)			
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, few bottom ash, and trace sand. (FILL)		512	
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)			
							4	Light yellowish brown (10YR6/4), moist, hard, weathered SHALE. (FILL)		510	
	38/48 *79%*	DP					6	Black (10YR2/1) mottled yellowish brown (10YR5/6) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		508	
							8	Dark yellowish brown (10YR4/4) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		506	
	40/48 *83%*	DP					10 ▼	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		504	
							12			502	
	42/48 *88%*	DP					14	Yellowish brown (10YR5/8), moist, soft, CLAY with some silt and trace sand.		500	
							16	Yellowish brown (10YR5/8), weathered SANDSTONE.		498	
	24/24 *100%*	DP					18	Brownish yellow (10YR6/8), weathered SHALE.		496	

End of Boring = 19.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1d
Well ID: DP-1d
Surface Elev: 513.11 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,232.30N
804,841.00E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.60 - 2/28/2019 @ 15.45
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 *100%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
							4	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
	48/48 *100%*	DP					6			506	
							8	Black (10YR2/1), moist, medium, CLAY with some silt, little sand, few bottom ash, and trace gravel.		504	
							10			502	
	37/48 *77%*	DP					▼	Yellowish brown (10YR5/8), wet, soft, CLAY with some silt and trace sand.			
							12	Black (10YR2/1), wet, soft, CLAY with some silt and trace sand.		500	
							14			498	
	40/48 *83%*	DP					16	Yellowish brown (10YR5/8), moist, soft, CLAY with some silt and trace sand.			
								Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1e
Well ID: DP-1e
Surface Elev: 512.80 ft. MSL
Completion: 8.00 ft. BGS
Station: 347,238.19N
804,865.50E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 0.00 - 2/28/2019 @ 15:25
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 *100%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
							2	Dark yellowish brown (10YR4/4), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
							4	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		508	
	36/36 *100%*	DP					6			506	
							8	Yellowish brown (10YR5/6), SANDSTONE.			

End of Boring = 8.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2a
Well ID: DP-2a
Surface Elev: 516.53 ft. MSL
Completion: 13.50 ft. BGS
Station: 347,133.62N
804,750.03E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 14.26 - 2/27/2019 @ 8:15
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 *100%*	DP					0	Black (10YR2/1), moist, loose, medium- to very coarse-grained SAND, with some silt and trace gravel. (FILL)		516	
								Black (10YR2/1), moist, stiff, CLAY with some silt, little sand, and trace gravel.			
							2	Brownish yellow (10YR6/6), moist, stiff, CLAY with some silt and trace sand.		514	
							4	Brownish yellow (10YR6/6) with 30% gray (10YR6/1) mottles, moist, medium, CLAY with some silt and trace sand.		512	
	35/48 *73%*	DP					6			510	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		508	
	31/48 *65%*	DP					10			506	
							12	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		504	
	6/6 *100%*	DP						Yellowish brown (10YR5/6), weathered SHALE.			
								Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 13.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2b
Well ID: DP-2b
Surface Elev: 516.65 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,117.86N
804,780.56E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 9.38 - 2/27/2019 @ 8:35
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	31/60 *52%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
								Yellowish brown (10YR5/8) with 40% Black (10YR2/1) mottles, moist, medium CLAY with some silt and trace sand. (FILL)		514	
							4				
										512	
								Dark gray (10YR4/1), moist, medium, CLAY with some silt and trace sand.			
	34/48 *71%*	DP					6			510	
							8			508	
							▼				
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.			
	35/48 *73%*	DP					10			506	
							12			504	
								Yellowish brown (10YR5/6), wet, soft, SILT with few clay and little very fine-grained sand.			
							14				
	36/36 *100%*	DP						Yellowish brown (10YR5/8), weathered SHALE.		502	
							16				

End of Boring = 16.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2c
Well ID: DP-2c
Surface Elev: 510.46 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,106.55N
804,802.49E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 7.34 - 2/27/2019 @ 8:55
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	40/60 *67%*	DP					0	Dark gray (10YR4/1) with 30% yellowish brown (10YR5/6) mottles, moist, medium, CLAY with some silt and trace sand.		510	
							2				
							4	Yellowish brown (10YR5/6) with 20% gray (10YR5/1) mottles, moist, medium, CLAY with some silt and trace sand.		508	
							6			506	
	43/48 *90%*	DP					▼				
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		504	
							10			502	
	41/48 *85%*	DP					12	Yellowish brown (10YR5/8), moist, hard, weathered SHALE		500	
							14			498	
	36/36 *100%*	DP					16	Yellowish brown (10YR5/8) SANDSTONE.		496	

End of Boring = 16.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2d
Well ID: DP-2d
Surface Elev: 508.64 ft. MSL
Completion: 15.50 ft. BGS
Station: 347,095.26N
804,823.89E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 13.00 - during drilling
▼ = 1.35 - 2/26/2019 @ 17:10
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	53/60 *88%*	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		508	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		504	
	42/48 *88%*	DP					6			502	
							8				
							10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		498	
	44/48 *92%*	DP					12	Yellowish brown (10YR5/8), weathered SHALE.		496	
							14	Yellowish brown (10YR5/8) SANDSTONE.		494	

End of Boring = 15.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2e
Well ID: DP-2e
Surface Elev: 507.37 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,083.66N
804,847.08E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 2.31 - 2/27/2019 @ 9:10
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in / N - Value / RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		507	
							2 ▼	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		506	
							4			504	
	39/48 81%	DP					6			502	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		500	
	48/48 100%	DP					10			498	
							12			496	
								Yellowish brown (10YR5/6), wet, soft, SILT with few clay and little very fine-grained sand.		494	
	27/36 75%	DP					14	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		492	
								Yellowish brown (10YR5/8), weathered SHALE.			
							16	**End of Boring = 16.0 ft.**			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2f
Well ID: DP-2f
Surface Elev: 506.32 ft. MSL
Completion: 15.50 ft. BGS
Station: 347,071.83N
804,869.56E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 3.55 - 2/27/2019 @ 9:25
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		506	
							2				
							▼ 4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		504	
							6			502	
	44/48 92%	DP						Yellowish brown (10YR5/6) with 20% gray (10YR5/1) mottles, moist, medium CLAY with some silt and trace sand.			
							8			500	
								Dark yellowish brown (10YR4/6), wet, medium dense, very fine- to medium-grained SAND with few clay and silt.			
							10			498	
	45/48 94%	DP						Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.			
							12			496	
										494	
	28/30 93%	DP					14	Light yellowish brown (10YR6/4) SANDSTONE.		492	
							15.5	**End of Boring = 15.5 ft.**			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2g
Well ID: DP-2g
Surface Elev: 505.12 ft. MSL
Completion: 15.40 ft. BGS
Station: 347,060.68N
804,891.97E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 9.00 - during drilling
▼ = 11.60 - 2/26/2019 @ 17:30
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	46/60 *77%*	DP					0	Gray (10YR5/1), moist, loose, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		505	
							1			504	
							2	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.			
							3			503	
							4	Yellowish brown (10YR5/6), medium CLAY with some silt and trace sand.		502	
							5			501	
							6	Gray (10YR5/1), moist, medium, CLAY with some silt, little sand, and trace gravel.		500	
	34/48 *71%*	DP					7			499	
							8			498	
							9			497	
							10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		496	
	35/48 *73%*	DP					11			495	
							12			494	
							13			493	
							14			492	
	29/30 *97%*	DP					15			491	
								Yyellowish brown (10YR5/8) SANDSTONE.		490	
								End of Boring = 15.4 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2h
Well ID: DP-2h
Surface Elev: 503.54 ft. MSL
Completion: 15.00 ft. BGS
Station: 347,048.55N
804,916.15E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 7.00 - during drilling
▼ = -0.30 - 2/26/2019 @ 17:40
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	45/60 75%	DP					0	Gray (10YR5/1), moist, loose, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		502	
							2				
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		500	
							6			498	
	33/48 69%	DP					▼				
							8	Gray (10YR6/1) with 20% yellowish brown (10YR5/6) mottles, wet, medium SILT with few clay and little very fine-grained sand.		496	
							10			494	
	42/48 88%	DP						Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt and trace sand.		492	
							12				
								Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt, little sand, and trace gravel.		490	
	24/24 100%	DP					14	Brownish yellow (10YR6/8) SANDSTONE.			

End of Boring = 15.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3a
Well ID: DP-3a
Surface Elev: 518.30 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,076.80N
804,653.12E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 11.68 - 2/26/2019 @ 8:55
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	49/60 *82%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		518	
							2			516	
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		514	
	30/48 *63%*	DP					6			512	
							8			510	
	32/48 *67%*	DP					10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
							12 ▼			506	
							14	Yellowish brown (10YR5/8), weathered SHALE.		504	
	36/48 *75%*	DP					16			502	
								Yellowish brown (10YR5/8), SANDSTONE.			
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3b
Well ID: DP-3b
Surface Elev: 518.15 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,052.67N
804,655.84E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.63 - 2/26/2019 @ 9:15
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Black (10YR2/1), moist, soft, CLAY with some silt and trace sand.		518	
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		516	
	48/48 100%	DP					4			514	
							6	Yellowish brown (10YR5/6), moist, medium, SILT with few clay, and trace very fine-grained sand.		512	
							8			510	
							10 ▼			508	
	39/48 81%	DP						Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.			
							12	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.			
							14			504	
	42/48 88%	DP						Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
							16	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and few very fine-grained sand.		502	
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.			
	23/24 96%	DP					18			500	
								Light yellowish brown (10YR6/4) SANDSTONE.			
								Yellowish brown (10YR5/8), weathered SHALE.			

End of Boring = 19.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3c
Well ID: DP-3c
Surface Elev: 516.55 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,027.84N
804,658.41E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 6.44 - 2/26/2019 @ 9:30
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 *100%*	DP					0	Very dark grayish brown (10YR3/2), moist, soft, CLAY with some silt and trace sand.		516	
							2				
								Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		514	
							4				
										512	
							6	▼			
	41/48 *85%*	DP								510	
							8				
										508	
							10				
	40/48 *83%*	DP						Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
							12				
										504	
							14				
	38/48 *79%*	DP								502	
								Brownish yellow (10YR6/8), weathered SANDSTONE.			
							16	**End of Boring = 16.0 ft.**			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP3d
Well ID: DP3d
Surface Elev: 516.62 ft. MSL
Completion: 10.30 ft. BGS
Station: 347,002.83N
804,660.29E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 5.06 - 2/26/2019 @ 9:45
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	53/60 *88%*	DP					0	Very dark grayish brown (10YR3/2), moist, soft, CLAY with some silt and trace sand.		516	
							2	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		514	
							4	Yellowish brown (10YR5/6), moist, medium, SILT with few clay, and trace very fine-grained sand. ▼		512	
	36/48 *75%*	DP					6	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		510	
							8	Yellowish brown (10YR5/6), weathered SHALE.		508	
	16/18 *89%*	DP					10	Yellowish brown (10YR5/6), weathered SANDSTONE.			

End of Boring = 10.3 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4a
Well ID: DP-4a
Surface Elev: 520.39 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,065.72N
804,472.12E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 14.26 - 2/27/2019 @ 8:15
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	42/60 *70%*	DP					0	Brown (10YR5/3), moist, medium, CLAY with some silt, little sand, and trace gravel. (FILL)		520	
							1	Light gray (10YR7/1), moist, dense, medium- to coarse-grained GRAVEL with little sand and few silt. (FILL)			
							2			518	
							4			516	
	48/48 *100%*	DP					6	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		514	
							8			512	
	48/48 *100%*	DP					10			510	
							12	Yellowish brown (10YR5/8), weathered SANDSTONE.		508	
	48/48 *100%*	DP					14 ▼	Yellowish brown (10YR5/8), weathered SHALE.		506	
							16	Yellowish brown (10YR5/8), weathered SILTSTONE.		504	
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4b
Well ID: DP-4b
Surface Elev: 520.64 ft. MSL
Completion: 14.50 ft. BGS
Station: 347,040.46N
804,473.43E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 13.55 - 2/27/2019 @ 8:15
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0			520	
							2				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		518	
							4				
										516	
							6				
	46/48 96%	DP								514	
							8				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		512	
							10				
	37/48 77%	DP								510	
							12				
								Yellowish brown (10YR5/8), weathered SHALE.		508	
							▼				
	18/18 100%	DP					14				
								Brownish yellow (10YR6/6) SANDSTONE.			

End of Boring = 14.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4c
Well ID: DP-4c
Surface Elev: 523.14 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,016.05N
804,473.64E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 13.61 - 2/27/2019 @ 8:15
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Brown (10YR4/3), moist, soft, CLAY with some silt and trace sand.		522	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		520	
							6			518	
	46/48 96%	DP					8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		516	
							10			514	
	35/48 73%	DP					12			512	
							▼ 13.61	Yellowish brown (10YR5/8), weathered SHALE.		510	
							14				
	28/48 58%	DP					16			508	
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4d
Well ID: DP-4d
Surface Elev: 524.09 ft. MSL
Completion: 17.00 ft. BGS
Station: 346,999.74N
804,474.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 2.10 - 2/26/2019 @ 8:25
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							0	Dark yellowish brown (10YR4/4), moist, soft, CLAY with some silt, little sand, and trace gravel.			
							2 ▼			522	
	60/60 *100%*	DP					4	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		520	
							6			518	
	46/48 *96%*	DP					8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		516	
							10			514	
	37/48 *77%*	DP						Yellowish brown (10YR5/8), weathered SHALE.			
							12	Yellowish brown (10YR5/8), weathered SANDSTONE.		512	
							14			510	
	28/48 *58%*	DP						Yellowish brown (10YR5/8), weathered SHALE.			
							16			508	

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-5a
Well ID: DP-5a
Surface Elev: 518.48 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,096.77N
804,316.45E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 15.00 - during drilling
▼ = 6.62 - 2/26/2019 @ 7:50
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	40/60 *67%*	DP					0			518	
							2			516	
							4			514	
							6	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		512	
	48/48 *100%*	DP					8			510	
							10			508	
	48/48 *100%*	DP					12	Light brownish gray (10YR6/2), moist, dense, very fine-grained SAND with some silt. (FILL)		506	
							14	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		504	
	26/48 *54%*	DP					16	Very dark brown (10YR2/2), wet, dense, bottom ASH. (FILL)		502	
								Very pale brown (10YR7/4), weathered SANDSTONE			
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-5b
Well ID: DP-5b
Surface Elev: 519.57 ft. MSL
Completion: 9.80 ft. BGS
Station: 347,061.40N
804,234.84E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 7.02 - 2/26/2019 @ 8:05
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	49/60 *82%*	DP					0	Yellow, (10YR7/6) wet, soft, GYPSUM (FILL)		518	
							2				
							4	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		516	
							6			514	
	48/48 *100%*	DP					▼				
							8			512	
	8/8 *100%*	DP						Yellowish brown (10YR5/8), weathered SANDSTONE		510	
								End of Boring = 9.8 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6a
Well ID: DP-6a
Surface Elev: 516.69 ft. MSL
Completion: 9.50 ft. BGS
Station: 347,227.38N
804,483.91E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 6.32 - 2/28/2019 @ 9:10
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	51/60 *85%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)			
							4	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.			
							6 ▼	Gray (10YR5/1), moist, soft, SILT with few clay and little very fine-grained sand.		510	
	34/48 *71%*	DP						Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.			
							8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
	6/6 *100%*	DP						Yellowish brown (10YR5/6), SANDSTONE.			

End of Boring = 9.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6b
Well ID: DP-6b
Surface Elev: 517.23 ft. MSL
Completion: 11.50 ft. BGS
Station: 347,252.51N
804,483.13E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.63 - 2/29/2019 @ 7:55
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	TESTING *Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	59/60 *98%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Black (10YR2/1), moist, dense, BOTTOM ASH. (FILL)			
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand. (FILL)		514	
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
							6	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.			
	31/48 *65%*	DP						Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		510	
							8	Dark gray (10YR4/1), moist, soft, SILT with few clay and little very fine-grained sand.		508	
	28/30 *93%*	DP					10	Yellowish brown (10YR5/8), weathered SHALE.			
								Yellowish brown (10YR5/8), SANDSTONE.		506	

End of Boring = 11.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6c
Well ID: DP-6c
Surface Elev: 516.49 ft. MSL
Completion: 8.00 ft. BGS
Station: 347,277.30N
804,482.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 1.00 - during drilling
▼ = 1.00 - 2/28/2019 @ 9:30
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	54/60 *90%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
	26/36 *72%*	DP					6	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		510	
							8	Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 8.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7a
Well ID: DP-7a
Surface Elev: 517.42 ft. MSL
Completion: 15.00 ft. BGS
Station: 347,250.66N
804,677.61E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 13.50 - during drilling
▼ = 8.49 - 2/28/2019 @ 8:00
▽ =

SAMPLE Number	Recov / Total (in) / % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	43/60 72%	DP					0	Black (10YR2/1), moist, loose, SILT and very fine- to coarse-grained SAND with few clay and trace gravel. (FILL)			
							1	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)			
								Black (10YR2/1), wet, soft SILT with few clay and trace very fine-grained sand. (FILL)		516	
							2				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand and gravel. (FILL)		514	
							4				
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
	31/48 65%	DP					6				
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		510	
							8	▼			
										508	
	38/48 79%	DP					10				
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
							12				
								▼		504	
	22/24 92%	DP					14	Black (10YR2/1), wet, medium loose, very fine- to medium-grained SAND with few silt and little clay.			
								Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 15.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7b
Well ID: DP-7b
Surface Elev: 517.56 ft. MSL
Completion: 15.50 ft. BGS
Station: 347,272.79N
804,688.58E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 13.00 - during drilling
▼ = 7.59 - 2/28/2019 @ 7:50
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	58/60 97%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
	26/48 54%	DP					6			512	
							8	Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt, little sand, and trace gravel. (FILL)		510	
	31/48 65%	DP					10			508	
							12	Light gray (10YR7/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)		506	
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
								Black (10YR2/1), wet, medium dense, weathered SANDSTONE.		504	
	30/30 100%	DP					14	Yellowish brown (10YR5/4), weathered SHALE.			
								Yellowish brown (10YR5/8) SANDSTONE.			

End of Boring = 15.5 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7c
Well ID: DP-7c
Surface Elev: 516.65 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,294.97N
804,701.22E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 11.60 - during drilling
▼ = 14.47 - 2/28/2019 @ 14:55
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	46/60 *77%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							6	Light gray (10YR7/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)		512	
	35/48 *73%*	DP					8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
							10			508	
	27/48 *56%*	DP					12	Gray (10YR6/1), moist, soft, CLAY with some silt, little sand, and trace gravel. (FILL)		506	
								Black (10YR2/1), wet, soft, SILT with few clay and trace very fine-grained sand.		504	
	25/48 *52%*	DP					14	Dark gray (10YR4/1), moist, soft, CLAY with some silt and trace sand.		502	
							16			500	
	20/24 *83%*	DP					18	Light yellowish brown (10YR6/4), moist, medium, CLAY with some silt, little sand, and trace gravel.			
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.			
								White (10YR8/1), weathered SHALE.		498	

End of Boring = 19.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push
FIELD STAFF: **Driller:** J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7d
Well ID: DP-7d
Surface Elev: 516.91 ft. MSL
Completion: 20.00 ft. BGS
Station: 347,317.15N
804,712.63E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

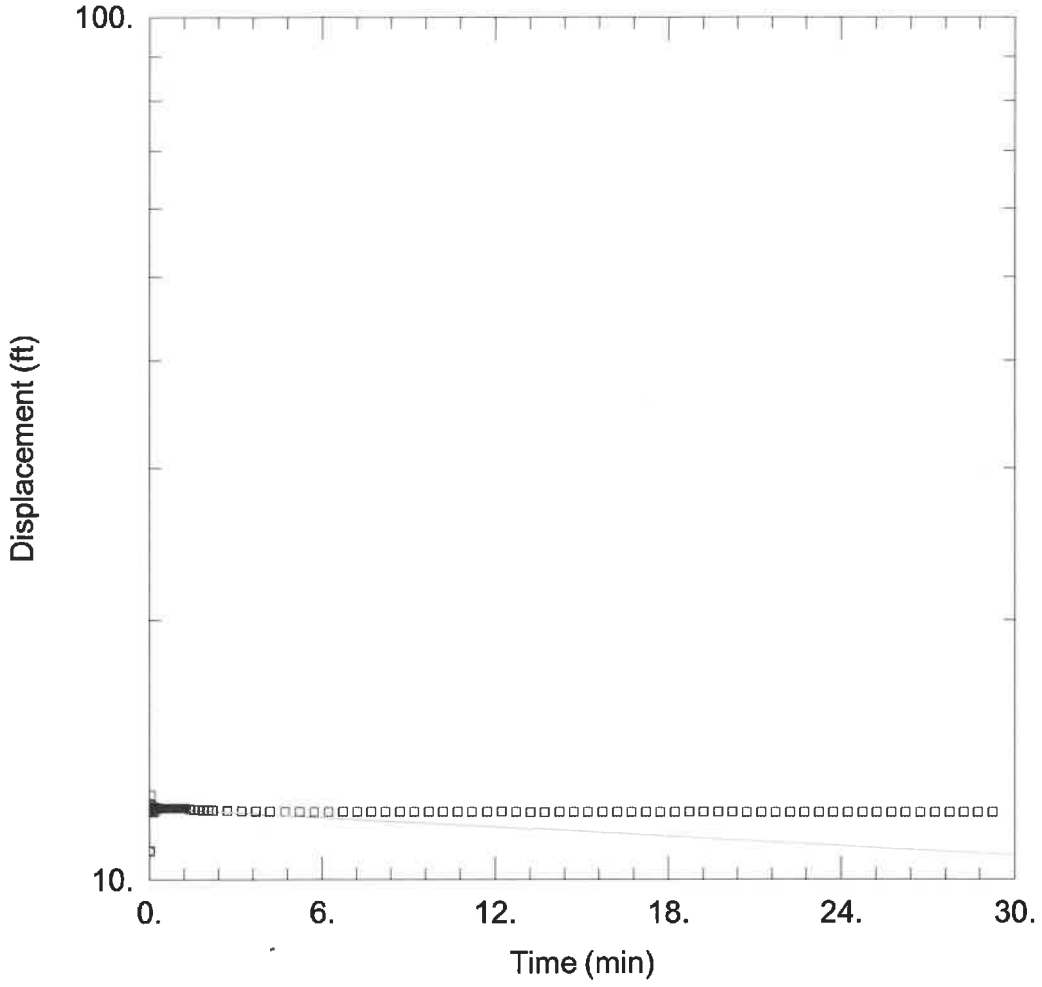
WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.59 - 2/28/2019 @ 8:45
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	56/60 *93%*	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							6	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand. (FILL)		512	
	30/48 *63%*	DP					8	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand. (FILL)		510	
							10			508	
	48/48 *100%*	DP					12	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand. (FILL)		506	
								Gray (10YR5/1), moist, soft, SILT with few clay and trace very fine-grained sand. (FILL)		504	
							14	Gray (10YR5/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)		502	
	33/48 *69%*	DP						Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.			
							16	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		500	
							18			498	
	29/36 *81%*	DP						Yellowish brown (10YR5/8), weathered SANDSTONE.			
							20	**End of Boring = 20.0 ft.**			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Appendix B

Slug Test Results



EBG – FALLING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EBG-fh.aqt
Date: 03/12/19 Time: 14:28:48

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 11. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EBG)

Initial Displacement: 4.5 ft
Total Well Penetration Depth: 17.9 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11. ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
K = 3.0E-6 cm/sec
Solution Method: Bouwer-Rice
y0 = 12.1 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EBG-fh.aqt
Title: EBG – Falling Head Test
Date: 03/12/19
Time: 14:28:50

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 11. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EBG

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 4.5 ft
Static Water Column Height: 11. ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 17.9 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	10.78	1.133	12.1
0.03333	10.8	1.15	12.1
0.05	12.53	1.167	12.1
0.06667	12.05	1.183	12.1
0.08333	12.22	1.2	12.1
0.1	11.99	1.217	12.1
0.1167	12.16	1.233	12.1
0.1333	12.09	1.4	12.06
0.15	12.03	1.567	12.05
0.1667	12.14	1.733	12.04
0.1833	11.97	1.9	12.03
0.2	12.11	2.067	12.03
0.2167	12.09	2.233	12.02
0.2333	12.12	2.733	12.
0.25	12.12	3.233	11.99
0.2667	12.08	3.733	11.99
0.2833	12.11	4.233	11.99
0.3	12.09	4.733	11.99
0.3167	12.1	5.233	11.98
0.3333	12.1	5.733	11.98

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	12.1	6.233	11.98
0.3667	12.1	6.733	11.98
0.3833	12.1	7.233	11.98
0.4	12.1	7.733	11.98
0.4167	12.1	8.233	11.98
0.4333	12.1	8.733	11.98
0.45	12.1	9.233	11.97
0.4667	12.1	9.733	11.97
0.4833	12.1	10.23	11.97
0.5	12.1	10.73	11.97
0.5167	12.1	11.23	11.97
0.5333	12.1	11.73	11.97
0.55	12.1	12.23	11.97
0.5667	12.1	12.73	11.97
0.5833	12.1	13.23	11.97
0.6	12.1	13.73	11.97
0.6167	12.1	14.23	11.97
0.6333	12.1	14.73	11.97
0.65	12.1	15.23	11.97
0.6667	12.1	15.73	11.97
0.6833	12.1	16.23	11.97
0.7	12.1	16.73	11.97
0.7167	12.1	17.23	11.97
0.7333	12.1	17.73	11.97
0.75	12.1	18.23	11.97
0.7667	12.1	18.73	11.97
0.7833	12.1	19.23	11.96
0.8	12.1	19.73	11.96
0.8167	12.1	20.23	11.96
0.8333	12.1	20.73	11.96
0.85	12.1	21.23	11.96
0.8667	12.1	21.73	11.96
0.8833	12.1	22.23	11.96
0.9	12.1	22.73	11.96
0.9167	12.1	23.23	11.96
0.9333	12.1	23.73	11.96
0.95	12.1	24.23	11.96
0.9667	12.1	24.73	11.96
0.9833	12.1	25.23	11.96
1.	12.1	25.73	11.96
1.017	12.1	26.23	11.96
1.033	12.1	26.73	11.96
1.05	12.1	27.23	11.96
1.067	12.1	27.73	11.96
1.083	12.1	28.23	11.96
1.1	12.1	28.73	11.96
1.117	12.1	29.23	11.95

SOLUTION

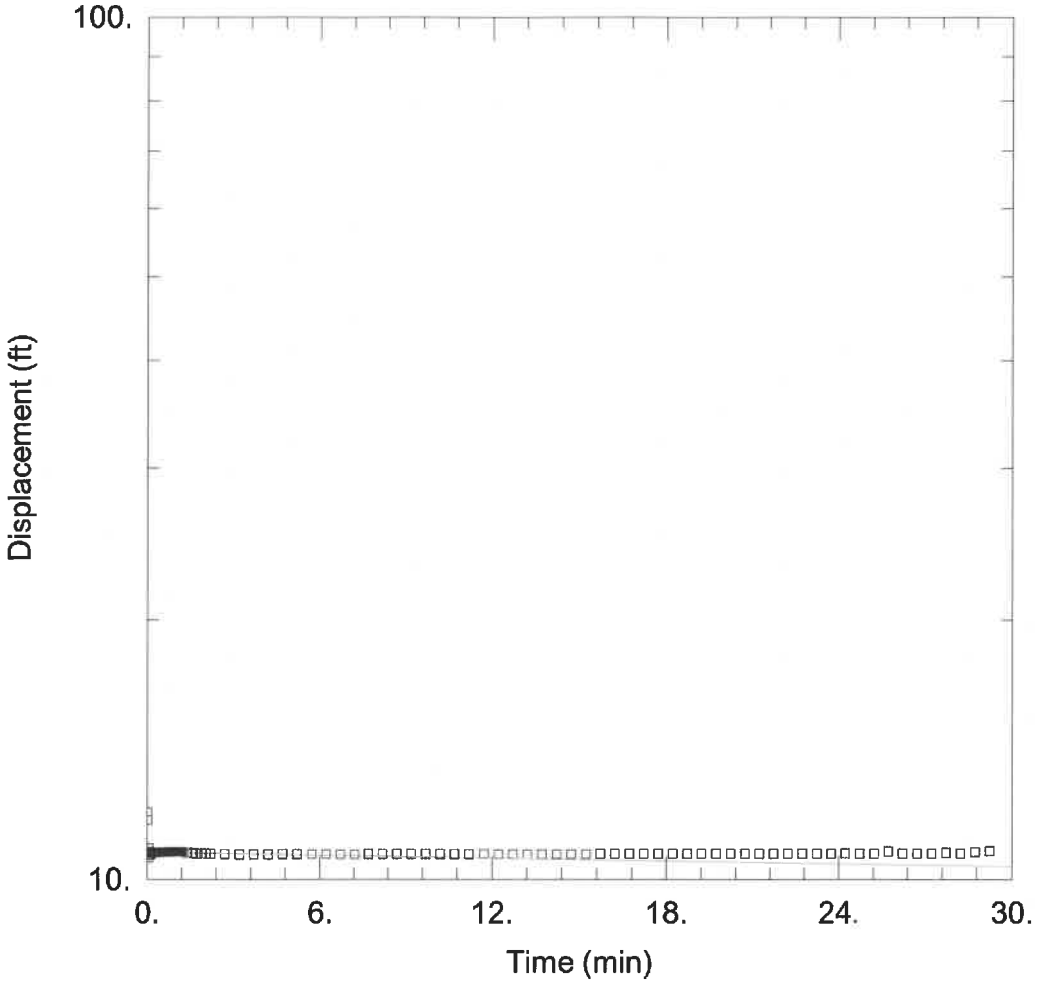
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.066

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.0E-6	cm/sec
y0	12.1	ft

T = K*b = 0.001006 cm²/sec



EBG – RISING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EBG-rh.aqt
Date: 03/12/19 Time: 14:28:52

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 11. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EBG)

Initial Displacement: 4.5 ft
Total Well Penetration Depth: 17.9 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11. ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 9.1E-7 cm/sec
y0 = 10.75 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EBG-rh.aqt
Title: EBG – Rising Head Test
Date: 03/12/19
Time: 14:28:54

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 11. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EBG

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 4.5 ft
Static Water Column Height: 11. ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 17.9 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	11.98	1.133	10.76
0.03333	11.71	1.15	10.76
0.05	10.58	1.167	10.76
0.06667	10.88	1.183	10.76
0.08333	10.66	1.2	10.76
0.1	10.66	1.217	10.76
0.1167	10.77	1.233	10.76
0.1333	10.68	1.4	10.73
0.15	10.74	1.567	10.72
0.1667	10.75	1.733	10.72
0.1833	10.72	1.9	10.71
0.2	10.74	2.067	10.71
0.2167	10.74	2.233	10.7
0.2333	10.73	2.733	10.69
0.25	10.73	3.233	10.69
0.2667	10.74	3.733	10.69
0.2833	10.74	4.233	10.69
0.3	10.74	4.733	10.69
0.3167	10.74	5.233	10.69
0.3333	10.74	5.733	10.69

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	10.74	6.233	10.69
0.3667	10.75	6.733	10.69
0.3833	10.75	7.233	10.69
0.4	10.75	7.733	10.69
0.4167	10.75	8.233	10.69
0.4333	10.75	8.733	10.69
0.45	10.75	9.233	10.69
0.4667	10.75	9.733	10.7
0.4833	10.75	10.23	10.69
0.5	10.75	10.73	10.69
0.5167	10.75	11.23	10.7
0.5333	10.75	11.73	10.7
0.55	10.75	12.23	10.7
0.5667	10.76	12.73	10.7
0.5833	10.76	13.23	10.7
0.6	10.76	13.73	10.7
0.6167	10.76	14.23	10.7
0.6333	10.76	14.73	10.7
0.65	10.76	15.23	10.7
0.6667	10.76	15.73	10.7
0.6833	10.76	16.23	10.7
0.7	10.76	16.73	10.7
0.7167	10.76	17.23	10.7
0.7333	10.76	17.73	10.7
0.75	10.76	18.23	10.7
0.7667	10.76	18.73	10.7
0.7833	10.76	19.23	10.7
0.8	10.76	19.73	10.7
0.8167	10.76	20.23	10.7
0.8333	10.76	20.73	10.71
0.85	10.76	21.23	10.71
0.8667	10.76	21.73	10.7
0.8833	10.76	22.23	10.7
0.9	10.76	22.73	10.7
0.9167	10.76	23.23	10.71
0.9333	10.76	23.73	10.71
0.95	10.76	24.23	10.71
0.9667	10.76	24.73	10.71
0.9833	10.76	25.23	10.71
1.	10.76	25.73	10.76
1.017	10.76	26.23	10.72
1.033	10.76	26.73	10.71
1.05	10.76	27.23	10.71
1.067	10.76	27.73	10.73
1.083	10.76	28.23	10.71
1.1	10.76	28.73	10.74
1.117	10.76	29.23	10.77

SOLUTION

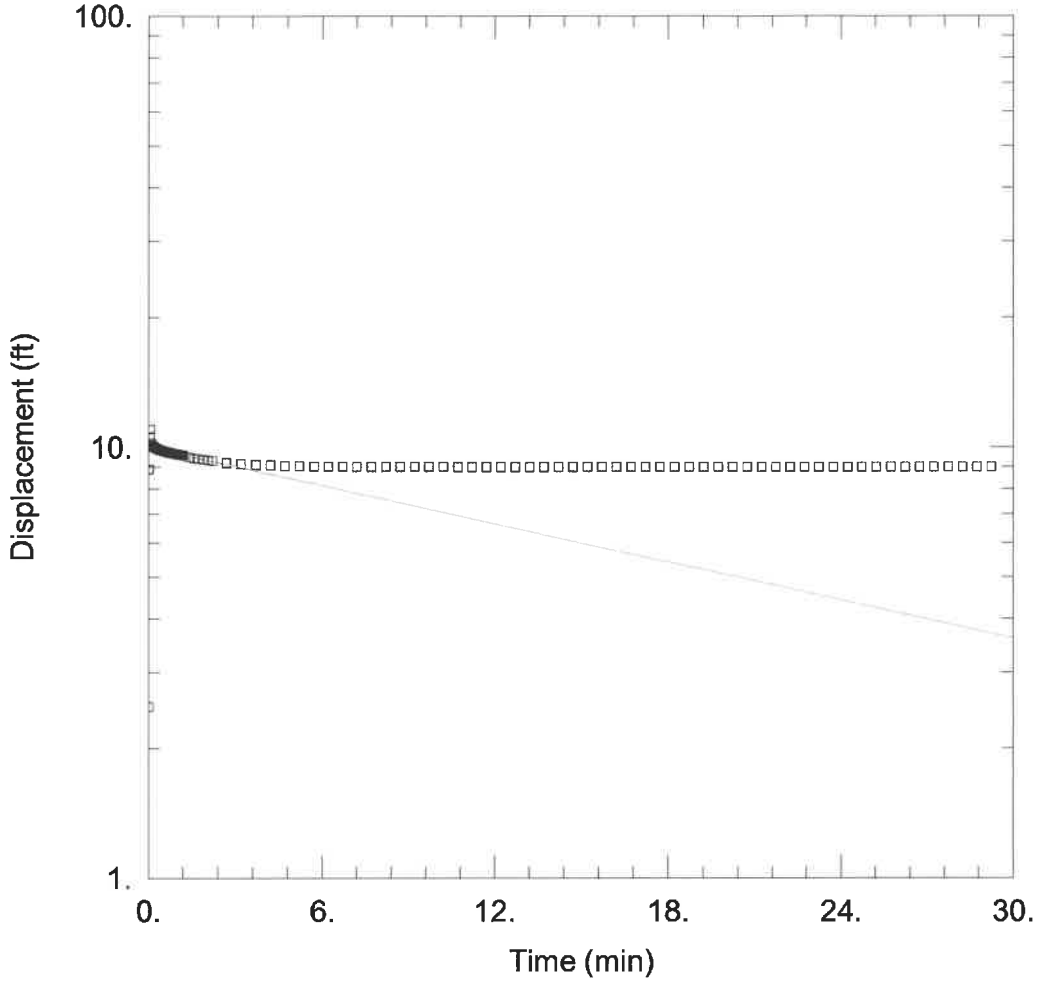
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.066

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	9.1E-7	cm/sec
y0	10.75	ft

T = K*b = 0.0003051 cm²/sec



EP01 – FALLING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP01-fh.aqt
Date: 03/12/19 Time: 14:28:56

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 8.9 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP01)

Initial Displacement: 2.5 ft
Total Well Penetration Depth: 21.4 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 8.9 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
K = 2.8E-5 cm/sec
Solution Method: Bouwer-Rice
y0 = 10. ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP01-fh.aqt
Title: EP01 – Falling Head Test
Date: 03/12/19
Time: 14:28:58

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 8.9 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP01

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.5 ft
Static Water Column Height: 8.9 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 21.4 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	8.878	1.133	9.607
0.03333	8.899	1.15	9.605
0.05	10.58	1.167	9.6
0.06667	11.02	1.183	9.596
0.08333	10.22	1.2	9.591
0.1	10.23	1.217	9.586
0.1167	10.12	1.233	9.582
0.1333	10.11	1.4	9.485
0.15	10.08	1.567	9.436
0.1667	10.06	1.733	9.396
0.1833	10.04	1.9	9.359
0.2	10.02	2.067	9.326
0.2167	10.01	2.233	9.298
0.2333	9.992	2.733	9.213
0.25	9.971	3.233	9.159
0.2667	9.957	3.733	9.119
0.2833	9.945	4.233	9.091
0.3	9.933	4.733	9.07
0.3167	9.922	5.233	9.054
0.3333	9.91	5.733	9.042

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	9.9	6.233	9.035
0.3667	9.889	6.733	9.028
0.3833	9.879	7.233	9.023
0.4	9.87	7.733	9.021
0.4167	9.861	8.233	9.019
0.4333	9.851	8.733	9.014
0.45	9.844	9.233	9.014
0.4667	9.837	9.733	9.014
0.4833	9.828	10.23	9.012
0.5	9.821	10.73	9.009
0.5167	9.814	11.23	9.009
0.5333	9.807	11.73	9.009
0.55	9.8	12.23	9.009
0.5667	9.793	12.73	9.007
0.5833	9.786	13.23	9.007
0.6	9.779	13.73	9.007
0.6167	9.772	14.23	9.005
0.6333	9.765	14.73	9.007
0.65	9.76	15.23	9.005
0.6667	9.753	15.73	9.005
0.6833	9.748	16.23	9.005
0.7	9.741	16.73	9.005
0.7167	9.734	17.23	9.002
0.7333	9.729	17.73	9.002
0.75	9.722	18.23	9.002
0.7667	9.718	18.73	9.002
0.7833	9.711	19.23	9.002
0.8	9.706	19.73	9.
0.8167	9.699	20.23	9.002
0.8333	9.694	20.73	9.002
0.85	9.69	21.23	9.
0.8667	9.685	21.73	9.
0.8833	9.68	22.23	9.
0.9	9.673	22.73	9.
0.9167	9.668	23.23	9.
0.9333	9.664	23.73	9.002
0.95	9.659	24.23	9.002
0.9667	9.652	24.73	9.
0.9833	9.65	25.23	9.
1.	9.645	25.73	9.
1.017	9.64	26.23	9.
1.033	9.636	26.73	9.
1.05	9.629	27.23	8.997
1.067	9.624	27.73	9.
1.083	9.622	28.23	8.997
1.1	9.617	28.73	9.
1.117	9.612	29.23	8.997

SOLUTION

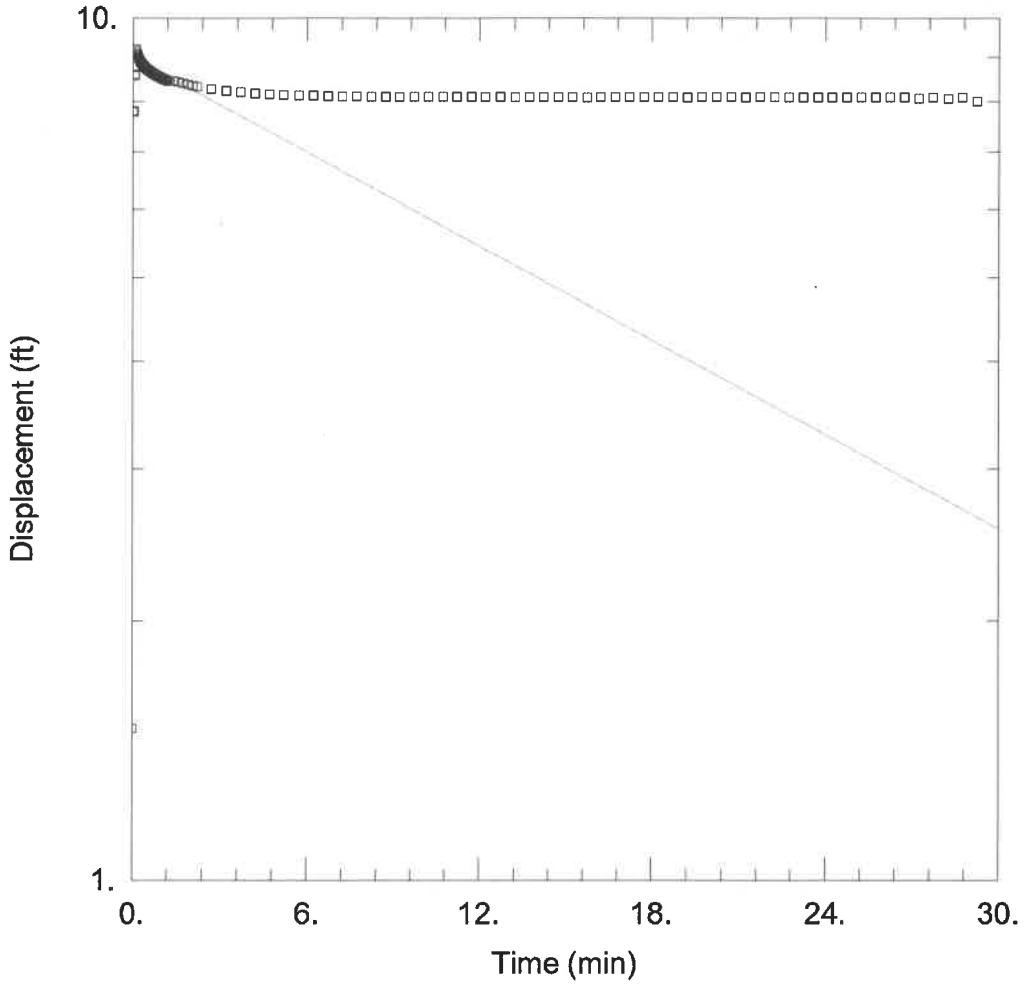
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.153

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	2.8E-5	cm/sec
y0	10.	ft

T = K*b = 0.007596 cm²/sec



EP01 – RISING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP01-rh.aqt
Date: 03/12/19 Time: 14:29:00

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 8.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP01)

Initial Displacement: 1.5 ft
Total Well Penetration Depth: 21.4 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 8.9 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 3.45E-5 cm/sec
y0 = 9. ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP01-rh.aqt
Title: EP01 – Rising Head Test
Date: 03/12/19
Time: 14:29:01

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 8.9 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP01

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.5 ft
Static Water Column Height: 8.9 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 21.4 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	7.806	1.133	8.481
0.03333	7.796	1.15	8.476
0.05	7.787	1.167	8.471
0.06667	8.605	1.183	8.469
0.08333	8.575	1.2	8.462
0.1	9.206	1.217	8.457
0.1167	9.184	1.233	8.453
0.1333	9.133	1.4	8.46
0.15	9.095	1.567	8.434
0.1667	9.058	1.733	8.404
0.1833	9.025	1.9	8.375
0.2	8.994	2.067	8.35
0.2167	8.969	2.233	8.326
0.2333	8.952	2.733	8.279
0.25	8.919	3.233	8.235
0.2667	8.898	3.733	8.204
0.2833	8.882	4.233	8.176
0.3	8.865	4.733	8.16
0.3167	8.851	5.233	8.146
0.3333	8.835	5.733	8.137

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	8.823	6.233	8.129
0.3667	8.809	6.733	8.125
0.3833	8.797	7.233	8.118
0.4	8.786	7.733	8.118
0.4167	8.774	8.233	8.113
0.4333	8.762	8.733	8.113
0.45	8.753	9.233	8.111
0.4667	8.741	9.733	8.111
0.4833	8.734	10.23	8.111
0.5	8.722	10.73	8.111
0.5167	8.715	11.23	8.108
0.5333	8.706	11.73	8.108
0.55	8.697	12.23	8.106
0.5667	8.69	12.73	8.108
0.5833	8.68	13.23	8.106
0.6	8.673	13.73	8.104
0.6167	8.666	14.23	8.104
0.6333	8.659	14.73	8.104
0.65	8.652	15.23	8.101
0.6667	8.643	15.73	8.099
0.6833	8.638	16.23	8.104
0.7	8.631	16.73	8.104
0.7167	8.624	17.23	8.101
0.7333	8.617	17.73	8.104
0.75	8.61	18.23	8.101
0.7667	8.603	18.73	8.101
0.7833	8.598	19.23	8.099
0.8	8.591	19.73	8.101
0.8167	8.584	20.23	8.101
0.8333	8.579	20.73	8.101
0.85	8.572	21.23	8.099
0.8667	8.568	21.73	8.101
0.8833	8.563	22.23	8.101
0.9	8.556	22.73	8.099
0.9167	8.551	23.23	8.099
0.9333	8.546	23.73	8.097
0.95	8.539	24.23	8.099
0.9667	8.535	24.73	8.099
0.9833	8.528	25.23	8.099
1.	8.523	25.73	8.097
1.017	8.518	26.23	8.097
1.033	8.511	26.73	8.097
1.05	8.507	27.23	8.075
1.067	8.502	27.73	8.092
1.083	8.497	28.23	8.068
1.1	8.49	28.73	8.09
1.117	8.485	29.23	8.005

SOLUTION

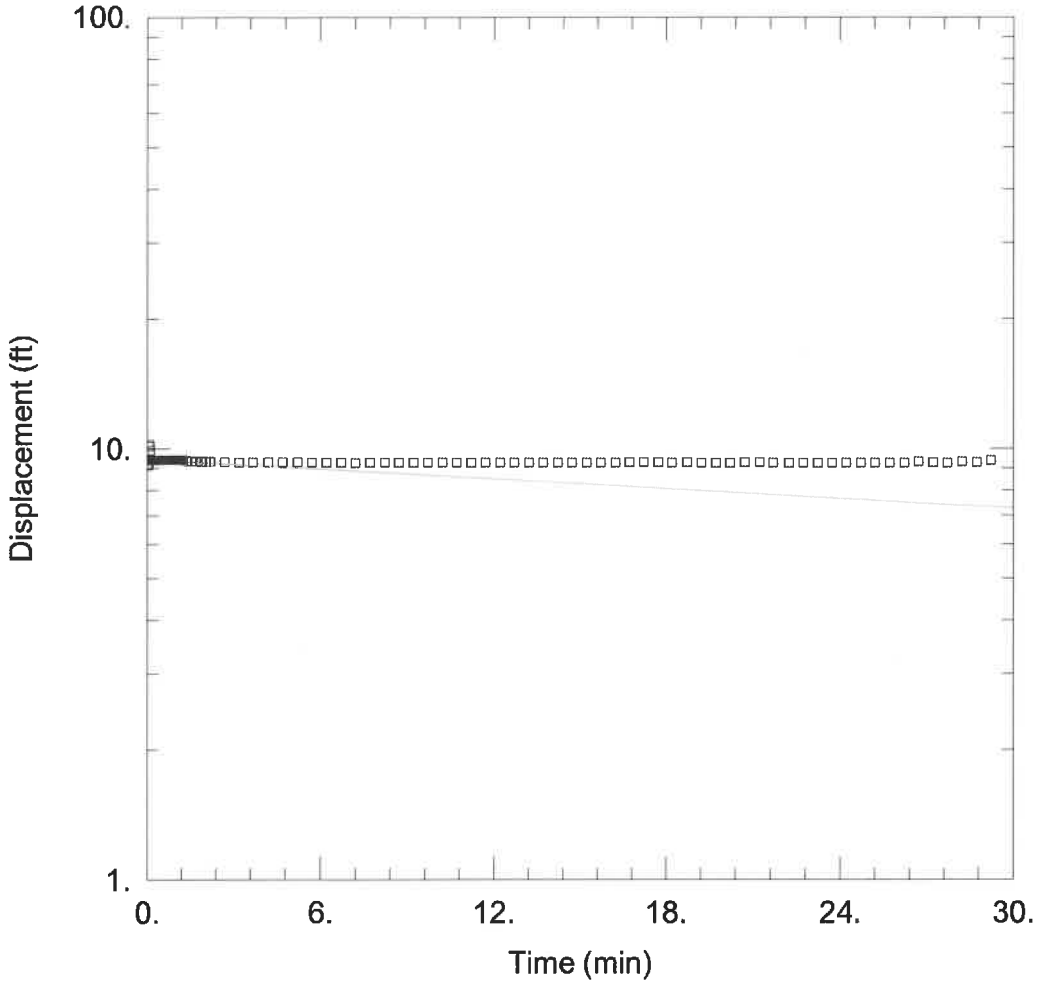
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 4.153

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.45E-5	cm/sec
y0	9.	ft

T = K*b = 0.009359 cm²/sec



EP02 – FALLING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP02-fh.aqt
Date: 03/12/19 Time: 14:29:04

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 9.4 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP02)

Initial Displacement: 9.4 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 8. ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
K = 6.0E-6 cm/sec
Solution Method: Bouwer-Rice
y0 = 9.45 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP02-fh.aqt
Title: EP02 – Falling Head Test
Date: 03/12/19
Time: 14:29:06

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 9.4 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP02

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 9.4 ft
Static Water Column Height: 8. ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 10. ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	9.148	1.133	9.408
0.03333	9.157	1.15	9.408
0.05	9.167	1.167	9.408
0.06667	9.172	1.183	9.408
0.08333	10.23	1.2	9.408
0.1	10.13	1.217	9.408
0.1167	9.908	1.233	9.408
0.1333	9.451	1.4	9.359
0.15	9.404	1.567	9.352
0.1667	9.394	1.733	9.347
0.1833	9.394	1.9	9.34
0.2	9.401	2.067	9.333
0.2167	9.399	2.233	9.328
0.2333	9.401	2.733	9.309
0.25	9.404	3.233	9.305
0.2667	9.406	3.733	9.3
0.2833	9.406	4.233	9.297
0.3	9.406	4.733	9.295
0.3167	9.406	5.233	9.293
0.3333	9.406	5.733	9.29

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	9.408	6.233	9.29
0.3667	9.408	6.733	9.288
0.3833	9.408	7.233	9.286
0.4	9.408	7.733	9.288
0.4167	9.408	8.233	9.286
0.4333	9.408	8.733	9.286
0.45	9.408	9.233	9.286
0.4667	9.408	9.733	9.283
0.4833	9.408	10.23	9.286
0.5	9.408	10.73	9.286
0.5167	9.408	11.23	9.286
0.5333	9.408	11.73	9.283
0.55	9.408	12.23	9.283
0.5667	9.408	12.73	9.281
0.5833	9.408	13.23	9.281
0.6	9.408	13.73	9.279
0.6167	9.408	14.23	9.281
0.6333	9.408	14.73	9.279
0.65	9.408	15.23	9.279
0.6667	9.408	15.73	9.279
0.6833	9.408	16.23	9.278
0.7	9.408	16.73	9.278
0.7167	9.408	17.23	9.279
0.7333	9.408	17.73	9.279
0.75	9.408	18.23	9.281
0.7667	9.408	18.73	9.278
0.7833	9.408	19.23	9.276
0.8	9.408	19.73	9.276
0.8167	9.408	20.23	9.276
0.8333	9.408	20.73	9.278
0.85	9.408	21.23	9.279
0.8667	9.408	21.73	9.276
0.8833	9.408	22.23	9.274
0.9	9.408	22.73	9.274
0.9167	9.408	23.23	9.274
0.9333	9.408	23.73	9.274
0.95	9.408	24.23	9.274
0.9667	9.408	24.73	9.274
0.9833	9.408	25.23	9.274
1.	9.408	25.73	9.274
1.017	9.408	26.23	9.274
1.033	9.408	26.73	9.328
1.05	9.408	27.23	9.283
1.067	9.408	27.73	9.276
1.083	9.408	28.23	9.311
1.1	9.408	28.73	9.281
1.117	9.408	29.23	9.373

SOLUTION

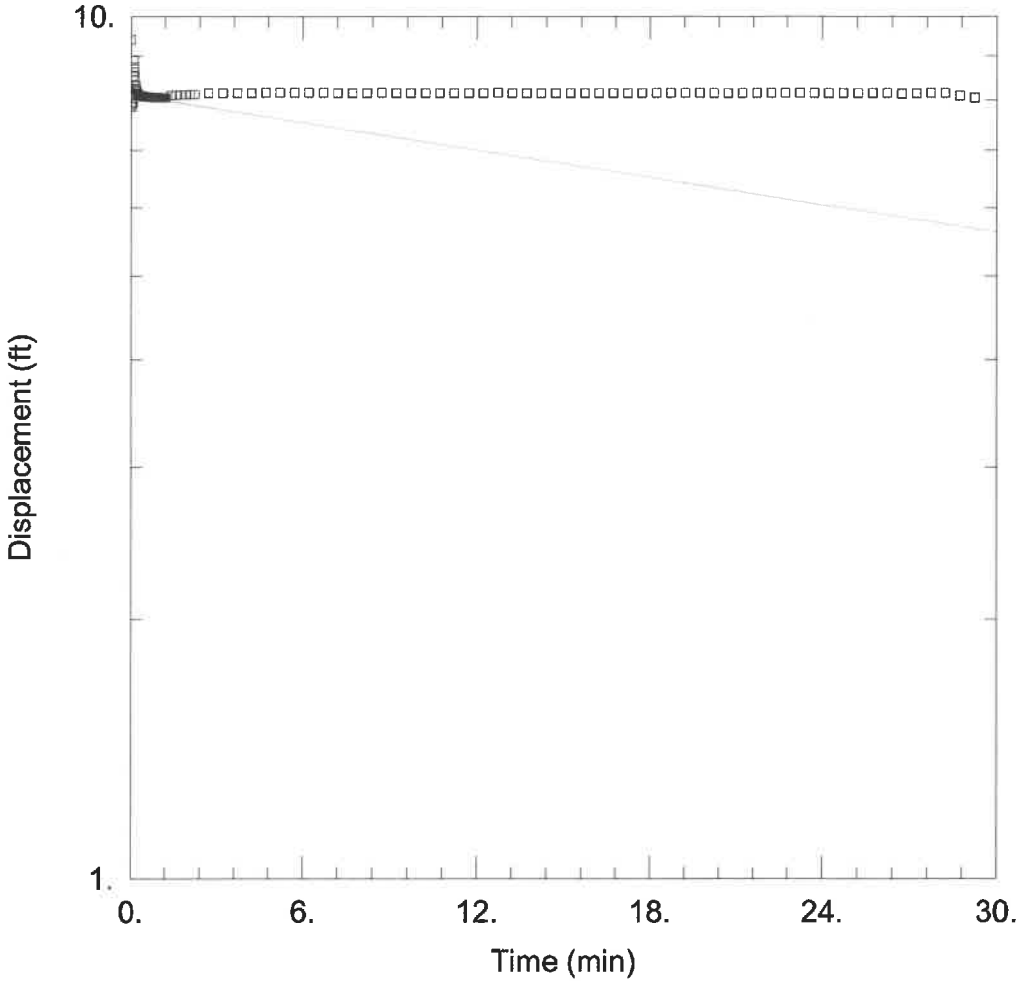
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.682

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	6.0E-6	cm/sec
y0	9.45	ft

T = K*b = 0.001719 cm²/sec



EP02 – RISING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP02-rh.aqt
Date: 03/12/19 Time: 14:29:08

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 9.4 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP02)

Initial Displacement: 9.4 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 8. ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
K = 8.4E-6 cm/sec
Solution Method: Bouwer-Rice
y0 = 8.1 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP02-rh.aqt
Title: EP02 – Rising Head Test
Date: 03/12/19
Time: 14:29:09

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 9.4 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP02

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 9.4 ft
Static Water Column Height: 8. ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 10. ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	7.865	1.133	8.052
0.03333	7.856	1.15	8.052
0.05	7.917	1.167	8.05
0.06667	7.954	1.183	8.05
0.08333	8.529	1.2	8.05
0.1	8.89	1.217	8.05
0.1167	8.735	1.233	8.05
0.1333	8.625	1.4	8.097
0.15	8.44	1.567	8.104
0.1667	8.313	1.733	8.109
0.1833	8.231	1.9	8.114
0.2	8.2	2.067	8.118
0.2167	8.163	2.233	8.118
0.2333	8.146	2.733	8.137
0.25	8.13	3.233	8.14
0.2667	8.121	3.733	8.142
0.2833	8.114	4.233	8.142
0.3	8.109	4.733	8.144
0.3167	8.104	5.233	8.144
0.3333	8.099	5.733	8.144

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	8.095	6.233	8.144
0.3667	8.092	6.733	8.144
0.3833	8.088	7.233	8.142
0.4	8.085	7.733	8.142
0.4167	8.083	8.233	8.142
0.4333	8.081	8.733	8.144
0.45	8.078	9.233	8.142
0.4667	8.076	9.733	8.142
0.4833	8.074	10.23	8.142
0.5	8.074	10.73	8.142
0.5167	8.074	11.23	8.142
0.5333	8.071	11.73	8.142
0.55	8.071	12.23	8.142
0.5667	8.069	12.73	8.144
0.5833	8.069	13.23	8.142
0.6	8.067	13.73	8.14
0.6167	8.067	14.23	8.14
0.6333	8.067	14.73	8.14
0.65	8.064	15.23	8.14
0.6667	8.064	15.73	8.14
0.6833	8.064	16.23	8.14
0.7	8.062	16.73	8.14
0.7167	8.062	17.23	8.14
0.7333	8.062	17.73	8.14
0.75	8.062	18.23	8.14
0.7667	8.062	18.73	8.14
0.7833	8.06	19.23	8.14
0.8	8.06	19.73	8.14
0.8167	8.057	20.23	8.14
0.8333	8.057	20.73	8.14
0.85	8.057	21.23	8.14
0.8667	8.057	21.73	8.14
0.8833	8.057	22.23	8.14
0.9	8.057	22.73	8.14
0.9167	8.055	23.23	8.14
0.9333	8.055	23.73	8.14
0.95	8.055	24.23	8.14
0.9667	8.055	24.73	8.14
0.9833	8.052	25.23	8.14
1.	8.052	25.73	8.14
1.017	8.052	26.23	8.14
1.033	8.052	26.73	8.128
1.05	8.052	27.23	8.135
1.067	8.052	27.73	8.137
1.083	8.052	28.23	8.137
1.1	8.052	28.73	8.083
1.117	8.052	29.23	8.039

SOLUTION

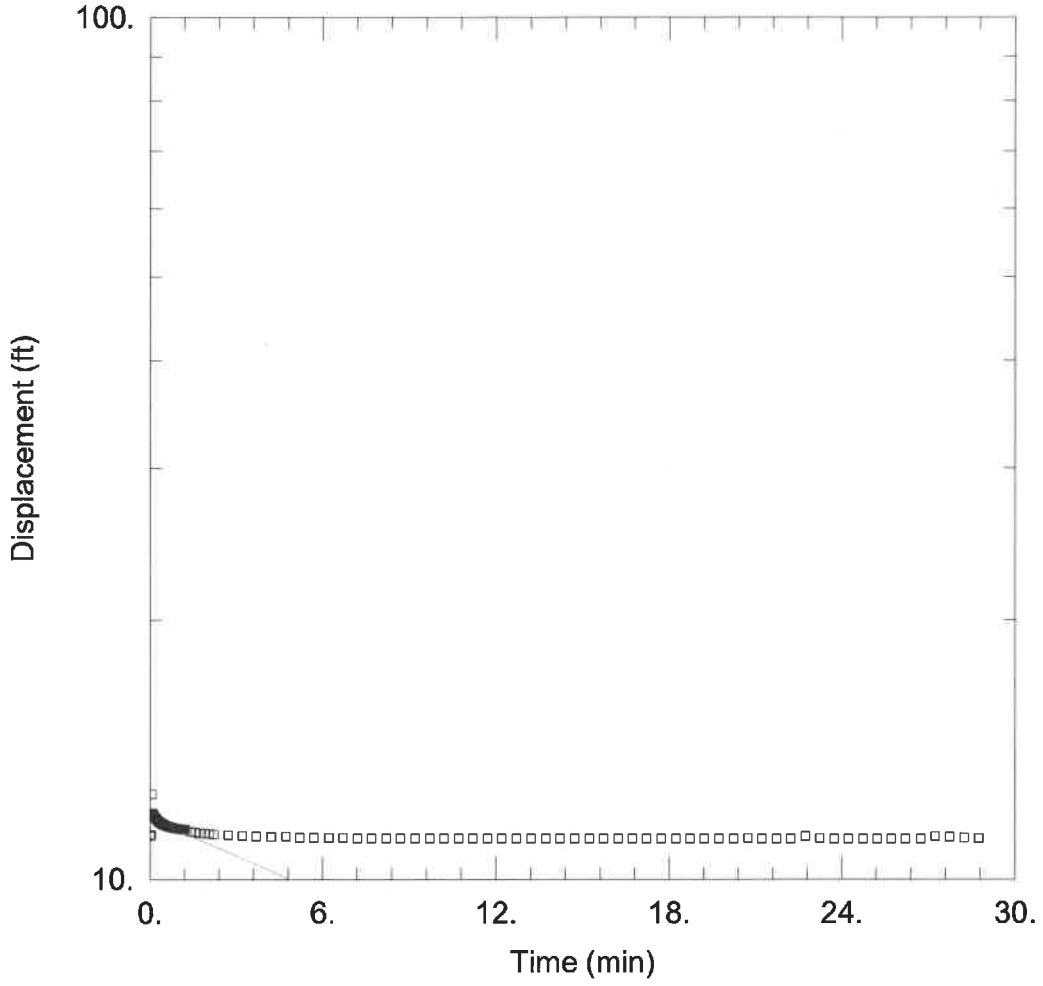
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.682

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	8.4E-6	cm/sec
y0	8.1	ft

T = K*b = 0.002407 cm²/sec



EP03 – FALLING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP03-fh.aqt
Date: 03/12/19 Time: 14:29:11

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP03)

Initial Displacement: 2.5 ft
Total Well Penetration Depth: 11.75 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.2 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 3.1E-5 cm/sec
y0 = 11.8 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP03-fh.aqt
Title: EP03 – Falling Head Test
Date: 03/12/19
Time: 14:29:13

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP03

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.5 ft
Static Water Column Height: 7.2 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 11.75 ft

No. of Observations: 133

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	11.23	1.133	11.44
0.03333	11.24	1.15	11.44
0.05	11.27	1.167	11.44
0.06667	12.57	1.183	11.43
0.08333	11.92	1.2	11.43
0.1	11.89	1.217	11.43
0.1167	11.94	1.233	11.43
0.1333	11.87	1.4	11.37
0.15	11.85	1.567	11.35
0.1667	11.84	1.733	11.32
0.1833	11.81	1.9	11.31
0.2	11.79	2.067	11.3
0.2167	11.77	2.233	11.29
0.2333	11.75	2.733	11.25
0.25	11.73	3.233	11.22
0.2667	11.72	3.733	11.21
0.2833	11.7	4.233	11.2
0.3	11.69	4.733	11.19
0.3167	11.68	5.233	11.18
0.3333	11.66	5.733	11.18

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	11.65	6.233	11.17
0.3667	11.64	6.733	11.16
0.3833	11.63	7.233	11.16
0.4	11.62	7.733	11.16
0.4167	11.62	8.233	11.15
0.4333	11.61	8.733	11.16
0.45	11.6	9.233	11.15
0.4667	11.59	9.733	11.15
0.4833	11.58	10.23	11.15
0.5	11.57	10.73	11.15
0.5167	11.57	11.23	11.15
0.5333	11.56	11.73	11.15
0.55	11.55	12.23	11.15
0.5667	11.55	12.73	11.14
0.5833	11.54	13.23	11.15
0.6	11.54	13.73	11.14
0.6167	11.54	14.23	11.15
0.6333	11.53	14.73	11.14
0.65	11.52	15.23	11.14
0.6667	11.52	15.73	11.14
0.6833	11.51	16.23	11.14
0.7	11.51	16.73	11.14
0.7167	11.51	17.23	11.14
0.7333	11.5	17.73	11.14
0.75	11.5	18.23	11.15
0.7667	11.49	18.73	11.14
0.7833	11.49	19.23	11.14
0.8	11.49	19.73	11.15
0.8167	11.48	20.23	11.14
0.8333	11.48	20.73	11.15
0.85	11.48	21.23	11.14
0.8667	11.48	21.73	11.14
0.8833	11.47	22.23	11.14
0.9	11.47	22.73	11.22
0.9167	11.47	23.23	11.15
0.9333	11.46	23.73	11.14
0.95	11.46	24.23	11.14
0.9667	11.46	24.73	11.14
0.9833	11.46	25.23	11.14
1.	11.46	25.73	11.14
1.017	11.45	26.23	11.14
1.033	11.45	26.73	11.14
1.05	11.45	27.23	11.21
1.067	11.45	27.73	11.19
1.083	11.44	28.23	11.17
1.1	11.44	28.73	11.15
1.117	11.44		

SOLUTION

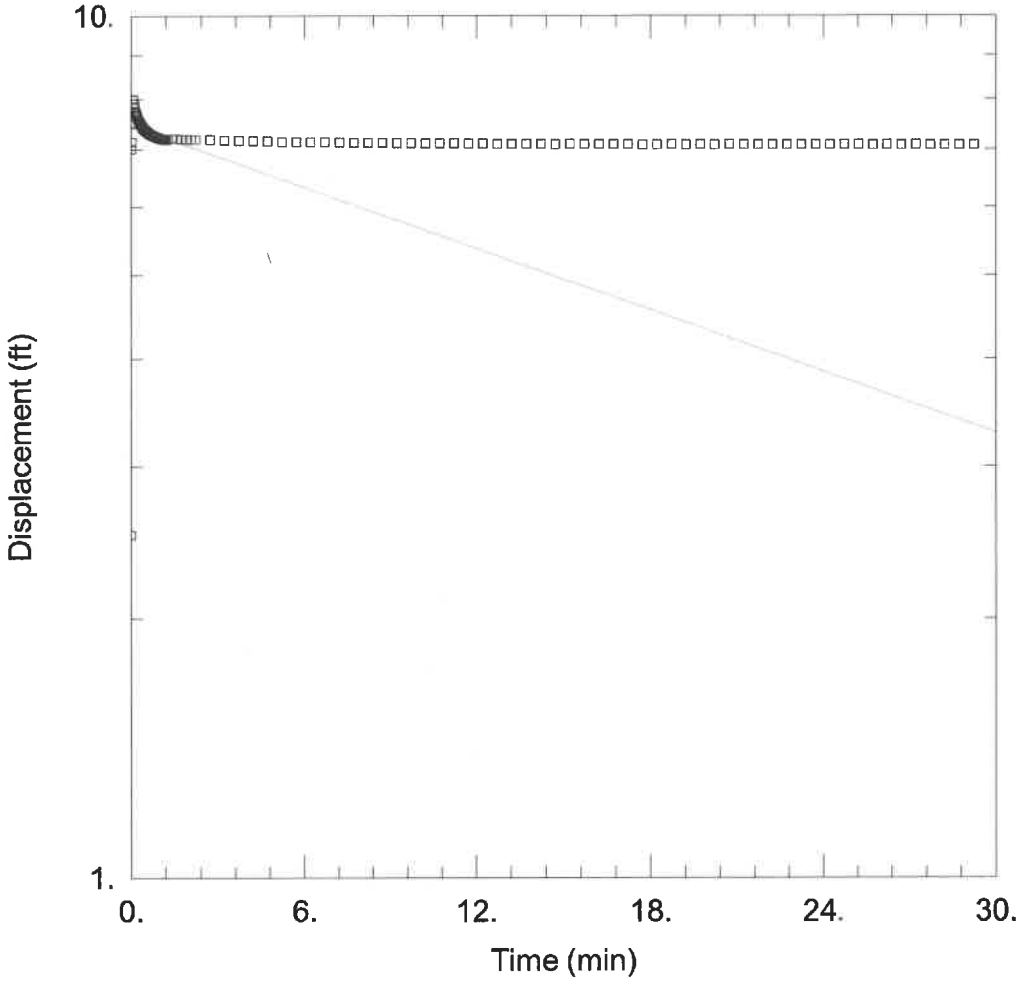
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.741

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.1E-5	cm/sec
y0	11.8	ft

T = K*b = 0.006803 cm²/sec



EP03 – RISING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP03-rh.aqt
Date: 03/12/19 Time: 14:29:16

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP03)

Initial Displacement: 2.5 ft
Total Well Penetration Depth: 11.75 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.2 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
K = 2.5E-5 cm/sec
Solution Method: Bouwer-Rice
y0 = 7.45 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP03-rh.aqt
Title: EP03 – Rising Head Test
Date: 03/12/19
Time: 14:29:18

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP03

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.5 ft
Static Water Column Height: 7.2 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 11.75 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	7.002	1.133	7.192
0.03333	7.143	1.15	7.19
0.05	7.502	1.167	7.187
0.06667	7.994	1.183	7.185
0.08333	8.004	1.2	7.185
0.1	7.919	1.217	7.183
0.1167	7.856	1.233	7.18
0.1333	7.818	1.4	7.204
0.15	7.76	1.567	7.202
0.1667	7.725	1.733	7.192
0.1833	7.694	1.9	7.19
0.2	7.664	2.067	7.183
0.2167	7.647	2.233	7.183
0.2333	7.614	2.733	7.183
0.25	7.579	3.233	7.176
0.2667	7.558	3.733	7.169
0.2833	7.539	4.233	7.16
0.3	7.521	4.733	7.155
0.3167	7.504	5.233	7.143
0.3333	7.488	5.733	7.143

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	7.471	6.233	7.136
0.3667	7.457	6.733	7.136
0.3833	7.443	7.233	7.129
0.4	7.429	7.733	7.127
0.4167	7.417	8.233	7.125
0.4333	7.406	8.733	7.122
0.45	7.394	9.233	7.117
0.4667	7.384	9.733	7.118
0.4833	7.375	10.23	7.115
0.5	7.366	10.73	7.113
0.5167	7.356	11.23	7.113
0.5333	7.347	11.73	7.108
0.55	7.34	12.23	7.108
0.5667	7.331	12.73	7.101
0.5833	7.323	13.23	7.103
0.6	7.319	13.73	7.099
0.6167	7.309	14.23	7.101
0.6333	7.305	14.73	7.096
0.65	7.298	15.23	7.099
0.6667	7.293	15.73	7.096
0.6833	7.286	16.23	7.096
0.7	7.281	16.73	7.096
0.7167	7.277	17.23	7.096
0.7333	7.272	17.73	7.082
0.75	7.267	18.23	7.089
0.7667	7.263	18.73	7.092
0.7833	7.258	19.23	7.087
0.8	7.253	19.73	7.094
0.8167	7.248	20.23	7.087
0.8333	7.246	20.73	7.092
0.85	7.241	21.23	7.087
0.8667	7.237	21.73	7.089
0.8833	7.234	22.23	7.087
0.9	7.23	22.73	7.089
0.9167	7.227	23.23	7.089
0.9333	7.225	23.73	7.087
0.95	7.22	24.23	7.087
0.9667	7.218	24.73	7.087
0.9833	7.216	25.23	7.089
1.	7.213	25.73	7.085
1.017	7.209	26.23	7.087
1.033	7.206	26.73	7.082
1.05	7.204	27.23	7.087
1.067	7.202	27.73	7.082
1.083	7.199	28.23	7.082
1.1	7.197	28.73	7.082
1.117	7.195	29.23	7.082

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.741

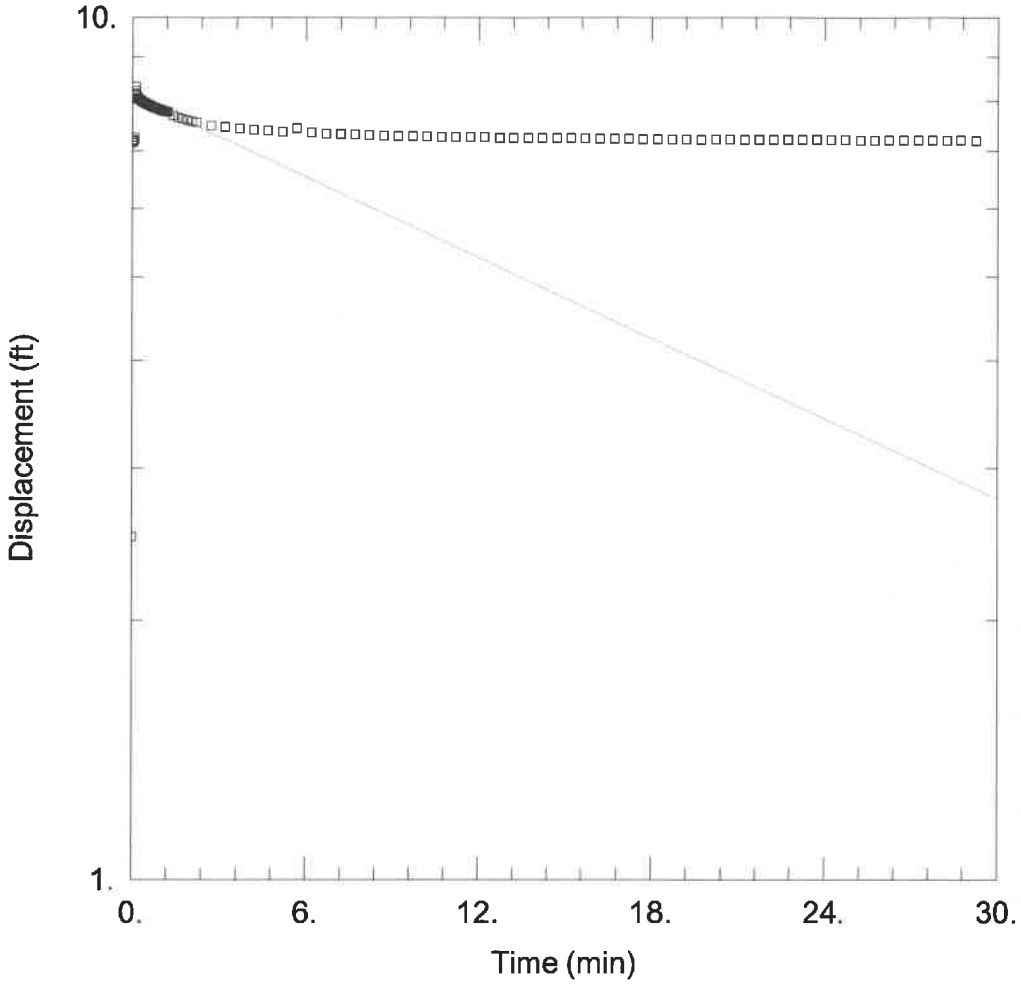
Electronic Filing: Received, Clerk's Office 01/13/2023

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	2.5E-5	cm/sec
y0	7.45	ft

T = K*b = 0.005486 cm²/sec



EP04 – FALLING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP04-fh.aqt
Date: 03/12/19 Time: 14:29:20

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP04)

Initial Displacement: 2.5 ft
Total Well Penetration Depth: 12.1 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.2 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 3.3E-5 cm/sec
y0 = 8.1 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP04-fh.aqt
Title: EP04 – Falling Head Test
Date: 03/12/19
Time: 14:29:22

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP04

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.5 ft
Static Water Column Height: 7.2 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 12.1 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	7.151	1.133	7.781
0.03333	7.177	1.15	7.779
0.05	7.193	1.167	7.777
0.06667	7.209	1.183	7.774
0.08333	7.261	1.2	7.77
0.1	8.159	1.217	7.767
0.1167	8.312	1.233	7.765
0.1333	8.218	1.4	7.69
0.15	8.117	1.567	7.657
0.1667	8.035	1.733	7.629
0.1833	8.058	1.9	7.603
0.2	8.068	2.067	7.579
0.2167	8.049	2.233	7.556
0.2333	8.04	2.733	7.492
0.25	8.03	3.233	7.452
0.2667	8.023	3.733	7.424
0.2833	8.016	4.233	7.401
0.3	8.009	4.733	7.38
0.3167	8.002	5.233	7.363
0.3333	7.997	5.733	7.434

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	7.988	6.233	7.349
0.3667	7.983	6.733	7.326
0.3833	7.976	7.233	7.316
0.4	7.972	7.733	7.307
0.4167	7.964	8.233	7.3
0.4333	7.96	8.733	7.293
0.45	7.953	9.233	7.283
0.4667	7.948	9.733	7.276
0.4833	7.943	10.23	7.272
0.5	7.936	10.73	7.269
0.5167	7.932	11.23	7.265
0.5333	7.927	11.73	7.262
0.55	7.92	12.23	7.257
0.5667	7.915	12.73	7.25
0.5833	7.91	13.23	7.248
0.6	7.906	13.73	7.246
0.6167	7.901	14.23	7.239
0.6333	7.896	14.73	7.243
0.65	7.892	15.23	7.239
0.6667	7.887	15.73	7.236
0.6833	7.882	16.23	7.232
0.7	7.878	16.73	7.229
0.7167	7.873	17.23	7.227
0.7333	7.868	17.73	7.222
0.75	7.866	18.23	7.225
0.7667	7.861	18.73	7.222
0.7833	7.857	19.23	7.222
0.8	7.852	19.73	7.218
0.8167	7.849	20.23	7.218
0.8333	7.845	20.73	7.215
0.85	7.84	21.23	7.213
0.8667	7.838	21.73	7.211
0.8833	7.833	22.23	7.208
0.9	7.828	22.73	7.208
0.9167	7.826	23.23	7.211
0.9333	7.821	23.73	7.208
0.95	7.819	24.23	7.204
0.9667	7.817	24.73	7.206
0.9833	7.812	25.23	7.201
1.	7.807	25.73	7.199
1.017	7.805	26.23	7.199
1.033	7.803	26.73	7.197
1.05	7.798	27.23	7.199
1.067	7.795	27.73	7.197
1.083	7.791	28.23	7.194
1.1	7.788	28.73	7.197
1.117	7.786	29.23	7.194

SOLUTION

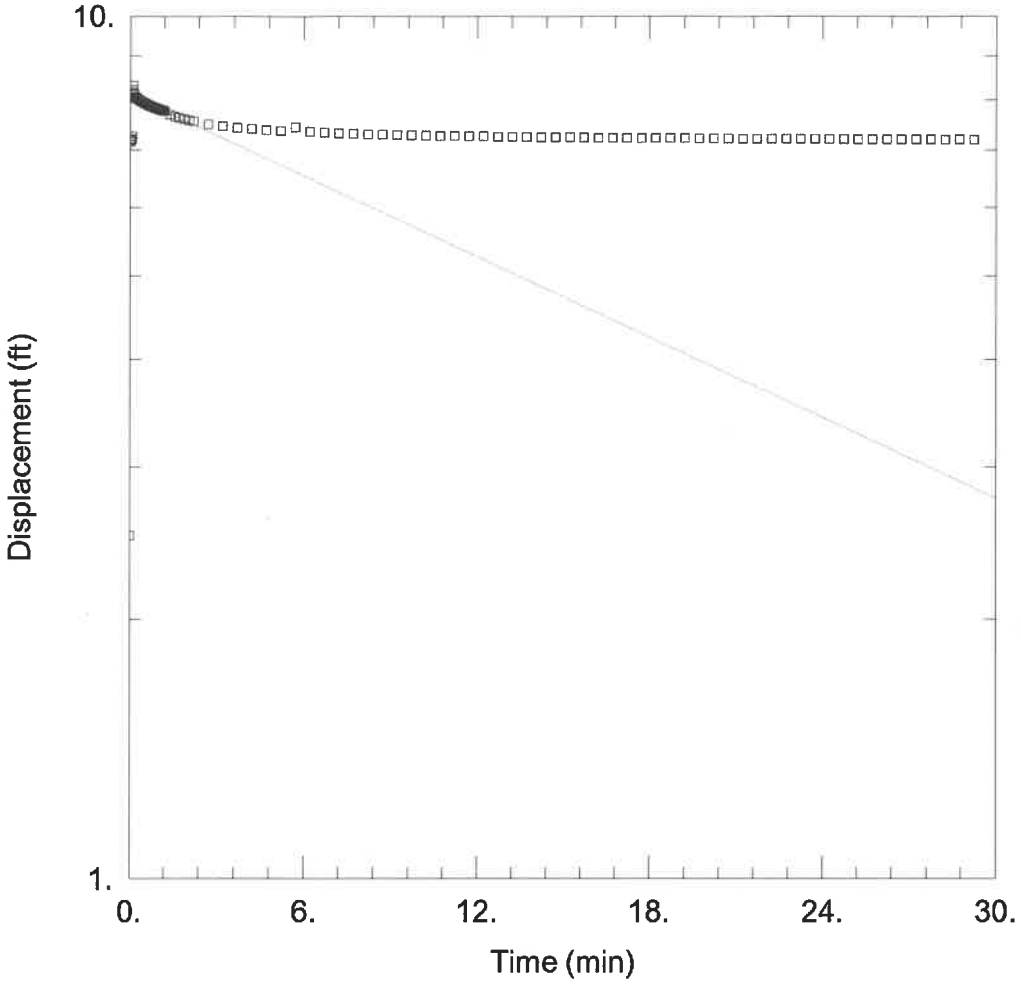
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.759

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.3E-5	cm/sec
y0	8.1	ft

T = K*b = 0.007242 cm²/sec



EP04 – FALLING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP04rfh.aqt
Date: 03/12/19 Time: 14:29:24

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP04)

Initial Displacement: 2.5 ft
Total Well Penetration Depth: 12.1 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.2 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 3.3E-5 cm/sec
y0 = 8.1 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP04rfh.aqt
Title: EP04 – Falling Head Test
Date: 03/12/19
Time: 14:29:26

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP04

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.5 ft
Static Water Column Height: 7.2 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 12.1 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	7.151	1.133	7.781
0.03333	7.177	1.15	7.779
0.05	7.193	1.167	7.777
0.06667	7.209	1.183	7.774
0.08333	7.261	1.2	7.77
0.1	8.159	1.217	7.767
0.1167	8.312	1.233	7.765
0.1333	8.218	1.4	7.69
0.15	8.117	1.567	7.657
0.1667	8.035	1.733	7.629
0.1833	8.058	1.9	7.603
0.2	8.068	2.067	7.579
0.2167	8.049	2.233	7.556
0.2333	8.04	2.733	7.492
0.25	8.03	3.233	7.452
0.2667	8.023	3.733	7.424
0.2833	8.016	4.233	7.401
0.3	8.009	4.733	7.38
0.3167	8.002	5.233	7.363
0.3333	7.997	5.733	7.434

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	7.988	6.233	7.349
0.3667	7.983	6.733	7.326
0.3833	7.976	7.233	7.316
0.4	7.972	7.733	7.307
0.4167	7.964	8.233	7.3
0.4333	7.96	8.733	7.293
0.45	7.953	9.233	7.283
0.4667	7.948	9.733	7.276
0.4833	7.943	10.23	7.272
0.5	7.936	10.73	7.269
0.5167	7.932	11.23	7.265
0.5333	7.927	11.73	7.262
0.55	7.92	12.23	7.257
0.5667	7.915	12.73	7.25
0.5833	7.91	13.23	7.248
0.6	7.906	13.73	7.246
0.6167	7.901	14.23	7.239
0.6333	7.896	14.73	7.243
0.65	7.892	15.23	7.239
0.6667	7.887	15.73	7.236
0.6833	7.882	16.23	7.232
0.7	7.878	16.73	7.229
0.7167	7.873	17.23	7.227
0.7333	7.868	17.73	7.222
0.75	7.866	18.23	7.225
0.7667	7.861	18.73	7.222
0.7833	7.857	19.23	7.222
0.8	7.852	19.73	7.218
0.8167	7.849	20.23	7.218
0.8333	7.845	20.73	7.215
0.85	7.84	21.23	7.213
0.8667	7.838	21.73	7.211
0.8833	7.833	22.23	7.208
0.9	7.828	22.73	7.208
0.9167	7.826	23.23	7.211
0.9333	7.821	23.73	7.208
0.95	7.819	24.23	7.204
0.9667	7.817	24.73	7.206
0.9833	7.812	25.23	7.201
1.	7.807	25.73	7.199
1.017	7.805	26.23	7.199
1.033	7.803	26.73	7.197
1.05	7.798	27.23	7.199
1.067	7.795	27.73	7.197
1.083	7.791	28.23	7.194
1.1	7.788	28.73	7.197
1.117	7.786	29.23	7.194

SOLUTION

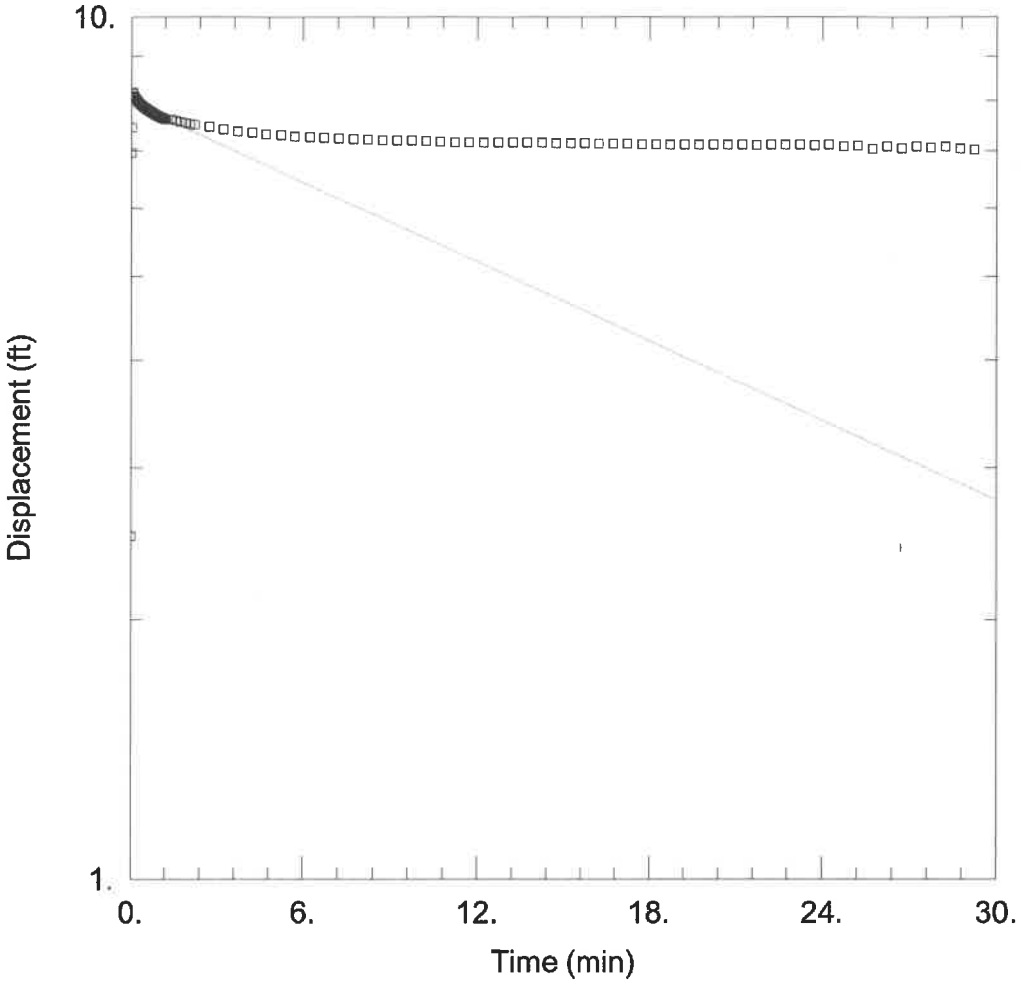
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.759

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.3E-5	cm/sec
y0	8.1	ft

T = K*b = 0.007242 cm²/sec



EP04 – RISING HEAD TEST

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP04-rh.aqt
Date: 03/12/19 Time: 14:29:28

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EP04)

Initial Displacement: 2.5 ft
Total Well Penetration Depth: 12.1 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 7.2 ft
Screen Length: 10. ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 3.25E-5 cm/sec
y0 = 7.95 ft

Data Set: I:\18jobs\18E0022\Admin\13-Calculations\SlugTests\EP04-rh.aqt
Title: EP04 – Rising Head Test
Date: 03/12/19
Time: 14:29:30

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022
Location: Marion, IL
Test Well: EPB

AQUIFER DATA

Saturated Thickness: 7.2 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP04

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.5 ft
Static Water Column Height: 7.2 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 10. ft
Total Well Penetration Depth: 12.1 ft

No. of Observations: 134

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	6.954	1.133	7.625
0.03333	7.439	1.15	7.62
0.05	8.145	1.167	7.615
0.06667	8.178	1.183	7.61
0.08333	8.098	1.2	7.608
0.1	8.084	1.217	7.603
0.1167	8.077	1.233	7.599
0.1333	8.066	1.4	7.608
0.15	8.056	1.567	7.582
0.1667	8.028	1.733	7.559
0.1833	8.014	1.9	7.536
0.2	8.005	2.067	7.515
0.2167	7.993	2.233	7.496
0.2333	7.981	2.733	7.456
0.25	7.965	3.233	7.411
0.2667	7.955	3.733	7.374
0.2833	7.946	4.233	7.341
0.3	7.936	4.733	7.315
0.3167	7.927	5.233	7.294
0.3333	7.918	5.733	7.273

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.35	7.908	6.233	7.261
0.3667	7.899	6.733	7.247
0.3833	7.892	7.233	7.233
0.4	7.883	7.733	7.222
0.4167	7.875	8.233	7.215
0.4333	7.868	8.733	7.205
0.45	7.859	9.233	7.196
0.4667	7.852	9.733	7.191
0.4833	7.845	10.23	7.186
0.5	7.838	10.73	7.179
0.5167	7.829	11.23	7.17
0.5333	7.821	11.73	7.168
0.55	7.817	12.23	7.163
0.5667	7.807	12.73	7.161
0.5833	7.8	13.23	7.156
0.6	7.796	13.73	7.154
0.6167	7.789	14.23	7.154
0.6333	7.782	14.73	7.147
0.65	7.777	15.23	7.147
0.6667	7.77	15.73	7.142
0.6833	7.765	16.23	7.137
0.7	7.758	16.73	7.135
0.7167	7.753	17.23	7.135
0.7333	7.746	17.73	7.132
0.75	7.742	18.23	7.13
0.7667	7.735	18.73	7.123
0.7833	7.73	19.23	7.123
0.8	7.723	19.73	7.123
0.8167	7.718	20.23	7.121
0.8333	7.711	20.73	7.118
0.85	7.707	21.23	7.116
0.8667	7.702	21.73	7.114
0.8833	7.695	22.23	7.114
0.9	7.69	22.73	7.111
0.9167	7.683	23.23	7.114
0.9333	7.678	23.73	7.109
0.95	7.674	24.23	7.111
0.9667	7.669	24.73	7.095
0.9833	7.664	25.23	7.102
1.	7.66	25.73	7.039
1.017	7.655	26.23	7.09
1.033	7.65	26.73	7.05
1.05	7.646	27.23	7.09
1.067	7.641	27.73	7.069
1.083	7.639	28.23	7.086
1.1	7.634	28.73	7.05
1.117	7.629	29.23	7.031

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.759

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.25E-5	cm/sec
y0	7.95	ft

T = K*b = 0.007132 cm²/sec

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	Approx. C.I.	t-Ratio	
K	3.944E-6	2.269E-7	+/- 4.488E-7	17.38	cm/sec
y0	7.746	0.0202	+/- 0.03995	383.6	ft

C.I. is approximate 95% confidence interval for parameter
t-ratio = estimate/std. error
No estimation window

T = K*b = 0.0008656 cm²/sec

Parameter Correlations

	K	y0
K	1.00	0.59
y0	0.59	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 4.477 ft^2
Variance . . . . . 0.03392 ft^2
Std. Deviation . . . . . 0.1842 ft
Mean . . . . . 6.23E-5 ft
No. of Residuals 134
No. of Estimates 2

Appendix C

Packer Test Results

Bedrock Packer Test Calculations

Packer Test Solution

"Methods and procedures for defining aquifer parameters" (by John Sevee);
in Practical Handbook of Ground-Water Monitoring (ed. David Nielsen)

"Friction Losses in Pipe" (APPENDIX 17.A.);
in Groundwater and Wells (Fletcher G. Driscoll)

Site SIPC Marion Power Plant
Boring EBR
1.4902 Radius of test hole (in ft.)
8.4700 Length of test zone (in ft.)

NOTE:
Zero flow rate

Test #		Depth [Interval midpoint] (feet BGS)	Constant flow rate Q (in gal/min)	Static Head H_s (in feet)	Guage pressure p (in psi)	Pressure head $H_p = p*2.31$ (in feet)	Friction loss H_f (in feet)	Differential head $H_s + H_p - H_f$ (in feet)	Hydraulic Conductivity K (in cm/sec)	Comments
A	1	160.55	0.600	154.74	10.00	23.07	0.220	177.587	2.002E-05	
	2	160.55	0.700	154.74	10.00	23.07	0.257	177.550	2.336E-05	
	3	160.55	0.600	154.74	10.00	23.07	0.220	177.587	2.002E-05	
	4	160.55	0.800	154.74	10.00	23.07	0.293	177.514	2.670E-05	
	5	160.55	0.600	154.74	20.00	46.13	0.220	200.654	1.772E-05	
	6	160.55	0.700	154.74	20.00	46.13	0.257	200.617	2.067E-05	
	7	160.55	0.500	154.74	20.00	46.13	0.183	200.691	1.476E-05	
	8	160.55	0.600	154.74	20.00	46.13	0.220	200.654	1.772E-05	
	9	160.55	0.400	154.74	30.00	69.20	0.147	223.794	1.059E-05	
	10	160.55	0.300	154.74	30.00	69.20	0.110	223.831	7.941E-06	
	11	160.55	0.450	154.74	30.00	69.20	0.165	223.776	1.191E-05	
	12	160.55	0.030	154.74	30.00	69.20	0.011	223.930	7.937E-07	
	13	160.55	0.150	154.74	20.00	46.13	0.055	200.819	4.425E-06	*Step down*
	14	160.55	-0.150	154.74	20.00	46.13	0.055	200.819	4.425E-06	*Step down*
	15	160.55	0.000	154.74	10.00	23.07	0.000	177.807	3.332E-10	*Step down*
	16	160.55	0.000	154.74	10.00	23.07	0.000	177.807	3.332E-10	*Step down*
B	1	149.50	0.400	143.69	10.00	23.07	0.137	166.620	1.400E-05	
	2	149.50	0.280	143.69	10.00	23.07	0.096	166.661	9.795E-06	
	3	149.50	0.190	143.69	10.00	23.07	0.065	166.692	6.645E-06	
	4	149.50	0.130	143.69	10.00	23.07	0.044	166.713	4.546E-06	
	5	149.50	0.190	143.69	20.00	46.13	0.065	189.759	5.838E-06	
	6	149.50	0.110	143.69	20.00	46.13	0.038	189.786	3.379E-06	
	7	149.50	0.120	143.69	20.00	46.13	0.041	189.783	3.686E-06	
	8	149.50	0.120	143.69	20.00	46.13	0.041	189.783	3.686E-06	
	9	149.50	0.380	143.69	30.00	69.20	0.130	212.761	1.041E-05	
	10	149.50	0.390	143.69	30.00	69.20	0.133	212.758	1.069E-05	
	11	149.50	0.530	143.69	30.00	69.20	0.181	212.710	1.453E-05	
	12	149.50	0.600	143.69	30.00	69.20	0.205	212.686	1.645E-05	
	13	149.50	0.190	143.69	20.00	46.13	0.065	189.759	5.838E-06	*Step down*
	14	149.50	0.270	143.69	20.00	46.13	0.092	189.732	8.297E-06	*Step down*
	15	149.50	-0.800	143.69	10.00	23.07	0.273	166.484	2.802E-05	*Step down*
	16	149.50	0.410	143.69	10.00	23.07	0.140	166.617	1.435E-05	*Step down*
C	1	139.45	0.510	133.64	10.00	23.07	0.162	156.545	1.869E-05	
	2	139.45	0.490	133.64	10.00	23.07	0.156	156.551	1.796E-05	
	3	139.45	0.760	133.64	10.00	23.07	0.242	156.465	2.787E-05	
	4	139.45	0.110	133.64	10.00	23.07	0.035	156.672	4.028E-06	
	5	139.45	0.540	133.64	20.00	46.13	0.172	179.602	1.725E-05	
	6	139.45	0.440	133.64	20.00	46.13	0.140	179.634	1.405E-05	
	7	139.45	0.580	133.64	20.00	46.13	0.185	179.589	1.853E-05	
	8	139.45	0.330	133.64	30.00	69.20	0.105	202.736	9.339E-06	
	9	139.45	0.290	133.64	30.00	69.20	0.092	202.749	8.207E-06	
	10	139.45	0.250	133.64	30.00	69.20	0.080	202.761	7.074E-06	
	11	139.45	0.900	133.64	30.00	69.20	0.287	202.554	2.549E-05	
	12	139.45	0.520	133.64	20.00	46.13	0.166	179.608	1.661E-05	*Step down*
	13	139.45	0.470	133.64	20.00	46.13	0.150	179.624	1.501E-05	*Step down*
	14	139.45	-0.050	133.64	10.00	23.07	0.016	156.691	1.831E-06	*Step down*
	15	139.45	-0.210	133.64	10.00	23.07	0.067	156.640	7.692E-06	*Step down*

Bedrock Packer Test Calculations

Site SIPC Marion Power Plant
Boring EBR
1.4902 Radius of test hole (in ft.)
8.4700 Length of test zone (in ft.)

NOTE:
Zero flow rate

Test #		Depth [Interval midpoint] (feet BGS)	Constant flow rate Q (in gal/min)	Static Head H_s (in feet)	Guage pressure p (in psi)	Pressure head $H_p = p*2.31$ (in feet)	Friction loss H_f (in feet)	Differential head $H_s + H_p - H_f$ (in feet)	Hydraulic Conductivity K (in cm/sec)	Comments
D	1	128.80	0.640	122.99	10.00	23.07	0.188	145.869	2.471E-05	
	2	128.80	0.580	122.99	10.00	23.07	0.171	145.886	2.239E-05	
	3	128.80	0.620	122.99	10.00	23.07	0.182	145.875	2.394E-05	
	4	128.80	0.620	122.99	10.00	23.07	0.182	145.875	2.394E-05	
	5	128.80	0.800	122.99	20.00	46.13	0.235	168.889	2.668E-05	
	6	128.80	0.680	122.99	20.00	46.13	0.200	168.924	2.267E-05	
	7	128.80	0.260	122.99	20.00	46.13	0.076	169.048	8.662E-06	
	8	128.80	0.590	122.99	20.00	46.13	0.174	168.950	1.967E-05	
	9	128.80	0.470	122.99	30.00	69.20	0.138	192.053	1.378E-05	
	10	128.80	0.660	122.99	30.00	69.20	0.194	191.997	1.936E-05	
	11	128.80	0.400	122.99	30.00	69.20	0.118	192.073	1.173E-05	
	12	128.80	0.470	122.99	30.00	69.20	0.138	192.053	1.378E-05	
	13	128.80	0.430	122.99	20.00	46.13	0.126	168.998	1.433E-05	*Step down*
	14	128.80	0.550	122.99	20.00	46.13	0.162	168.962	1.833E-05	*Step down*
	15	128.80	-0.060	122.99	10.00	23.07	0.018	146.039	2.314E-06	*Step down*
	16	128.80	0.080	122.99	10.00	23.07	0.024	146.033	3.085E-06	*Step down*
E	1	118.50	0.160	112.69	10.00	23.07	0.043	135.714	6.508E-06	
	2	118.50	0.010	112.69	10.00	23.07	0.003	135.754	4.066E-07	
	3	118.50	0.080	112.69	10.00	23.07	0.022	135.735	3.253E-06	
	4	118.50	0.100	112.69	10.00	23.07	0.027	135.730	4.067E-06	
	5	118.50	0.080	112.69	20.00	46.13	0.022	158.802	2.781E-06	
	6	118.50	0.001	112.69	20.00	46.13	0.000	158.824	3.476E-08	
	7	118.50	0.099	112.69	20.00	46.13	0.027	158.797	3.441E-06	
	8	118.50	0.070	112.69	20.00	46.13	0.019	158.805	2.433E-06	
	9	118.50	0.400	112.69	30.00	69.20	0.108	181.783	1.215E-05	
	10	118.50	0.310	112.69	30.00	69.20	0.084	181.807	9.412E-06	
	11	118.50	0.350	112.69	30.00	69.20	0.095	181.796	1.063E-05	
	12	118.50	0.300	112.69	30.00	69.20	0.081	181.810	9.109E-06	
	13	118.50	0.130	112.69	20.00	46.13	0.035	158.789	4.519E-06	*Step down*
	14	118.50	0.070	112.69	20.00	46.13	0.019	158.805	2.433E-06	*Step down*
	15	118.50	-0.300	112.69	10.00	23.07	0.081	135.676	1.221E-05	*Step down*
	16	118.50	-0.850	112.69	10.00	23.07	0.230	135.527	3.462E-05	*Step down*
F	1	108.30	0.580	102.49	10.00	23.07	0.143	125.414	2.497E-05	
	2	108.30	0.390	102.49	10.00	23.07	0.096	125.461	1.678E-05	
	3	108.30	-0.110	102.49	10.00	23.07	0.027	125.530	4.731E-06	
	4	108.30	0.360	102.49	10.00	23.07	0.089	125.468	1.549E-05	
	5	108.30	0.540	102.49	20.00	46.13	0.134	148.490	1.963E-05	
	6	108.30	0.460	102.49	20.00	46.13	0.114	148.510	1.672E-05	
	7	108.30	0.770	102.49	20.00	46.13	0.190	148.434	2.801E-05	
	8	108.30	0.470	102.49	20.00	46.13	0.116	148.508	1.709E-05	
	9	108.30	0.650	102.49	30.00	69.20	0.161	171.530	2.046E-05	
	10	108.30	0.610	102.49	30.00	69.20	0.151	171.540	1.920E-05	
	11	108.30	0.620	102.49	30.00	69.20	0.153	171.538	1.951E-05	
	12	108.30	1.050	102.49	30.00	69.20	0.260	171.431	3.307E-05	
	13	108.30	0.700	102.49	20.00	46.13	0.173	148.451	2.546E-05	*Step down*
	14	108.30	0.410	102.49	20.00	46.13	0.101	148.523	1.490E-05	*Step down*
	15	108.30	-0.190	102.49	10.00	23.07	0.047	125.510	8.173E-06	*Step down*
	16	108.30	-0.510	102.49	10.00	23.07	0.126	125.431	2.195E-05	*Step down*

Bedrock Packer Test Calculations

Site SIPC Marion Power Plant
Boring EBR
1.4902 Radius of test hole (in ft.)
8.4700 Length of test zone (in ft.)

NOTE:
Zero flow rate

Test #		Depth [Interval midpoint] (feet BGS)	Constant flow rate Q (in gal/min)	Static Head H_s (in feet)	Guage pressure p (in psi)	Pressure head $H_p = p*2.31$ (in feet)	Friction loss H_f (in feet)	Differential head $H_s + H_p - H_f$ (in feet)	Hydraulic Conductivity K (in cm/sec)	Comments
G	1	97.85	0.310	92.04	10.00	23.07	0.069	115.038	1.418E-05	
	2	97.85	0.220	92.04	10.00	23.07	0.049	115.058	1.006E-05	
	3	97.85	0.610	92.04	10.00	23.07	0.136	114.971	2.792E-05	
	4	97.85	0.500	92.04	10.00	23.07	0.112	114.995	2.288E-05	
	5	97.85	0.490	92.04	20.00	46.13	0.109	138.065	1.867E-05	
	6	97.85	0.480	92.04	20.00	46.13	0.107	138.067	1.829E-05	
	7	97.85	0.510	92.04	20.00	46.13	0.114	138.060	1.944E-05	
	8	97.85	0.550	92.04	20.00	46.13	0.123	138.051	2.096E-05	
	9	97.85	0.690	92.04	30.00	69.20	0.154	161.087	2.254E-05	
	10	97.85	0.630	92.04	30.00	69.20	0.141	161.100	2.058E-05	
	11	97.85	0.580	92.04	30.00	69.20	0.130	161.111	1.894E-05	
	12	97.85	1.220	92.04	30.00	69.20	0.273	160.968	3.988E-05	
	13	97.85	0.640	92.04	20.00	46.13	0.143	138.031	2.440E-05	*Step down*
	14	97.85	0.300	92.04	20.00	46.13	0.067	138.107	1.143E-05	*Step down*
	15	97.85	-0.150	92.04	10.00	23.07	0.034	115.073	6.859E-06	*Step down*
	16	97.85	-0.150	92.04	10.00	23.07	0.034	115.073	6.859E-06	*Step down*
H	1	87.70	0.310	81.89	10.00	23.07	0.062	104.895	1.511E-05	
	2	87.70	0.240	81.89	10.00	23.07	0.048	104.909	1.170E-05	
	3	87.70	0.240	81.89	10.00	23.07	0.048	104.909	1.170E-05	
	4	87.70	0.250	81.89	10.00	23.07	0.050	104.907	1.218E-05	
	5	87.70	0.280	81.89	20.00	46.13	0.056	127.968	1.119E-05	
	6	87.70	0.200	81.89	20.00	46.13	0.040	127.984	7.990E-06	
	7	87.70	0.160	81.89	20.00	46.13	0.032	127.992	6.392E-06	
	8	87.70	0.320	81.89	20.00	46.13	0.064	127.960	1.279E-05	
	9	87.70	0.420	81.89	30.00	69.20	0.084	151.007	1.422E-05	
	10	87.70	0.460	81.89	30.00	69.20	0.092	150.999	1.558E-05	
	11	87.70	0.420	81.89	30.00	69.20	0.084	151.007	1.422E-05	
	12	87.70	0.910	81.89	30.00	69.20	0.182	150.909	3.083E-05	
	13	87.70	0.320	81.89	20.00	46.13	0.064	127.960	1.279E-05	*Step down*
	14	87.70	0.330	81.89	20.00	46.13	0.066	127.958	1.319E-05	*Step down*
	15	87.70	0.020	81.89	10.00	23.07	0.004	104.953	9.743E-07	*Step down*
	16	87.70	-0.130	81.89	10.00	23.07	0.026	104.931	6.334E-06	*Step down*
I	1	77.55	0.100	71.74	10.00	23.07	0.018	94.789	5.216E-06	
	2	77.55	0.030	71.74	10.00	23.07	0.005	94.802	1.565E-06	
	3	77.55	0.010	71.74	10.00	23.07	0.002	94.805	5.215E-07	
	4	77.55	0.000	71.74	10.00	23.07	0.000	94.807	0.000E+00	*No take*
	5	77.55	0.000	71.74	20.00	46.13	0.000	117.874	4.194E-10	*No take*
	6	77.55	0.070	71.74	20.00	46.13	0.012	117.862	2.936E-06	
	7	77.55	0.030	71.74	20.00	46.13	0.005	117.869	1.258E-06	
	8	77.55	0.110	71.74	20.00	46.13	0.019	117.855	4.615E-06	
	9	77.55	0.180	71.74	30.00	69.20	0.032	140.909	6.316E-06	
	10	77.55	0.000	71.74	30.00	69.20	0.000	140.941	3.508E-10	*No take*
	11	77.55	0.000	71.74	30.00	69.20	0.000	140.941	3.508E-10	*No take*
	12	77.55	0.000	71.74	30.00	69.20	0.000	140.941	3.508E-10	*No take*
	13	77.55	0.230	71.74	20.00	46.13	0.041	117.833	9.651E-06	*Step down*
	14	77.55	0.220	71.74	20.00	46.13	0.039	117.835	9.231E-06	*Step down*
	15	77.55	0.040	71.74	10.00	23.07	0.007	94.800	2.086E-06	*Step down*
	16	77.55	-0.400	71.74	10.00	23.07	0.071	94.736	2.088E-05	*Step down*

Bedrock Packer Test Calculations

Site SIPC Marion Power Plant
Boring EBR
1.4902 Radius of test hole (in ft.)
8.4700 Length of test zone (in ft.)

NOTE:
Zero flow rate

Test #		Depth [Interval midpoint] (feet BGS)	Constant flow rate Q (in gal/min)	Static Head H_s (in feet)	Guage pressure p (in psi)	Pressure head $H_p = p*2.31$ (in feet)	Friction loss H_f (in feet)	Differential head $H_s + H_p - H_f$ (in feet)	Hydraulic Conductivity K (in cm/sec)	Comments
J	1	67.20	0.000	61.39	10.00	23.07	0.000	84.457	5.619E-10	
	2	67.20	0.010	61.39	10.00	23.07	0.002	84.455	5.619E-07	
	3	67.20	-0.070	61.39	10.00	23.07	0.011	84.446	3.934E-06	
	4	67.20	0.030	61.39	10.00	23.07	0.005	84.452	1.686E-06	
	5	67.20	0.010	61.39	20.00	46.13	0.002	107.522	4.414E-07	
	6	67.20	0.190	61.39	20.00	46.13	0.029	107.495	8.388E-06	
	7	67.20	0.090	61.39	20.00	46.13	0.014	107.510	3.973E-06	
	8	67.20	0.030	61.39	20.00	46.13	0.005	107.519	1.324E-06	
	9	67.20	0.070	61.39	30.00	69.20	0.011	130.580	2.544E-06	
	10	67.20	0.030	61.39	30.00	69.20	0.005	130.586	1.090E-06	
	11	67.20	0.040	61.39	30.00	69.20	0.006	130.585	1.454E-06	
	12	67.20	0.060	61.39	30.00	69.20	0.009	130.582	2.181E-06	
	13	67.20	-0.040	61.39	20.00	46.13	0.006	107.518	1.765E-06	*Step down*
	14	67.20	-0.040	61.39	20.00	46.13	0.006	107.518	1.765E-06	*Step down*
	15	67.20	0.020	61.39	10.00	23.07	0.003	84.454	1.124E-06	*Step down*
	16	67.20	0.000	61.39	10.00	23.07	0.000	84.457	5.619E-10	*Step down*
K	1	56.70	0.040	50.89	10.00	23.07	0.005	73.952	2.438E-06	
	2	56.70	0.010	50.89	10.00	23.07	0.001	73.956	6.094E-07	
	3	56.70	-0.060	50.89	10.00	23.07	0.008	73.949	3.656E-06	
	4	56.70	0.020	50.89	10.00	23.07	0.003	73.954	1.219E-06	
	5	56.70	0.010	50.89	20.00	46.13	0.001	97.023	4.645E-07	
	6	56.70	0.000	50.89	20.00	46.13	0.000	97.024	4.645E-10	*No take*
	7	56.70	0.000	50.89	20.00	46.13	0.000	97.024	4.645E-10	*No take*
	8	56.70	0.000	50.89	20.00	46.13	0.000	97.024	4.645E-10	*No take*
	9	56.70	0.370	50.89	30.00	69.20	0.048	120.043	1.389E-05	
	10	56.70	0.440	50.89	30.00	69.20	0.057	120.034	1.652E-05	
	11	56.70	0.330	50.89	30.00	69.20	0.043	120.048	1.239E-05	
	12	56.70	0.510	50.89	30.00	69.20	0.066	120.025	1.915E-05	
	13	56.70	0.000	50.89	20.00	46.13	0.000	97.024	4.645E-10	*Step down*
	14	56.70	0.030	50.89	20.00	46.13	0.004	97.020	1.393E-06	*Step down*
	15	56.70	0.020	50.89	10.00	23.07	0.003	73.954	1.219E-06	*Step down*
	16	56.70	0.000	50.89	10.00	23.07	0.000	73.957	6.093E-10	*Step down*
L	1	46.25	0.760	40.44	10.00	23.07	0.080	63.427	5.049E-05	
	2	46.25	0.810	40.44	10.00	23.07	0.086	63.421	5.382E-05	
	3	46.25	0.750	40.44	10.00	23.07	0.079	63.428	4.983E-05	
	4	46.25	0.710	40.44	10.00	23.07	0.075	63.432	4.717E-05	
	5	46.25	1.480	40.44	20.00	46.13	0.156	86.418	7.217E-05	
	6	46.25	1.290	40.44	20.00	46.13	0.136	86.438	6.289E-05	
	7	46.25	1.170	40.44	20.00	46.13	0.124	86.450	5.703E-05	
	8	46.25	1.160	40.44	20.00	46.13	0.123	86.451	5.654E-05	
	9	46.25	0.770	40.44	10.00	23.07	0.081	63.426	5.116E-05	*Step down*
	10	46.25	0.710	40.44	10.00	23.07	0.075	63.432	4.717E-05	*Step down*
M	1	35.75	0.390	29.94	10.00	23.07	0.032	52.975	2.821E-05	
	2	35.75	0.540	29.94	10.00	23.07	0.044	52.963	3.907E-05	
	3	35.75	0.420	29.94	10.00	23.07	0.034	52.973	3.038E-05	
	4	35.75	0.430	29.94	10.00	23.07	0.035	52.972	3.110E-05	
	5	35.75	0.580	29.94	20.00	46.13	0.047	76.027	2.923E-05	
	6	35.75	0.480	29.94	20.00	46.13	0.039	76.035	2.419E-05	
	7	35.75	0.560	29.94	20.00	46.13	0.046	76.028	2.822E-05	
	8	35.75	0.550	29.94	20.00	46.13	0.045	76.029	2.772E-05	
	9	35.75	0.410	29.94	10.00	23.07	0.033	52.974	2.966E-05	*Step down*
	10	35.75	0.470	29.94	10.00	23.07	0.038	52.969	3.400E-05	*Step down*

Bedrock Packer Test Calculations

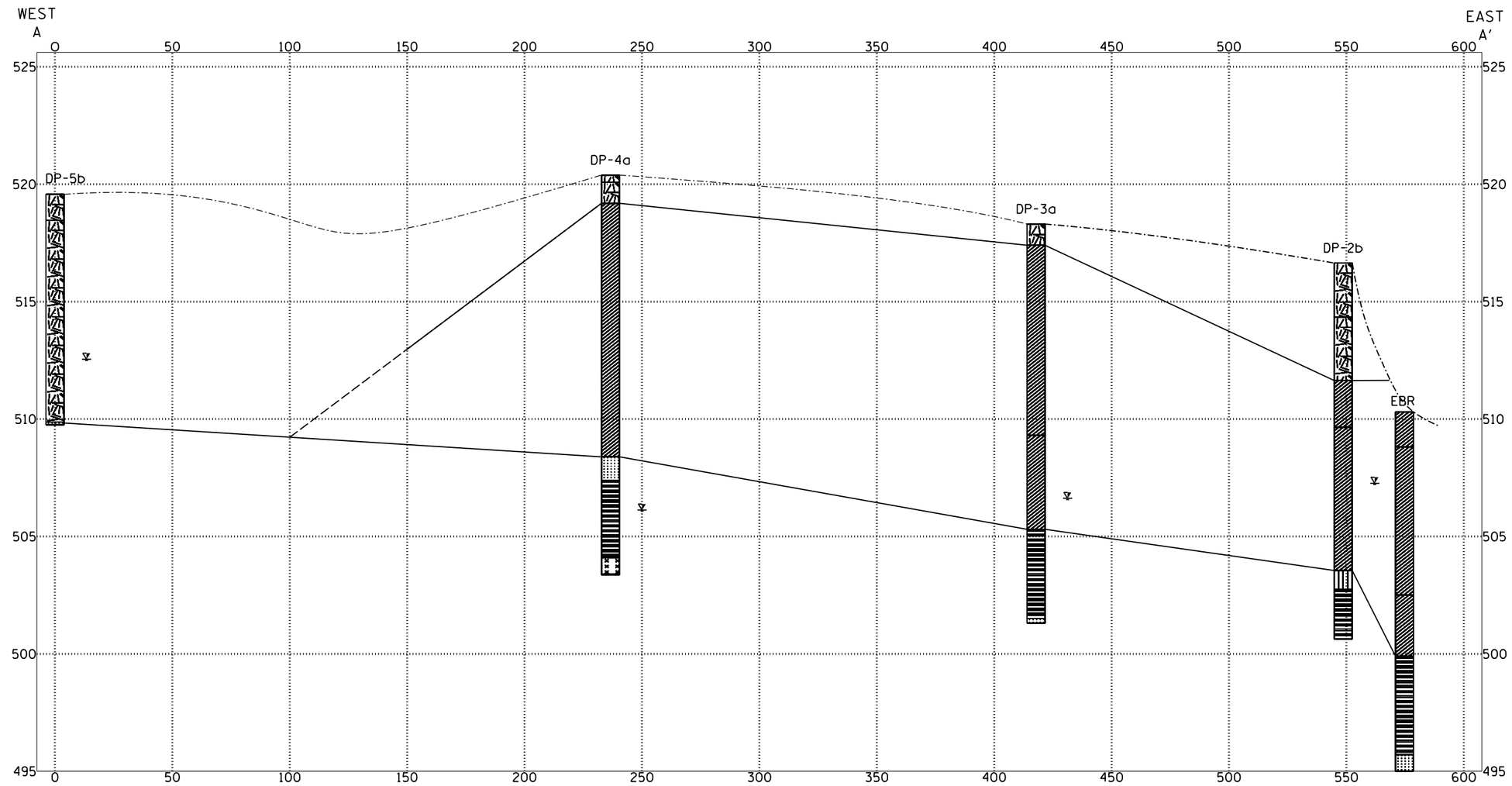
Site: SIPC Marion Power Plant
Boring: EBR
1.4902 Radius of test hole (in ft.)
8.4700 Length of test zone (in ft.)

NOTE:
Zero flow rate.

	Test #	Depth [Interval midpoint] (feet BGS)	Constant flow rate Q (in gal/min)	Static Head H_s (in feet)	Guage pressure p (in psi)	Pressure head $H_p = p*2.31$ (in feet)	Friction loss H_f (in feet)	Differential head $H_s + H_p - H_f$ (in feet)	Hydraulic Conductivity K (in cm/sec)	Comments
N	1	26.20	0.180	20.39	10.00	23.07	0.011	43.446	1.386E-05	
	2	26.20	0.300	20.39	10.00	23.07	0.018	43.439	2.310E-05	
	3	26.20	0.260	20.39	10.00	23.07	0.016	43.441	2.002E-05	
	4	26.20	0.160	20.39	10.00	23.07	0.010	43.447	1.232E-05	
	5	26.20	0.200	20.39	10.00	23.07	0.012	43.445	1.540E-05	
	6	26.20	0.250	20.39	10.00	23.07	0.015	43.442	1.925E-05	
	7	26.20	0.250	20.39	10.00	23.07	0.015	43.442	1.925E-05	
	8	26.20	0.240	20.39	10.00	23.07	0.014	43.443	1.848E-05	
	9	26.20	0.170	20.39	10.00	23.07	0.010	43.447	1.309E-05	

Appendix D

Geologic Cross Sections



EXPLANATION

LITHOLOGY

- FILL
- CLAY
- SILT
- SAND
- SANDSTONE
- SHALE

EX — EXISTING GROUND

PB — POND BOUNDARY

POTENTIOMETRIC SURFACE (27 FEB 2019 - 1 MARCH 2019)

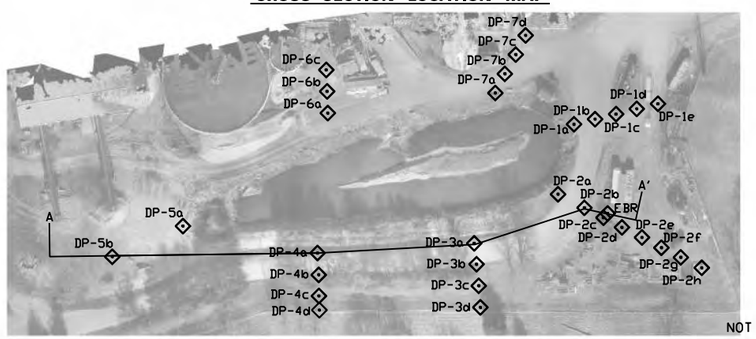
SCALES

VERTICAL ENHANCEMENT = 10X

VERTICAL: 1 IN. = 2.5 FT. (2.5 0 2.5 5)

HORIZONTAL: 1 IN. = 25 FT. (25 0 25 50)

CROSS SECTION LOCATION MAP



NOT TO SCALE

NOTES:

1. GEOLOGY AT INDIVIDUAL BOREHOLES IS NOT REPRESENTATIVE OF ENTIRE SITE.
2. TOPOGRAPHY MAPPED BY HANSON AERIAL SURVEY DATED 10 JANUARY 2019.
3. GEOLOGIC UNITS ARE INTERPOLATED BETWEEN BORING LOCATIONS, ACTUAL SUBSURFACE CONDITIONS MAY VARY FROM THOSE DEPICTED.
4. LITHOLOGICAL INTERPRETATION ARE GENERALIZED IN CROSS SECTION. ADDITIONAL DETAIL MAY BE INCLUDED ON THE APPROPRIATE FIELD BORING LOGS.
5. GROUNDWATER LEVELS REPRSENT WATER LEVELS TAKEN ON 27 FEBRUARY 2019 TO 1 MARCH 2019

DESIGNED	RWH	03/15/2019
DRAWN	CAD	03/15/2019
REVIEWED	RWH	03/15/2019

HANSON
Hanson Professional Services Inc.

CROSS SECTIONS A–A'

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A

FIGURE D–1

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTH B

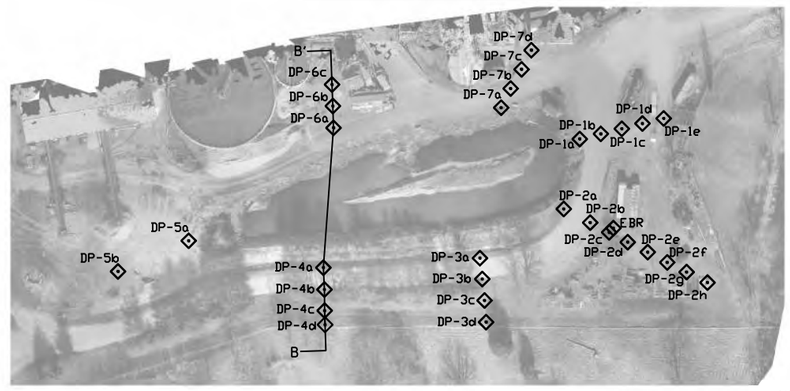
NORTH B'

DP-4d DP-4c DP-4b DP-4a PB PB DP-6a DP-6b DP-6c

525 520 515 510 505 500 495

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280

CROSS SECTION LOCATION MAP



NOT TO SCALE

EXPLANATION

LITHOLOGY

- FILL
- CLAY
- SILT
- SAND
- SANDSTONE
- SHALE

EX — EXISTING GROUND

PB — POND BOUNDARY

POTENTIOMETRIC SURFACE (27 FEB 2019 - 1 MARCH 2019)

SCALES

VERTICAL ENHANCEMENT = 4X

VERTICAL: 1 IN. = 2.5 FT. (2.5 0 2.5 5)

HORIZONTAL: 1 IN. = 10 FT. (10 0 10 20)

NOTES:

1. GEOLOGY AT INDIVIDUAL BOREHOLES IS NOT REPRESENTATIVE OF ENTIRE SITE.
2. TOPOGRAPHY MAPPED BY HANSON AERIAL SURVEY DATED 10 JANUARY 2019.
3. GEOLOGIC UNITS ARE INTERPOLATED BETWEEN BORING LOCATIONS, ACTUAL SUBSURFACE CONDITIONS MAY VARY FROM THOSE DEPICTED.
4. LITHOLOGICAL INTERPRETATION ARE GENERALIZED IN CROSS SECTION. ADDITIONAL DETAIL MAY BE INCLUDED ON THE APPROPRIATE FIELD BORING LOGS.
5. GROUNDWATER LEVELS REPRSENT WATER LEVELS TAKEN ON 27 FEBRUARY 2019 TO 1 MARCH 2019

DESIGNED	RWH	03/15/2019
DRAWN	CAD	03/15/2019
REVIEWED	RWH	03/15/2019

HANSON

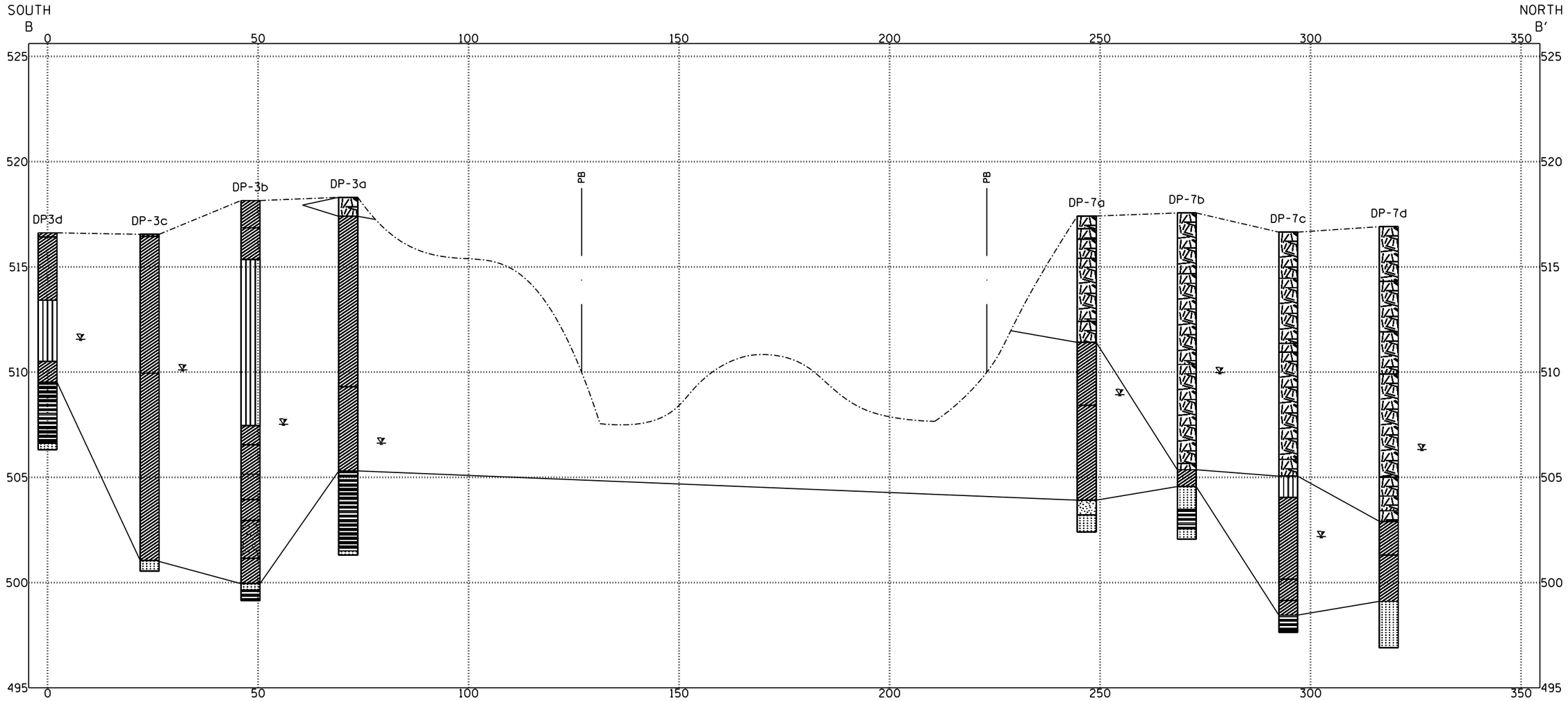
Hanson Professional Services Inc.

CROSS SECTIONS B–B'

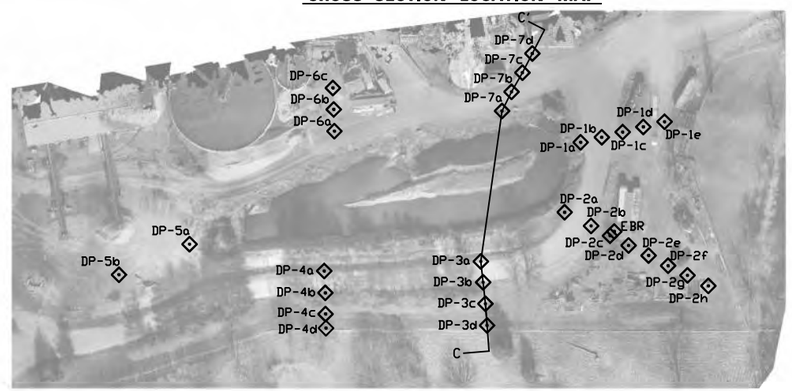
EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A **FIGURE D–2**

Electronic Filing: Received, Clerk's Office 01/13/2023



CROSS SECTION LOCATION MAP



NOT TO SCALE

EXPLANATION

LITHOLOGY

- FILL
- CLAY
- SILT
- SAND
- SANDSTONE
- SHALE

EX — EXISTING GROUND

PB — POND BOUNDARY

POTENTIOMETRIC SURFACE (27 FEB 2019 - 1 MARCH 2019)

SCALES

VERTICAL ENHANCEMENT = 5X

VERTICAL: 1 IN. = 2.5 FT. (2.5 0 2.5 5)

HORIZONTAL: 1 IN. = 12.5 FT. (12.5 0 12.5 25)

NOTES:

1. GEOLOGY AT INDIVIDUAL BOREHOLES IS NOT REPRESENTATIVE OF ENTIRE SITE.
2. TOPOGRAPHY MAPPED BY HANSON AERIAL SURVEY DATED 10 JANUARY 2019.
3. GEOLOGIC UNITS ARE INTERPOLATED BETWEEN BORING LOCATIONS. ACTUAL SUBSURFACE CONDITIONS MAY VARY FROM THOSE DEPICTED.
4. LITHOLOGICAL INTERPRETATION ARE GENERALIZED IN CROSS SECTION. ADDITIONAL DETAIL MAY BE INCLUDED ON THE APPROPRIATE FIELD BORING LOGS.
5. GROUNDWATER LEVELS REPRSENT WATER LEVELS TAKEN ON 27 FEBRUARY 2019 TO 1 MARCH 2019

DESIGNED	RWH	03/15/2019
DRAWN	CAD	03/15/2019
REVIEWED	RWH	03/15/2019

HANSON
Hanson Professional Services Inc.

CROSS SECTIONS C–C'

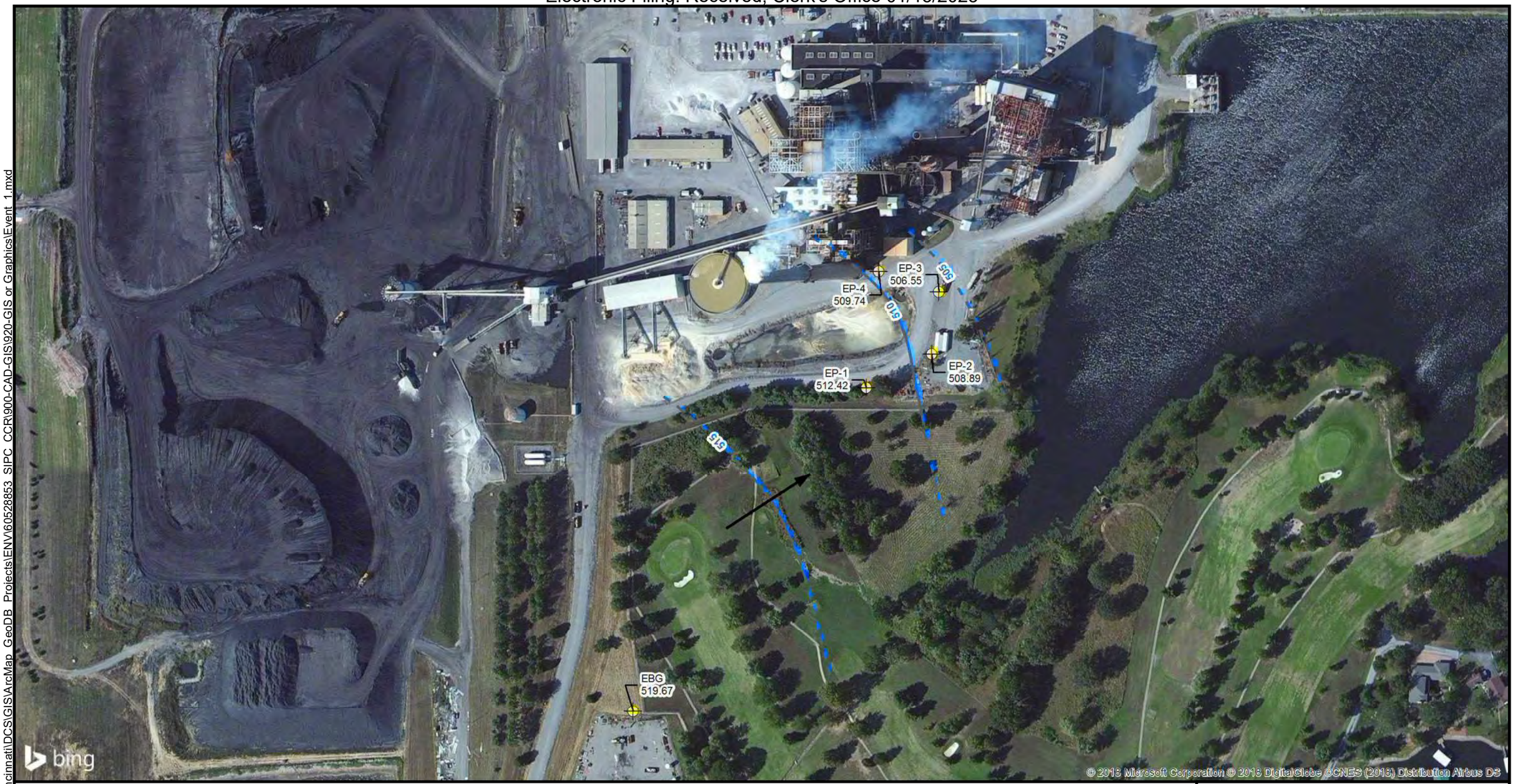
EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A

FIGURE D–3

Appendix E

Potentiometric Surface Maps



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Legend

- Groundwater Monitoring Well
- ;
- Solid
- Inferred Direction of Groundwater Flow

0 200 400
Feet

N

MARION POWER PLANT

APPENDIX B
EVENT 1
EMORY POND POTENTIOMETRIC SURFACE MAP MARCH 24, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	

Legend

- Groundwater Monitoring Well
- Groundwater Contour (ft,msl)
- Inferred Groundwater Contour (ft,msl)
- Inferred Direction of Groundwater Flow

0 200 400
Feet

N

MARION POWER PLANT

APPENDIX B
EVENT 2
EMORY POND POTENTIOMETRIC SURFACE MAP APRIL 24, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	

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Document Path: G:\Cincinnati\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60528853_SIPC_CCR\900-CAD-GIS\920-GIS or Graphics\Event_3.mxd

Legend

- Groundwater Monitoring Well
- Groundwater Contour (ft,msl)
- Inferred Groundwater Contour (ft,msl)
- Inferred Direction of Groundwater Flow

0 200 400
Feet

N

MARION POWER PLANT

APPENDIX B
EVENT 3
EMORY POND POTENTIOMETRIC SURFACE MAP MAY 25, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	

Document Path: G:\Cincinnati\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60528853_SIPC_CCR\900-CAD-GIS\920-GIS or Graphics\Event_4.mxd

Legend

- Groundwater Monitoring Well
- Groundwater Contour (ft,msl)
- Inferred Groundwater Contour (ft,msl)
- Inferred Direction of Groundwater Flow

0 200 400
Feet

N

MARION POWER PLANT

APPENDIX B
EVENT 4
EMORY POND POTENTIOMETRIC
SURFACE MAP JUNE 22, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	

Document Path: G:\Cincinnati\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60528853_SIPC_CCR\900-CAD-GIS\920-GIS or Graphics\Event_5.mxd

Legend

- Groundwater Monitoring Well
- Groundwater Contour (ft,msl)
- Inferred Groundwater Contour (ft,msl)
- Inferred Direction of Groundwater Flow

0 200 400
Feet

N

MARION POWER PLANT

APPENDIX B
EVENT 5
EMORY POND POTENTIOMETRIC
SURFACE MAP JUNE 29, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	

Document Path: G:\Cincinnati\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60528853_SIPC_CCR\900-CAD-GIS\920-GIS or Graphics\Event_6.mxd

Legend

- Groundwater Monitoring Well
- Groundwater Contour (ft,msl)
- Inferred Groundwater Contour (ft,msl)
- Inferred Direction of Groundwater Flow

0 200 400
Feet

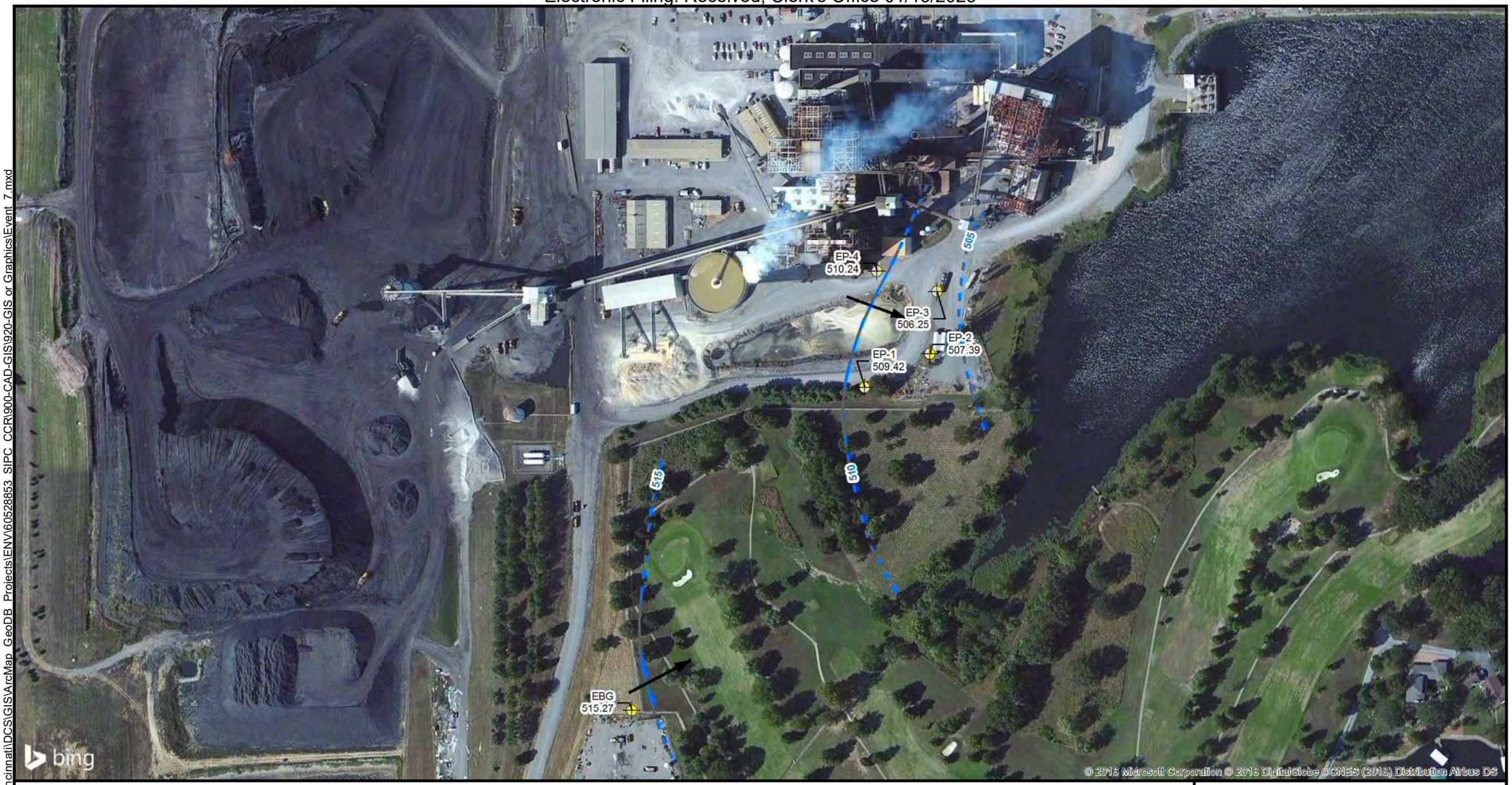
N

MARION POWER PLANT

APPENDIX B
EVENT 6
EMORY POND POTENTIOMETRIC
SURFACE MAP JULY 24, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	

Document Path: G:\Cincinnati\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60528853_SIPC_CCR\900-CAD-GIS\920-GIS or Graphics\Event_7.mxd



Legend

- Groundwater Monitoring Well
- Groundwater Contour (ft,msl)
- Inferred Groundwater Contour (ft,msl)
- Inferred Direction of Groundwater Flow

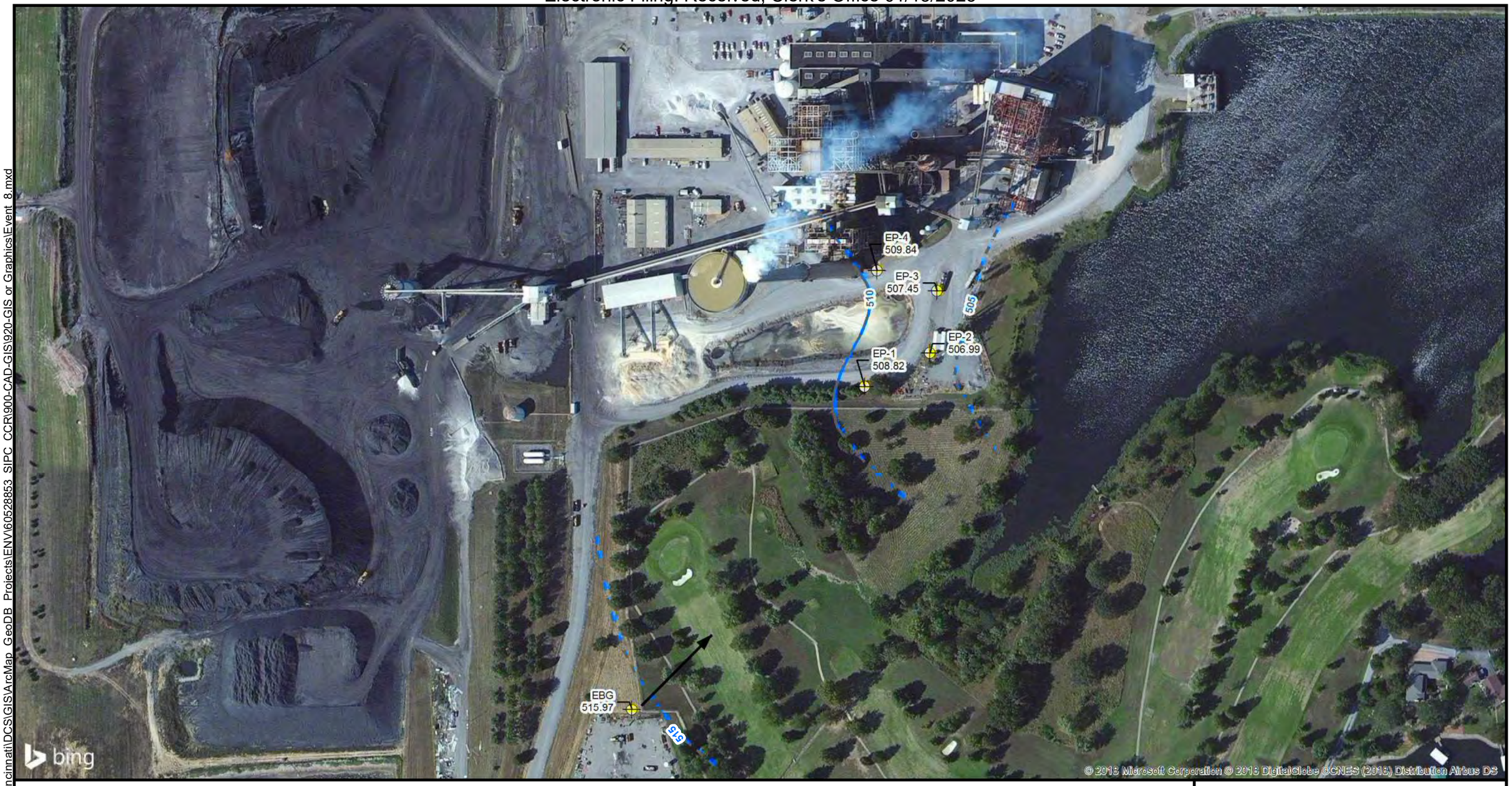
0 200 400
Feet

N

MARION POWER PLANT

APPENDIX B
EVENT 7
EMORY POND POTENTIOMETRIC SURFACE MAP AUGUST 3, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	



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Legend

- Groundwater Monitoring Well
- Groundwater Contour (ft,msl)
- Inferred Groundwater Contour (ft,msl)
- Inferred Direction of Groundwater Flow

0 200 400
Feet

N

MARION POWER PLANT

APPENDIX B
EVENT 8
EMORY POND POTENTIOMETRIC SURFACE MAP AUGUST 31, 2017

DATE: 1/22/2018	1 inch = 200 feet
CREATED BY: TA	CHECKED BY: DPC
JOB NO. 60535846	

Electronic Filing: Received, Clerk's Office 01/13/2023

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POTENTIOMETRIC SURFACE MAP

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0007

FIGURE NO. E-9

HANSON
Hanson Professional Services Inc.

N

SCALE: 1 in. = 135 ft.

0 ft. 100 ft. 200 ft. 300 ft. 400 ft.

CONTOUR INTERVAL = 1 ft.

I:\19jobs\19E0002\Admin\14-Reports\FIG_B1PZ20180322_20190118.srf

Electronic Filing: Received, Clerk's Office 01/13/2023

©Hanson Professional Services Inc., 2019

POTENTIOMETRIC SURFACE MAP

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0007

FIGURE NO. E-10

HANSON
Hanson Professional Services Inc.

N

SCALE: 1 in. = 135 ft.

0 ft. 100 ft. 200 ft. 300 ft. 400 ft.

CONTOUR INTERVAL = 1 ft.

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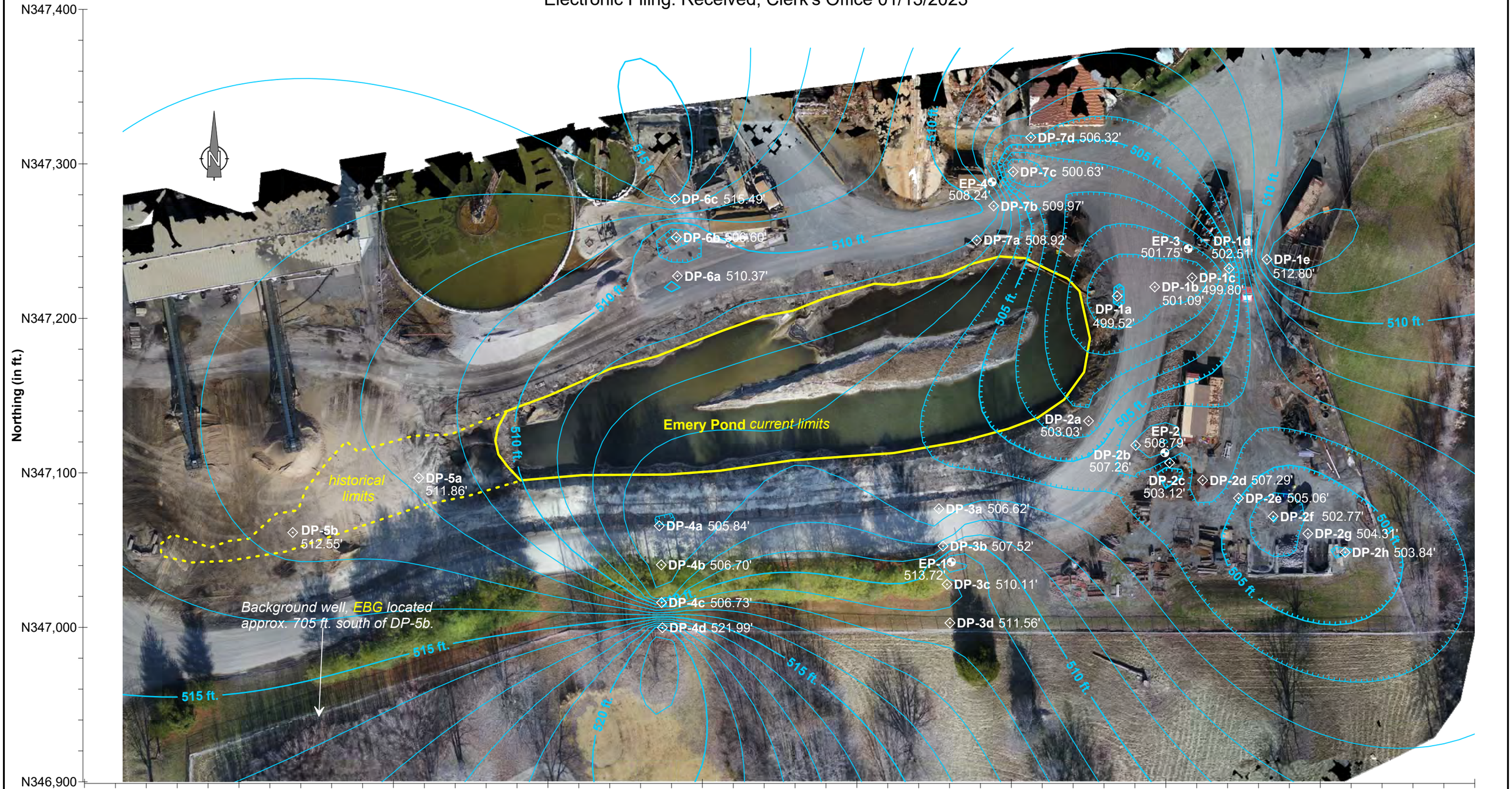
Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Water levels taken 27 Feb to 1 Mar 2019.

SCALE: 1 inch equals 60 feet

0 ft. 60 ft. 120 ft. 180 ft. 240 ft.

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Hanson Professional Services Inc.

Potentiometric Surface Map - 1 March 2019

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE NO. E-11

Electronic Filing: Received, Clerk's Office 01/13/2023

APPENDIX E

Hydrogeologic Investigation Addendum

Electronic Filing: Received, Clerk's Office 01/13/2023

Emery Pond

Hydrogeologic Investigation Addendum

Marion Power Plant
Southern Illinois Power Cooperative
Marion, Williamson County, Illinois

July 9, 2019

HANSON
Engineering | Planning | Allied Services

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Abbreviations

B-R – Bouwer and Rice
CFR – Code of Federal Regulations
$cm^3/cm^2/sec$ – cubic centimeters per square centimeters per second (see also cm/s)
cm/sec – centimeters per second (simplification of $cm^3/cm^2/sec$)
(dim) – Dimensionless
EPA – Environmental Protection Agency
ft. – feet
ft^2 – square feet
GPD – Gallons per day
GPM – Gallons per minute
IAC – Illinois Administrative Code
KGS – Kansas Geological Survey

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1. Introduction

Southern Illinois Power Cooperative (SIPC) submitted documentation prepared by Hanson Professional Services Inc. (Hanson) to the Illinois Environmental Protection Agency Bureau of Water in response to a Violation Notice (No. 6364 dated July 3, 2018) for groundwater exceedances at the Emery Pond (Site). The Bureau of Water provided review comments in a letter SIPC received on June 6, 2019. This report provides a response to Comment 1 regarding the interpretation of Class I versus Class II groundwater [35 IAC 620.210-220] at the Site.

2. Site Hydrogeology

The site is located in the Shawnee Hills section within the Interior Low Plateaus (physiographic) Province (Leighton et al., 1948). Site geology consists of glacially-derived deposits of the Illinoisan Stage overlying Pennsylvanian Age bedrock. Table 1 list the hydro- and litho-stratigraphic units with their descriptions located within 50 feet of the surface at the Site (Willman et al., 1995 and Berg & Kempton, 1988).

Table 1. Site Geologic/Hydrogeologic Units

Litho-stratigraphic Unit	Hydro-stratigraphic Unit	Lithologic Description
Peoria/Roxana Silt	Unlithified Unit	light yellow-tan to gray, fine sandy silt
Glasford Formation (undifferentiated)		silty/sandy diamictons with thin lenticular bodies of silt, sand, and gravel
Caseyville Formation	Bedrock Unit	primarily sandstone with shales

The Emery Pond appears to have been constructed on the Bedrock Unit, with the current pond footprint being relatively flat (elevation 505 ft. on the east and west sides to 507 ft. in the middle) with rather sharp elevation changes within the historical footprint (502 ft. to 510 ft. as depicted in Figure 11 of the Hydrogeologic Investigation Report (Hanson, 2019a). The original groundwater monitoring wells for the Site are screened to monitor the Unlithified Unit adjacent to the Emery Pond.

The Unlithified Unit only has a few feet (3-5 ft.) of saturated thickness, and Hanson's March 2019 evaluation of the hydraulic conductivity indicated that the Unlithified Unit had hydraulic conductivity values lower than 1×10^{-4} $cm^3/cm^2/sec$ at all four of the detection monitoring wells (EP-1, EP-2, EP-3 and EP-4). The Illinois EPA, relying on the Holcomb Foundation Engineering Company's (Holcomb) earlier interpretation of the slug test data, indicated in Comment 1 that the groundwater at EP-1 and EP-4 should be classified as Class I: Potable Resource Groundwater. During June 2019, Hanson further investigated the Site and installed two new monitoring wells adjacent to existing wells EP-1 and EP-4. With this additional information, Hanson continues to interpret the Unlithified Unit as containing Class II: General Resource Groundwater.

3. New Monitoring Wells

On June 10, 2019, Hanson and Holcomb mobilized to the Site to collect additional soil data and install two new monitoring wells adjacent to EP-1 and EP-4 (see Figure 1). For reference, the Boring Logs with well details for the original (AECOM) and new (Hanson) monitoring wells are located in Appendix A.

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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

SCALE: 1 inch equals 60 feet

0 ft. 60 ft. 120 ft. 180 ft. 240 ft.

HANSON
Hanson Professional Services Inc.

Monitoring Well Location Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE NO. 1

3.1 Monitoring Well EP-1a

Hanson believed that EP-1a was necessary because of the well construction of EP-1, which was drilled 15 feet into the Bedrock Unit. Additionally, the filter pack extends 13 feet above the top of the screen for a total filter pack length of 23 feet. The Illinois Water Well Code [77 IAC 920] limits the filter pack to only 2 feet above the top of the screen [77 IAC 920.170(c)(2)]. This excessive filter pack also cross connects groundwater from the Unlithified Unit with the Bedrock Unit. The grouting requirements of the Water Well Code [77 IAC 920.170(d)] requires that migration of fluids from one zone to another be prevented.

EP-1a was drilled and installed at a depth of approximately 16.5 ft. with a 5-foot screen. The bottom of the well is about 1-foot into the Bedrock Unit, and the filter pack extends about 1.5 ft. above the screen.

3.2 Monitoring Well EP-4a

The well construction of EP-4 does conform to 77 IAC 920.170. The issue at this location was to confirm the lithology found during the installation of EP-4 and to collect soil samples for testing.

EP-4a was drilled and installed at a depth of approximately 17 ft. with a 5-foot screen. The bottom of the well is about 1-foot into the Bedrock Unit, and the filter pack extends about 1.25 ft. above the screen.

4. Hydraulic Conductivity Testing

4.1 Horizontal Hydraulic Conductivity Testing

The day after the well installation, EP-4, EP-4a, and EP-1a were slug tested to obtain hydraulic conductivity values. Table 2 summarizes the results of the various hydraulic conductivity testing (Hanson, 2019b) at the Site. The most recent slug test results are located in Appendix B.

Table 2. Slug Test Results

Well ID	Testing Company	Method	Falling Head ($cm^3/cm^2/sec$)	Rising Head^ ($cm^3/cm^2/sec$)	Average ($cm^3/cm^2/sec$)	Geometric Mean ($cm^3/cm^2/sec$)
EP-1	Holcomb	B-R	2.36×10^{-4}			
EP-1	Hanson	B-R	2.80×10^{-5}	3.45×10^{-5}	3.13×10^{-5}	3.11×10^{-5}
EBR*	Hanson	Packer			1.72×10^{-5}	1.68×10^{-5}
EP-1a	Hanson	KGS	7.60×10^{-5}	7.50×10^{-6}	7.55×10^{-6}	7.55×10^{-6}
EP-4	Holcomb	B-R	2.63×10^{-4}			
EP-4	Hanson	B-R	3.30×10^{-5}	3.25×10^{-5}	3.28×10^{-5}	3.27×10^{-5}
EP-4	Hanson	KGS	1.10×10^{-4}	9.10×10^{-6}	5.96×10^{-5}	3.16×10^{-5}
EP-4a	Hanson	KGS	1.40×10^{-3}	9.40×10^{-4}	1.17×10^{-3}	1.15×10^{-3}

^ Rising head test data for EP-1a failed to record. Result is a second falling head test.
* Depth of EBR Packer Test at 26.2 ft. is equivalent to the depth of the screen (in the sandstone) at EP-1.

Hanson selected the Kansas Geological Survey Model (Hyder et al., 1994) for the slug test analyses. The KGS Model uses curve matching over the entire test dataset and not just the second (transitional) portion of the data curve (referred to as the Double Straight Line Effect) as the Bouwer and Rice (1976

and Bouwer, 1989) Method requires. This match to the entire data curve is less subjective than the straight-line fit to the relevant portion of the data curve of the B-R Method and reduces the variability in results by the analyst, as seen in the hydraulic conductivity values calculated by Holcomb and Hanson using the same datasets for EP-1 and EP-4. Other interpretive issues could arise if the analyst only relies on the original Bouwer and Rice (1976) paper. Bouwer (1989) explains that there were two problems with 1976 paper, 1) it said the fit line should match the first or steepest part of the data curve, resulting in a much higher hydraulic conductivity value, and 2) an equation to estimate the slug test duration had an error that underestimated the time the test should take, that could create an insufficient dataset.

Comparison of different tests methods at EP-1 appear to indicate that Hanson's Bouwer-Rice results were similar to the bedrock packer test (Sevee, 1991) done at boring EBR (results at 26.2 ft. or elevation 484.1 ft. were in the low-10^{-5} range). The packer test is a calculation with no interpretation. The results at EP-1a are more representative of what would be expected of a well screened in the unlithified materials found at the Site. Hydraulic conductivity results at EP-1a were found in the high-10^{-6} range, well below the Class I groundwater requirement of 1 x 10^{-4} $cm^3/cm^2/sec$. This means that 4 of the 5 monitoring wells had hydraulic conductivity test results of less than 1 x 10^{-4} $cm^3/cm^2/sec$, as identified in 35 IAC 620.210(a)(4)(B).

4.2 Vertical Hydraulic Conductivity Testing

As part of the new monitoring well installations, thin-wall (Shelby) tube samples were collected at representative depths at each well location. The upper samples (6-8 ft. depth at both locations) were taken to evaluate possible infiltration rates for potential groundwater modeling and the deeper samples (12-14 ft. at EP-1a and 14-16 ft. at EP-4a) were collected to evaluate potential anisotropy in the water bearing zone. Table 3 lists the results of the laboratory testing following ASTM D5084. The complete Holcomb laboratory report is located in Appendix C.

Table 3. Permeameter Test Results

Well ID	Depth (ft.)	Avg. Hydraulic Conductivity ($cm^3/cm^2/sec$)
EP-1a	6.5 – 7.0	6.91 x 10^{-8}
EP-1a	13.0 – 13.5	1.02 x 10^{-7}
EP-4a	7.5 – 8.0	5.52 x 10^{-8}
EP-4a	14.0 – 14.5	no test

The deep sample from EP-4a was unable to be tested. The sample contained several sandstone cobbles, likely placed during the fill process during plant construction. The presence of these sandstone cobbles may be related to why the horizontal hydraulic conductivity values observed during the slug tests at these wells are higher than the values observed during slug testing of the adjacent EP-4.

The vertical hydraulic conductivity results indicate there is anisotropy with respect to groundwater flow within the unlithified materials overlying bedrock. This anisotropy limits vertical recharge of surface water and/or precipitation through these materials. Hanson believes that recharge of the Unlithified Unit occurs in and around the area of the gypsum loadout where more permeable bottom ash is found directly above the Bedrock Unit. This anisotropy may also be related to why several of the extent of contamination study borings were unable to make water.

The observed anisotropy between horizontal and vertical hydraulic conductivity is typically observed in bedded geologic materials. However, anisotropy can also be associated with different flow mechanisms in fine-grained materials (e.g., fractures, piping, etc.) (Ohio EPA, 2006). At 1- to 2-orders of magnitude difference between horizontal and vertical hydraulic conductivities, the Hanson horizontal hydraulic conductivity results should be considered more representative.

5. Simulation of a Pumping Test

Along with slug testing the monitoring wells to evaluate the local hydraulic conductivity, Hanson has also prepared a pump test model to evaluate the criteria of 35 IAC 620.210(a)(4)(A). The pump test model evaluates several site-specific parameters relative to the requirement of sustained pumping of 150 gallons per day from a 12-inch diameter borehole from a thickness of 15 feet or less. Hanson used a finite-difference model created by P-Squared Technologies, Inc. (P^2, 1996) that is based on Rathod and Rushton (1984). Table 4 lists the input parameters for the pump test simulation and Table 5 presents input changes made for sensitivity analyses. Simulation output files are located in Appendix D.

Table 4. Model Input Parameters

Parameter	Value	Model Input	Description
Aquifer horiz. K	3 x 10^{-3} cm/s	0.636 GPD/ft^2	Maximum value from slug tests in geologic materials
Aquifer vert. K	3 x 10^{-5} cm/s	0.00636 GPD/ft^2	Horizontal versus vertical hydraulic conductivity
Base of Aquifer	15 ft.	15 ft.	Values combine to represent site-specific values. Maximum water level measure in wells was approximately 10 ft., with only about 5 ft. of saturated thickness observed during drilling.
Top of Aquifer	10 ft.	10 ft.	
Initial Water Level	5 ft.	5 ft.	
Well Radius	6 in.	0.5 ft.	Per 35 IAC 620.210(a)(4)(A)
Production Rate	150 GPD	0.10417 GPM	Per 35 IAC 620.210(a)(4)(A)
Aquifer Storativity	0.001 (dim)	0.001 (dim)	Default value in model
Artesian Storativity	0.001 (dim)	0.001 (dim)	Default value in model
Aquifer Type	none	Semi-confined	Site-specific interpretation

Table 5. Model Sensitivity Parameters

Parameter	Base-line Value	Sensitivity Value	Change(s)
Aquifer Type	Semi-confined	Unconfined	Nominal (Δh = -0.42 ft.) and simulation terminated at 573 min.
Aquifer Parameter	Anisotropic hK <> vK	Isotropic hK = vK	Nominal (Δh = -0.24 ft.) and simulation terminated at 573 min.
hK and vK	0.636 & 0.00636 GPD/ft^2	2.12* & 0.0212 GPD/ft^2	Well pumped 150 GPD for a full day
Aquifer Thickness	10 ft.	15 ft.	Small (Δh = 1.58 ft.) and simulation terminated at 909 min.

* 2.12 GPD/ft^2 = 1.0 x 10^{-4} cm/s.

The simulations show that for most of the sensitivity changes the model was not particularly sensitive, with simulations terminating for excess drawdown at some time less than 1,440 minutes (1 day). The model was more sensitive to changes in horizontal hydraulic conductivity, with the model pumping 150 gallons in the 1,440 minute (1 day) model period for the hK = 1 x 10^{-4} cm^3/cm^2/sec scenario. Based on the findings of the pump test simulation modeled with site-specific inputs, Hanson confirms that shallow groundwater in the Unlithified Unit at the Site cannot sustain a pumping rate of 150 GPD and therefore is Class II: General Resource Groundwater.

A pump test simulation was also performed to evaluate the Bedrock Unit. Hanson found that from a 12-inch diameter borehole, 15 ft. thick, with a geometric mean hydraulic conductivity of 3.1 x 10^{-5} cm/s (from the interval of 21.5 to 51.5 ft. in boring EBR) the simulation was incapable of sustaining a 150 GPD pumping rate. Therefore, although the groundwater associated with the Bedrock Unit is Class I: Potable Resource Groundwater, the shallower portions of the Bedrock Unit should not be considered an aquifer.

6. Groundwater Classification

Hanson has found that that 4 of the 5 monitoring wells monitoring the Unlithified Unit had hydraulic conductivity test results of less than 1 x 10^{-4} cm^3/cm^2/sec. The exceptions were EP-4 and EP-4a. Both wells had results greater than 1 x 10^{-4} cm^3/cm^2/sec. However, Hanson has found that test results from EP-3, EP-4, and EP-4a are not germane to groundwater classification, since all three wells are screened in man-made or fill materials. The US Geological Survey (USGS) does not consider fill† to be a geologic material (see Soller, 2009).

The Illinois Groundwater Quality Rules [35 IAC 620.110] equate the terms aquifer and groundwater with the phrase “saturated geological materials”.

> “Aquifer” means saturated (with groundwater) soils and geologic materials which are sufficiently permeable to readily yield economically useful qualities of water to wells, springs, or streams under ordinary hydraulic gradients [415 ILCS 55/3(b)]
>
> “Groundwater” means underground water which occurs within the saturated zone and geologic materials where the fluid pressure in the pore space is equal to or greater than atmospheric pressure. [415 ILCS 5/3.210]

35 IAC 620.210 goes further and requires that Class I: Potable Resource Groundwater be in a “geologic material” [35 IAC 620.210(a)(4)]. Therefore, based on the hydraulic conductivity results of wells screened in unlithified geologic materials and other wells screened in fill or made land, none of the shallow groundwater at the Emery Pond is Class I: Potable Resource Groundwater as defined in 35 Ill. Adm. Code 620.210(a). Therefore, all groundwater found within the Unlithified Unit at the Site is Class II: General Resource Groundwater.

† Other Materials identified by USGS are “rock and sediment (undifferentiated)”, “rock (undifferentiated)”, “made or human-engineered land”, “water or ice”, and “unmapped areas” (Soller, 2009).

7. Conclusion

Hanson has installed two additional monitoring wells to provide a better interpretation of groundwater at the Site. The new wells were installed to 1) provide an evaluation of the Unlithified Unit at the Site (EP-1a) and 2) provide additional hydraulic conductivity data (EP-1a and EP-4a). From this additional information, Hanson reaches the following conclusions:

1. EBG, EP-1, and EP-3 were improperly installed to evaluate groundwater solely from the Unlithified Unit.

2. Hanson's original evaluation of the hydraulic conductivity at EP-1 more closely matches the bedrock packer test data from EBR at an equivalent depth.

3. New hydraulic conductivity data was obtained from EP-1a using a slug test solution method less prone to variation in user analysis (i.e., the line fit used in B-R method versus the curve match in KGS method).

4. The Emery Pond does not lie within the minimum setback zone of a potable water supply well per 35 IAC 620.210(a)(1). The nearest potable water well is at the Lake of Egypt Country Club, over 2,400 feet away from the Emery Pond.

5. The Unlithified Unit does not contain sands and gravels greater than or equal to 5 ft. thick per 35 IAC 620.210(a)(2), and does not contain sandstone greater than or equal to 10 ft. thick or fractured carbonate rock greater than or equal to 15 ft. thick per 35 IAC 620.210(a)(3).

6. EP-3, EP-4, and EP-4a are constructed in "human-engineered land" or fill which cannot contain "groundwater" as defined in 35 IAC 620.110.

7. The hydraulic conductivity results obtained from EP-1a and EP-2, are less than 1×10^{-4} $cm^3/cm^2/sec$, and indicates groundwater at the Site is Class II: General Resource Groundwater per 35 IAC 620.210(a)(4)(B).

8. A pump test simulation, using site-specific input parameters, further confirms that the Unlithified Unit groundwater at the Site should be classified as Class II: General Resource Groundwater per 35 IAC 620.210(a)(4)(A).

9. Based on the definitions of "aquifer" and "groundwater" found at 35 IAC 610.110, an aquifer contains groundwater, but not all strata that contain groundwater are aquifers. The latter describes groundwater found within the Unlithified Unit and the upper Bedrock Unit at the Site (above elevation 450 ft. NVGD), further supporting the conclusion that there is no aquifer as defined by 40 CFR 257.2.

8. Licensed Professional Signature/Seal

The geological work product contained in this document has been prepared under my personal supervision and has been prepared and administered in accordance with the standards of reasonable professional skill and diligence.

Rhonald W. Hasenyager, P.G.
Hanson Professional Services Inc.
1525 South Sixth Street
Springfield, IL 62703-2886
(217) 788-2450
Registration No. 196-000246

Seal:

Expires 31 March 2021

Signature: _____ Date: 9 July 2019

9. References

Berg, R.C. and J.P. Kempton, 1988. "Stack-Unit Mapping of Geological Materials in Illinois to a Depth of 15 Meters" Circular 542, Illinois State Geological Survey, Urbana, IL, 23 pp. + 4 maps.

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Appendix A

Boring Logs with Well Construction Details

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-1

Sheet 1 of 1

Date(s) Drilled and Installed	**2/7/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**31.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**519.72 ft, msl** **517.07 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347042.306 ft** **804661.174 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
	0		NR	Topsoil		Black TOPSOIL, moist
			NR	CL		Brownish tan silty CLAY, moist, medium plasticity (CL)
	5		NR			
510			NR			becomes orangish with trace coarse sand and gravel, with rust colored mottles
	10		NR			becomes very stiff
			NR			becomes medium-stiff, low plasticity
	15		NR	ML		Brownish tan to oragne clayey SILT, trace gravel and rust colored mottles, stiff, non-plastic, moist (ML)
500			NR	SP		Red orange SAND with orange-brown silty clay, moist (SP)
	20		NR	SNDSTN		SANDSTONE, with interbedded limestone and shale
			NR			
	25		NR			
490			NR			
	30		NR			
	35					Boring terminated at 31.0 ft. bgs on 2/7/2017. Monitoring well installed to 31.0 ft. bgs on 2/7/2017. NR = Not Recorded

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- Filter Sand
- 2.0" diameter SCH 40 PVC Riser
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-2

Sheet 1 of 1

Date(s) Drilled and Installed	**2/7/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**15.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**513.79 ft, msl** **511.15 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347113.029 ft** **804799.408 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	SAMPLES: Sample Interval	SAMPLES: % Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
510	0		NR	Fill		Asphalt and GRAVEL (FILL)
			NR	CL		Brown to tan silty CLAY, medium stiff, moist (CL)
			NR	CL		brown to tan silty CLAY, soft to medium, medium to high plasticity, moist (CL)
	5		NR			medium plasticity, with rust color oxidation, trace sand and gravel
			NR			
	10		NR			
500			NR	ML		Tan clayey SILT, stiff, low plasticity, moist (ML)
	15		NR	SNDSTN		SANDSTONE
490	20					Boring terminated at 15.0 ft. bgs on 2/7/2017. Monitoring well installed to 15.0 ft. bgs on 2/7/2017. NR = Not Recorded
	25					
480	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- 2.0" diameter SCH 40 PVC Riser
- Filter Sand
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Electronic Filing: Received, Clerk's Office 01/13/2023

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-3

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**26.5 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**518.95 ft, msl** **518.95 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347245.08 ft** **804814.534 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
	0		NR	Fill		GRAVEL (FILL)
			NR	ML		Brown clayey SILT, moist (ML)
			NR	CL		Olive green to gray silty CLAY, trace sand, medium, low to medium plasticity, moist (CL)
	5		NR			
			NR			
510			NR			2 inch layer of cinders, clay becomes tan-brown
	10		NR			becomes loose, moist, brown/gray/tan, with gravel, some sand and cinders
			NR			
			NR	ML		Light gray to tan clayey SILT, stiff, low plasticity, moist (ML)
	15		NR	ML		Gray SILT, trace clay, stiff, non-plastic, moist (ML)
500			NR	CL		Gray silty CLAY with yellow-gold gypsum, moist to wet (CL)
	20		NR	SNDSTN		SANDSTONE
			NR			
	25		NR			
			NR			
490						Boring terminated at 26.5 ft. bgs on 2/8/2017. Monitoring well installed to 26.5 ft. bgs on 2/8/2017. NR = Not Recorded
	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- 2.0" diameter SCH 40 PVC Riser
- Bentonite Chips
- Filter Sand
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen

SIPC MARION SIPC MARION.GPJ 10/9/17

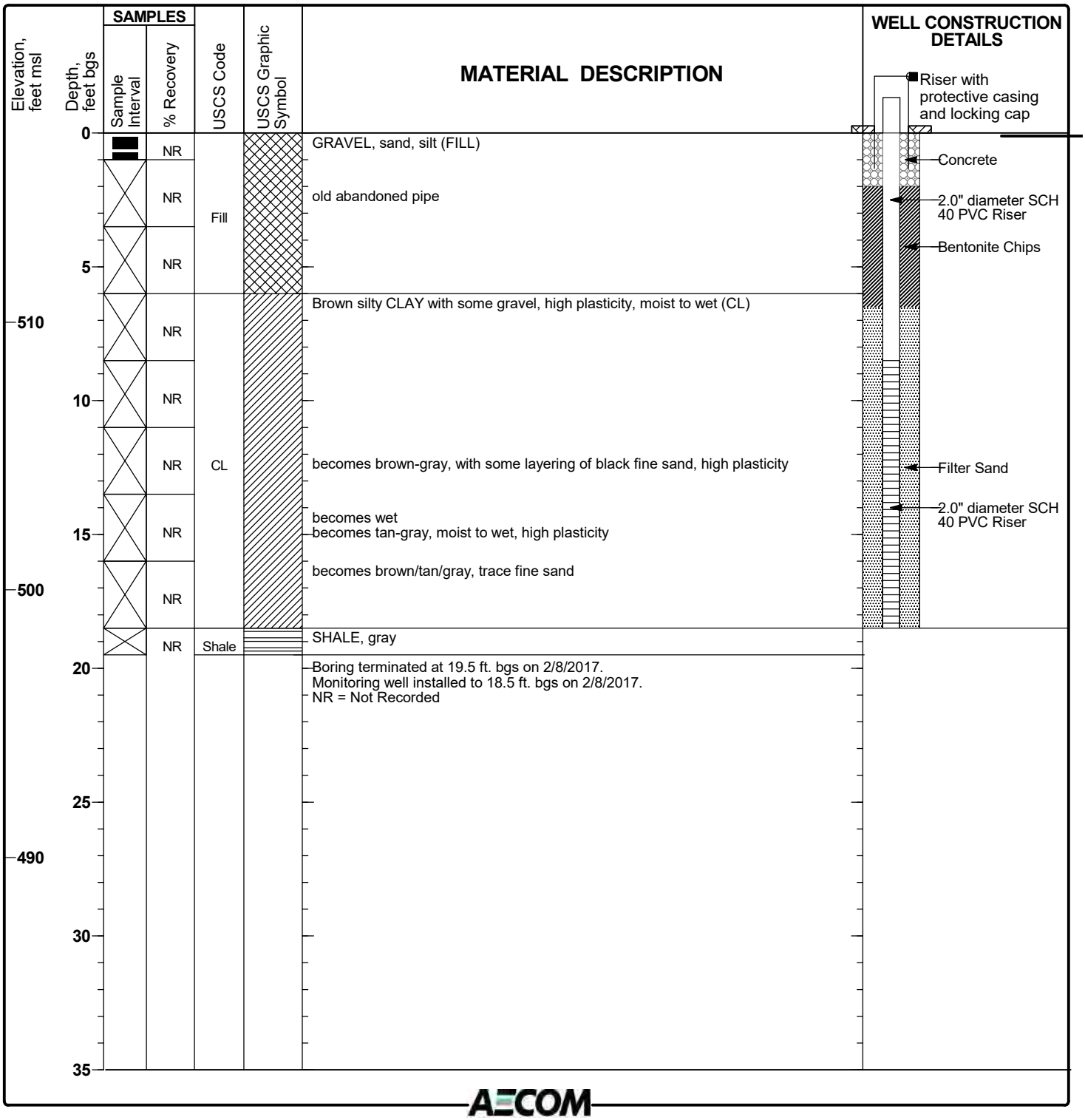
AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EP-4

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**18.5 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**519.74 ft, msl** **517.07 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**347288.297 ft** **804687.527 ft**
Seal or Backfill	**Bentonite Chips**				



SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

Client: Southern Illinois Power Cooperative
Project Name: SIPC Marion CCR
Project Location: SIPC Marion
Project Number: 60535846

Log of EBG

Sheet 1 of 1

Date(s) Drilled and Installed	**2/8/2017**	Logged By	**Suzanne Dale**	Reviewed By	
Drilling Method	**Hollow Stem Auger**	Drilling Contractor	**Holcomb Engineering**	Total Depth of Borehole	**25.0 feet, bgs**
Sampling Method	**Split Spoon**	Water Level TOIC	**Not measured**	TOC Elevation Ground Surface	**524.87 ft, msl** **521.74 ft, msl**
Size and Type of Well Casing	**2-Inch Schedule 40 PVC**	Screen Perforation	**0.010 - inch**	Northing (Plant) Easting (Plant)	**346358.14 ft** **804168.155 ft**
Seal or Backfill	**Bentonite Chips**				

Elevation, feet msl	Depth, feet bgs	Sample Interval	% Recovery	USCS Code	USCS Graphic Symbol	MATERIAL DESCRIPTION
520	0		NR	ML		Brownish tan, clayey SILT, stiff, non-plastic, moist (ML)
	5		NR	CL		Brownish tan silty CLAY, very soft, medium to high plasticity, moist (CL)
			NR			becomes low to medium plasticity
	10		NR			with black fines
510			NR			becomes brown/orange/gray, trace black fines, low plasticity
	15		NR			trace rust colored oxidation with red mottling
			NR	SHALE		SHALE, gray
	20		NR			
500			NR			
	25		NR			Boring terminated at 25.0 ft. bgs on 2/7/2017. Monitoring well installed to 25.0 ft. bgs on 2/7/2017. NR = Not Recorded
490	30					
	35					

WELL CONSTRUCTION DETAILS

- Riser with protective casing and locking cap
- Concrete
- Bentonite Chips
- 2.0" diameter, SCH 40 PVC Riser
- 2.0" diameter SCH 40 PVC, 0.010" Slotted Screen
- Filter Sand

SIPC MARION SIPC MARION.GPJ 10/9/17

AECOM

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KEY TO SYMBOLS

Hanson Professional Services Inc.
1525 S. Sixth Street
Springfield, Illinois 62703
(217) 788-2450

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

ASPHALT	ASHPALT		MH	ELASTIC SILT
BASALT	BASALT		ML	SILT
BLDRCBBL	BOULDERS AND COBBLES		OH	HIGH PLASTICITY ORGANIC SILT
BRECCIA	BRECCIA		OL	LOW PLASTICITY SILT
CH	HIGH PLASTICITY CLAY		PT	PEAT
CL	LOW PLASTICITY CLAY			SANDSTONE
COAL	COAL		SC	CLAYEY SAND
CONC.	CONCRETE			SHALE
FILL	FILL			SILTSTONE
GC	CLAYEY GRAVEL		SM	SILTY SAND
GM	SILTY GRAVEL		SP	POORLY GRADED SAND
GPS	SANDY GRAVEL		SW	WELL GRADED SAND
GP	POORLY GRADED GRAVEL		TILL	GLACIAL TILL
GW	WELL GRADED GRAVEL			TOPSOIL
LIMESTONE				

SAMPLER SYMBOLS

- GRAB / AUGER CUTTINGS HAND AUGER [AUG or HA]
- SPLIT SPOON / SPT [SS]
- SHELBY TUBE [SH]
- ROCK CORE [RC]
- CONTINUOUS OR MACROSAMPLER [CS or DP]
- BLIND DRILL [BD]
- MODOFIED CALIFORNIA SAMPLER [MC]

WELL SYMBOLS

- CONCRETE SURFACE SEAL
- HIGH-SOLIDS BENTONITE GROUT
- BENTONITE CHIP SEAL
- SAND PACK W/SOLID RISER
- SAND PACK W/SCREEN

ABBREVIATIONS

LL	-	Liquid Limit (%)	NP	-	Non-Plastic
PL	-	Plastic Limit (%)	Qu	-	Unconfined Compressive Strength (tsf)
woh	-	Weight of Hammer	Qp (P)	-	Pocket Penetrometer
wor	-	Weight of Rods	TV	-	Torvane
MaxGS	-	Maximum Grain Size	PID	-	Photoionization Detector
<#200	-	Percent Passing No. 200 Sieve	ppm	-	Parts per Million

GROUNDWATER LEVELS

- Level during drilling, or as indicated
- Level after 24 hours, or as indicated
- Level as indicated

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 6/10/2019
Finish: 6/10/2019
WEATHER: Ptly. Cloudy, mild (mid 70's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT
FIELD STAFF: **Driller:** J Carter
Helper: D Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: EP1a
Well ID: EP1a
Surface Elev: 516.58 ft. MSL
Completion: 16.44 ft. BGS
Station: 347,045.80N
804,657.41E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 10.50 - during drilling
▼ = Dry - in MW at completion
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
1A	21/24 88%	SS	2-2 3-5 N=5	21.9		2.5	0	Black (10YR2/1), moist, medium, SILT with few clay and trace sand.		516	
2A	22/24 92%	SS	1-2 4-7 N=6	21.4		2.0	2			514	
3A	24/24 100%	SS	2-4 5-6 N=9	20.8			4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, few sand, and trace gravel.		512	
ST4	24/24 100%	SH		18.3	112	3.5	6			510	
5A	19/24 79%	SS	2-4 7-6 N=11	22.8		2.5	8			508	
6A	24/24 100%	SS	2-3 5-7 N=8	21.2		2.0	10 ▼	Yellowish brown (10YR5/6) with 15% gray (10YR5/1) mottles, moist, medium, CLAY with some silt, few sand, and trace gravel.		506	
ST7	24/24 100%	SH		20.3	105	3.0	12			504	
8A	23/23 100%	SS	4-10 21-60/5" N=31	15.7			14	Yellowish brown (10YR5/6) with 15% gray (10YR5/1) mottles, moist, stiff, SILT with few clay and trace sand.		502	
8B				12.7			16	Yellowish brown (10YR5/4), moist, loose, very fine- to medium-grained SAND. Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt, few sand, and trace gravel. Yellowish brown (10YR5/6), weathered SANDSTONE.			
	0/6 0%	BD						**End of boring = 16.4 ft.**			

NOTE(S): Monitoring well EP1a installed in bore hole.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: **Start:** 6/10/2019
Finish: 6/10/2019
WEATHER: Ptly. Sunny, mild (lo 70's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT
FIELD STAFF: **Driller:** J Carter
Helper: D Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: EP4a
Well ID: EP4a
Surface Elev: 517.36 ft. MSL
Completion: 18.00 ft. BGS
Station: 347,283.28N
804,686.50E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, **Tier** 10S.; **Range** 2E.

WATER LEVEL INFORMATION:
▼ = 14.00 - during drilling
▼ = 14.10 - in MW at completion
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
1A	23/24 96%	SS	11-14 38-18 N=52	4.0			0	Gray (10YR6/1), moist, very hard, GRAVEL with few sand and little silt [FILL]		516	
2A	21/24 88%	SS	5-6 10-10 N=16	16.8		4.5	2	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt, few sand, and trace gravel. [FILL]		514	
3A	19/24 79%	SS	3-3 3-4 N=6	17.5		1.5	4			512	
ST4	20/24 83%	SH		18.4	111	3.8	6	Yellowish brown (10YR5/6), moist, medium,CLAY with some silt, few sand, and trace gravel. [FILL]		510	
5A	15/24 63%	SS	1-2 2-2 N=4	22.8		1.5	8			508	
6A	20/24 83%	SS	woh-woh 1-1	23.7		0.0	10			506	
7A	16/24 67%	SS	woh-woh 1-1	22.4		0.5	12	Dark gray (10YR4/1), moist, soft, CLAY with some silt few sand, and trace gravel, bottom ash, and sandstone cobbles. [FILL]		504	
ST8	9/24 38%	SH		18.4		2.5	14 ▼			502	
9A	23/24 96%	SS	4-5 4-10 N=9	14.2			16	Yellowish brown (10YR5/8), weathered SANDSTONE.			
								Light gray (10YR6/1), SHALE.		500	
							18	**End of boring = 18.0 ft.**			

NOTE(S): Monitoring well EP4a installed in bore hole.

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency — Well Completion Report

Site #: _____ County: Williamson Well #: EP1a

Site Name: Emery Pond Borehole #: EP1a

State Plane Coordinate: X 804,657.4 Y 347,045.8 (or) Latitude: 37° 37' 7.867" Longitude: -88° 57' 11.832"

Surveyed By: _____ IL Registration #: _____

Drilling Contractor: Holcomb Foundation Engineering Co. Driller: J Carter

Consulting Firm: Hanson Professional Services Inc. Geologist: Rhonald W. Hasenyager, LPG #196-000246

Drilling Method: Hollow Stem Auger Drilling Fluid (Type): none

Logged By: Rhonald W. Hasenyager Date Started: 6/10/2019 Date Finished: 6/10/2019

Report Form Completed By: Rhonald W. Hasenyager Date: 6/14/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite chips

Installation Method: Gravity

Setting Time: 15 min.

Type of Bentonite Seal -- Granular Pellet Slurry (choose one)

Installation Method: _____

Setting Time: _____

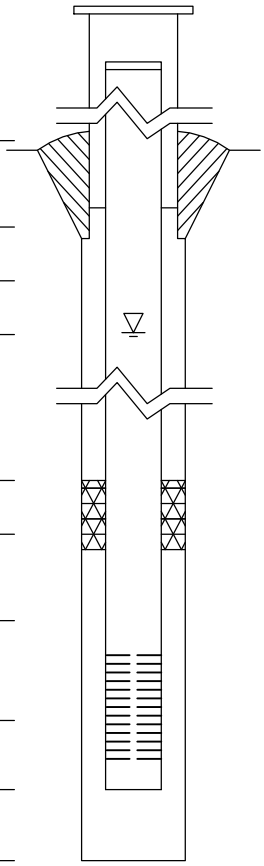
Type of Sand Pack: Quartz sand

Grain Size: 10/20 (sieve size)

Installation Method: Gravity

Type of Backfill Material: _____ (if applicable)

Installation Method: _____



Elevations (MSL)*	Depths (BGS) (0.01 ft.)	
520.52	-3.94	Top of Protective Casing
520.02	-3.44	Top of Riser Pipe
516.58	0.00	Ground Surface
514.08	2.50	Top of Annular Sealant
512.17	4.41	Static Water Level (After Completion) 6/11/2019
n/a	n/a	Top of Seal
506.76	9.82	Top of Sand Pack
505.28	11.30	Top of Screen
500.62	15.96	Bottom of Screen
500.14	16.44	Bottom of Well
500.14	16.44	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIALS

(Choose one type of material for each area)

Protective Casing	SS304	SS316	PTFE	PVC	OTHER: Steel
Riser Pipe Above W.T.	SS304	SS316	PTFE	PVC	OTHER:
Riser Pipe Below W.T.	SS304	SS316	PTFE	PVC	OTHER:
Screen	SS304	SS316	PTFE	PVC	OTHER:

CASING MEASUREMENTS

Diameter of Borehole	(inches)	8.0
ID of Riser Pipe	(inches)	2.0
Protective Casing Length	(feet)	5.0
Riser Pipe Length	(feet)	14.74
Bottom of Screen to End Cap	(feet)	0.48
Screen Length (1st slot to last slot)	(feet)	4.66
Total Length of Casing	(feet)	19.88
Screen Slot Size **	(inches)	0.010

**Hand-Slotted Well Screens Are Unacceptable

Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois Environmental Protection Agency — Well Completion Report

Site #: _____ County: Williamson Well #: EP4a

Site Name: Emery Pond Borehole #: EP4a

State Plane Coordinate: X 804,686.5 Y 347,283.3 (or) Latitude: 37° 37' 5.518" Longitude: -88° 57' 12.174"

Surveyed By: _____ IL Registration #: _____

Drilling Contractor: Holcomb Foundation Engineering Co. Driller: J Carter

Consulting Firm: Hanson Professional Services Inc. Geologist: Rhonald W. Hasenyager, LPG #196-000246

Drilling Method: Hollow Stem Auger Drilling Fluid (Type): none

Logged By: Rhonald W. Hasenyager Date Started: 6/10/2019 Date Finished: 6/10/2019

Report Form Completed By: Rhonald W. Hasenyager Date: 6/14/2019

ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Bentonite chips

Installation Method: Gravity

Setting Time: 15 min.

Type of Bentonite Seal -- Granular Pellet Slurry (choose one)

Installation Method: _____

Setting Time: _____

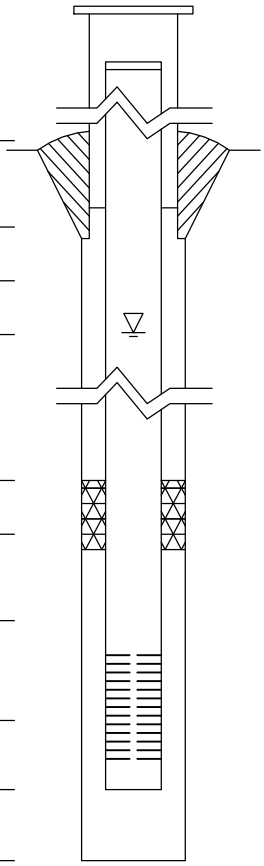
Type of Sand Pack: Quartz sand

Grain Size: 10/20 (sieve size)

Installation Method: Gravity

Type of Backfill Material: _____ (if applicable)

Installation Method: _____



Elevations (MSL)*	Depths (BGS) (0.01 ft.)	
519.50	-2.14	Top of Protective Casing
518.93	-1.57	Top of Riser Pipe
517.36	0.00	Ground Surface
514.86	2.50	Top of Annular Sealant
511.62	5.74	Static Water Level (After Completion) 6/11/2019
n/a	n/a	Top of Seal
506.41	10.95	Top of Sand Pack
505.14	12.22	Top of Screen
500.48	16.88	Bottom of Screen
500.00	17.36	Bottom of Well
499.36	18.00	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIALS

(Choose one type of material for each area)

Protective Casing	SS304	SS316	PTFE	PVC	OTHER: Steel
Riser Pipe Above W.T.	SS304	SS316	PTFE	PVC	OTHER:
Riser Pipe Below W.T.	SS304	SS316	PTFE	PVC	OTHER:
Screen	SS304	SS316	PTFE	PVC	OTHER:

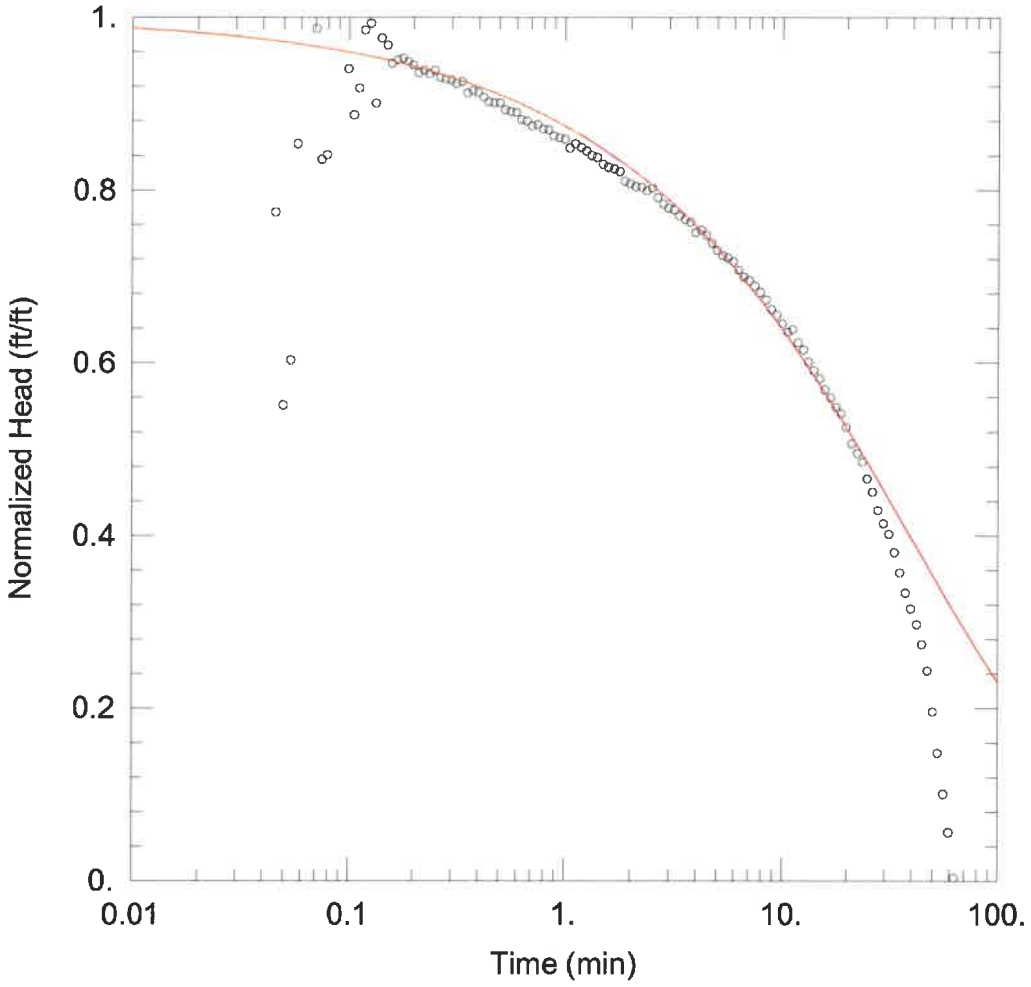
CASING MEASUREMENTS

Diameter of Borehole	(inches)	8.0
ID of Riser Pipe	(inches)	2.0
Protective Casing Length	(feet)	5.0
Riser Pipe Length	(feet)	13.79
Bottom of Screen to End Cap	(feet)	0.48
Screen Length (1st slot to last slot)	(feet)	4.66
Total Length of Casing	(feet)	18.93
Screen Slot Size **	(inches)	0.010

**Hand-Slotted Well Screens Are Unacceptable

Appendix B

Slug Test Results



EP-1A FALLING HEAD TEST

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP1a-fh.aqt
Date: 06/14/19 Time: 13:15:15

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Well: EP1a
Test Date: 11 June 2019

AQUIFER DATA

Saturated Thickness: 11.31 ft

WELL DATA (EP-1a)

Initial Displacement: 0.99 ft
Total Well Penetration Depth: 15.97 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.31 ft
Screen Length: 4.66 ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 7.6E-6 cm/sec
Kz/Kr = 1.
Ss = 0.07 ft^{-1}

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP1a-fh.aqt
Title: EP-1a Falling Head Test
Date: 06/14/19
Time: 13:01:10

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Date: 11 June 2019
Test Well: EP1a

AQUIFER DATA

Saturated Thickness: 11.31 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP-1a

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.99 ft
Static Water Column Height: 11.31 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 1. ft
Screen Length: 4.66 ft
Total Well Penetration Depth: 15.97 ft

No. of Observations: 132

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.02083	1.619	1.5	0.821
0.025	1.531	1.58	0.818
0.02917	1.283	1.68	0.816
0.03333	1.145	1.78	0.813
0.0375	1.181	1.88	0.802
0.04167	1.262	1.99	0.799
0.04583	0.766	2.11	0.796
0.05	0.545	2.24	0.795
0.05417	0.597	2.37	0.791
0.05833	0.845	2.51	0.794
0.0625	1.024	2.66	0.783
0.06667	1.054	2.82	0.776
0.07083	0.977	2.98	0.771
0.075	0.827	3.16	0.769
0.07917	0.832	3.35	0.762
0.08333	1.061	3.55	0.758
0.0875	1.134	3.76	0.755
0.09167	1.102	3.98	0.743
0.09583	1.025	4.22	0.746

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.1	0.931	4.47	0.74
0.106	0.878	4.73	0.731
0.112	0.909	5.01	0.723
0.119	0.975	5.31	0.717
0.126	0.983	5.62	0.714
0.133	0.892	5.96	0.71
0.141	0.966	6.31	0.7
0.15	0.958	6.68	0.692
0.158	0.937	7.08	0.688
0.168	0.941	7.5	0.682
0.178	0.943	7.94	0.675
0.188	0.939	8.41	0.666
0.199	0.935	8.91	0.655
0.211	0.926	9.44	0.649
0.224	0.929	10.	0.639
0.237	0.925	10.6	0.629
0.251	0.929	11.2	0.632
0.266	0.921	11.9	0.617
0.282	0.919	12.6	0.609
0.298	0.918	13.3	0.595
0.316	0.914	14.1	0.585
0.335	0.916	15.	0.576
0.355	0.903	15.8	0.563
0.376	0.906	16.8	0.554
0.398	0.904	17.8	0.543
0.422	0.898	18.8	0.536
0.447	0.893	19.9	0.52
0.473	0.892	21.1	0.501
0.501	0.892	22.4	0.49
0.531	0.884	23.7	0.48
0.562	0.882	25.1	0.46
0.596	0.881	26.6	0.445
0.631	0.873	28.2	0.424
0.668	0.871	29.8	0.409
0.708	0.865	31.6	0.397
0.75	0.867	33.5	0.376
0.794	0.862	35.5	0.353
0.841	0.861	37.6	0.33
0.891	0.854	39.8	0.312
0.944	0.852	42.2	0.294
1.	0.85	44.7	0.271
1.06	0.839	47.3	0.241
1.12	0.844	50.1	0.194
1.193	0.84	53.1	0.146
1.26	0.836	56.2	0.099
1.33	0.831	59.6	0.055
1.41	0.829	63.1	0.003

SOLUTION

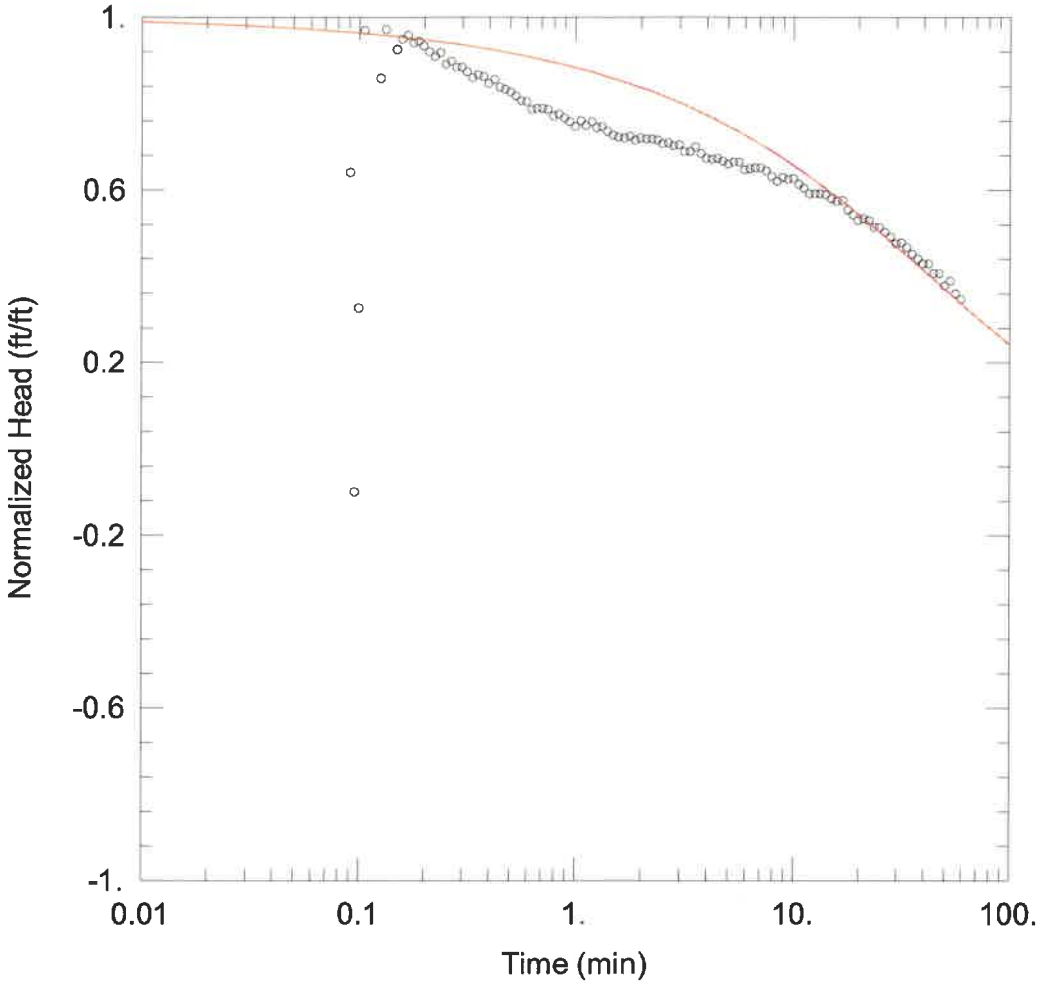
Slug Test
Aquifer Model: Confined
Solution Method: KGS Model

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
Kr	9.5E-6	cm/sec
Ss	0.05	ft^{-1}
Kz/Kr	1.	

T = K*b = 0.003275 cm^2/sec



EP-1A FALLING HEAD TEST 2

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP1a-fh2.aqt
Date: 06/14/19 Time: 13:15:17

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Well: EP1a
Test Date: 11 June 2019

AQUIFER DATA

Saturated Thickness: 11.31 ft

WELL DATA (EP-1a)

Initial Displacement: 0.45 ft
Total Well Penetration Depth: 15.97 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.31 ft
Screen Length: 4.66 ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model
Kr = 7.5E-6 cm/sec
Kz/Kr = 1.
Ss = 0.06 ft^{-1}

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP1a-fh2.aqt
Title: EP-1a Falling Head Test 2
Date: 06/14/19
Time: 13:01:16

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Date: 11 June 2019
Test Well: EP1a

AQUIFER DATA

Saturated Thickness: 11.31 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP-1a

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.45 ft
Static Water Column Height: 11.31 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 1. ft
Screen Length: 4.66 ft
Total Well Penetration Depth: 15.97 ft

No. of Observations: 123

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.05417	0.809	1.88	0.322
0.05833	2.237	1.99	0.324
0.0625	1.448	2.114	0.323
0.06667	0.771	2.24	0.323
0.07083	1.122	2.37	0.322
0.075	1.815	2.51	0.318
0.07917	1.743	2.66	0.319
0.08333	1.254	2.82	0.316
0.0875	0.664	2.98	0.317
0.09167	0.288	3.16	0.31
0.09583	-0.045	3.35	0.31
0.1	0.147	3.55	0.315
0.106	0.436	3.76	0.308
0.112	0.59	3.98	0.303
0.119	0.452	4.22	0.302
0.126	0.386	4.47	0.303
0.133	0.437	4.73	0.3
0.141	0.455	5.01	0.297
0.15	0.416	5.31	0.299

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.158	0.427	5.62	0.299
0.168	0.431	5.96	0.291
0.178	0.423	6.31	0.292
0.188	0.425	6.68	0.293
0.199	0.42	7.08	0.293
0.211	0.414	7.5	0.29
0.224	0.409	7.94	0.284
0.237	0.413	8.41	0.279
0.251	0.401	8.91	0.283
0.266	0.404	9.44	0.281
0.282	0.398	10.	0.282
0.298	0.398	10.6	0.276
0.316	0.393	11.2	0.272
0.335	0.387	11.9	0.266
0.355	0.39	12.6	0.266
0.376	0.388	13.3	0.266
0.398	0.381	14.1	0.265
0.422	0.385	15.	0.261
0.4485	0.377	15.8	0.258
0.473	0.375	16.8	0.259
0.501	0.372	17.8	0.249
0.531	0.368	18.8	0.244
0.562	0.363	19.9	0.238
0.596	0.362	21.1	0.24
0.631	0.354	22.4	0.238
0.668	0.355	23.7	0.231
0.708	0.355	25.1	0.231
0.75	0.354	26.6	0.226
0.794	0.347	28.2	0.221
0.841	0.349	29.8	0.214
0.891	0.345	31.6	0.215
0.9445	0.341	33.5	0.21
1.	0.336	35.5	0.203
1.06	0.342	37.6	0.198
1.12	0.337	39.8	0.193
1.195	0.341	42.2	0.193
1.26	0.335	44.7	0.183
1.33	0.336	47.3	0.183
1.41	0.331	50.1	0.17
1.5	0.327	53.1	0.175
1.58	0.325	56.2	0.162
1.68	0.324	59.6	0.156
1.78	0.326		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: KGS Model

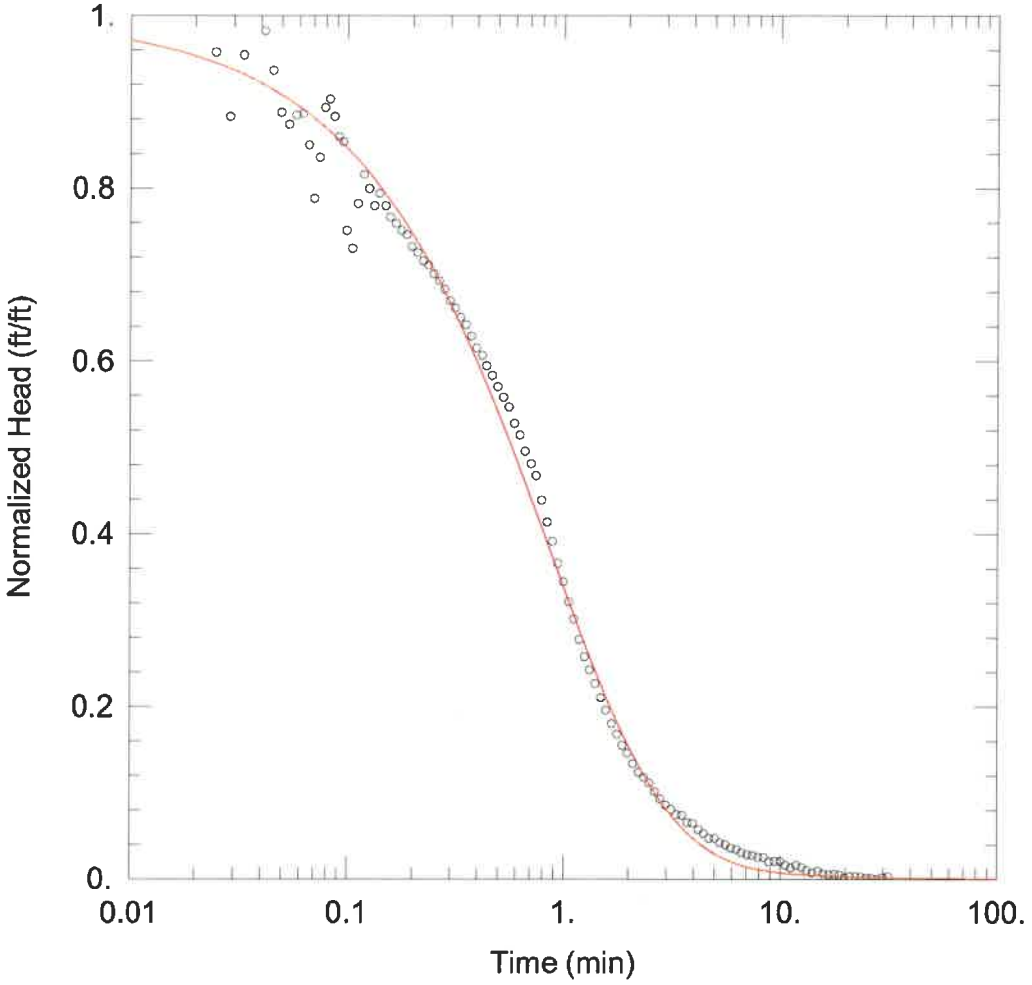
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate

Kr	7.5E-6	cm/sec
Ss	0.06	ft^{-1}
Kz/Kr	1.	

T = K*b = 0.002585 cm^2/sec



EP-4A FALLING HEAD TEST

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4a-fh.aqt
Date: 06/14/19 Time: 13:15:20

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Well: EP1a
Test Date: 11 June 2019

AQUIFER DATA

Saturated Thickness: 11.91 ft

WELL DATA (EP-4a)

Initial Displacement: 2.45 ft
Total Well Penetration Depth: 16.57 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.91 ft
Screen Length: 4.66 ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.0014 cm/sec
Kz/Kr = 1.
Ss = 0.0005 ft^{-1}

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4a-fh.aqt
Title: EP-4a Falling Head Test
Date: 06/14/19
Time: 13:01:21

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Date: 11 June 2019
Test Well: EP1a

AQUIFER DATA

Saturated Thickness: 11.91 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP-4a

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.45 ft
Static Water Column Height: 11.91 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 1. ft
Screen Length: 4.66 ft
Total Well Penetration Depth: 16.57 ft

No. of Observations: 121

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.01667	2.858	1.06	0.786
0.02083	2.766	1.12	0.737
0.025	2.344	1.19	0.679
0.02917	2.162	1.26	0.63
0.03333	2.337	1.33	0.593
0.0375	2.452	1.41	0.554
0.04167	2.406	1.5	0.514
0.04583	2.292	1.58	0.479
0.05	2.174	1.68	0.441
0.05417	2.14	1.78	0.411
0.05833	2.167	1.88	0.379
0.0625	2.171	1.99	0.357
0.06667	2.082	2.11	0.327
0.07083	1.932	2.24	0.303
0.075	2.048	2.37	0.288
0.07917	2.187	2.51	0.273
0.08333	2.211	2.66	0.248
0.0875	2.162	2.82	0.227
0.09167	2.106	2.98	0.21

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.09583	2.092	3.16	0.198
0.1	1.84	3.35	0.183
0.106	1.79	3.55	0.181
0.112	1.915	3.76	0.16
0.119	1.999	3.98	0.158
0.126	1.957	4.22	0.14
0.133	1.909	4.47	0.129
0.141	1.945	4.73	0.116
0.15	1.909	5.01	0.116
0.158	1.878	5.31	0.103
0.168	1.86	5.62	0.098
0.178	1.84	5.96	0.088
0.188	1.828	6.31	0.084
0.199	1.794	6.68	0.075
0.211	1.777	7.08	0.069
0.224	1.754	7.5	0.067
0.237	1.742	7.94	0.062
0.251	1.717	8.41	0.061
0.266	1.697	8.91	0.049
0.282	1.674	9.44	0.05
0.298	1.641	10.	0.05
0.316	1.62	10.6	0.039
0.335	1.594	11.2	0.031
0.355	1.573	11.9	0.039
0.376	1.54	12.6	0.033
0.398	1.507	13.3	0.024
0.422	1.486	14.1	0.018
0.447	1.453	15.	0.022
0.473	1.426	15.8	0.015
0.501	1.394	16.8	0.012
0.531	1.364	17.8	0.013
0.562	1.337	18.8	0.011
0.596	1.291	19.9	0.003
0.631	1.258	21.1	0.008
0.668	1.213	22.4	0.007
0.7111	1.177	23.7	0.006
0.75	1.144	25.1	0.003
0.7944	1.075	26.6	0.002
0.841	1.013	28.2	0.
0.891	0.958	29.8	0.004
0.944	0.895	31.6	0.007
1.	0.843		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: KGS Model

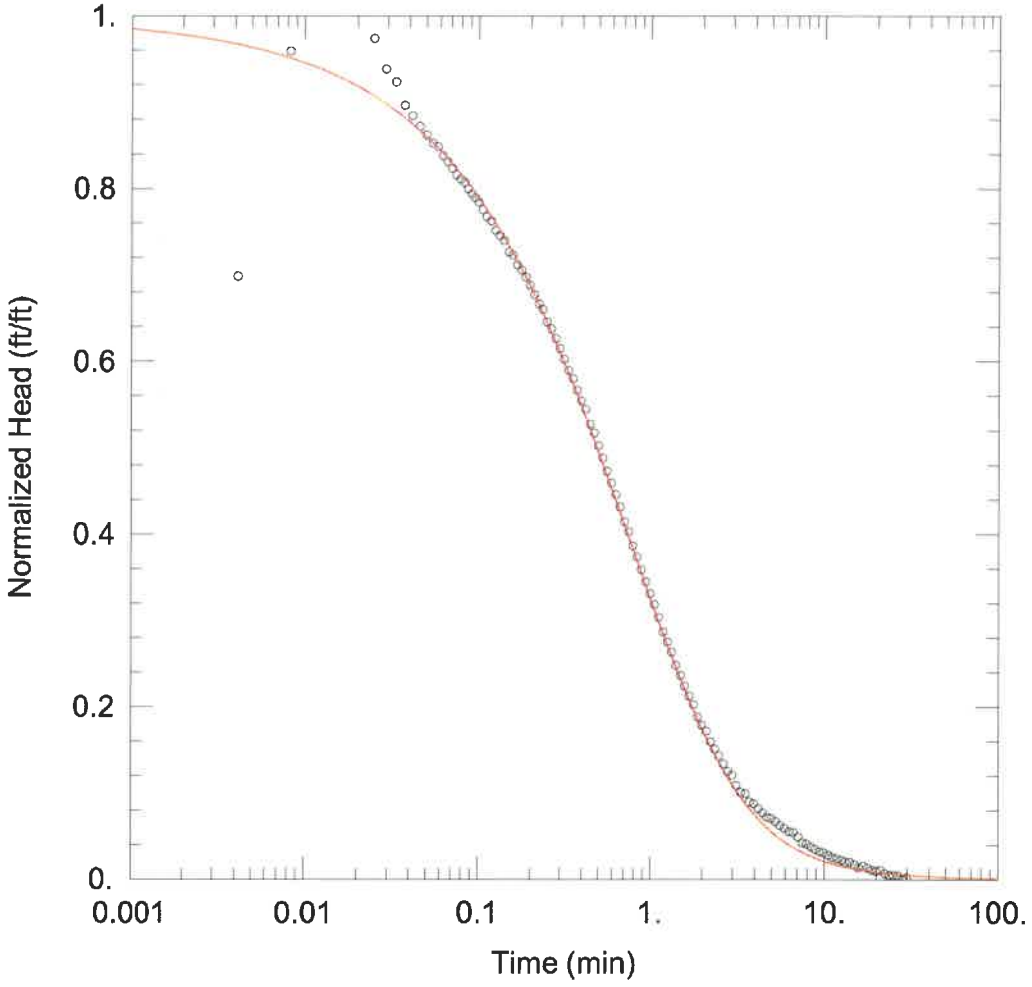
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
Kr	0.0014	cm/sec

Ss	0.0005	ft^{-1}
Kz/Kr	1.	

T = K*b = 0.5082 cm^2/sec



EP-4A RISING HEAD TEST

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4a-rh.aqt
Date: 06/14/19 Time: 13:15:23

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Well: EP1a
Test Date: 11 June 2019

AQUIFER DATA

Saturated Thickness: 11.91 ft

WELL DATA (EP-4a)

Initial Displacement: 2.08 ft
Total Well Penetration Depth: 16.57 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 11.91 ft
Screen Length: 4.66 ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model
Kr = 0.00094 cm/sec
Kz/Kr = 1.
Ss = 0.007 ft^{-1}

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4a-rh.aqt
Title: EP-4a Rising Head Test
Date: 06/14/19
Time: 13:01:27

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Date: 11 June 2019
Test Well: EP1a

AQUIFER DATA

Saturated Thickness: 11.91 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP-4a

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.08 ft
Static Water Column Height: 11.91 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 1. ft
Screen Length: 4.66 ft
Total Well Penetration Depth: 16.57 ft

No. of Observations: 123

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.004167	1.452	0.944	0.717
0.008333	1.994	1.	0.688
0.01352	2.373	1.06	0.662
0.01667	2.255	1.12	0.631
0.02083	2.081	1.19	0.597
0.025	2.024	1.26	0.572
0.02917	1.951	1.33	0.547
0.03333	1.92	1.41	0.516
0.0375	1.864	1.5	0.491
0.04167	1.839	1.58	0.466
0.04583	1.814	1.68	0.442
0.05	1.793	1.78	0.421
0.05417	1.774	1.88	0.391
0.05833	1.765	1.99	0.371
0.0625	1.743	2.11	0.357
0.06667	1.728	2.24	0.332
0.07083	1.713	2.37	0.314
0.075	1.697	2.51	0.298
0.07917	1.687	2.66	0.278

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.08333	1.679	2.82	0.259
0.0875	1.663	2.98	0.251
0.09167	1.651	3.16	0.227
0.09583	1.641	3.35	0.209
0.1	1.631	3.55	0.206
0.106	1.613	3.76	0.187
0.112	1.596	3.98	0.182
0.119	1.586	4.22	0.17
0.126	1.563	4.47	0.16
0.133	1.551	4.73	0.15
0.141	1.539	5.01	0.147
0.15	1.511	5.31	0.139
0.158	1.504	5.62	0.13
0.168	1.48	5.96	0.123
0.178	1.468	6.31	0.115
0.188	1.451	6.68	0.113
0.199	1.431	7.08	0.102
0.211	1.409	7.5	0.088
0.224	1.387	7.94	0.085
0.237	1.373	8.41	0.078
0.251	1.343	8.91	0.073
0.266	1.326	9.44	0.067
0.282	1.303	10.	0.064
0.298	1.279	10.6	0.058
0.316	1.253	11.2	0.053
0.335	1.226	11.9	0.05
0.355	1.206	12.6	0.046
0.376	1.178	13.3	0.042
0.398	1.153	14.1	0.042
0.422	1.132	15.	0.035
0.447	1.097	15.8	0.028
0.473	1.076	16.8	0.032
0.501	1.045	17.8	0.027
0.531	1.015	18.8	0.022
0.562	0.983	19.9	0.02
0.596	0.955	21.1	0.022
0.631	0.927	22.4	0.014
0.668	0.897	23.7	0.01
0.7095	0.862	25.1	0.01
0.75	0.838	26.6	0.009
0.794	0.803	28.2	0.
0.841	0.777	29.8	0.004
0.891	0.746		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: KGS Model

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate

Kr	0.00094	cm/sec
Ss	0.007	ft^{-1}
Kz/Kr	1.	

T = K*b = 0.3412 cm^2/sec

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	Approx. C.I.	t-Ratio	
Kr	0.0009353	6.228E-5	+/- 0.0001233	15.02	cm/sec
Ss	0.00671	0.001498	+/- 0.002967	4.478	ft^{-1}
Kz/Kr	0.5	not estimated			

C.I. is approximate 95% confidence interval for parameter
t-ratio = estimate/std. error
No estimation window

T = K*b = 0.3395 cm^2/sec

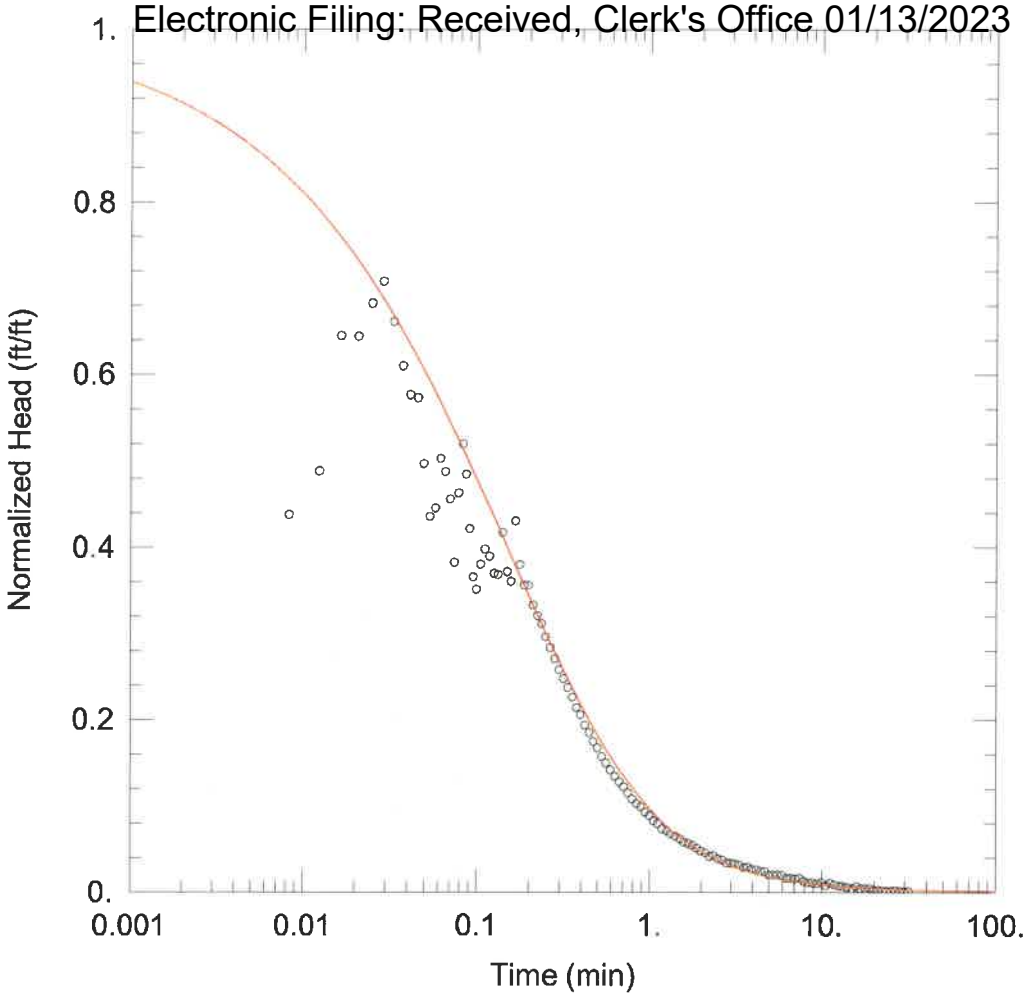
Parameter Correlations

	Kr	Ss
Kr	1.00	-0.94
Ss	-0.94	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.6775 ft^2
Variance . . . . . 0.005599 ft^2
Std. Deviation . . . . . 0.07483 ft
Mean . . . . . 0.005425 ft
No. of Residuals 123
No. of Estimates 2



EP-4 FALLING HEAD TEST

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4-fh.aqt
Date: 06/24/19 Time: 07:59:14

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Well: EP4
Test Date: 11 June 2019

AQUIFER DATA

Saturated Thickness: 12.72 ft

WELL DATA (EP-4)

Initial Displacement: 3.4 ft
Total Well Penetration Depth: 22.42 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 12.72 ft
Screen Length: 9.7 ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.0011 cm/sec
Kz/Kr = 1.
Ss = 0.025 ft^{-1}

Electronic Filing: Received, Clerk's Office 01/13/2023

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4-fh.aqt
Title: EP-4 Falling Head Test
Date: 06/24/19
Time: 07:51:17

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Date: 11 June 2019
Test Well: EP4

AQUIFER DATA

Saturated Thickness: 12.72 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP-4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 3.4 ft
Static Water Column Height: 12.72 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 1. ft
Screen Length: 9.7 ft
Total Well Penetration Depth: 22.42 ft

No. of Observations: 123

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.00835	1.486	1.	0.302
0.01252	1.66	1.06	0.281
0.01668	2.193	1.12	0.27
0.02085	2.191	1.19	0.25
0.02502	2.32	1.26	0.243
0.02918	2.406	1.33	0.23
0.03335	2.249	1.41	0.221
0.03752	2.075	1.5	0.21
0.04168	1.961	1.58	0.197
0.04585	1.95	1.68	0.192
0.05002	1.688	1.78	0.185
0.05418	1.481	1.88	0.173
0.05835	1.514	1.99	0.162
0.06252	1.708	2.11	0.154
0.06668	1.657	2.24	0.141
0.07085	1.549	2.37	0.144
0.07502	1.302	2.51	0.132
0.07918	1.574	2.66	0.127
0.08335	1.766	2.82	0.115

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.08752	1.646	2.98	0.114
0.09168	1.434	3.16	0.112
0.09585	1.245	3.35	0.106
0.1	1.196	3.55	0.098
0.106	1.294	3.76	0.099
0.112	1.353	3.98	0.09
0.119	1.325	4.22	0.089
0.126	1.259	4.47	0.083
0.133	1.254	4.73	0.081
0.141	1.417	5.01	0.069
0.15	1.265	5.31	0.068
0.158	1.227	5.62	0.069
0.168	1.464	5.96	0.066
0.178	1.292	6.31	0.055
0.188	1.21	6.68	0.055
0.199	1.21	7.08	0.052
0.211	1.132	7.5	0.055
0.224	1.09	7.94	0.043
0.237	1.058	8.41	0.039
0.251	1.007	8.91	0.037
0.266	0.964	9.44	0.033
0.282	0.92	10.	0.039
0.298	0.877	10.6	0.026
0.316	0.842	11.2	0.036
0.335	0.807	11.9	0.03
0.355	0.769	12.6	0.025
0.376	0.727	13.3	0.023
0.398	0.7	14.1	0.019
0.422	0.658	15.	0.015
0.447	0.629	15.8	0.022
0.473	0.594	16.8	0.015
0.501	0.569	17.8	0.014
0.531	0.535	18.8	0.015
0.562	0.509	19.9	0.008
0.596	0.482	21.1	0.008
0.631	0.457	22.4	0.007
0.668	0.435	23.7	0.004
0.708	0.415	25.1	0.004
0.75	0.391	26.6	0.007
0.794	0.367	28.2	0.004
0.841	0.348	29.8	0.002
0.891	0.337	31.6	0.005
0.944	0.316		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: KGS Model

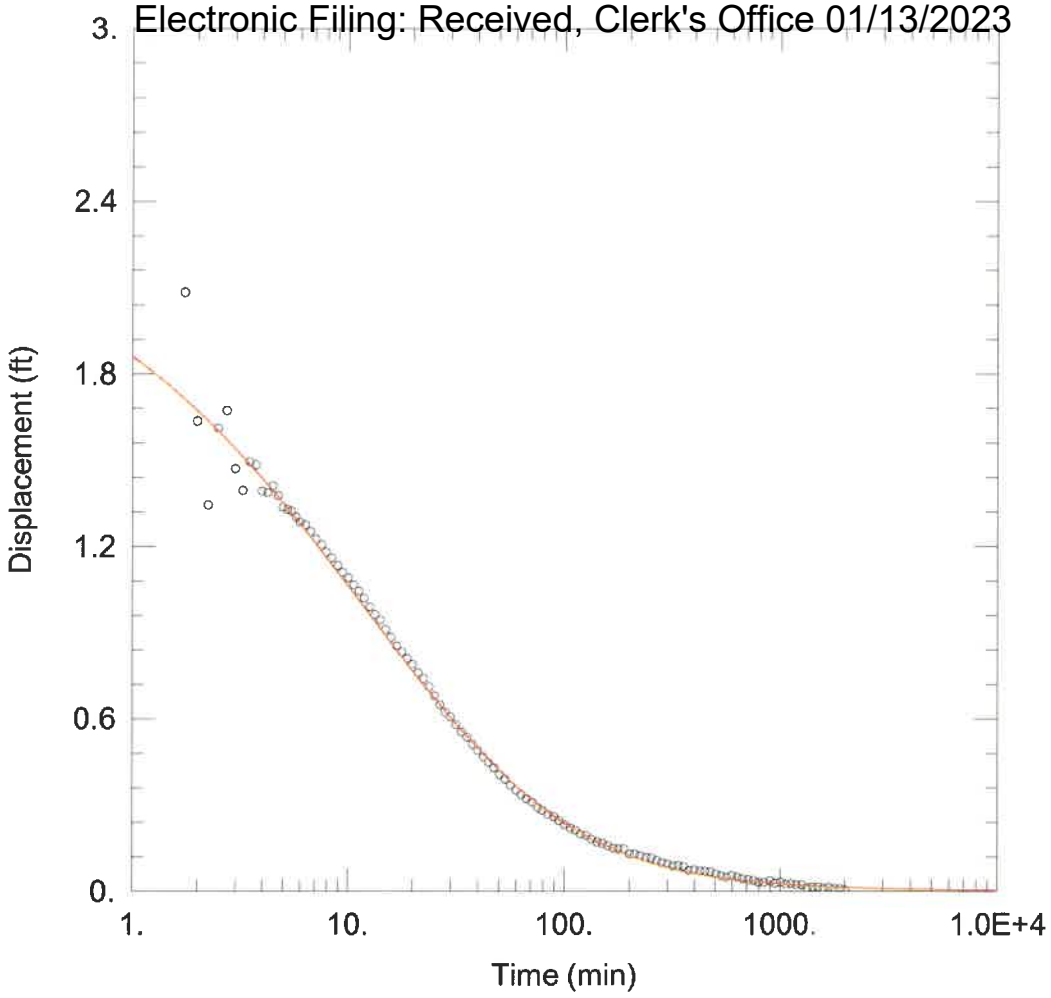
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate

Kr	0.0011	cm/sec
Ss	0.025	ft^{-1}
Kz/Kr	1.	

T = K*b = 0.4265 cm^2/sec



EP-4 RISING HEAD TEST

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4-rh.aqt
Date: 06/24/19 Time: 07:59:20

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Well: EP4
Test Date: 11 June 2019

AQUIFER DATA

Saturated Thickness: 12.72 ft

WELL DATA (EP-4)

Initial Displacement: 2.4 ft
Total Well Penetration Depth: 22.42 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 12.72 ft
Screen Length: 9.7 ft
Well Radius: 0.08333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 9.1E-6 cm/sec
Kz/Kr = 1.
Ss = 0.05 ft^{-1}

Data Set: I:\18jobs\18E0022A\Admin\13-Calculations\SlugTests\EP4-rh.aqt
Title: EP-4 Rising Head Test
Date: 06/24/19
Time: 07:51:20

PROJECT INFORMATION

Client: Southern Illinois Power Coop.
Project: 18E0022a
Location: Marion, IL
Test Date: 11 June 2019
Test Well: EP4

AQUIFER DATA

Saturated Thickness: 12.72 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: EP-4

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.4 ft
Static Water Column Height: 12.72 ft
Casing Radius: 0.08333 ft
Well Radius: 0.08333 ft
Well Skin Radius: 1. ft
Screen Length: 9.7 ft
Total Well Penetration Depth: 22.42 ft

No. of Observations: 119

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.75	2.083	71.4	0.31
2.	1.635	75.6	0.291
2.25	1.343	79.8	0.281
2.5	1.611	84.6	0.267
2.75	1.671	90.	0.258
3.	1.468	94.8	0.245
3.25	1.395	100.8	0.231
3.5	1.494	106.8	0.219
3.75	1.483	112.8	0.212
4.	1.392	119.4	0.198
4.25	1.386	126.6	0.194
4.5	1.409	134.4	0.181
4.75	1.376	142.2	0.171
5.	1.335	150.6	0.166
5.25	1.327	159.6	0.157
5.5	1.322	169.2	0.15
5.75	1.302	178.8	0.146
6.	1.283	189.6	0.146
6.36	1.274	201.	0.13

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
6.72	1.251	213.	0.128
7.14	1.225	225.6	0.123
7.56	1.205	238.8	0.117
7.98	1.179	253.2	0.115
8.46	1.16	268.2	0.106
9.	1.133	283.8	0.098
9.48	1.108	300.6	0.094
10.08	1.089	318.6	0.087
10.68	1.065	337.2	0.088
11.28	1.044	357.6	0.086
11.94	1.018	378.6	0.072
12.66	0.988	400.8	0.074
13.44	0.962	424.8	0.07
14.22	0.943	450.	0.069
15.06	0.91	476.4	0.067
15.96	0.883	504.6	0.059
16.92	0.853	534.6	0.053
17.88	0.832	566.4	0.048
18.96	0.809	600.	0.054
20.1	0.788	636.	0.048
21.3	0.76	672.	0.043
22.56	0.739	714.	0.04
23.88	0.711	756.	0.037
25.32	0.679	798.	0.031
26.82	0.648	846.	0.03
28.38	0.623	900.	0.036
30.06	0.606	948.	0.027
31.86	0.58	1008.	0.032
33.72	0.554	1068.	0.024
35.76	0.535	1128.	0.026
37.86	0.511	1194.	0.022
40.08	0.49	1266.	0.022
42.48	0.467	1344.	0.011
45.	0.447	1422.	0.014
47.64	0.43	1506.	0.014
50.46	0.405	1596.	0.009
53.46	0.39	1692.	0.013
56.64	0.368	1788.	0.008
60.	0.351	1896.	0.007
63.6	0.335	2010.	0.004
67.2	0.322		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: KGS Model

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
Kr	9.1E-6	cm/sec
Ss	0.05	ft^{-1}

Kz/Kr 1.

T = K*b = 0.003528 cm²/sec

Appendix C

Holcomb Lab Test Results

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LABORATORY TESTS
MARION POWER STATION- EMERY POND
WILLIAMSON COUNTY, ILLINOIS

Prepared for:

Hanson Professional Services, Inc
1525 South Sixth Street
Springfield, Illinois 62703

Prepared by:

HFE
Holcomb Foundation Engineering
Carbondale, Illinois
618-529-5262

June 27, 2019

HFE File Number: H-19093

Subcontract Agreement No S-18E0022A/HFE 2

Electronic Filing: Received, Clerk's Office 01/13/2023

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UNIFIED SOIL CLASSIFICATIONS	17

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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

June 27, 2019

Hanson Professional Services, LLC
7625 North University Street, Suite 200
Peoria, IL 61614

Attention: Mr. Rhonald Hasenyager

Re: Laboratory Tests
Marion Power Station – Emery Pond
Williamson County, Illinois
HFE File H-19093
Subcontract Agreement No S-18E0022A/HFE2

Dear Sir:

We have completed the soil borings and laboratory tests for the above referenced project Enclosed is the Laboratory Test Data. If you should have any questions or require additional information, please feel free to contact us at your convenience.

Sincerely,

HOLCOMB FOUNDATION ENGINEERING INC.

Timothy J. Holcomb, P.E.

MOISTURE CONTENT WORKSHEET

Project: Marion Power Station
Project No.: H-19093 6/26/2019

Boring	Sample	Wet Wt.	Pan	Dry Wt.	Mc. (%)
EP-1	1	165.7	34.4	142.1	21.9
EP-1	2	150.2	26	128.3	21.4
EP-1	3	168.8	35.1	145.8	20.8
EP-1	4	733.3	92.9	634.1	18.3
EP-1	5	190.5	28.6	160.4	22.8
EP-1	6	165	26.3	140.7	21.2
EP-1	7	511.9	75.5	438.2	20.3
EP-1	8A	174.2	26.6	154.2	15.7
EP-1	8B	152.1	25	137.8	12.7
EP-4	1	104.1	28.8	101.2	4.0
EP-4	2	130.4	29.7	115.9	16.8
EP-4	3	128.2	25.3	112.9	17.5
EP-4	5	151.1	21.5	127	22.8
EP-4	6	169.4	21.3	141	23.7
EP-4	7	168.3	27.5	142.5	22.4
EP-4	8	442.4	73.3	385	18.4
EP-4	9	146.7	31.6	132.4	14.2

Marion Power Station

Emery Pond

Permeability Tests

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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

Permeability Tests Results

Marion Power Plant

Marion, Illinois

HFE File: H-19093
Date: 6/25/19

Location	Moisture Content (%) Before Test	Moisture Content (%) After Test	Dry Unit Weight (PCF)	Permeability (Cm./Sec.)
EP-1A (6-8')	18.3	19.1	111.7	7 x 10-8
EP-1A (12-14')	20.3	20.6	105.1	1 x 10-7
EP-4A (6-8')	18.4	17.4	111.2	5 x 10-8

Permeability Tests performed in accordance with ASTM D-5084

HOLCOMB FOUNDATION ENGINEERING CO.
393 WOOD ROAD
CARBONDALE ILLINOIS

PERMEABILITY TEST RESULTS

Project	Marion Power Plant	Boring/Sample	EP-1A		
		Depth	13-13.5'		
Project #	H-19093	Classification	Brown Silty Clay		
Date	6/25/2019	Diameter	2.865	Area	41.59169
		Length	5.577 Inch		

In Place Mc		After Test Mc		Unit Weight (PCF)	
Wet Wt.	511.9	Wet Wt.	1274.6	Sample Wt	1192.4
Pan	75.5	Pan	82.5		
Dry Wt.	438.2	Dry Wt.	1070.6	Wet UW=	126.5
Mc (%)	20.3	Mc (%)	20.6	Dry UW=	105.1

Time(hrs)	Time(min)	Quantity In (cc	Out Flow (cc	Head (psi)		Permeability (cm/sec)
15	38	0.40	24.90			
31	40	5.50	22.20	2		2.14E-07
55	51	9.70	18.30	2		1.56E-07
64	41	11.10	16.80	2		1.47E-07
78	41	13.30	14.60	2		1.38E-07
102	26	16.00	12.00	2		1.21E-07
127	3	18.80	9.50	2		1.11E-07
151	10	21.00	7.30	2		1.02E-07
175	8	23.00	5.40	2		9.54E-08
7	30	0.50	24.20			
31	55	4.00	20.80	2		9.65E-08
55	53	8.00	16.50	2		1.04E-07
79	1	11.50	13.00	2		1.04E-07
			Average Permeability			1.02E-07

PERMEABILITY TEST RESULTS

Project	Marion Power Plant	Boring/Sample	EP-1A		
		Depth	6.5-7'		
Project #	H-19093	Classification	Brown Silty Clay		
Date	6/25/2019	Diameter	2.828	Area	40.52436
		Length	5.58 Inch		

In Place Mc		After Test Mc		Unit Weight (PCF)	
Wet Wt.	733.3	Wet Wt.	1302.1	Sample Wt	1214.5
Pan	92.9	Pan	80.6		
Dry Wt.	634.1	Dry Wt.	1106.5	Wet UW=	132.1
Mc (%)	18.3	Mc (%)	19.1	Dry UW=	111.7

Time(hrs)	Time(min)	Quantity In (cc	Out Flow (cc	Head (psi)		Permeability (cm/sec)
15	24	0.10	24.90			
31	40	11.50	13.80	2		4.84E-07
39	3	13.30	12.20	2		3.86E-07
15	4	0.10	24.80			
31	51	7.80	17.40	2		3.17E-07
40	41	9.50	15.60	2		2.54E-07
54	42	10.20	15.00	2		1.76E-07
14	52	1.70	24.00			
30	26	7.40	18.20	2		2.53E-07
55	3	8.90	17.00	2		1.24E-07
79	11	10.10	15.80	2		9.03E-08
103	8	10.90	15.00	2		7.20E-08
127	55	11.90	12.10	2		6.24E-08
151	52	16.50	9.10	2		7.47E-08
175	2	17.30	8.10	2		6.73E-08
			Average Permeability			6.91E-08

HOLCOMB FOUNDATION ENGINEERING CO.
393 WOOD ROAD
CARBONDALE ILLINOIS

PERMEABILITY TEST RESULTS

Project	Marion Power Plant	Boring/Sample	EP-4A		
		Depth	7.5-8'		
Project #	H-19093	Classification	Brown Silty Clay w/ small pebbles & sand		
Date	6/25/2019	Diameter	2.825 Inch	Area	40.43842
		Length	5.575 Inch		

In Place Mc		After Test Mc		Unit Weight (PCF)	
Wet Wt.	442.4	Wet Wt.	1293.1	Sample Wt	1206.8
Pan	73.3	Pan	91.4		
Dry Wt.	385	Dry Wt.	1115.4	Wet UW=	131.7
Mc (%)	18.4	Mc (%)	17.4	Dry UW=	111.2

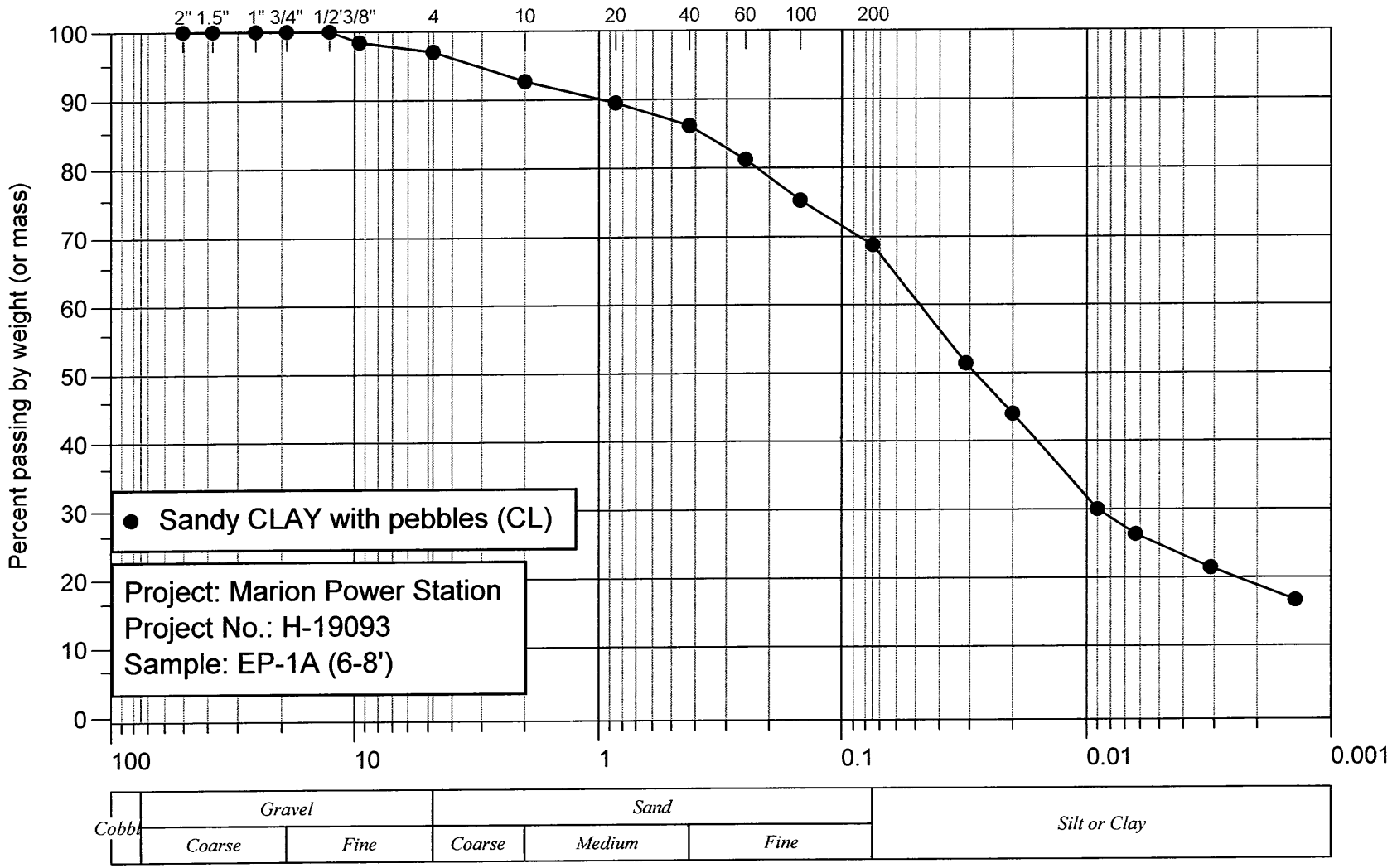
Time(hrs)	Time(min)	Quantity (cc)	Flow (cc)	Head (psi)	Permeability (cm/sec)
8	7	0.20	24.60		
30	27	2.90	23.70	2	8.36E-08
55	3	4.90	22.30	2	6.93E-08
79	15	6.60	20.80	2	6.23E-08
103	8	8.30	19.40	2	5.90E-08
127	54	9.80	18.00	2	5.55E-08
151	52	11.40	16.40	2	5.39E-08
175	1	12.90	14.90	2	5.26E-08
			Average Permeability		5.52E-08

Marion Power Station

Emery Pond

Grain Size Analyses

Grain Size Analysis



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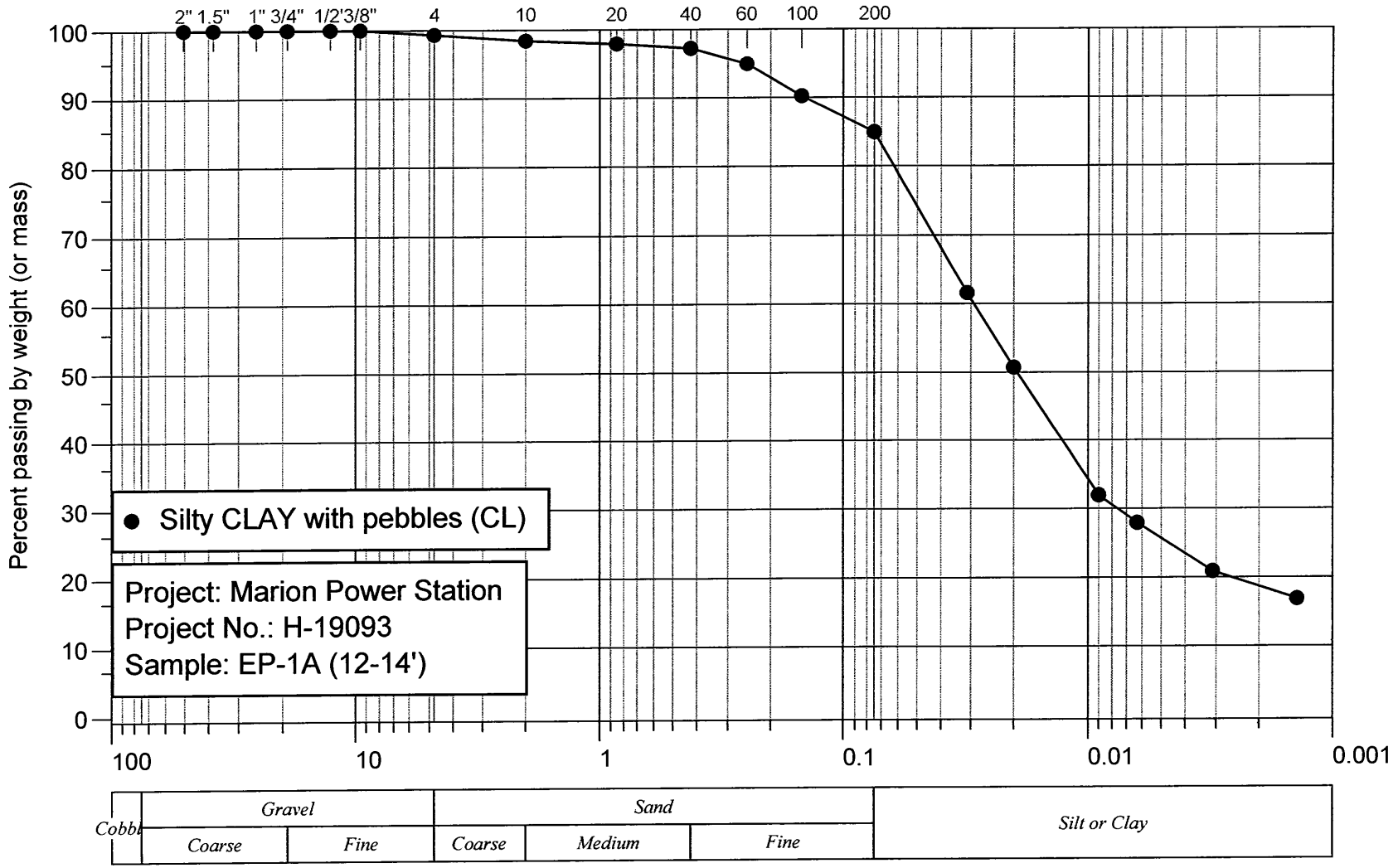
Grain Size Analysis



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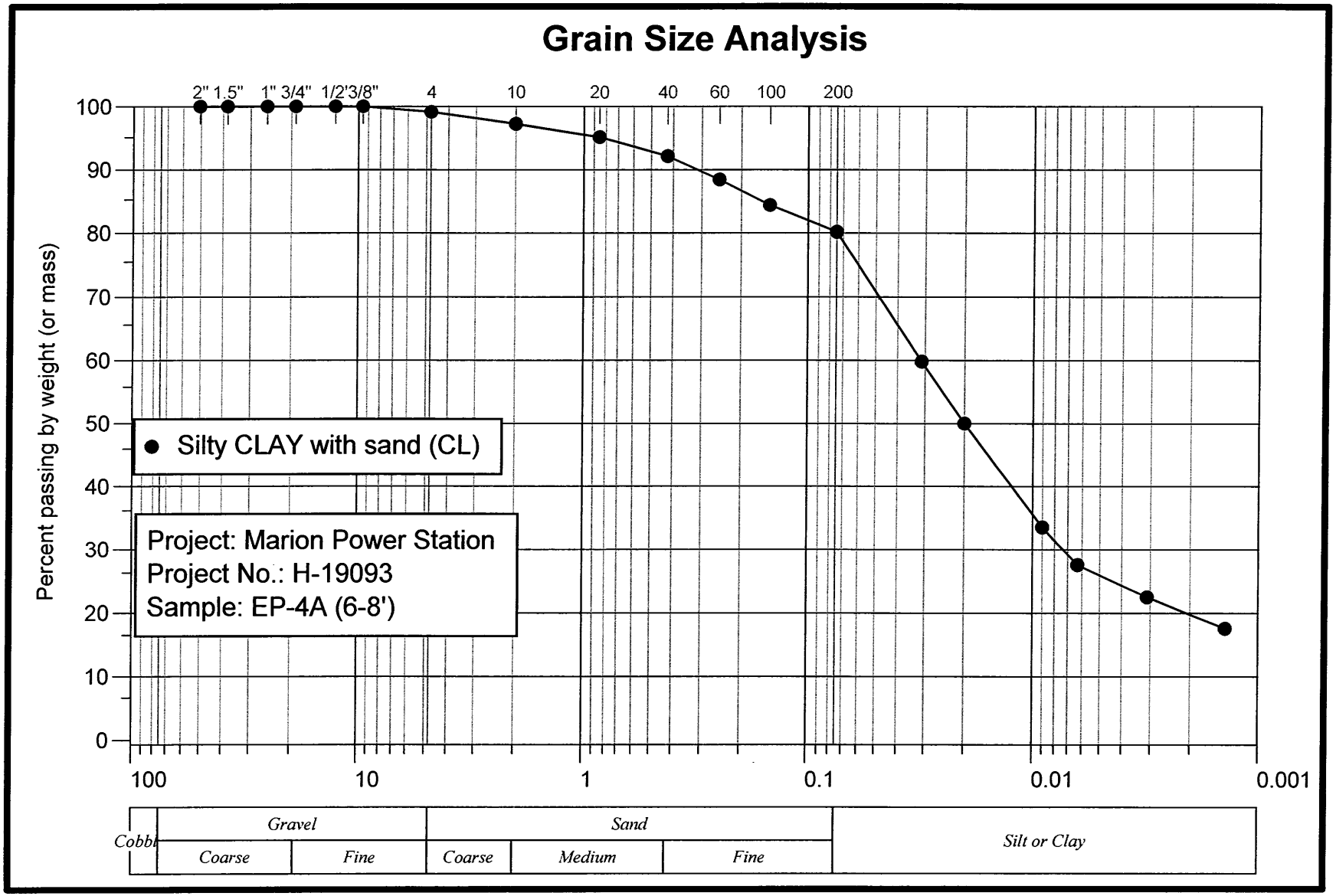
Grain Size Analysis



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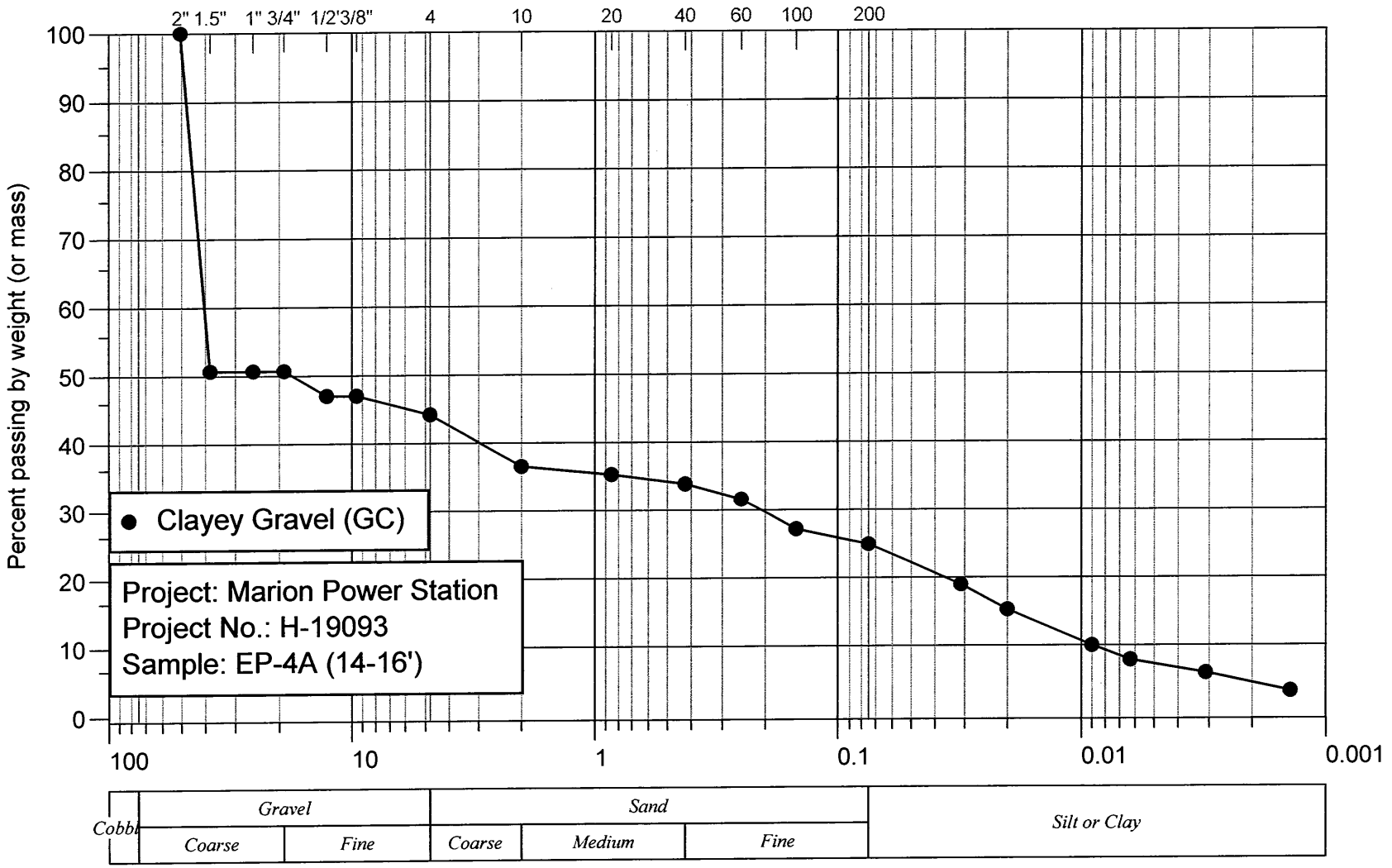
Grain Size Analysis



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Grain Size Analysis and Hydrometer Worksheet

Project:	Marion Power Station	Client:	
Project No.:	H-19093	Date:	6/19/2019
Boring/Depth:	**EP-1A 6-8'**	Total Weight:	239.70

Grain Size

Sieve	mm	Wt. Retained	% Passing	Adj. % Passing
2"	50.800	0.000	0.0	100.0
1.5"	38.100	0.000	0.0	100.0
1"	25.400	0.000	0.0	100.0
3/4"	19.050	0.000	0.0	100.0
1/2"	12.700	0.000	0.0	100.0
3/8"	9.530	3.800	1.6	98.4
#4	4.760	7.200	3.0	97.0
#10	2.000	17.800	7.4	92.6
#20	0.850		96.7	89.5
#40	0.425		93.1	86.2
#60	0.250		87.7	81.2
#100	0.149		81.3	75.3
#200	0.075		74.5	68.9
.031mm			55.8	51.7
.020mm			47.8	44.3
.009mm			32.8	30.4
.0063mm			28.8	26.7
.0031mm			23.6	21.8
.0014mm			18.6	17.2

Hydrometer

Grain Size	*	% Passing	*	Hydrometer	*	Temperature	*	Wt. Ret.
#10	*	100.0	*	X	*	X	*	0
#20	*	96.7	*	X	*	X	*	1.66
#40	*	93.1	*	X	*	X	*	3.46
#60	*	87.7	*	X	*	X	*	6.14
#100	*	81.3	*	X	*	X	*	9.35
#200	*	74.5	*	X	*	X	*	12.76
	*		*		*		*	
0.031	*	55.8	*	34	*	72	*	X
0.020	*	47.8	*	30	*	72	*	X
0.009	*	32.8	*	22	*	74	*	X
0.0063	*	28.8	*	20	*	74	*	X
0.0031	*	23.6	*	17	*	76	*	X
0.0014	*	18.6	*	14.5	*	76	*	X

Grain Size Analysis and Hydrometer Worksheet

Project:	Marion Power Station	Client:	
Project No.:	H-19093	Date:	6/19/2019
Boring/Depth:	**EP-1A 12-14'**	Total Weight:	196.80

Grain Size

Sieve	mm	Wt. Retained	% Passing	Adj. % Passing
2"	50.800	0.000	0.0	100.0
1.5"	38.100	0.000	0.0	100.0
1"	25.400	0.000	0.0	100.0
3/4"	19.050	0.000	0.0	100.0
1/2"	12.700	0.000	0.0	100.0
3/8"	9.530	0.000	0.0	100.0
#4	4.760	1.400	0.7	99.3
#10	2.000	3.100	1.6	98.4
#20	0.850		99.5	97.9
#40	0.425		98.6	97.1
#60	0.250		96.4	94.9
#100	0.149		91.6	90.2
#200	0.075		86.4	85.0
.031mm			62.8	61.8
.020mm			51.8	51.0
.009mm			32.8	32.3
.0063mm			28.8	28.3
.0031mm			21.6	21.3
.0014mm			17.6	17.3

Hydrometer

Grain Size	*	% Passing	*	Hydrometer	*	Temperature	*	Wt. Ret.
#10	*	100.0	*	X	*	X	*	0
#20	*	99.5	*	X	*	X	*	0.25
#40	*	98.6	*	X	*	X	*	0.69
#60	*	96.4	*	X	*	X	*	1.78
#100	*	91.6	*	X	*	X	*	4.19
#200	*	86.4	*	X	*	X	*	6.81
	*		*		*		*	
0.031	*	62.8	*	37.5	*	72	*	X
0.020	*	51.8	*	32	*	72	*	X
0.009	*	32.8	*	22	*	74	*	X
0.0063	*	28.8	*	20	*	74	*	X
0.0031	*	21.6	*	16	*	76	*	X
0.0014	*	17.6	*	14	*	76	*	X

Grain Size Analysis and Hydrometer Worksheet

Project:	Marion Power Station	Client:	
Project No.:	H-19093	Date:	6/19/2019
Boring/Depth:	**EP-4A 7.5-8'**	Total Weight:	168.00

Grain Size

Sieve	mm	Wt. Retained	% Passing	Adj. % Passing
2"	50.800	0.000	0.0	100.0
1.5"	38.100	0.000	0.0	100.0
1"	25.400	0.000	0.0	100.0
3/4"	19.050	0.000	0.0	100.0
1/2"	12.700	0.000	0.0	100.0
3/8"	9.530	0.000	0.0	100.0
#4	4.760	1.700	1.0	99.0
#10	2.000	4.780	2.8	97.2
#20	0.850		97.8	95.1
#40	0.425		94.8	92.1
#60	0.250		90.9	88.4
#100	0.149		86.9	84.4
#200	0.075		82.7	80.3
.031mm			61.8	60.0
.020mm			51.8	50.3
.009mm			34.8	33.8
.0063mm			28.8	28.0
.0031mm			23.6	22.9
.0014mm			18.6	18.1

Hydrometer

Grain Size	*	% Passing	*	Hydrometer	*	Temperature	*	Wt. Ret.
#10	*	100.0	*	X	*	X	*	0
#20	*	97.8	*	X	*	X	*	1.08
#40	*	94.8	*	X	*	X	*	2.62
#60	*	90.9	*	X	*	X	*	4.53
#100	*	86.9	*	X	*	X	*	6.54
#200	*	82.7	*	X	*	X	*	8.66
	*		*		*		*	
0.031	*	61.8	*	37	*	72	*	X
0.020	*	51.8	*	32	*	72	*	X
0.009	*	34.8	*	23	*	74	*	X
0.0063	*	28.8	*	20	*	74	*	X
0.0031	*	23.6	*	17	*	76	*	X
0.0014	*	18.6	*	14.5	*	76	*	X

Grain Size Analysis and Hydrometer Worksheet

Project:	Marion Power Station	Client:	
Project No.:	H-19093	Date:	6/19/2019
Boring/Depth:	**EP-4A 14-16'**	Total Weight:	169.80

Grain Size

Sieve	mm	Wt. Retained	% Passing	Adj. % Passing
2"	50.800	0.000	0.0	100.0
1.5"	38.100	83.200	49.0	51.0
1"	25.400	83.200	49.0	51.0
3/4"	19.050	83.200	49.0	51.0
1/2"	12.700	89.400	52.7	47.3
3/8"	9.530	89.400	52.7	47.3
#4	4.760	94.200	55.5	44.5
#10	2.000	107.200	63.1	36.9
#20	0.850		96.6	35.6
#40	0.425		92.8	34.2
#60	0.250		86.5	31.9
#100	0.149		75.1	27.7
#200	0.075		68.8	25.3
.031mm			52.8	19.5
.020mm			42.8	15.8
.009mm			28.8	10.6
.0063mm			22.8	8.4
.0031mm			17.6	6.5
.0014mm			10.6	3.9

Hydrometer

Grain Size	*	% Passing	*	Hydrometer	*	Temperature	*	Wt. Ret.
#10	*	100.0	*	X	*	X	*	0
#20	*	96.6	*	X	*	X	*	1.68
#40	*	92.8	*	X	*	X	*	3.62
#60	*	86.5	*	X	*	X	*	6.73
#100	*	75.1	*	X	*	X	*	12.46
#200	*	68.8	*	X	*	X	*	15.62
	*		*		*		*	
0.031	*	52.8	*	32.5	*	72	*	X
0.020	*	42.8	*	27.5	*	72	*	X
0.009	*	28.8	*	20	*	74	*	X
0.0063	*	22.8	*	17	*	74	*	X
0.0031	*	17.6	*	14	*	76	*	X
0.0014	*	10.6	*	10.5	*	76	*	X

GENERAL NOTES

SAMPLE INDENTIFICATION

The Unified Classification System is used to indentify the soil unless othwerwise noted.

RELATIVE DENSITY & CONSISTENCY CLASSIFICATION

TERM (NON-COHESIVE SOILS)	BLOWS PER FOOT
Very Loose	0-4
Loose	5-10
Firm	11-30
Dense	31-50
Very Dense	Over 50

TERM (COHESIVE SOILS)	QU (tsf)
Very Soft	0.00- 0.25
Soft	0.25-0.50
Firm	0.50-1.00
Stiff	1.00-2.00
Very Stiff	2.00-4.00
Hard	4.00+

DRILLING & SAMPLING SYMBOLS

ss:	Split Spoon-	1 3/8" I.D., 2" O.D.
st:	Shelby Tube-	2.80" I.D., 3" O.D.
au:	Auger Samples	
cs:	Continuous Sampling	2.0" I.D

SOIL PROPERTY SYMBOLS

●	Unconfined Compressive Strength, Qu (tsf)
+	Penetrometer Value, (tsf)
	Plastic Limit (%)
O	Water Content (%)
	Liquid Limit (%)
X	Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2" O.D. Split Spoon

PARTICLE SIZE

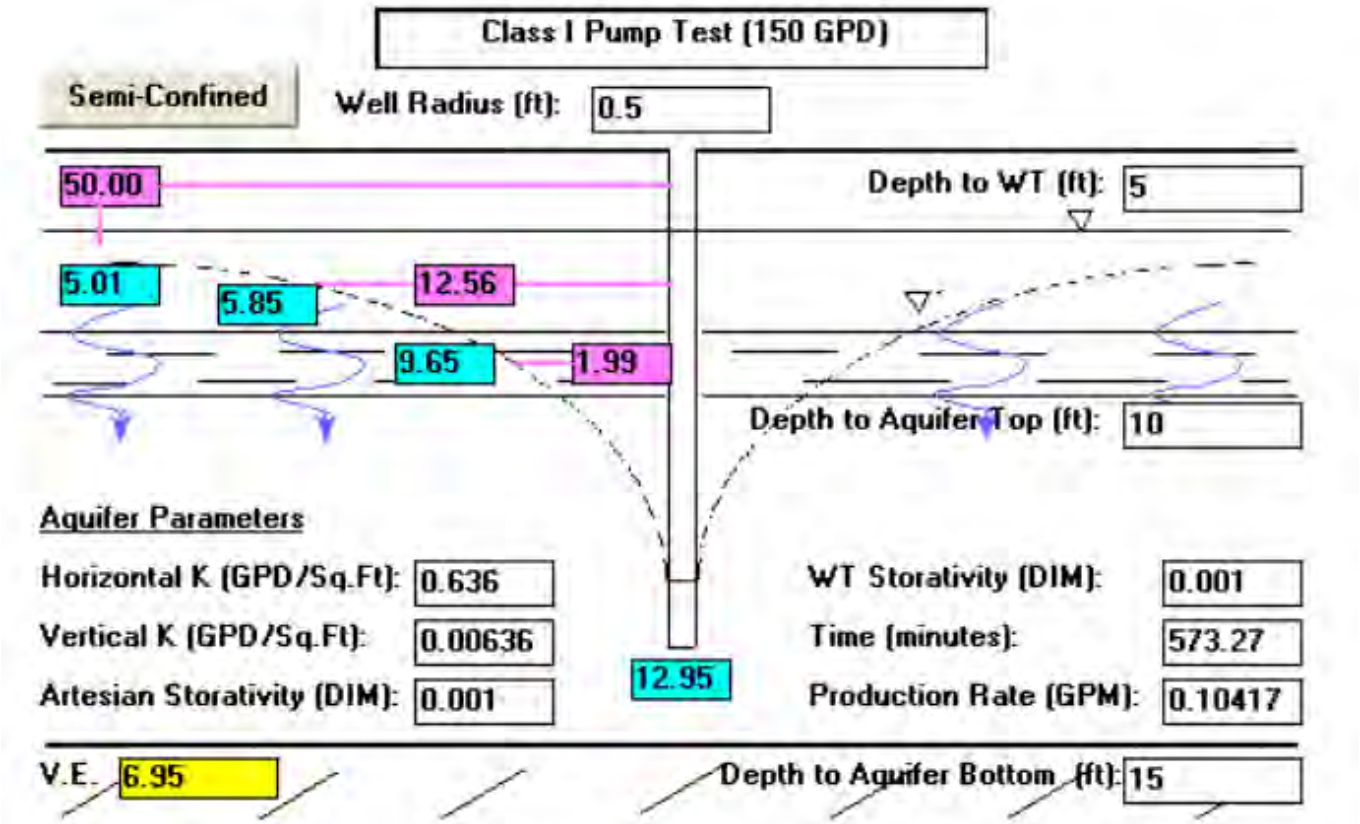
Boulders	8in +	Medium Sand	0.6mm to 0.2mm
Cobbles	8in to 3in	Fine Sand	0.2mm to 0.74 mm
Gravel	3in. to 5mm	Silt	0.074mm to 0.0005mm
Coarse Sand	5mm to 0.6mm	Clay	Less Than 0.005mm

UNIFIED SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		GRAVELS WITH FINES	GM	Silty gravels, gravels-sand silt mixtures
			GC	Clayey gravels, gravel-sand clay mixtures
		CLEAN SANDS	SW	Well-graded sands, gravelly sands
		SANDS WITH FINES	SP	Poorly graded sands, gravelly sands
			SM	Silty sands, sand-silt mixtures
FINE GRAINED SOILS	SILTS AND CLAYS LOW PLASTICITY		SC	Clayey sands, clay-sand mixtures
			ML	Inoganic silts of clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity
	SILTS AND CLAYS HIGH PLASTICITY		OL	Organic silts and organic silty clays of low plasticity
			MH	Inorganic clays of high plasticity
			CH	Organic clays of high plasticity
HIGHLY ORGANIC SOILS			OH	Organic clays of medium to high plasticity
			PT	Peat, humus, swamp soils with high organic contents

Appendix D

Pump Test Simulation



D-1. Base-line Model

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Model  : SIMULATION OF 1 OR 2-LAYER AQUIFER SYSTEM, UNIFORM PROPERTIES, WELL
         STORAGE CAPACITY, DELAYED GRAVITY YIELD, LEAKAGE, DEWATERING, RADIAL FLOW
         TO PRODUCTION WELL,FINITE-DIFFERENCE APPROXIMATION FOR PUMPING TEST DESIGN

Program based in part on program presented by Rushton, K.R. and S.C.Redshaw. 1979.
Seepage and groundwater flow-numerical analysis by analog and digital methods. John
Wiley & Sons, Ltd. New York, and Rathod,K.S and Rushton, K.R. 1984. Numerical
method of pumping test analysis using microcomputers.  GROUND WATER. Vol.22, No.5.

SIMULATION SOFTWARE BY:
   P-Squared Technologies, Inc.
   P.O. Box 22668
   KNOXVILLE, TN 37933
   (423) 691-3668
   May, 1996

DATA BASE FOR SEMI-CONFINED AQUIFER TYPE:

AQUIFER HORIZ. HYDR. COND. (GPD/SQ FT)=0.64
AQUITARD VERT. HYDR. COND. (GPD/SQ FT)=0.0064
AQUIFER THICKNESS (FT)=10.00
AQUITARD THICKNESS (FT)=5.00
ARTESIAN AQUIFER STORATIVITY (DIM)=0.0010
WATER TABLE STORATIVITY (DIM)=0.0010
PRODUCTION WELL EFFECTIVE RADIUS (FT)=0.500
TOP OF AQUIFER DEPTH (FT)=10.00
BASE OF AQUIFER DEPTH (FT)=15.00
INITIAL WATER LEVEL DEPTH (FT)=5.00
INFINITE AQUIFER SYSTEM

COMPUTATION RESULTS:

PRODUCTION WELL DISCHARGE RATE (GPM)= .10417

TIME-DRAWDOWN OR WATER LEVEL VALUES (FT)

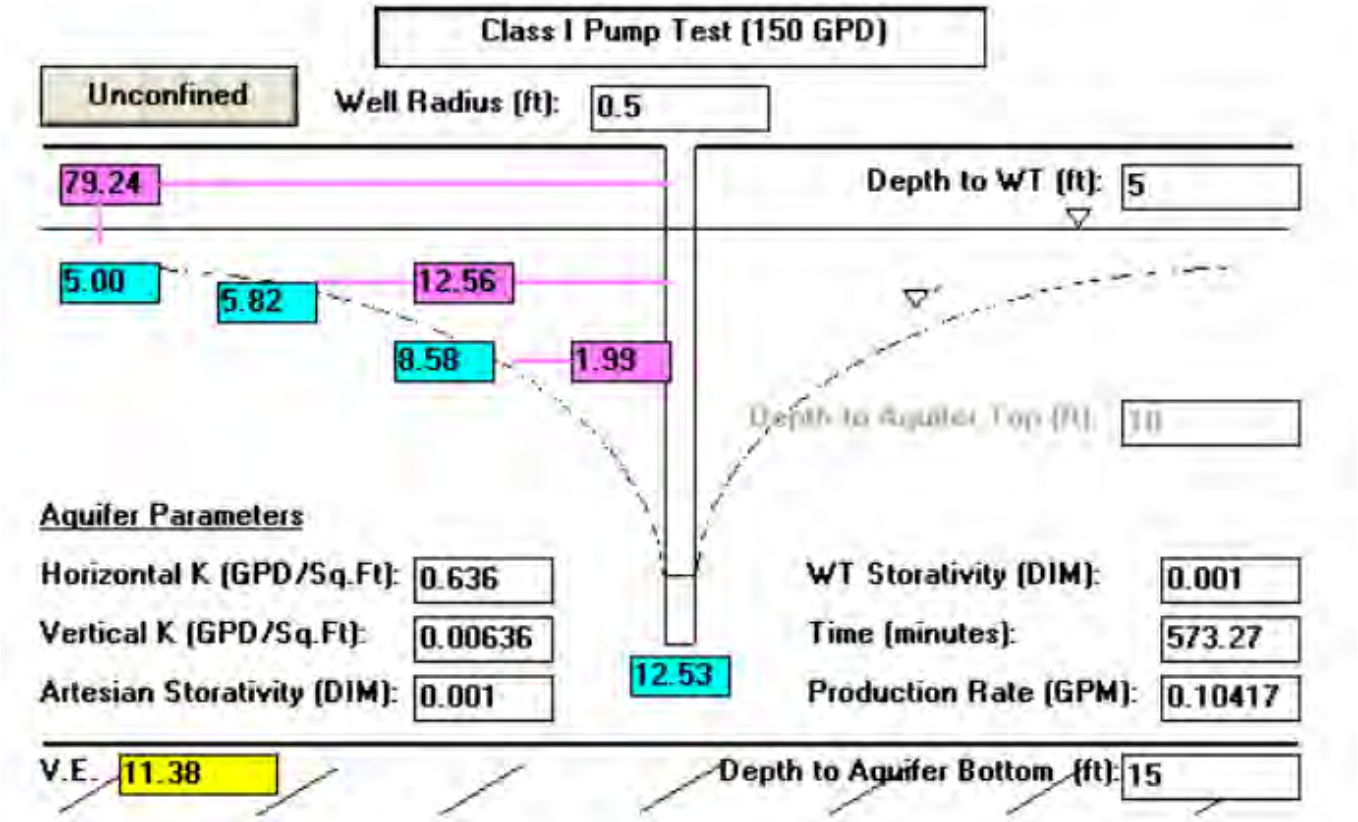
                              SELECTED DISTANCES (FT)

  TIME          0.50      79.24     199.05     500.00    1255.94    3154.79  (MIN)
     0.14       5.00       5.00       5.00       5.00       5.00       5.00
     0.23       5.00       5.00       5.00       5.00       5.00       5.00
     0.36       5.01       5.00       5.00       5.00       5.00       5.00
     0.57       5.01       5.00       5.00       5.00       5.00       5.00
     0.91       5.02       5.00       5.00       5.00       5.00       5.00
     1.44       5.03       5.00       5.00       5.00       5.00       5.00
     2.28       5.04       5.00       5.00       5.00       5.00       5.00
     3.62       5.06       5.00       5.00       5.00       5.00       5.00
     5.73       5.10       5.00       5.00       5.00       5.00       5.00
     9.09       5.16       5.00       5.00       5.00       5.00       5.00
    14.40       5.25       5.00       5.00       5.00       5.00       5.00
    22.82       5.40       5.00       5.00       5.00       5.00       5.00
    36.17       5.62       5.00       5.00       5.00       5.00       5.00
    57.33       5.98       5.00       5.00       5.00       5.00       5.00
    90.86       6.52       5.00       5.00       5.00       5.00       5.00
   144.00       7.35       5.00       5.00       5.00       5.00       5.00
   228.22       8.59       5.00       5.00       5.00       5.00       5.00
   361.71      10.40       5.00       5.00       5.00       5.00       5.00
   573.27      12.95       5.00       5.00       5.00       5.00       5.00
EXCESSIVE DRAWDOWN

DURATION OF MODELING SIMULATION IN MINUTES = 1440.00

DISTANCE-DRAWDOWN OR WATER LEVEL VALUES AT END OF PUMPING PERIOD
```

NODE NO	RADIUS(FT)	DRAWDOWN OR WATER LEVEL (FT)
2	0.50	12.95
3	0.79	11.85
4	1.26	10.74
5	1.99	9.65
6	3.15	8.58
7	5.00	7.56
8	7.92	6.63
9	12.56	5.85
10	19.91	5.33
11	31.55	5.07
12	50.00	5.01



D-2. Unconfined Aquifer Sensitivity

Model : SIMULATION OF 1 OR 2-LAYER AQUIFER SYSTEM, UNIFORM PROPERTIES, WELL STORAGE CAPACITY, DELAYED GRAVITY YIELD, LEAKAGE, DEWATERING, RADIAL FLOW TO PRODUCTION WELL,FINITE-DIFFERENCE APPROXIMATION FOR PUMPING TEST DESIGN

Program based in part on program presented by Rushton, K.R. and S.C.Redshaw. 1979. Seepage and groundwater flow-numerical analysis by analog and digital methods. John Wiley & Sons, Ltd. New York, and Rathod,K.S and Rushton, K.R. 1984. Numerical method of pumping test analysis using microcomputers. GROUND WATER. Vol.22, No.5.

SIMULATION SOFTWARE BY:
P-Squared Technologies, Inc.
P.O. Box 22668
KNOXVILLE, TN 37933
(423) 691-3668
May, 1996

DATA BASE FOR SEMI-CONFINED AQUIFER TYPE:

AQUIFER HORIZ. HYDR. COND. (GPD/SQ FT)=0.64
AQUIFER VERT. HYDR. COND. (GPD/SQ FT)=0.006
AQUIFER THICKNESS (FT)=10.00
ARTESIAN AQUIFER STORATIVITY (DIM)=0.0010
WATER TABLE STORATIVITY (DIM)=0.0010
PRODUCTION WELL EFFECTIVE RADIUS (FT)=0.500
TOP OF AQUIFER DEPTH (FT)=5.00
BASE OF AQUIFER DEPTH (FT)=15.00
INITIAL WATER LEVEL DEPTH (FT)=5.00
INFINITE AQUIFER SYSTEM

COMPUTATION RESULTS:

PRODUCTION WELL DISCHARGE RATE (GPM)= .10417

TIME-DRAWDOWN OR WATER LEVEL VALUES (FT)

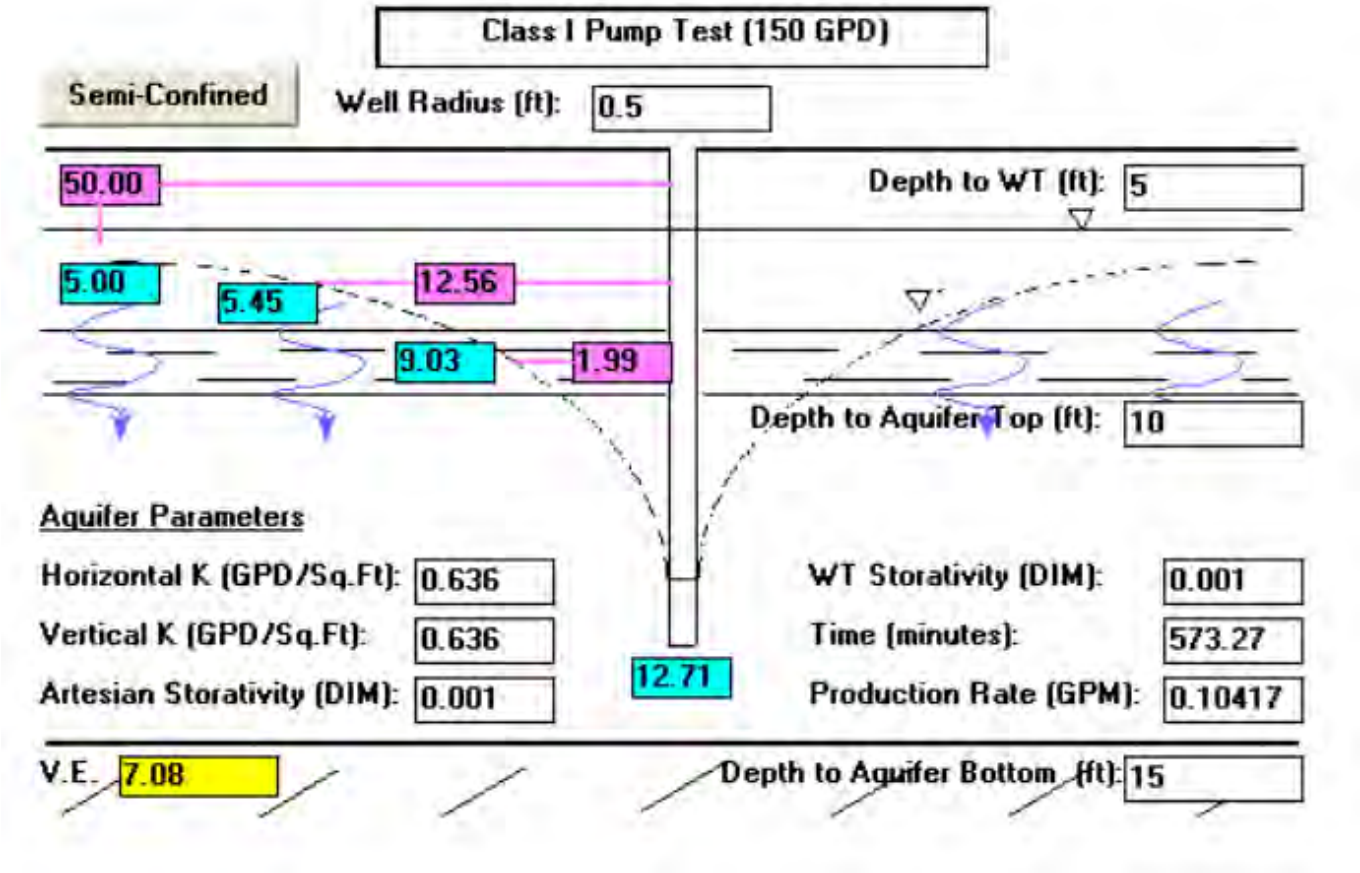
	SELECTED DISTANCES (FT)						
TIME	0.50	79.24	199.05	500.00	1255.94	3154.79	(MIN)
0.14	5.00	5.00	5.00	5.00	5.00	5.00	
0.23	5.00	5.00	5.00	5.00	5.00	5.00	
0.36	5.01	5.00	5.00	5.00	5.00	5.00	
0.57	5.01	5.00	5.00	5.00	5.00	5.00	
0.91	5.02	5.00	5.00	5.00	5.00	5.00	
1.44	5.03	5.00	5.00	5.00	5.00	5.00	
2.28	5.04	5.00	5.00	5.00	5.00	5.00	
3.62	5.06	5.00	5.00	5.00	5.00	5.00	
5.73	5.10	5.00	5.00	5.00	5.00	5.00	
9.09	5.16	5.00	5.00	5.00	5.00	5.00	
14.40	5.25	5.00	5.00	5.00	5.00	5.00	
22.82	5.39	5.00	5.00	5.00	5.00	5.00	
36.17	5.61	5.00	5.00	5.00	5.00	5.00	
57.33	5.95	5.00	5.00	5.00	5.00	5.00	
90.86	6.47	5.00	5.00	5.00	5.00	5.00	
144.00	7.24	5.00	5.00	5.00	5.00	5.00	
228.22	8.38	5.00	5.00	5.00	5.00	5.00	
361.71	10.05	5.00	5.00	5.00	5.00	5.00	
573.27	12.53	5.00	5.00	5.00	5.00	5.00	

EXCESSIVE DRAWDOWN

DURATION OF MODELING SIMULATION IN MINUTES = 1440.00

DISTANCE-DRAWDOWN OR WATER LEVEL VALUES AT END OF PUMPING PERIOD

NODE NO	RADIUS(FT)	DRAWDOWN OR WATER LEVEL (FT)
2	0.50	12.53
3	0.79	10.77
4	1.26	9.56
5	1.99	8.58
6	3.15	7.74
7	5.00	7.00
8	7.92	6.36
9	12.56	5.82
10	19.91	5.40
11	31.55	5.14
12	50.00	5.03
13	79.24	5.00



D-3. Isotropic Aquifer Sensitivity

Model : SIMULATION OF 1 OR 2-LAYER AQUIFER SYSTEM, UNIFORM PROPERTIES, WELL STORAGE CAPACITY, DELAYED GRAVITY YIELD, LEAKAGE, DEWATERING, RADIAL FLOW TO PRODUCTION WELL,FINITE-DIFFERENCE APPROXIMATION FOR PUMPING TEST DESIGN

Program based in part on program presented by Rushton, K.R. and S.C.Redshaw. 1979. Seepage and groundwater flow-numerical analysis by analog and digital methods. John Wiley & Sons, Ltd. New York, and Rathod,K.S and Rushton, K.R. 1984. Numerical method of pumping test analysis using microcomputers. GROUND WATER. Vol.22, No.5.

SIMULATION SOFTWARE BY:
P-Squared Technologies, Inc.
P.O. Box 22668
KNOXVILLE, TN 37933
(423) 691-3668
May, 1996

DATA BASE FOR SEMI-CONFINED AQUIFER TYPE:

AQUIFER HORIZ. HYDR. COND. (GPD/SQ FT)=0.64
AQUITARD VERT. HYDR. COND. (GPD/SQ FT)=0.6360
AQUIFER THICKNESS (FT)=10.00
AQUITARD THICKNESS (FT)=5.00
ARTESIAN AQUIFER STORATIVITY (DIM)=0.0010
WATER TABLE STORATIVITY (DIM)=0.0010
PRODUCTION WELL EFFECTIVE RADIUS (FT)=0.500
TOP OF AQUIFER DEPTH (FT)=10.00
BASE OF AQUIFER DEPTH (FT)=15.00
INITIAL WATER LEVEL DEPTH (FT)=5.00
INFINITE AQUIFER SYSTEM

COMPUTATION RESULTS:

PRODUCTION WELL DISCHARGE RATE (GPM)= .10417

TIME-DRAWDOWN OR WATER LEVEL VALUES (FT)

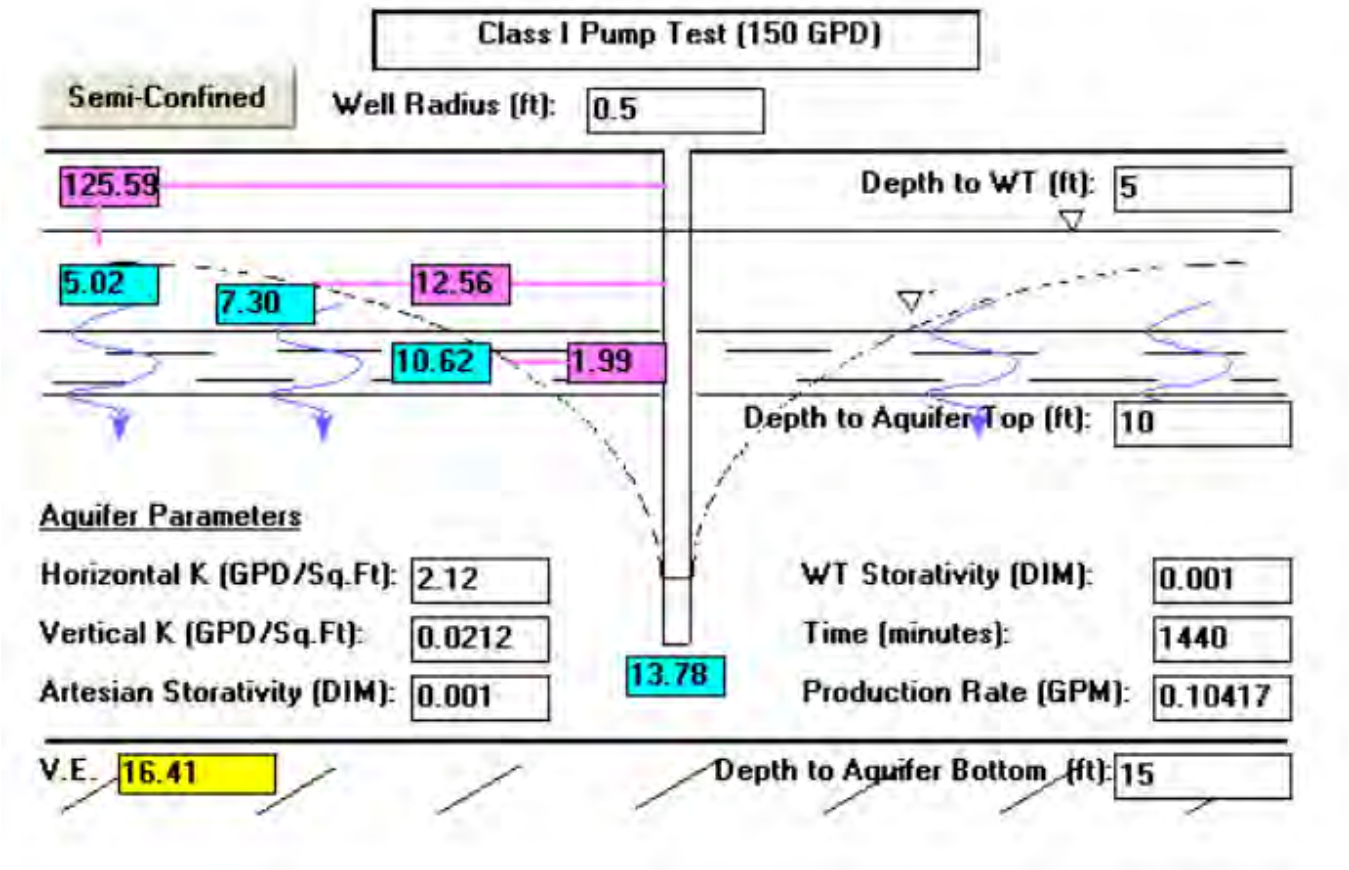
	SELECTED DISTANCES (FT)						
TIME	0.50	79.24	199.05	500.00	1255.94	3154.79	(MIN)
0.14	5.00	5.00	5.00	5.00	5.00	5.00	
0.23	5.00	5.00	5.00	5.00	5.00	5.00	
0.36	5.01	5.00	5.00	5.00	5.00	5.00	
0.57	5.01	5.00	5.00	5.00	5.00	5.00	
0.91	5.02	5.00	5.00	5.00	5.00	5.00	
1.44	5.03	5.00	5.00	5.00	5.00	5.00	
2.28	5.04	5.00	5.00	5.00	5.00	5.00	
3.62	5.06	5.00	5.00	5.00	5.00	5.00	
5.73	5.10	5.00	5.00	5.00	5.00	5.00	
9.09	5.16	5.00	5.00	5.00	5.00	5.00	
14.40	5.25	5.00	5.00	5.00	5.00	5.00	
22.82	5.40	5.00	5.00	5.00	5.00	5.00	
36.17	5.62	5.00	5.00	5.00	5.00	5.00	
57.33	5.98	5.00	5.00	5.00	5.00	5.00	
90.86	6.52	5.00	5.00	5.00	5.00	5.00	
144.00	7.34	5.00	5.00	5.00	5.00	5.00	
228.22	8.56	5.00	5.00	5.00	5.00	5.00	
361.71	10.32	5.00	5.00	5.00	5.00	5.00	
573.27	12.71	5.00	5.00	5.00	5.00	5.00	

EXCESSIVE DRAWDOWN

DURATION OF MODELING SIMULATION IN MINUTES = 1440.00

DISTANCE-DRAWDOWN OR WATER LEVEL VALUES AT END OF PUMPING PERIOD

NODE NO	RADIUS(FT)	DRAWDOWN OR WATER LEVEL (FT)
2	0.50	12.71
3	0.79	11.46
4	1.26	10.23
5	1.99	9.03
6	3.15	7.89
7	5.00	6.87
8	7.92	6.03
9	12.56	5.45
10	19.91	5.13
11	31.55	5.02
12	50.00	5.00



D-4. Hydraulic Conductivity at 1 x 10^{-4} cm/s Sensitivity

Model : SIMULATION OF 1 OR 2-LAYER AQUIFER SYSTEM, UNIFORM PROPERTIES, WELL STORAGE CAPACITY, DELAYED GRAVITY YIELD, LEAKAGE, DEWATERING, RADIAL FLOW TO PRODUCTION WELL,FINITE-DIFFERENCE APPROXIMATION FOR PUMPING TEST DESIGN

Program based in part on program presented by Rushton, K.R. and S.C.Redshaw. 1979. Seepage and groundwater flow-numerical analysis by analog and digital methods. John Wiley & Sons, Ltd. New York, and Rathod,K.S and Rushton, K.R. 1984. Numerical method of pumping test analysis using microcomputers. GROUND WATER. Vol.22, No.5.

SIMULATION SOFTWARE BY:
P-Squared Technologies, Inc.
P.O. Box 22668
KNOXVILLE, TN 37933
(423) 691-3668
May, 1996

DATA BASE FOR SEMI-CONFINED AQUIFER TYPE:

AQUIFER HORIZ. HYDR. COND. (GPD/SQ FT)=2.12
AQUITARD VERT. HYDR. COND. (GPD/SQ FT)=0.0212
AQUIFER THICKNESS (FT)=10.00
AQUITARD THICKNESS (FT)=5.00
ARTESIAN AQUIFER STORATIVITY (DIM)=0.0010
WATER TABLE STORATIVITY (DIM)=0.0010
PRODUCTION WELL EFFECTIVE RADIUS (FT)=0.500
TOP OF AQUIFER DEPTH (FT)=10.00
BASE OF AQUIFER DEPTH (FT)=15.00
INITIAL WATER LEVEL DEPTH (FT)=5.00
INFINITE AQUIFER SYSTEM

COMPUTATION RESULTS:

PRODUCTION WELL DISCHARGE RATE (GPM)= .10417

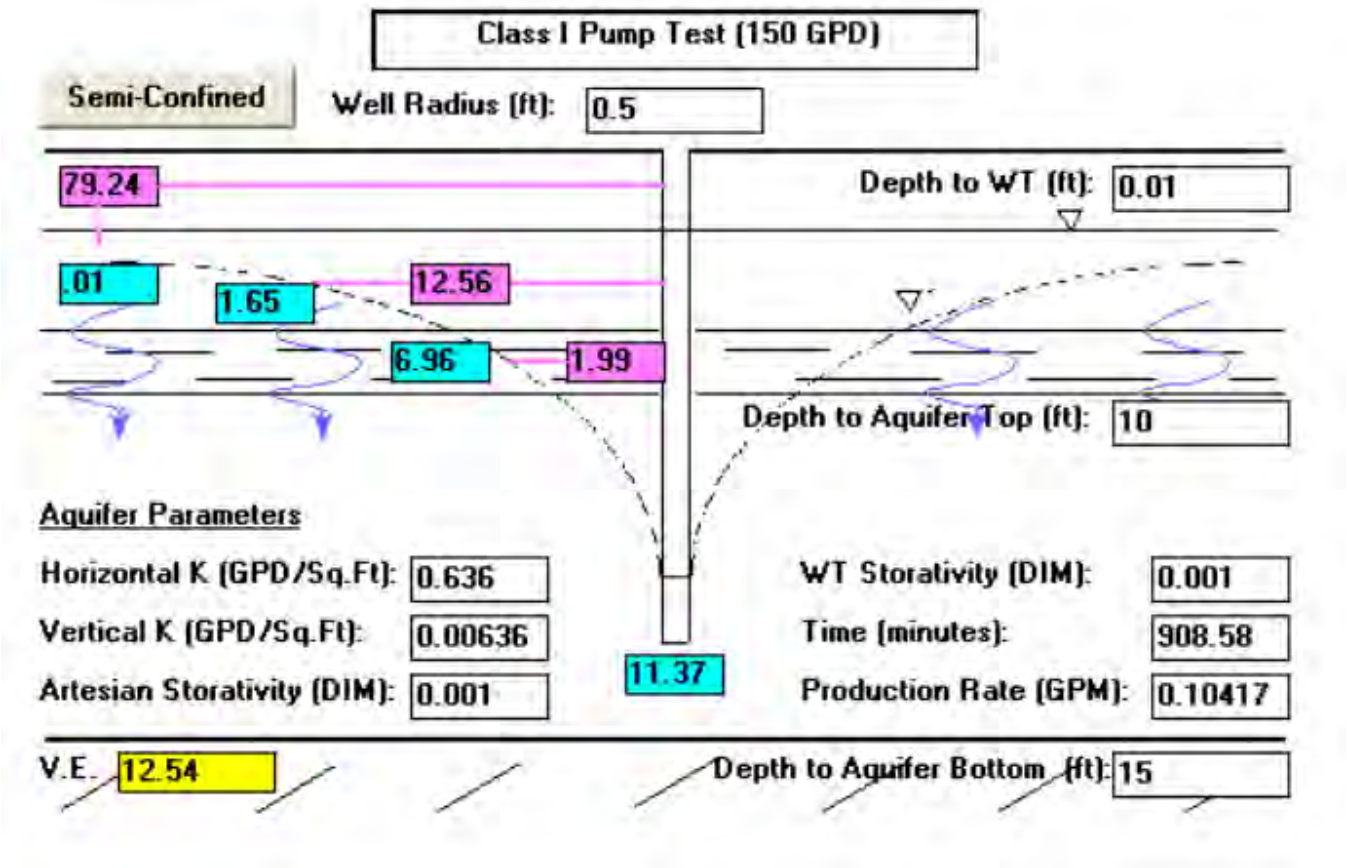
TIME-DRAWDOWN OR WATER LEVEL VALUES (FT)

	SELECTED DISTANCES (FT)						
TIME	0.50	79.24	199.05	500.00	1255.94	3154.79	(MIN)
0.14	5.00	5.00	5.00	5.00	5.00	5.00	
0.23	5.00	5.00	5.00	5.00	5.00	5.00	
0.36	5.01	5.00	5.00	5.00	5.00	5.00	
0.57	5.01	5.00	5.00	5.00	5.00	5.00	
0.91	5.02	5.00	5.00	5.00	5.00	5.00	
1.44	5.03	5.00	5.00	5.00	5.00	5.00	
2.28	5.04	5.00	5.00	5.00	5.00	5.00	
3.62	5.06	5.00	5.00	5.00	5.00	5.00	
5.73	5.10	5.00	5.00	5.00	5.00	5.00	
9.09	5.16	5.00	5.00	5.00	5.00	5.00	
14.40	5.25	5.00	5.00	5.00	5.00	5.00	
22.82	5.38	5.00	5.00	5.00	5.00	5.00	
36.17	5.60	5.00	5.00	5.00	5.00	5.00	
57.33	5.92	5.00	5.00	5.00	5.00	5.00	
90.86	6.39	5.00	5.00	5.00	5.00	5.00	
144.00	7.06	5.00	5.00	5.00	5.00	5.00	
228.22	7.98	5.00	5.00	5.00	5.00	5.00	
361.71	9.16	5.00	5.00	5.00	5.00	5.00	
573.27	10.56	5.01	5.00	5.00	5.00	5.00	
908.58	12.06	5.04	5.00	5.00	5.00	5.00	
1440.00	13.78	5.11	5.00	5.00	5.00	5.00	

DURATION OF MODELING SIMULATION IN MINUTES = 1440.00

DISTANCE-DRAWDOWN OR WATER LEVEL VALUES AT END OF PUMPING PERIOD

NODE NO	RADIUS(FT)	DRAWDOWN OR WATER LEVEL (FT)
2	0.50	13.78
3	0.79	12.51
4	1.26	11.48
5	1.99	10.62
6	3.15	9.78
7	5.00	8.94
8	7.92	8.11
9	12.56	7.30
10	19.91	6.55
11	31.55	5.89
12	50.00	5.39
13	79.24	5.11
14	125.59	5.02



D-5. Aquifer Thickness at 15 ft. Sensitivity

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Model  : SIMULATION OF 1 OR 2-LAYER AQUIFER SYSTEM, UNIFORM PROPERTIES, WELL
         STORAGE CAPACITY, DELAYED GRAVITY YIELD, LEAKAGE, DEWATERING, RADIAL FLOW
         TO PRODUCTION WELL,FINITE-DIFFERENCE APPROXIMATION FOR PUMPING TEST DESIGN

Program based in part on program presented by Rushton, K.R. and S.C.Redshaw. 1979.
Seepage and groundwater flow-numerical analysis by analog and digital methods. John
Wiley & Sons, Ltd. New York, and Rathod,K.S and Rushton, K.R. 1984. Numerical
method of pumping test analysis using microcomputers.  GROUND WATER. Vol.22, No.5.

SIMULATION SOFTWARE BY:
   P-Squared Technologies, Inc.
   P.O. Box 22668
   KNOXVILLE, TN 37933
   (423) 691-3668
   May, 1996

DATA BASE FOR SEMI-CONFINED AQUIFER TYPE:

AQUIFER HORIZ. HYDR. COND. (GPD/SQ FT)=0.64
AQUITARD VERT. HYDR. COND. (GPD/SQ FT)=0.0064
AQUIFER THICKNESS (FT)=14.00
AQUITARD THICKNESS (FT)=5.00
ARTESIAN AQUIFER STORATIVITY (DIM)=0.0010
WATER TABLE STORATIVITY (DIM)=0.0010
PRODUCTION WELL EFFECTIVE RADIUS (FT)=0.500
TOP OF AQUIFER DEPTH (FT)=10.00
BASE OF AQUIFER DEPTH (FT)=15.00
INITIAL WATER LEVEL DEPTH (FT)=0.01
INFINITE AQUIFER SYSTEM

COMPUTATION RESULTS:

PRODUCTION WELL DISCHARGE RATE (GPM)= .10417

TIME-DRAWDOWN OR WATER LEVEL VALUES (FT)
```

	SELECTED DISTANCES (FT)						
TIME	0.50	79.24	199.05	500.00	1255.94	3154.79	(MIN)
0.14	0.01	0.01	0.01	0.01	0.01	0.01	
0.23	0.01	0.01	0.01	0.01	0.01	0.01	
0.36	0.02	0.01	0.01	0.01	0.01	0.01	
0.57	0.02	0.01	0.01	0.01	0.01	0.01	
0.91	0.03	0.01	0.01	0.01	0.01	0.01	
1.44	0.04	0.01	0.01	0.01	0.01	0.01	
2.28	0.05	0.01	0.01	0.01	0.01	0.01	
3.62	0.07	0.01	0.01	0.01	0.01	0.01	
5.73	0.11	0.01	0.01	0.01	0.01	0.01	
9.09	0.17	0.01	0.01	0.01	0.01	0.01	
14.40	0.26	0.01	0.01	0.01	0.01	0.01	
22.82	0.41	0.01	0.01	0.01	0.01	0.01	
36.17	0.63	0.01	0.01	0.01	0.01	0.01	
57.33	0.99	0.01	0.01	0.01	0.01	0.01	
90.86	1.53	0.01	0.01	0.01	0.01	0.01	
144.00	2.36	0.01	0.01	0.01	0.01	0.01	
228.22	3.60	0.01	0.01	0.01	0.01	0.01	
361.71	5.41	0.01	0.01	0.01	0.01	0.01	
573.27	7.96	0.01	0.01	0.01	0.01	0.01	
908.58	11.37	0.01	0.01	0.01	0.01	0.01	

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EXCESSIVE DRAWDOWN

DURATION OF MODELING SIMULATION IN MINUTES = 1440.00
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DISTANCE-DRAWDOWN OR WATER LEVEL VALUES AT END OF PUMPING PERIOD

NODE NO	RADIUS(FT)	DRAWDOWN OR WATER LEVEL (FT)
2	0.50	11.37
3	0.79	9.89
4	1.26	8.42
5	1.99	6.96
6	3.15	5.52
7	5.00	4.12
8	7.92	2.80
9	12.56	1.65
10	19.91	0.76
11	31.55	0.24
12	50.00	0.05
13	79.24	0.01

APPENDIX F

Groundwater Analytical Results

Electronic Filing: Received, Clerk's Office 01/13/2023

Well ID		EBG	EBG	EBG	EBG	EBG	EBG	EBG	EBG	EBG
Sample Data		3/23/2017	4/3/2017	5/25/2017	6/22/2017	6/29/2017	7/24/2017	8/1/2017	8/31/2017	3/22/2018
Sample Purpose		Background	Background	Background	Background	Background	Background	Background	Background	Detection Monitoring
ANALYTE	Unit									
CCR Appendix III										
Boron	mg/L	0.12	0.079	0.1	0.071	0.073	0.079	0.074	0.056	0.033
Calcium	mg/L	23	10	30	23	32	37	35	35	14
Chloride	mg/L	55	11	84	68	79	27	86	82	12
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	<0.5	0.53
pH	SU	6.5	6.8	6.41	6.45	6.53	6.59	6.66	6.26	6.35
Sulfate	mg/L	64	54	42	57	50	61	45	44	63
Total Dissolved Solids (TDS)	mg/L	480	400	440	470	280	420	380	470	300
CCR Appendix IV										
Antimony	mg/L	0.00057	0.00085 J	<0.005	0.00069 J	0.0014 J	<0.005	0.00022 J	<0.005	
Arsenic	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Barium	mg/L	0.13	0.029	0.17	0.049	0.086	0.19	0.18	0.16	
Beryllium	mg/L	0.00033 J	<0.0002	<0.005	<0.0002	<0.0002	<0.005	<0.0002	<0.005	
Cadmium	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Chromium	mg/L	0.0062	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Cobalt	mg/L	0.008	0.00016 J	0.014	0.00015 J	0.0014 J	0.0093	0.0038 J	0.0073	
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	<0.5	0.53
Lead	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Lithium	mg/L	0.046 J	0.0074 J	<0.1	0.028 J	0.059 J	<0.1	0.082 J	<0.1	
Mercury	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0034 J	0.0043 J	<0.005	0.0017 J	0.0016 J	<0.005	0.0024 J	<0.005	
Radium 226	pCi/L	0.878	<0.223	0.805	<0.262	<0.245	0.43	0.28	0.77	
Radium 228	pCi/L	1.06	<0.496	0.555	<0.0695	<0.371	0.98	1.24	2.22	
Radium, 226/228 Combined	pCi/L	1.938	<0.496	1.36	<0.262	<0.371	1.41	1.52	2.99	
Selenium	mg/L	0.0019 J	<0.0005	<0.005	0.0036 J	0.0019 J	<0.005	0.0028 J	0.007	
Thallium	mg/L	<0.025	<0.025	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

Electronic Filing: Received, Clerk's Office 01/13/2023

Well ID		EBG	EBG	EBG	EBG	EBG	EBG	EBG	EBG
Sample Data		8/27/2018	1/11/2019	6/27/2019	1/30/2020	6/22/2020	1/21/2021	5/31/2021	8/30/2021
Sample Purpose		Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Corrective Action Monitoring	Corrective Action Monitoring
ANALYTE	Unit								
CCR Appendix III									
Boron	mg/L	0.035	0.041	<0.08	<0.5	0.022	<0.5	<0.02	0.01 J
Calcium	mg/L	15	13	15.2	12	13	15	13.3	12.1
Chloride	mg/L	16	12	18	7.2	12	13	22	17
Fluoride	mg/L	0.55	0.5	<0.5	0.56	<0.5	0.46	0.6	0.58
pH	SU	6.57	6.85	6.21	6.54	6.5	6.57	6.61	6.58
Sulfate	mg/L	72	75	77	87	81	78	85	83
Total Dissolved Solids (TDS)	mg/L	360	370	470	280	500	320	344	340
CCR Appendix IV									
Antimony	mg/L	<0.012		<0.0016		<0.001		<0.001	<0.001
Arsenic	mg/L	<0.3		<0.002		0.0011		<0.001	<0.001
Barium	mg/L	0.091		<0.2		0.068		0.0505	0.0469
Beryllium	mg/L	<0.008	0.00038 J	<0.00015		<0.001		<0.001	<0.001
Cadmium	mg/L	<0.01		<0.00054		<0.002		<0.001	<0.001
Chromium	mg/L	<0.01	<0.01	<0.014		0.0042		<0.0015	0.0011 J
Cobalt	mg/L	<0.01	0.0038	<0.01		0.0017		<0.001	0.0003 J
Fluoride	mg/L	0.55	0.5	<0.5	0.56	<0.5	0.46	0.6	0.58
Lead	mg/L	<0.01	<0.01	<0.0062		<0.0075		<0.001	<0.001
Lithium	mg/L	<0.1 J		<0.08		<0.1 J		0.0207	0.0164
Mercury	mg/L	<0.0002		<0.0002		<0.0002		<0.0002	<0.0002
Molybdenum	mg/L	<0.005		<0.01		<0.003		0.0145	0.0014 J
Radium 226	pCi/L	0.933		0.703		0.468			<0.21
Radium 228	pCi/L	0.447		0.911		0.514			1.02
Radium, 226/228 Combined	pCi/L	1.38		1.61		0.983			<1.23
Selenium	mg/L	<0.002	0.00079 J	<0.001		<0.001		<0.001	<0.001
Thallium	mg/L	<0.05	<0.05	<0.00094		<0.05		<0.002	0.0054

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

	Well ID	EP-1	EP-1	EP-1	EP-1	EP-1	EP-1	EP-1	EP-1	EP-1
	Sample Data	3/23/2017	4/3/2017	5/25/2017	6/22/2017	6/29/2017	7/24/2017	8/1/2017	8/31/2017	3/22/2018
	Sample Purpose	Background	Background	Background	Background	Background	Background	Background	Background	Detection Monitoring
ANALYTE	Unit									
CCR Appendix III										
Boron	mg/L	0.13	0.21	0.28	0.26	0.32	0.21	0.23	0.17	0.38
Calcium	mg/L	220	280	310	310	310	270	250	240	330
Chloride	mg/L	54	54	48	50	50	51	48	48	60
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH	SU	6.94	6.89	6.55	6.52	6.64	6.57	6.82	6.79	6.25
Sulfate	mg/L	820	910	850	850	440	540	520	440	510
Total Dissolved Solids (TDS)	mg/L	2000	2300	2300	2300	2200	2200	2100	2100	2400
CCR Appendix IV										
Antimony	mg/L	0.00043 J	<0.0002	<0.005	0.00057 J	0.00095 J	<0.005	<0.0002	<0.005	
Arsenic	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Barium	mg/L	0.045	0.04	0.041	0.032	0.033	0.029	0.028	0.026	
Beryllium	mg/L	<0.0002	<0.0002	<0.005	<0.0002	<0.0002	<0.005	<0.0002	<0.005	
Cadmium	mg/L	<0.005	0.006	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Chromium	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Cobalt	mg/L	0.0017 J	0.00079 J	<0.005	0.00081 J	0.00057 J	<0.005	0.00074 J	<0.005	
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Lithium	mg/L	0.024 J	0.028 J	<0.1	0.032 J	0.029 J	<0.1	0.024 J	<0.1	
Mercury	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0028 J	0.0016 J	<0.005	0.00077 J	0.0018 J	<0.005	0.0019 J	<0.005	
Radium 226	pCi/L	0.603	0.341	0.37	0.313	<0.139	0.16	0.38	0.24	
Radium 228	pCi/L	<0.0552	0.55	<0.609	0.496	<0.0387	<0.27	1.04	1.15	
Radium, 226/228 Combined	pCi/L	0.603	0.891	0.37	0.809	<0.139	0.16	1.42	1.39	
Selenium	mg/L	0.0012 J	0.0014 J	<0.005	0.005 J	0.0025 J	<0.005	0.0011 J	<0.005	
Thallium	mg/L	<0.025	<0.025	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

	Well ID	EP-1	EP-1	EP-1	EP-1	EP-1	EP-1	EP-1	EP-1
	Sample Data	8/27/2018	1/11/2019	6/27/2019	1/30/2020	6/22/2020	1/21/2021	5/31/2021	8/30/2021
	Sample Purpose	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Corrective Action Monitoring	Corrective Action Monitoring
ANALYTE	Unit								
CCR Appendix III									
Boron	mg/L	0.92	0.75	1.12	1.1	0.92	1	0.816	0.931
Calcium	mg/L	410	410	444	540	470	460	478	483
Chloride	mg/L	63	70	55	52	34	39	44	48
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.22	0.19
pH	SU	6.36	6.33	6.2	7.39	6.15	6.29	6.18	6.12
Sulfate	mg/L	1000	1600	1500	1700	1400	1400	1450	1640
Total Dissolved Solids (TDS)	mg/L	2700	2800	550	2700	2700	2500	2500	2520
CCR Appendix IV									
Antimony	mg/L	<0.012		<0.0016		<0.005		<0.001	0.0005 J
Arsenic	mg/L	<0.3		<0.002		<0.005		<0.001	0.0005 J
Barium	mg/L	0.023		<0.2		0.019		0.0216	0.02
Beryllium	mg/L	<0.008	<0.005	<0.00015		<0.005		<0.001	<0.001
Cadmium	mg/L	<0.01		<0.00054		<0.002 J		<0.001	<0.001
Chromium	mg/L	<0.01	<0.01	<0.014		<0.003		<0.002	0.0019
Cobalt	mg/L	<0.01	0.00056 J	<0.01		<0.005		0.0012	0.001 J
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.22	0.19
Lead	mg/L	<0.01	<0.01	<0.0062		<0.0075		<0.001	<0.001
Lithium	mg/L	<0.1 J		<0.08		<0.1 J		0.0141	0.0127
Mercury	mg/L	<0.0002		<0.0002		<0.0002		<0.0002	<0.0002
Molybdenum	mg/L	<0.005		<0.01		<0.005		<0.0015	<0.0015
Radium 226	pCi/L	0.453		0.619		0.42			<0.04
Radium 228	pCi/L	0.992		0.0905		0.405			1.78
Radium, 226/228 Combined	pCi/L	1.445		0.71		0.825			<1.82
Selenium	mg/L	<0.002	<0.0028	<0.001		<0.005		0.0015	0.0014
Thallium	mg/L	<0.05	<0.05	<0.00094		<0.05		<0.002	0.0042

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

Well ID		EP-2	EP-2	EP-2	EP-2	EP-2	EP-2	EP-2	EP-2	EP-2
Sample Data		3/23/2017	4/3/2017	5/25/2017	6/22/2017	6/29/2017	7/24/2017	8/1/2017	8/31/2017	3/22/2018
Sample Purpose		Background	Background	Background	Background	Background	Background	Background	Background	Detection Monitoring
ANALYTE	Unit									
CCR Appendix III										
Boron	mg/L	0.22	0.19	0.2	0.23	0.29	0.26	0.31	0.23	0.24
Calcium	mg/L	190	170	200	200	470	200	190	180	230
Chloride	mg/L	42	39	36	37	36	36	36	36	30
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH	SU	6.18	6.39	6.31	6.1	5.75	5.86	5.88	6.33	6.27
Sulfate	mg/L	860	660	780	780	470	430	770	340	420
Total Dissolved Solids (TDS)	mg/L	1800	1800	1900	1800	1900	1800	1800	1800	1700
CCR Appendix IV										
Antimony	mg/L	0.00029 J	<0.0002	<0.005	0.0004 J	0.00073 J	<0.005	<0.0002	<0.005	
Arsenic	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Barium	mg/L	0.039	0.035	0.038	0.03	0.029	0.025	0.025	0.025	
Beryllium	mg/L	<0.0002	<0.0002	<0.005	<0.0002	<0.0002	<0.005	<0.0002	<0.005	
Cadmium	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Chromium	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Cobalt	mg/L	0.052	0.029	0.023	0.016	0.0087	<0.005	0.00086 J	<0.005	
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Lithium	mg/L	0.018 J	0.015 J	<0.1	0.020 J	0.025 J	<0.1	0.021 J	<0.1	
Mercury	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.0015 J	0.0017 J	<0.005	0.0003 J	0.00055 J	<0.005	0.00082 J	<0.005	
Radium 226	pCi/L	<0.187	0.338	<0.177	0.197	1.9	0.08	0.14	0.08	
Radium 228	pCi/L	0.853	<0.0622	<0.126	<0.127	<0.458	0.4	1.35	0.64	
Radium, 226/228 Combined	pCi/L	0.853	0.338	<0.177	0.197	1.9	0.48	1.49	0.72	
Selenium	mg/L	0.0038 J	0.0027 J	<0.005	0.0074	0.0061	0.0054	0.0046 J	<0.005	
Thallium	mg/L	<0.025	<0.025	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

GOLDER

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Well ID		EP-2	EP-2	EP-2	EP-2	EP-2	EP-2	EP-2	EP-2
Sample Data		8/27/2018	1/11/2019	6/27/2019	1/30/2020	6/22/2020	1/21/2021	5/31/2021	8/30/2021
Sample Purpose		Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Corrective Action Monitoring	Corrective Action Monitoring
ANALYTE	Unit								
CCR Appendix III									
Boron	mg/L	0.2	0.37	0.274	0.56	0.47	0.49 J	0.544	0.499
Calcium	mg/L	190	280	236	430	360	340	372	363
Chloride	mg/L	35	25	29	13	19	28	29	34
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.28	0.62	0.40
pH	SU	6.28	6.62	6.18	6.46	5.81	6.37	5.74	5.91
Sulfate	mg/L	740	1100	1100	1100	1200	1300	1370	1590
Total Dissolved Solids (TDS)	mg/L	1800	1900	400	1900	2200	2300	2120	2370
CCR Appendix IV									
Antimony	mg/L	<0.012		<0.0016		<0.001		<0.001	<0.0010
Arsenic	mg/L	<0.3		<0.002		<0.001		<0.001	0.0005 J
Barium	mg/L	0.018		<0.2		0.019		0.0146	0.0198
Beryllium	mg/L	<0.008	<0.005	<0.0016		<0.001		0.0011	0.0003 J
Cadmium	mg/L	<0.01		<0.00054		<0.002 J		0.0015	0.0016
Chromium	mg/L		<0.01	<0.014		<0.003		<0.0015	<0.0015
Cobalt	mg/L	<0.01	0.0007 J	<0.01		<0.001		0.0017	0.0052
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.28	0.62	0.40
Lead	mg/L	<0.01	<0.01	<0.0062		<0.0075		<0.001	0.0007 J
Lithium	mg/L	<0.1 J		<0.08		<0.1 J		0.0206	0.0148
Mercury	mg/L	<0.0002		<0.0002		<0.0002		<0.0002	<0.00020
Molybdenum	mg/L	<0.005		<0.01		<0.001		<0.0015	<0.0015
Radium 226	pCi/L	0		<0.149		0.0467			<0.02
Radium 228	pCi/L	0.443		0.553		0.176			2.51
Radium, 226/228 Combined	pCi/L	0.443		0.553		0.222			2.53
Selenium	mg/L	<0.002	0.0055	<0.001		0.0031		<0.001	<0.0010
Thallium	mg/L	<0.05	<0.05	<0.00094		<0.05		<0.002	0.0090

Notes:
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pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

	Well ID	EP-3	EP-3	EP-3	EP-3	EP-3	EP-3	EP-3	EP-3	EP-3
	Sample Data	3/23/2017	4/3/2017	5/25/2017	6/22/2017	6/29/2017	7/24/2017	8/1/2017	8/31/2017	3/22/2018
	Sample Purpose	Background	Background	Background	Background	Background	Background	Background	Background	Detection Monitoring
ANALYTE	Unit									
CCR Appendix III										
Boron	mg/L	0.11	0.089	0.081	0.057	0.085	0.083	0.09	0.09	0.078
Calcium	mg/L	34	29	45	93	30	32	34	33	34
Chloride	mg/L	100	120	140	220	66	110	120	110	110
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH	SU	5.99	5.96	6.03	6.08	6.01	5.96	6.02	6.13	6.1
Sulfate	mg/L	120	180	190	300	73	130	140	110	110
Total Dissolved Solids (TDS)	mg/L	680	820	1400	560	570	720	630	1000	700
CCR Appendix IV										
Antimony	mg/L	0.00022 J	<0.0002	<0.005	0.00026 J	0.00091 J	<0.005	<0.0002	<0.005	
Arsenic	mg/L	<0.005	0.0088	0.0076	0.0061	<0.005	0.0093	0.0062	0.0069	
Barium	mg/L	0.072	0.059	0.059	0.061	0.065	0.064	0.057	0.058	
Beryllium	mg/L	<0.0002	<0.0002	<0.005	<0.0002	<0.0002	<0.005	<0.0002	<0.005	
Cadmium	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Chromium	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Cobalt	mg/L	0.11	0.12	0.091	0.037	0.11	0.12	0.1	0.11	
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	mg/L	<0.005	0.0056	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Lithium	mg/L	<0.003	0.0095 J	<0.1	0.12	0.012 J	<0.1	0.028 J	<0.1	
Mercury	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.00037 J	0.00045 J	<0.005	<0.0002	<0.0002	<0.005	0.00047 J	<0.005	
Radium 226	pCi/L	1.64	0.715	1	0.366	0.317	0.19	0.43	0.41	
Radium 228	pCi/L	<0.438	1.92	<0.633	0.42	<0.397	0.77	2.42	0.77	
Radium, 226/228 Combined	pCi/L	1.64	2.635	1	0.786	0.317	0.96	2.88	1.18	
Selenium	mg/L	0.013	0.011	0.016	0.028	0.013	0.016	0.012	0.022	
Thallium	mg/L	<0.025	<0.025	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
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GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

Well ID		EP-3	EP-3	EP-3	EP-3	EP-3	EP-3	EP-3	EP-3
Sample Data		8/27/2018	1/11/2019	6/27/2019	1/30/2020	6/22/2020	1/21/2021	5/31/2021	8/30/2021
Sample Purpose		Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Corrective Action Monitoring	Corrective Action Monitoring
ANALYTE	Unit								
CCR Appendix III									
Boron	mg/L	0.082	0.033	<0.08	<0.5	0.024	<0.25	0.0556	0.0750
Calcium	mg/L	38	94	76.3	40	80	66	40.6	35.5
Chloride	mg/L	140	240	150	140	330	230	127	129
Fluoride	mg/L	<0.5	<0.5	<25	<0.5	<0.5	0.35	0.22	0.17
pH	SU	6.1	6.11	5.98	6.31	6.01	6.24	6.13	6.07
Sulfate	mg/L	150	340	160	190	410	300	148	114
Total Dissolved Solids (TDS)	mg/L	690	750	580	750	960	1500	692	672
CCR Appendix IV									
Antimony	mg/L	<0.012		<0.0016		<0.001		<0.001	<0.0010
Arsenic	mg/L	<0.3		0.0057	0.0067	0.0059	<0.1	0.0075	0.0076
Barium	mg/L	0.064		<0.2		0.041		0.0819	0.101
Beryllium	mg/L	<0.008	0.00033 J	<0.00015		<0.001		<0.001	<0.0010
Cadmium	mg/L	<0.01		<0.00054		<0.002		<0.001	<0.0010
Chromium	mg/L	<0.01	<0.01	<0.014		<0.003		<0.0015	<0.0015
Cobalt	mg/L	0.088	0.044	0.032	0.087	0.047	0.031	0.0912	0.0882
Fluoride	mg/L	<0.5	<0.5	<25	<0.5	<0.5	0.35	0.22	0.17
Lead	mg/L	<0.01	<0.01	<0.0062		<0.0075 J		<0.001	<0.0010
Lithium	mg/L	<0.1 J		0.119		0.12		0.0314	0.0169
Mercury	mg/L	<0.0002		<0.0002		<0.0002		<0.0002	<0.00020
Molybdenum	mg/L	<0.005		<0.01		<0.001		<0.0015	<0.0015
Radium 226	pCi/L	0.679		0.0839		0.513			<0.27
Radium 228	pCi/L	0.717		0.477		0.304			<0.5
Radium, 226/228 Combined	pCi/L	1.396		0.561		0.817			<0.77
Selenium	mg/L	<0.002	<0.0028	<0.001		<0.001		<0.001	<0.0010
Thallium	mg/L	<0.05	<0.05	<0.00094		<0.05		<0.002	0.0019 J

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

Well ID		EP-4	EP-4	EP-4	EP-4	EP-4	EP-4	EP-4	EP-4	EP-4
Sample Data		3/23/2017	4/3/2017	5/25/2017	6/22/2017	6/29/2017	7/24/2017	8/1/2017	8/31/2017	3/22/2018
Sample Purpose		Background	Background	Background	Background	Background	Background	Background	Background	Detection Monitoring
ANALYTE	Unit									
CCR Appendix III										
Boron	mg/L	14	23	14	11	13	11	14	11	13
Calcium	mg/L	190	170	170	150	190	160	150	150	200
Chloride	mg/L	460	290	380	430	250	180	210	210	200
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH	SU	5.51	5.88	5.77	5.8	5.81	5.8	5.8	5.85	6.04
Sulfate	mg/L	620	530	660	730	410	290	330	340	320
Total Dissolved Solids (TDS)	mg/L	2300	2300	2400	2000	2100	2300	2200	2300	2100
CCR Appendix IV										
Antimony	mg/L	0.00028 J	<0.0002	<0.005	0.00033 J	0.00051 J	<0.005	<0.0002	<0.005	
Arsenic	mg/L	0.035	0.039	0.037	0.053	0.044	0.044	0.035	0.049	
Barium	mg/L	0.035	0.026	0.028	0.029	0.037	0.026	0.031	0.023	
Beryllium	mg/L	<0.0002	<0.0002	<0.005	<0.0002	<0.0002	<0.005	<0.0002	<0.005	
Cadmium	mg/L	<0.005	0.0052	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Chromium	mg/L	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Cobalt	mg/L	0.39	0.41	0.41	0.44	0.34	0.41	0.42	0.38	
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	mg/L	0.009	0.013	0.011	0.017	<0.01	0.011	0.012	0.012	
Lithium	mg/L	0.0044 J	0.0062 J	<0.1	0.0047 J	0.0063 J	<0.1	0.0053 J	<0.1	
Mercury	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Molybdenum	mg/L	0.00092 J	0.0011 J	<0.005	<0.0002	0.00058 J	<0.005	0.001 J	<0.005	
Radium 226	pCi/L	1.1	1.17	<0.0457	0.18	<0.219	0.3	0.15	0.33	
Radium 228	pCi/L	<0.442	<0.353	0.864	0.897	<0.490	0.44	0.96	2.14	
Radium, 226/228 Combined	pCi/L	1.1	1.17	0.864	1.077	<0.490	0.74	1.11	2.47	
Selenium	mg/L	0.13	0.12	0.13	0.2	0.13	0.13	0.11	0.16	
Thallium	mg/L	<0.025	0.065	0.092	0.094	0.058	<0.05	0.075	0.075	

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

	Well ID	EP-4	EP-4	EP-4	EP-4	EP-4	EP-4	EP-4	EP-4
	Sample Data	8/27/2018	1/11/2019	6/27/2019	1/30/2020	6/22/2020	1/21/2021	5/31/2021	8/30/2021
	Sample Purpose	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Annual Assessment Monitoring	Semi-Annual Assessment Monitoring	Corrective Action Monitoring	Corrective Action Monitoring
ANALYTE	Unit								
CCR Appendix III									
Boron	mg/L	11	15	11.5	11	9.9	10	11.9	11.8
Calcium	mg/L	150	140	159	170	150	140	179	162
Chloride	mg/L	310	420	440	370	380	390	484	446
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	0.09 J
pH	SU	5.85	6.07	5.86	5.94	5.79	5.91	5.79	5.70
Sulfate	mg/L	520	750	710	630	610	580	670	565
Total Dissolved Solids (TDS)	mg/L	1900	2000	130	2000	2500	1900	1860	1750
CCR Appendix IV									
Antimony	mg/L	<0.012		<0.0016		<0.001		<0.001	<0.0010
Arsenic	mg/L	<0.3		0.026 J	0.019	0.014	<0.1	0.0075	0.0073
Barium	mg/L	0.023		<0.2		0.027		0.0248	0.0270
Beryllium	mg/L		<0.0055	<0.0015		<0.005		<0.001	<0.0010
Cadmium	mg/L	<0.01		<0.00054		<0.002		<0.001	<0.0010
Chromium	mg/L	0.011	<0.01	<0.014		<0.003 J		<0.0015	<0.0015
Cobalt	mg/L	0.31	0.41	0.28	0.26	0.33	0.32	0.287	0.326
Fluoride	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	0.09 J
Lead	mg/L	0.015	<0.01	<0.0062		0.018	<0.05	<0.001	<0.0010
Lithium	mg/L	<0.1 J		<0.08		<0.1 J		<0.003	0.0023 J
Mercury	mg/L	<0.0002		<0.0002		<0.0002		<0.0002	<0.00020
Molybdenum	mg/L	<0.005		<0.01		<0.001		<0.0015	<0.0015
Radium 226	pCi/L	0.262		0.77		0.163			<0.11
Radium 228	pCi/L	0.79		0.929		0.41			<0.14
Radium, 226/228 Combined	pCi/L	1.052		1.7		0.573			<0.25
Selenium	mg/L	0.021	<0.0028	<0.001		0.0012		<0.001	<0.0010
Thallium	mg/L	0.14	0.18	<0.00094		<0.05 J		<0.002	0.0012 J

Notes:
SU= Standard Units
mg/L= miligram per liter
pCi/L= picocurries per liter
"<" indicates the result was not detected, the laboratory reporting limit is provided
"J" indicates the result is estimated

Prepared by: DPJ
Checked by: DFSC
Reviewed by: MAH

GOLDER

Electronic Filing: Received, Clerk's Office 01/13/2023

APPENDIX G

Corrective Action and Selected Remedy Plan

Electronic Filing: Received, Clerk's Office 01/13/2023

Emery Pond

Corrective Action and Selected Remedy Plan, Including GMZ Petition

Marion Power Plant
Southern Illinois Power Cooperative
Marion, Williamson County, Illinois

March 29, 2019
revised March 30, 2021

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Engineering | Planning | Allied Services

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Abbreviations

BGS – below ground surface
CAP – Correction Action Plan
CCR – Coal Combustion Residuals
CFR – Code of Federal Regulations
COC – Contaminant of Concern
EPA – Environmental Protection Agency
GMZ – Groundwater Management Zone
GPS – groundwater protection standard [after 40 CFR 257.95(h)]
IAC – Illinois Administrative Code
NELAP – National Environmental Laboratory Accreditation Program
mg/L – milligram per liter
SSL – statistically significant level
ug/L – micrograms per liter

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1. Introduction

Marion Power Plant (Plant) is owned and operated by the Southern Illinois Power Cooperative (SIPC). The Emery Pond is a coal combustion residuals (CCR) impoundment at the Plant and has functioned from the late-1980's to the present as a storm water storage structure for drainage from the adjacent Plant area, including the more recent Gypsum Loadout Area. The Emery Pond and adjacent Gypsum Loadout Area are referred to in this Plan as the Site.

This Plan outlines the selection of a remedy to address the 35 IAC Part 620 exceedances due to the Site alleged in Illinois EPA's Violation Notice No. 6364 issued on July 3, 2018, and any additional detected Part 620 exceedances attributable to the Site, as further described below. The selected remedy for impacted groundwater is also consistent with the federal CCR rule, including 40 CFR 257.97 and 40 CFR 257.98. The remedy selected in this plan includes both active remedial actions, including the removal of CCR from the Site, and a request for a groundwater management zone (GMZ) for a limited time to allow the active corrective action to achieve relevant Part 620 groundwater quality standards. As discussed further below, the impacted groundwater has not measurably impacted nearby surface waters, specifically Lake of Egypt, and no such impact is expected during the requested GMZ period.

Figure 1 shows the Site location on a USGS Topographic Map and Figure 2 depicts the Emery Pond and other features/units at the Site.

2. Groundwater Impacts

2.1 Site Hydrogeology

The site is located in the Shawnee Hills Section within the Interior Low Plateaus (physiographic) Province (Leighton et al., 1948). Site geology consists of glacially derived deposits of the Illinoisan Stage overlying Pennsylvanian Age bedrock. Table 1 list the hydro- and litho-stratigraphic units with their descriptions located within 50 feet of the surface at the Site (Willman et al, 1995 and Berg & Kempton, 1988).

Table 1. Site Geologic/Hydrogeologic Units

Litho-stratigraphic Unit	Hydro-stratigraphic Unit	Lithologic Description
Peoria/Roxana Silt	Unlithified Unit	light yellow tan to gray, fine sandy silt
Glasford Formation (undifferentiated)		silty/sandy diamictons with thin lenticular bodies of silt, sand, and gravel
Caseyville Formation	Bedrock Unit	primarily sandstone with shales

The current groundwater monitoring wells for the Site are all screened at the Unlithified/Bedrock Units interface. This zone has relatively low hydraulic conductivity (< $1x10^{-4}$ cm/s) and only a few feet (5-10 ft.) of saturated thickness. Because of this low hydraulic conductivity, groundwater in the Unlithified Unit and upper portion of the Bedrock Unit (approximately the upper 11 ft.) is classified as Class II: General Resource Groundwater. At the request of Illinois EPA, compliance will be evaluated against the Class I: Potable Resource Groundwater standards. Groundwater in the rest of the explored Bedrock Unit is Class I: Potable Resource Groundwater.

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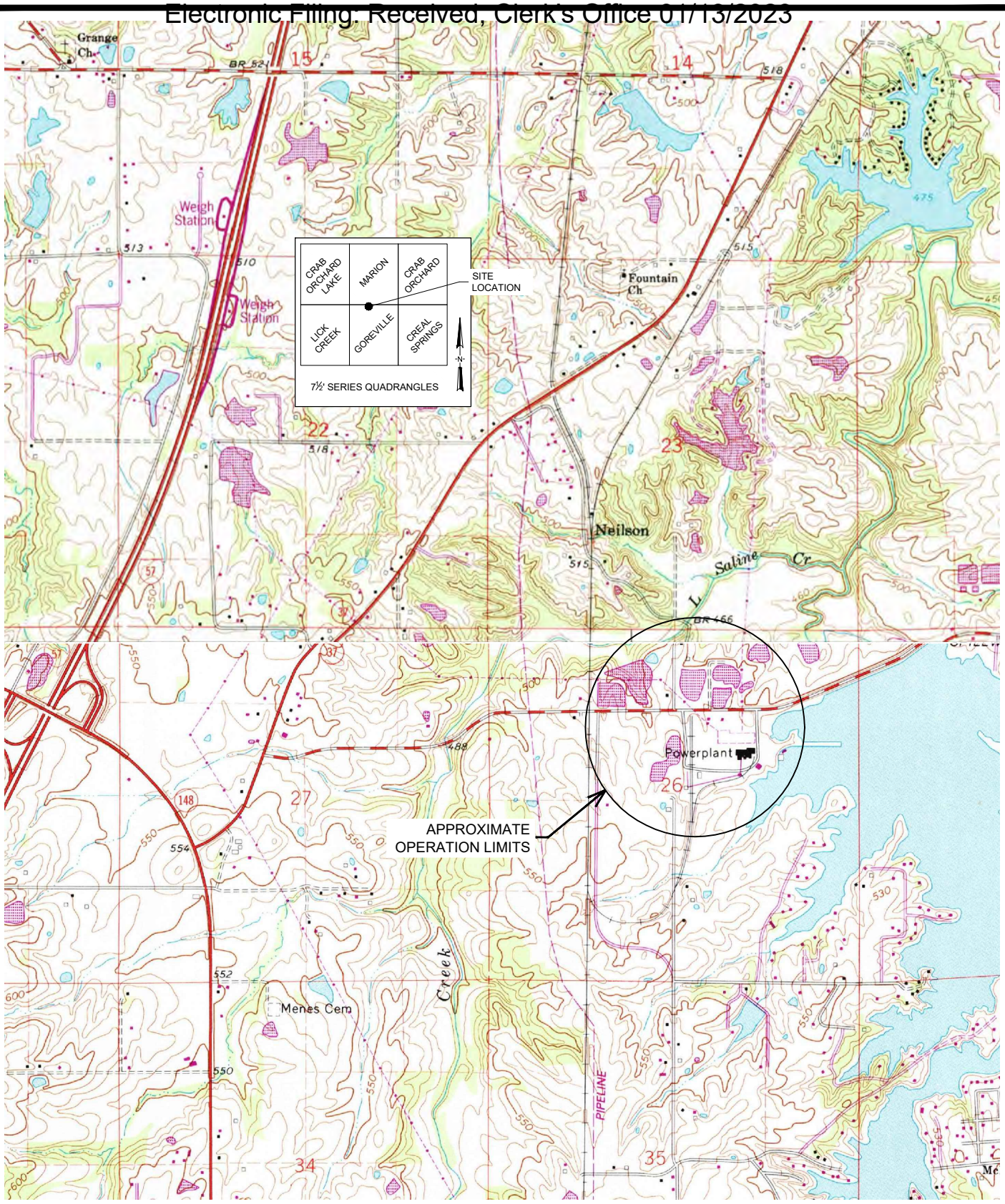

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SCALE

2,000 0 2,000 4,000

1 inch = 2,000 feet Contour interval = 10 feet

Approximate Site Location: n½ of Section 26; T10S., R2E.

SITE LOCATION MAP

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 1

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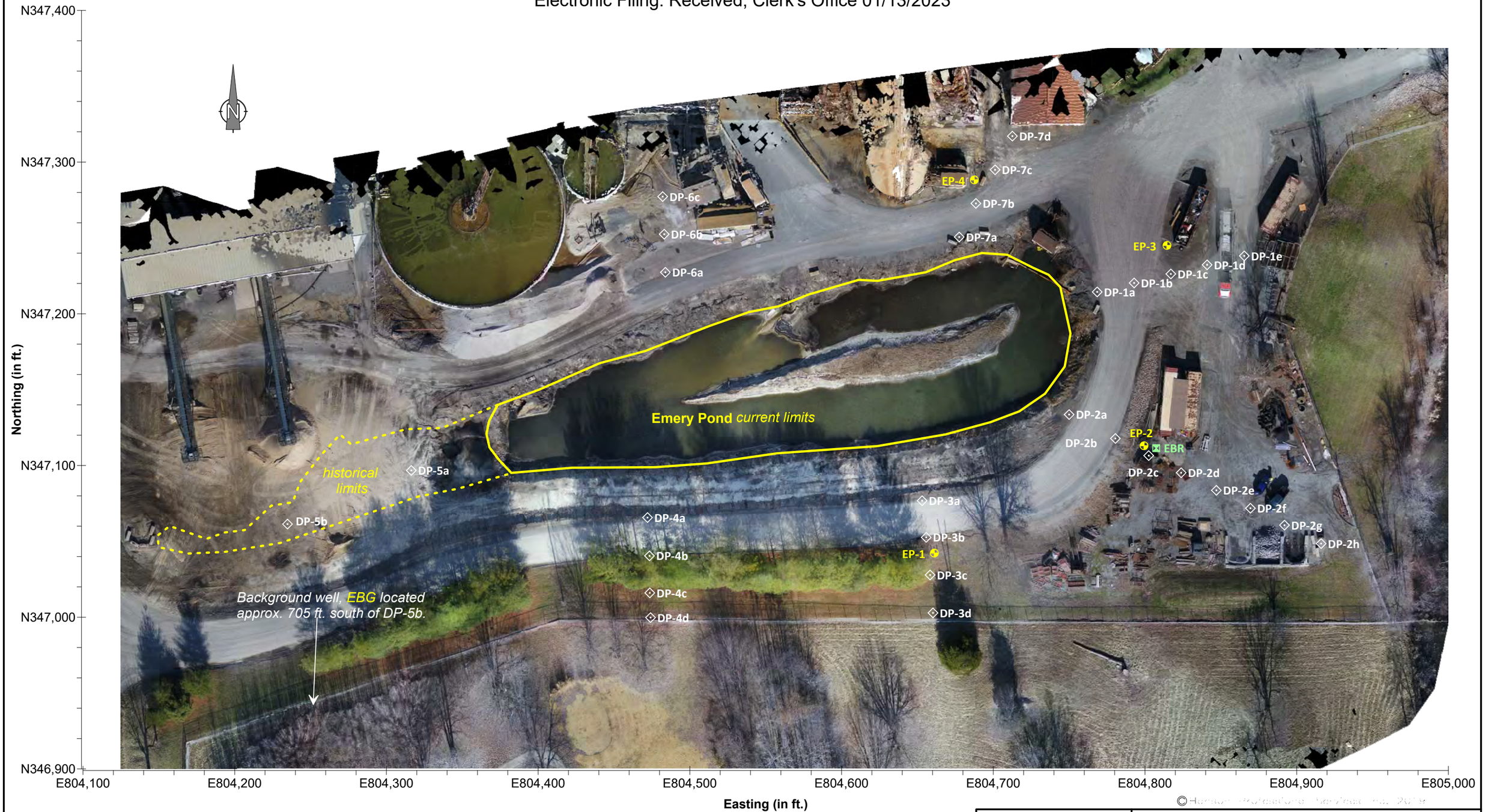

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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

SCALE: 1 inch equals 60 feet

0 ft. 60 ft. 120 ft. 180 ft. 240 ft.

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Site Features Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE NO. 2

The following reasons are used for these classifications:

The Unlithified Unit is classified as Class II groundwater because:

1. The Unit does not contain a sand, gravel, or sand & gravel deposit greater than 5 ft. thick, and
2. The slug test results (see Hanson, 2019a and 2019b) are less than 1 x 10^{-4} cm/s.

The upper (approximately 11 ft.) of the Bedrock Unit is classified as Class II groundwater because:

1. The Unit contains less than 10 ft. of sandstone,
2. The Unit contains less than 15 ft. of fractured carbonate rock, and
3. The packer test results (see Hanson, 2019a) are less than 1 x 10^{-4} cm/s.

The lower Bedrock Unit is classified as Class I groundwater because:

1. The Unit has two continuous segments of sandstone that exceed 10 ft. in thickness,
2. Although the packer test results (see Hanson, 2019a) are less than 1 x 10^{-4} cm/s.

Although groundwater is present in the Unlithified and upper/lower Bedrock Units, there is no groundwater use associated with any of the operations at the Marion Power Plant. Additionally, given existing groundwater data and because SIPC owns the property immediately surrounding the Marion Power Plant and Lake of Egypt, there is no off-site migration of groundwater. The nearest water well is located at the Lake of Egypt County Club, approximately 2,500 feet south southeast from Emery Pond and is screened from 65-90 feet below ground surface. This water well is also located on SIPC property.

For the purposes of the Emery Pond corrective action and closure work, SIPC has agreed to monitor and conduct corrective action for the purpose of achieving compliance with Class I groundwater quality standards.

2.2 Groundwater Monitoring History

Five monitoring wells were installed to meet the monitoring requirements of the US EPA's CCR Rule, background well EBG and downgradient wells EP-1, EP-2, EP-3, and EP-4 (see Figure 2). Groundwater monitoring at the Site has been ongoing since evaluation of background water quality began in 2017, consistent with 40 CFR 257.90. SIPC conducted detection monitoring in compliance with the CCR Rule (40 CFR 257.94). The results of detection monitoring triggered assessment monitoring (40 CFR 257.95) in 2018 for Appendix IV constituents.

The Illinois EPA issued Violation Notice No. 6364 on July 3, 2018. This notice alleged the exceedances of the Class I: Potable Use Groundwater Standards (35 IAC 620.410) summarized in Table 2. As identified in the Hydrogeologic Investigation Report (Hanson, 2019a) and Hydrogeologic Investigation Addendum (Hanson, 2019b), groundwater at the Site has been classified as Class II: General Resource Groundwater (35 IAC 620.240) in the Unlithified Unit and the upper (approx. 11 ft.) of the Bedrock Unit.

Table 2. Exceedances of the Class I: Potable Resource GW Standards

Parameter	Class I Std.	Units	EP-1	EP-2	EP-3	EP-4
Arsenic	0.010	mg/L				X
Boron	2.0	mg/L				X
Cadmium	0.005	mg/L	X			X
Chloride	200	mg/L			X	
Lead	0.0075	mg/L				X
pH	6.5 – 9.0	SU		X	X	X
Selenium	0.050	mg/L				X
Sulfate	400	mg/L	X	X		X
TDS	1,200	mg/L	X	X	X	
Thallium	0.002	mg/L				X

An extent of contamination study was performed in February 2019. The isopleth maps showing the results of that study are in Appendix C. Seven (7) linear sets of borings were drilled (direct push method) in a radial pattern around the Site at approximately 25 ft. intervals outward from the Emery Pond (see Figure 2). Groundwater samples were collected at each boring and analyzed for total analytes of the Class I inorganic parameter list. During sample collection, several borings were found to be either dry or were unable to produce sufficient volume of water for sampling. These borings were: DP1a, DP1b, DP2a, DP4a, DP4b, DP4c, and DP6b. An additional map, showing the location of each direct push boring, its bottom elevation, and the top of bedrock elevation (assumed to be the bottom of Emery Pond) is also included in Appendix C.

Appendix A contains the tabulated groundwater data and Appendix B and Appendix C contain the graphical groundwater data for the COCs identified and discussed below. While Hanson contends that the groundwater relevant to the Site is Class II under Part 620, it recognizes Illinois EPA's allegations of Class I standards. Accordingly, the below evaluations of Site water quality compare groundwater investigation results to both the Class I and Class II Part 620 groundwater standards and/or the Site Groundwater Protection Standards (GPS) under the federal CCR rule [40 CFR 257.95(h)], as applicable. Parameters with only one exceedance at a well are treated as a false positive result or not a confirmed exceedance† (e.g., Chromium, Lithium, etc.) assuming a 95% confidence limit and observable data trends.

2.2.1 Part 257, Appendix III Parameters

2.2.1a Boron

Boron (CAS# 7440-42-8) concentrations exceeded the 35 IAC 620.410 Class I and Class II Standard (2.0 mg/L) at EP-4 since the well was first sampled. Boron has exceeded the Site's background water quality at EP-1, EP-2, and EP-4. Boron had a high concentration in the Emery Pond water sample (72 mg/L). The Boron Concentration Map (in Appendix C) shows the pattern of elevated Boron concentrations at the Site. Note that high concentrations were observed in Line 6 (DP6a and DP6c) in Line 7 (DP7c), in EP-4, and Line 1 (DP1c and DP1e). Migration of Boron does not appear to be to the south of the Emery Pond.

† The alternative source demonstration in 40 CFR 257.94(e)(2) allows for the evaluation of natural variation in groundwater quality. Should a re-sample show the previous result was not statistically significant, then that result is a false positive or not a confirmed exceedance.

2.2.1b Calcium

Calcium (CAS# 7440-70-2) does not have a 35 IAC 620 Class I or Class II Standard. However, Calcium has exceeded the Site's background water quality at EP-1, EP-2, and EP-4. The Calcium Concentration Map (in Appendix C) shows the pattern of elevated Calcium concentrations at the Site. Emery Pond water had a Calcium concentration of 899 mg/L, while the gypsum leachate extract had a concentration of 629 mg/L. Calcium concentrations along the south-side of the Emery Pond are generally lower than the pond water or gypsum (in the low- to mid-hundreds). Along the north-side of the pond, concentrations are much higher (exceeding the pond and gypsum concentrations), with an extreme value at DP1e of 16,700 mg/L.

2.2.1c Chloride

Chloride (CAS# 7782-50-5) concentrations exceeded the 35 IAC 620 Class I and Class II groundwater standard (200 mg/L) at EP-4. Chloride has exceeded the Site's background water quality at EP-4 and intermittently at EP-3. The Chloride Concentration Map (in Appendix C) shows the pattern of elevated Chloride concentrations at the Site. Emery Pond had a Chloride concentration of 2190 mg/L. The isopleth map shows high concentrations at DP5a, DP5b, DP6a, DP7c, and EP4. Again, the south side of the Emery Pond generally has concentrations below the Class I and Class II Standards.

2.2.1d pH

pH (CAS# 13967-14-1) has concentrations below the 35 IAC 620 Class I and Class II (lower) groundwater standard (6.5 SU) at EP-4, EP-3, and intermittently at EP-2. pH falls below the Site's lower background water quality limit at EP-4, EP-3, and intermittently at EP-2. The pH Concentration Map (in Appendix C) shows the pattern of pH concentrations at the Site. The pH Isopleth Map shows the historic area of the Emery Pond with pH levels above both the upper-Class II Standard and the upper GPS at DP5a and DP5b. Conversely, pH levels below the lower Class II Standard and lower background water quality limit are found at EP-3, EP-4, DP2g, and DP2h. The Emery Pond had a pH concentration of 7.77 SU.

2.2.1e Sulfate

Sulfate (CAS# 14996-02-2) concentrations have consistently exceeded the 35 IAC 620 Class I and Class II groundwater standard (400 mg/L) at EP-1, EP-2, and EP-4. Sulfate has exceeded the Site's background water quality limit at all four downgradient monitoring wells and upgradient well, EBG for the past two rounds. The Emery Pond had a concentration of 2,000 mg/L and the gypsum leachate had a concentration of 1,350 mg/L. The Sulfate Concentration Map (in Appendix C) shows the pattern of elevated Sulfate concentrations at the Site. Several exploration lines have concentrations that are higher at further distances from the Emery Pond than those closer (see Line 1, Line 3, and Line 6).

2.2.1f Total Dissolved Solids (TDS)

TDS (CAS# 10-05-2) concentrations have consistently exceeded the 35 IAC 620 Class I and Class II groundwater standard (1,200 mg/L) at EP-1, EP-2, and EP-4 and intermittently at EP-3. TDS has also exceeded the Site's background water quality limit at all four downgradient monitoring wells. The TDS Concentration Map (in Appendix C) shows the pattern of elevated TDS concentrations at the Site. This isopleth map displays a similar pattern as Sulfate, whereby some exploration lines have higher concentrations at distance from the Emery Pond. TDS concentrations in the Emery Pond were 6,540 mg/L and the gypsum leachate was 2,140 mg/L.

2.2.2 Part 257, Appendix IV Parameters

2.2.2a Arsenic

Arsenic (CAS# 7440-38-2) concentrations have not exceeded the 35 IAC 620.420 Class II Standard (0.2 mg/L) but did exceed and Class I Standard (0.01 mg/L) at EP-4. Arsenic has exceeded the Site's GPS at EP-3 and EP-4. The Arsenic concentration in the Emery Pond water sample was only 0.0025 mg/L and the gypsum leachate was <0.01 mg/L. The Arsenic Concentration Map (in Appendix C) shows the pattern of elevated Arsenic concentrations at the Site.

2.2.2b Lead

Lead (CAS# 7439-92-1) concentrations have not exceeded the 35 IAC 620 Class II Standard (0.1 mg/L) at any of the monitoring wells but did exceed the Class I Standard at EP-4. Lead has intermittently had concentrations above the Site's GPS of 0.015 mg/L (twice since the end of 2016, but these were not confirmed exceedances that would establish an SSL of the GPS). The Lead concentration in the Emery Pond water sample was only 0.0026 mg/L and the gypsum leachate was <0.0075 mg/L. The Lead Concentration Map (in Appendix C) shows the elevated Lead concentrations around EP-4.

2.2.2c Selenium

Selenium (CAS# 7782-49-2) concentrations exceeded the 35 IAC 620 Class I and Class II Standard (0.05 mg/L) at EP-4 since the well was first sampled. Selenium has also been detected during the background monitoring period above the Site's GPS but has not been observed at an SSL above the GPS at EP-3 and EP-4. The Selenium concentration in the Emery Pond water sample was only 0.082 mg/L and the gypsum leachate was <0.0462 mg/L. The Selenium Concentration Map (in Appendix C) shows the pattern of elevated Selenium concentrations around the Site.

2.2.2d Cobalt

Cobalt (CAS# 7440-48-4) concentrations have not exceeded the 35 IAC 620 Class I or Class II groundwater standards (1.0 mg/L). However, Cobalt has exceeded the Site's GPS at EP-2, EP-3, and EP-4. The Cobalt Concentration Map (in Appendix C) shows the pattern of elevated Cobalt concentrations at the Site. Note that there are two extent borings with high Cobalt, DP1e and DP6a. Both have concentrations above the Emery Pond water and gypsum leachate, 0.145 mg/L and <0.005 mg/L, respectively. No obvious source for these exceedances exists and there is also no apparent connection between the two borings.

2.2.2e Cadmium

Cadmium (CAS# 7440-43-9) concentrations have not exceeded the 35 IAC 620.410 Class II: General Resource groundwater standard (0.05 mg/L), but Cadmium has been reported above the GPS (0.005 mg/L) once (not a confirmed exceedance that would establish an SSL above the GPS). Note that there are two extent borings with high Cadmium, DP1e and DP6a. Both have concentrations above the Emery Pond water and gypsum leachate, 0.019 mg/L and <0.002 mg/L, respectively. No obvious source for these Class II exceedances exists and there is also no apparent connection between the two borings.

2.2.2f Thallium

Thallium (CAS# 7440-28-0) concentrations may have exceeded the 35 IAC 620 Class I and Class II: groundwater standard (0.002 and 0.02 mg/L, respectively) at all the monitoring wells, because the laboratory performing the analyses had a reporting limit of 0.050 mg/L. However, Thallium has had been

detected during the background monitoring period above the Site's GPS but has not been observed at an SSL above the GPS. The Thallium Concentration Map (in Appendix C) shows the pattern of elevated Thallium concentrations at the Site. Note that both the Emery Pond and gypsum leachate have concentrations at or below 0.002 mg/L. Therefore, it is unlikely that the Thallium exceedances are related to a release from the Site.

2.2.3 Other 35 IAC 620 Exceedances

The February 2019 investigation identified three other parameters that exceeded the Class I and Class II groundwater standards – Iron, Manganese, and Zinc.

2.2.3a Iron

Iron (CAS# 7439-89-6) concentrations were observed above the Class I and Class II groundwater standard (5.0 mg/L) during the extent investigation. Iron exceedances were observed at all the extent borings plus EP-3 and EP-4. The background monitoring well, EBG, had an Iron concentration that almost reached the Class II Standard (EBG Iron = 4.4 mg/L), but the Emery Pond and gypsum leachate samples had Iron concentrations of 0.899 and 0.0719 mg/L. This implies that Iron is naturally occurring at these elevated concentrations, likely related to the residual iron in the bedrock and RedOx conditions at the Site.

2.2.3b Manganese

Manganese (CAS# 7439-96-5) concentrations were observed above the Class I and Class II groundwater standards (0.150 mg/L and 10.0 mg/L, respectively) during the extent investigation. Manganese exceedances were observed at many of the extent borings plus EP-4. The Emery Pond and gypsum leachate samples had Manganese concentrations of 4.56 and 0.0444 mg/L, respectively. This implies that Manganese, like Iron, at these observed concentrations are naturally occurring, and not related to a release at the Site.

2.2.3c Zinc

Zinc (CAS# 7439-66-6) concentrations were observed above the Class II General Resource groundwater standard (5.0 mg/L) during the extent investigation. Zinc exceedances were observed at three extent borings, DP1e, DP7a, and DP7b. The Emery Pond and gypsum leachate samples had Zinc concentrations of 0.215 and <0.01 mg/L, respectively. The low source water concentrations indicate that these exceedances are not related to a release at the Site.

2.3 Major Cation and Anion Geochemistry

Figure 3 presents the major cation and anion data from the Emery Pond monitoring wells, investigation borings, and potential source water samples. Also shown are ellipses representing possible CCR source waters. Many of the sample results lie in the area identified as Calcium-Chloride type waters. Note that the gypsum leachate sample lies at the apex of this area and is further delineated by the possible scrubber (gypsum) impacted water ellipse. Three of the five monitoring wells also lie in this area (EP-1, EP-2, and EP-4).

The other two monitoring wells (EP-3 and upgradient well, EBG), lie within or near the other CCR source water ellipse. This area to the right of the diamond is identified as Sodium-Chloride type waters and is more indicative of ash impacted waters (either ash leachate or pond water). The investigation borings identified between the two ellipses are likely indicative of mixing of water types from the background waters to the impacted waters. The conclusion drawn from the cation/anion geochemistry is that gypsum is impacting the Emery Pond monitoring system.

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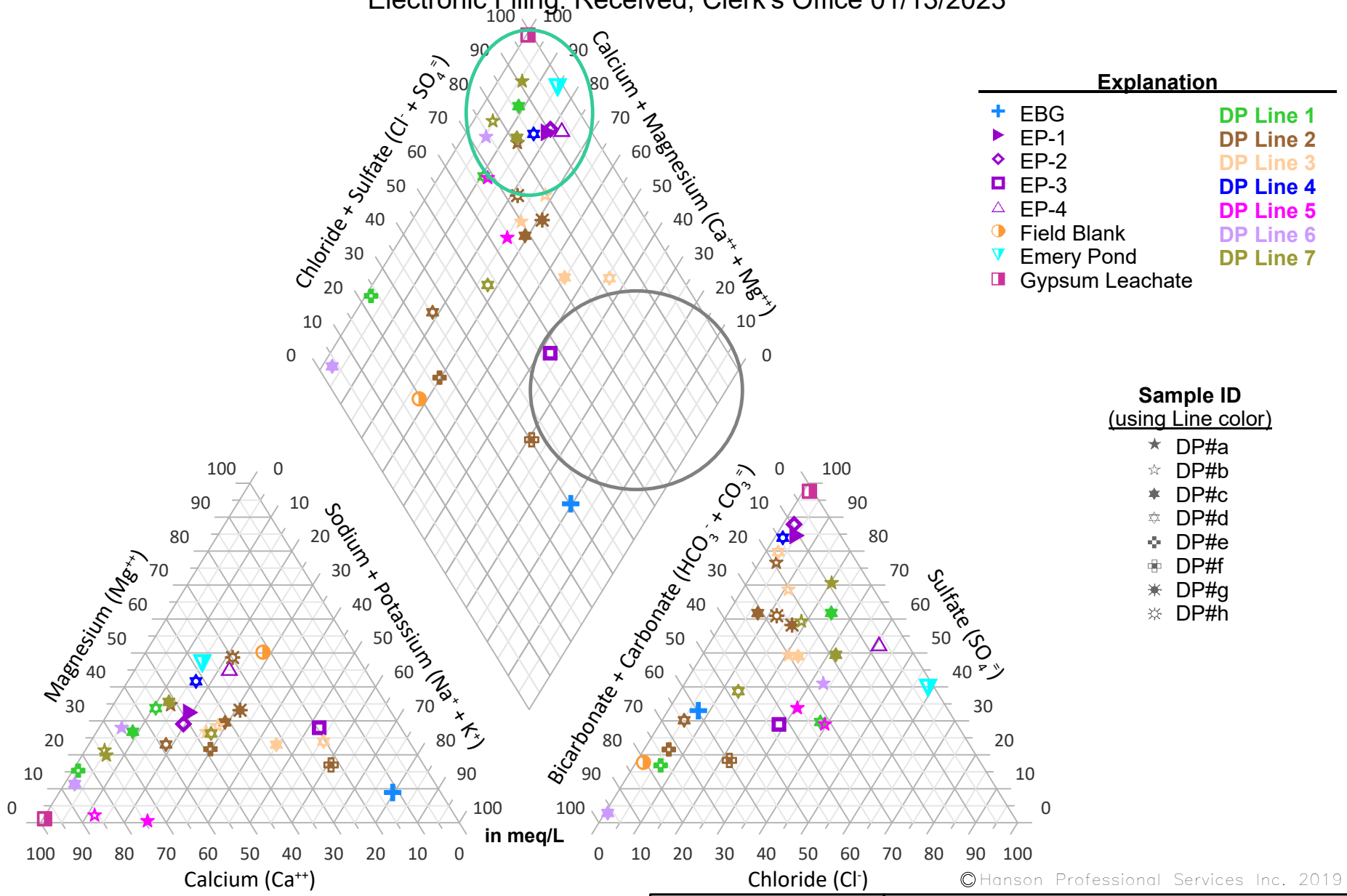

Explanation

EBG	DP Line 1
EP-1	DP Line 2
EP-2	DP Line 3
EP-3	DP Line 4
EP-4	DP Line 5
Field Blank	DP Line 6
Emery Pond	DP Line 7
Gypsum Leachate	

Sample ID
(using Line color)

- DP#a
- DP#b
- DP#c
- DP#d
- DP#e
- DP#f
- DP#g
- DP#h

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Possible CCR Waters

- Scrubber (gypsum) impacted waters
- Ash (leachate and ponds) impacted waters

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Emery Pond Piper (Tri-linear) Diagram

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 3

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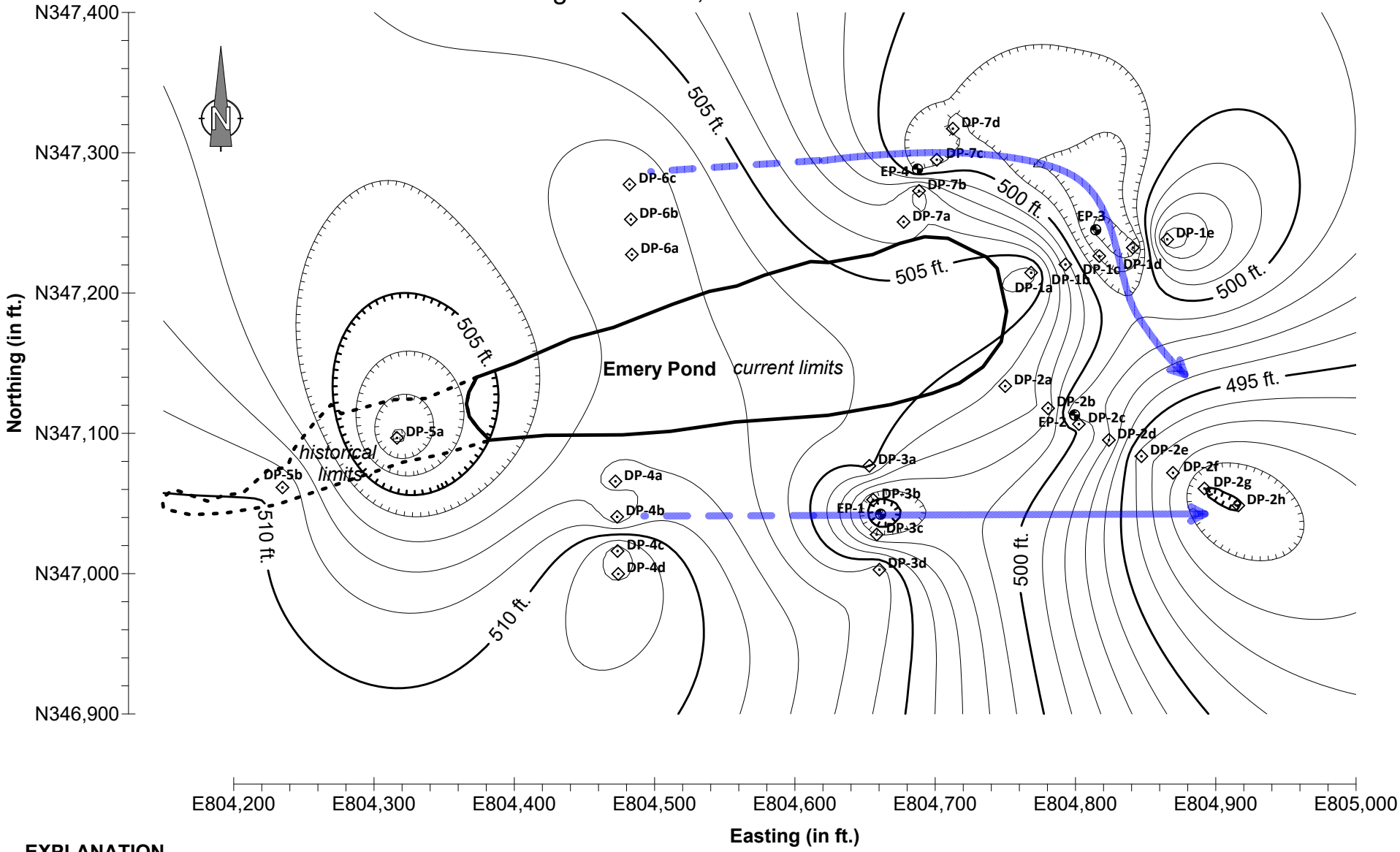

EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 1 foot
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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Preferential Flow Paths (Bedrock Surface)

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE 4

2.4 Groundwater Monitoring Observations

Several overall trends can be observed in the graphs and maps found in Appendix B and Appendix C, including:

1. Several investigation borings have higher concentrations at points further from the Emery Pond than those borings that are closer (e.g., Boron at DP1e and DP7c and Sulfate at DP3b and DP6c). Hanson believes that groundwater flow is controlled by the bedrock topography and the amount and type of fill materials that appear to have been used along the north and east side of the Emery Pond (see Figure 4 for flow paths).
2. Increasing concentration trends can be observed in several wells for many COCs. The most notable is Sulfate, which has had three consecutive increases in concentration over the past four sampling events. Even EBG has seen concentration increases, although to a lesser degree.

   Note that the Groundwater Protection Evaluation model also shows increasing concentrations prior to the implementation of clean closure. In fact, the model shows concentrations continuing to increase for 2-3 years after CCR removal activities are complete, but then reduces over time.
3. pH levels vary dramatically across the Site, from over 10 SU in the bottom ash fill beneath the Gypsum Loadout Area to just above 6 SU at select points east of the Emery Pond. Hanson is unsure of the mechanism that is buffering the pH levels from one side of the Site to the other.

3. Assessment of Corrective Measures

3.1 Corrective Measures Alternatives

An Assessment of Corrective Measures (ACM) is required by 40 CFR 257.96. This requires an evaluation of the available options to mitigating groundwater impacts at the Site. An evaluation addressing the requirements of 257.96 and 257.97 as applied to remedy options is discussed in this Section and Sections 4 and 5, and is summarized in Table 4, Table 5, and Table 6. This evaluation also supports the selected remedy as an adequate and appropriate remedy to address any Part 620 exceedances due to the Site, including those alleged in Illinois EPA's 2018 Violation Notice.

The assessment of corrective measures must include an analysis of the effectiveness of potential corrective measures in meeting the requirements and objectives of the remedy as described under § 257.97, including at least the following:

- The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;
- The time required to begin and complete the remedy;
- The institutional requirements, such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).

Corrective Measures under review are the following techniques:

Do nothing	Close in Place	Clean Close	Barrier Wall	
Monitored Natural Attenuation		Pump and Treat	Pump Station	Retrofit

The next subsection will discuss each of these alternatives.

3.1.1 Do Nothing

Performing no further action at Emery Pond is a potential corrective measure. It takes no time to implement or complete. However, it does nothing to reduce impacts, control exposure, or limit residual contamination. It also opens the owner to additional scrutiny by Federal and State regulators as well as third-party intervention.

This remedy is not protective of human health, nor does it provide a clear path to attaining the GPS or controlling releases. The CCR is not removed or managed. Because of this, there is an exposure potential.

3.1.2 Close in Place

Leaving the CCR in place and providing an isolating cover system is one of the more commonly used remedy alternatives, especially for larger impoundments. This requires construction of a final cover system that restricts the amount of water infiltration into the CCR and thereby limits the amount of leachate generated. Implementation requires a specialty contractor for the placement and welding of a geosynthetic liner and a regular dirt contractor for placement of the recompacted soil liner and vegetative soil later. The time required to install the cover system varies by the size of the project. For Emery Pond, installation would take between 6-8 weeks. This project would require a new construction permit from Illinois EPA Bureau of Water, which would add 90+ days to the schedule. A construction permit under the proposed Part 845 regulations is not needed if completed prior to July 2021. A down side to close in place is loss, or at least reduction, of storm water storage, which is the primary future function of the new Storm Water Basin.

This potential corrective measure is limited in effectiveness because the potential future groundwater contact with the CCR could prevent attaining the GPS.

3.1.3 Clean Close

Removal of CCR from the Emery Pond is perhaps the most effective and efficient corrective measure for this small pond. The small size of Emery Pond makes this remedy more cost effective, practical, and efficient than at larger ponds, where transposition and disposal of huge amounts of CCR may take months or more, be impractical and create additional concerns and risks. Clean closure will remove CCR and thus any future impact to groundwater. Excavation of bottom sediments in Emery Pond and the removal of the Gypsum Loadout Area and CCR beneath the loadout area will have an immediate benefit to the Site groundwater. CCR will be transported offsite to a solid waste disposal facility in accordance with the proposed Part 845 regulations. Implementation of the plan and removal of CCR should be limited to a 4- to 6-week timeframe. At this time, no additional permitting should be needed (a water pollution control permit has already been received for the work, no additional NPDES permitting should be required, as discussed below, and a construction permit under the proposed Part 845 regulations is not needed, if closure is completed prior to July 2021), but there will be disposal fees associated with disposal of the CCR in a State permitted facility.

3.1.4 Barrier Wall

Barrier walls have been used for some time to protect groundwater from contaminated sources that are too large or too dangerous to economically remove. The most common type of barrier wall is a bentonite slurry wall, where an excavation is made, and a high-solids bentonite slurry is pumped into the excavation. The excavation is extended as bentonite slurry is added. There are some problems with barrier wall systems. First, they can be expensive to construct, with prices in the millions of dollars

for even fractions of mile long walls. Secondly, the precipitation that lands within the confines of the wall must be managed to not overtop the barrier or cause additional releases of contaminants to the environment. Overtopping would be a concern for a slurry wall here because it would likely be adjacent to Lake of Egypt and raise the potential for exposure to the contaminants of concern in the lake. Third, a barrier wall likely provides the most return when CCR is left in place and where the CCR could continue to cause groundwater impacts. In that case, the barrier wall may mitigate such impacts. However, when the source CCR is removed, which would occur with the clean close option, a barrier wall provides far less benefit, especially if there is no identified groundwater receptor at risk. This is true for Emery Pond, as discussed in this report. Evidence indicates that even without a slurry wall, current groundwater is not impacting the surface waters of Lake of Egypt (see Section 6.3).

Another issue with constructing a slurry wall around Emery Pond are the underground utilities and foundations associated with the power plant. Utilities (electrical, water, sewer, fuel, etc.) would almost certainly have to be relocated or terminated before construction of the wall could begin with potential interruption to plant operations. Furthermore, excavations adjacent to a large existing structure (i.e., Unit 4 smoke stack) could cause foundation instability. Additional geotechnical investigations would need to be done to establish safe excavation practices prior to any slurry wall construction. Excluding any additional investigations or utility relocations, Hanson estimates an 8- to 12-week installation timeline for slurry wall construction, assuming it could be constructed at this location.

3.1.5 Pump and Treat

As with barrier walls, pump and treat systems have been implemented as a corrective action for decades. Either vertical well points or horizontal trenches can be used to collect groundwater. Although treatment for metals can be straightforward, treating anion contamination can be time consuming and expensive. For example, chloride and sulfate treatment must be done with reverse osmosis (RO). RO uses a semi-permeable membrane to remove many of the dissolved solids in groundwater. This process is slow, expensive, and still generates a waste water stream that could require additional treatment or disposal.

Although horizontal trenches may be more efficient, as noted above, subsurface conditions or utilities may prevent installation of a trench system. The use of well points to collect groundwater also has limits, especially in low hydraulic conductivity soils. The low hydraulic conductivity causes rapid drawdown at the well points with reduced zones of capture. Permitting for this system would require modifying the Site's NPDES permit to allow discharge of the collected groundwater or any treated groundwater. As is true for barrier walls, pump and treat systems typically provide far less benefit when CCR is removed, especially when there are no identified at-risk groundwater receptors. Time for installation could range from 4- to 8-weeks, depending on the system used.

3.1.6 Pump Station

Since the new Stormwater Basin's purpose was to manage storm water, the closure of Emery Pond causes the need to replace that storm water collection function. A pump station is a potential alternative to a new storm water detention basin. This measure must be implemented with either the clean close or close in place options. The pump station could conceptually replace a detention basin with a cistern or sump. The smaller storm water collection volume would require that a larger pump, sized for the appropriate precipitation event (or storm) be used to control flow and prevent storm water discharges directly to Lake of Egypt. With the larger capacity pump, a larger discharge pipe may also be required to get storm water routed through the NPDES discharge system. Storm water would then continue to be discharged via the pond system to NPDES Outfall 002. This option would require a

change to the currently planned and permitted construction of the new Stormwater Basin, causing substantial additional delay in the work and no meaningful corrective action benefit. The benefits and limitations of the clean close and close in place options have been previously discussed.

3.1.7 Retrofit

A retrofit of the Emery Pond to a CCR compliant impoundment was also considered. A retrofit would include excavating the CCR present in Emery Pond and the FGD load out area and decontaminating the area, which would remove CCR and its likelihood to impact groundwater. The composite liner system would protect groundwater from future CCR impacts and the impoundment could continue to provide storm water detention. Additionally, a final cover system would need to be placed at the Gypsum Loadout Area after removal of the bed ash found there. This system would take more time than just lining or covering Emery Pond, likely 8- to 10-weeks. Removal of CCR would also require proper transportation and disposal at a State permitted facility. A Bureau of Water construction permit would also be needed and may require an Illinois Department of Natural Resources dam permit. However, because Unit 4 shut down in October 2020, a new CCR surface impoundment is no longer needed.

3.1.8 Monitored Natural Attenuation

Monitored Natural Attenuation (MNA) can work as a corrective measure for both organic and inorganic parameters. "Attenuation processes include ions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in-situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants" (US EPA, 2015b). As noted by US EPA (2012), MNA works best when the source of contamination has been removed. Natural processes will, over time, remove or attenuate the small amounts of contaminants left in the soil and groundwater.

One or more of the MNA processes will be involved with the return to Class I groundwater standard for the inorganic constituents that show exceedances of Class I standards and Federal CCR rule standards. Dilution and dispersion were incorporated into the contaminant transport model used to assess Emery Pond (Hanson, 2020a), but none of the current site investigations or the contaminant transport modeling have looked at any of the "reactive" attenuation processes (e.g., sorption, chemical reaction, etc.) that could enhance clean up times. Further, that modeling shows that attaining the Part 257 GPS for Arsenic and Cobalt (the only two Appendix IV parameters with SSLs above the GPS) occurs much quicker. Table 3 lists the time to compliance at each of the downgradient monitoring wells. Note that Cobalt, at the various compliance points does not have exceedances after clean closure is achieved. MNA is an effective process here when paired with active source removal principally due to the small size of Emery Pond and the short duration of the CCR exposure (beginning 2007/08 with the construction of the Gypsum Loadout Area).

Table 3. Time to Reach Compliance at Monitoring Locations

Well ID	Arsenic SSL (time in years)	Arsenic Class I (time in years)	Cobalt SSL (time in years)	Cobalt Class I (time in years)
EP-1	8	2	n/a	n/a
EP-2	10	8	n/a	n/a
EP-3	n/a	n/a	n/a	n/a
EP-4	1	n/a	n/a	n/a

4. Evaluation of Potential Remedies

From the list of remedial option presented in the previous section, several of the more viable alternatives will be discussed here and in the next Section. Based on 40 CFR 257.97, remedies must:

- Be protective of human health and the environment;
- Attain the groundwater protection standard as specified pursuant to § 257.95(h);
- Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment;
- Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems;
- Comply with standards for management of wastes as specified in § 257.98(d).

Based on the Site hydrogeology, effectiveness, identified risks, and constructability of the closure alternative, SIPC selected three options to further evaluate as part of the Groundwater Protection Evaluation: Closure by Removal with backfill, Closure by Removal with Composite Liner System, Closure by Removal with Composite Liner System and Perimeter Drain, and MNA. All these options meet the needs of the selection criteria for the following reasons:

- Protective of human health and the environment – removal of the CCR removes any probability of future releases from the source of contamination above the GPS. A barrier wall or additional pump and treat system is not warranted because this remedy removes the source, thus eliminating any future releases to be treated by a barrier wall or pump and treat system, and there are no identified at-risk groundwater receptors. Further a barrier wall or pump and treat system would require considerably more time to obtain approval and then construct and would substantially raise costs without any material demonstrated benefit.
- Attain the groundwater standards – Over time, with source removal and monitored natural attenuation, groundwater concentrations are predicted to timely return to below Site background concentrations, Federal GPS (40 CFR 257.95(h)), and the Illinois Class I groundwater standards (35 IAC 620.410) based on model results. Indeed, that modeling predicts that GPS for the exceeded Part 257 constituents should be achieved within 7 years, as mentioned above.
- Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible – Clean closure removes the physical CCR material within the limits of Emery Pond, including the Gypsum Loadout Area.
- Comply with standards for management of wastes per 257.98(d) – Wastes removed as part of the clean closure will be managed, transported, and disposed of pursuant to RCRA requirements.

5. Corrective Action and Selected Remedy

This Corrective Action and Selected Remedy is submitted to address the groundwater exceedances identified in Section 2, above. Hanson (2020b) proposes to mitigate any groundwater impacts due to the Emery Pond CCR impoundment and adjacent Gypsum Loadout Area by using multiple alternatives from the Table 4 assessed options. These alternatives are consistent with the federal CCR rule and should lead to timely compliance with the Illinois Part 620 groundwater quality standards and the Part 257 GPS.

5.1 Selected Remedy

SIPC proposes to close Emery Pond and the adjacent Gypsum Loadout Area by removal, construct a CCR-compliant composite liner system in the footprint of the existing Emery Pond to continue the storm water management function, construct a perimeter drain at the toe of the liner system to protect the liner from external hydrostatic pressure with the additional benefit of recovering contaminated groundwater, continue to monitor the natural attenuation of contaminants in groundwater, and establish a Groundwater Management Zone (GMZ) pursuant to 35 IAC 620.250(a)(2) to address any Part 620 exceedances due to the Site, including those alleged in Illinois EPA's 2018 Violation Notice.

5.1.1 CCR Removal

Hanson (2020b) proposes to remove the CCR from the current footprint of the Emery Pond and any additional CCR located at and beneath the Gypsum Loadout Area to visually clean levels. Clean closure (removal of any CCR materials) will be visually confirmed and certified by a Professional Engineer prior to continued construction activities. The CCR removal is expected to remove the source of the observed groundwater impacts at the Site, allowing groundwater to improve while the requested GMZ is in effect.

5.1.2 Construction of a CCR Rule Compliant Liner

After removal of the CCR from the current footprint of Emery Pond, a new storm water basin will be constructed within the footprint of the former Emery Pond, which will include a CCR Rule compliant composite liner system and a perimeter drainage system located beneath the outside toe of the liner system (Hanson, 2020b). The liner system is not required by the federal CCR rule because regulated CCR is not expected to be discharged to the new basin following CCR removal from the existing pond. However, the liner will be added as a conservative, protective measure at significant expense, and it should eliminate any discharges to groundwater from the new basin.

5.1.3 Perimeter Drain System

Additionally, the installation of the perimeter toe drain around the base of the basin liner system provides protection from hydraulic (hydrostatic) pressures to the liner system and further affords for collection of groundwater in the vicinity of the new basin. The collected groundwater would be discharged to the new basin and routed to NPDES Outfall 002, which is currently permitted to discharge the types of constituents that would be present in the groundwater. Section 3.9 of the Closure Plan (submitted with this Plan) contains a complete description of the perimeter toe drain and IEPA has issued SIPC a construction permit for the work, which suggests that no additional NPDES permitting is required. However, a confirming question with supporting information concerning NPDES permitting is currently pending with Bureau of Water.

5.1.4 Monitored Natural Attenuation

MNA (dilution and dispersion) will be used to aid in returning groundwater to below the Illinois Class I standards and Federal CCR rule standards. With the removal of the CCR at Emery Pond, MNA functions as a finishing or polishing step in the timely return of groundwater compliance.

5.2 Long- and Short-Term Effectiveness, Protectiveness, and Certainty

The selected remedy provides the best combination of corrective measures to address the long- and short-term effectiveness, protectiveness, and certainty of reaching and maintaining the GPS and Class I groundwater standards.

5.2.1 Magnitude of Reduction of Existing Risks

Removal of the CCR from the Emery Pond and vicinity is the best alternative for reducing risk by allowing the material to be disposed of in a permitted landfill facility that meets the current Illinois landfill rules (35 IAC 810-815). Further protections are included due to the facility's composite liner, leachate collection, and final cover requirement. The added benefit of the perimeter drain will also lower risk with the removal of a currently impacted groundwater.

5.2.2 Magnitude of Residual Risks, Likelihood of Further CCR Releases

As noted in Section 5.2.1, removal prevents further CCR releases from Emery Pond.

5.2.3 Type and Degree of Long-Term Management Required

Long term management of the selected remedy should be nominal. There are operation and management (O & M) needs, including perimeter drain pump maintenance and/or replacement and protection of the geomembrane component of the composite liner system.

However, the O & M costs associated with a close in place and treatment solution would be much greater. Operating a Pump and Treat system or managing precipitation falling within a slurry wall (this water could pick up contamination from contact with the in place CCR) would require further management, create additional risks and concerns (as discussed above) and cost much more than simply removing the CCR and allowing natural attenuation to aid with cleanup.

Groundwater monitoring wells will need to be maintained and repaired/replaced, as needed.

5.2.4 Short-term Risks to the Community or the Environment During Implementation

Potential short-term risks to the removal of the CCR include fugitive dust from storage and loading the dry CCR for transport and the actual transport of the CCR to the permitted disposal facility. Fugitive dust controls will follow the requirements of 40 CFR 257.80 and the proposed 35 IAC 845.500.

Loading CCR for transport will only occur within the Site boundaries, limiting community exposure. Transportation of the CCR will follow the requirements of the proposed 35 IAC 845.740.

5.2.5 Time Until Full Protection is Achieved

Hanson's Groundwater Protection Evaluation indicates that all GPS and Class I groundwater standards will be reached in approximately 27 years, and some will take less time. Further meeting the Part 257 GPS for arsenic and cobalt (only two parameters with an established SSL of the GPS) is predicted to occur much quicker, with arsenic modeled to reach the GPS in approximately 7 years and cobalt never causing a GPS compliance issue at the nearest potential groundwater receptor, the edge of Lake of Egypt.

5.2.6 Potential for Exposure of Human and Environmental Receptors to Remaining CCR

With clean closure there will be no remaining wastes. Groundwater is not used by the Plant, but nominal amounts of groundwater will be collected (estimated to be approximately 600 gallons per day) by the perimeter drain system and discharged to the Storm Water Basin and eventually NPDES Outfall 002. CCR transported to the permitted disposal facility will be entombed and eventually covered with a composite liner system preventing future exposure. The permitted off-site landfill's leachate collection system will restrict potential migration of contaminants to groundwater.

5.2.7 Long-Term Reliability of the Engineering and Institutional Controls

Long-term reliability of the selected remedy is excellent provided routine O & M is performed. Clean closure of the Emery Pond removes continued impacts to groundwater by CCR. Groundwater, as modeled, should return to compliance with Class I standards three years before the end of the 30-year post-closure care period, and compliance with the Part 257 GPS much faster than that.

5.2.8 Potential Need for Replacement of the Remedy

The primary remedy is the removal of CCR from the Emery Pond. Although there are other components to the selected remedy that could need replacement, they are primarily present to continue the use of the impoundment for storm water management, and do not present an exposure potential to CCR. Proper O & M will also defer the need for replacement of parts of the selected remedy.

5.3 Source Control Effectiveness

The selected remedy for Emery Pond does not rely on a source control as the primary mitigation method. New releases of CCR around Emery Pond, with the closure of Unit 4, are unlikely.

5.3.1 The Extent to Which Containment Practices Will Reduce Further Releases

As previously noted, there will be no CCR containment associated with the selected remedy.

5.3.2 Extent to Which Treatment Technologies May be Used

Although there is some groundwater collection associated with the selected remedy, discharge of those waters is controlled by the Site NPDES permit. The only additional treatment technology used is natural attenuation, in conjunction with source removal.

5.4 Implementing Selected Remedy

This section looks at the ease and operational reliability of implementation of the remedy and includes consideration of regulatory requirements and necessary resource for implementation.

5.4.1 Degree of Difficulty Associated with Constructing the Technology

CCR excavation and construction of the perimeter drain and composite liner system are common construction activities. The installation of the geomembrane does require a specialized contractor, but primarily for the equipment needed to make water-tight connections between the geomembrane panels and the remaining water control structures needed for storm water management.

The small size of the Emery Pond also reduces the difficulty and time needed for the closure activity and any risks or concerns that might otherwise be associated with CCR removal, transport, and off-site disposal.

5.4.2 Expected Operational Reliability of Technologies

Composite liner systems have been used at municipal solid waste landfills for over 30 years. With proper construction techniques and third-party construction quality assurance inspections, the selected remedy should perform reliably for as long as the Plant will need to control storm water. Of course, this would include any required O & M to maintain pumps and repair any damages.

Table 4. Corrective Measures Options

Potential Remedies	Pros	Cons	Human Health	Attain GPS	Control Release	Material Removal	Manage RCRA Wastes
Do nothing	• Inexpensive	• Liability	No	No	No	No	n/a
Close in Place	• 40 CFR 257 compliant	• Loss of storm water storage	Somewhat	No	Some	No	Yes
Clean close	• 40 CFR 257 compliant	• Loss of storm water storage	Protective	Yes	Yes	Yes	Yes
Barrier wall	• Containment of COCs	• Still an unlined CCR impoundment • Working around buried utilities	Protective	Yes	Yes	No	n/a
Pump and Treat	• Removal of COCs	• Still an unlined CCR impoundment • Low hydraulic conductivity causes narrow capture zones at wells	Protective	Unk	Unk	No	n/a
Pump Station	• No dam or dam permit • Smaller footprint	• Increased O & M • Additional measures to control CCR	Protective	Yes	Unk	n/a	Yes
Retrofit	• 40 CFR 257 compliant Removes COC source	• Pond unusable during construction • Requires CCR removal • Requires dam permit • New compliant unit no longer needed with shutdown of Unit 4	Protective	Yes	Yes	Yes	Yes

Table 5. Long and Short-term Effectiveness of Options

Potential Remedies	Reduce Existing Risk	Residual Risk	Long-term Management			Short-term Risk	Completion Date	Potential Receptor Exposure	Long-term Reliability	Need to Replace
			Monitoring	Operation	Maintenance					
Do nothing	No	No	No	n/a	n/a	High	Immediately	High	Low	Likely
Close in Place	Somewhat	No	Some	n/a	Yes	Moderate	Fall 2020	Low	Moderate	Possibly
Clean close	Protective	Yes	Yes	Yes	Yes	Low	Fall 2020	Low	Low	Unlikely
Barrier wall	Protective	Yes	Yes	n/a	n/a	Moderate	Fall 2019	Low	Moderate	Possibly
Pump and Treat	Protective	Unk	Unk	n/a	n/a	Moderate	Fall 2019	Moderate	Moderate	Possibly
Pump Station	Protective	Yes	Unk	n/a	Yes	Low	Fall 2020	Low	Low	Unlikely
Retrofit	Protective	Yes	Yes	Yes	Yes	Low	Fall 2020	Low	Low	Unlikely

Table 6. Implementation of Options

Potential Remedies	Construction Difficulties	Operational Reliability	Permits & Approvals	Specialty Equip./Eng.	Availability Treatment, Disposal, & Storage
Do nothing	None	n/a	None	None	None
Close in Place	Nothing major	Good	None	None	None
Clean close	Nothing major	Good	None	None	Need disposal site
Barrier wall	Excavation & buried utilities	Good	None	Specialty Contractor	Unknown fill
Pump and Treat	Drilling & well installation	Good	NPDES	Drilling & Pumps	GW discharges
Pump Station	Drilled shafts	Good	Water Treatment permit	Drilling Contractor	Just like pond
Retrofit	Clean close existing pond	Good	Water Treatment & Dam permits	Geosynthetics	None

5.4.3 Need to Coordinate and Obtain Necessary Approvals / Permits from Other Agencies

SIPC has been working with Bureau of Water to obtain the needed Water Treatment Device permit (35 IAC 309, Subpart B) and any NPDES permitting (35 IAC 309, Subpart A) that might be required for the selected remedy. The construction permit for the water treatment device was issued by Bureau of Water on October 16, 2020. Pursuant to submissions that have been made to Illinois EPA, the proposed remedy adds no new wastewater constituents to the currently permitted discharge and should not adversely impact any receiving water. Indeed, with the recent closure of Unit 4, all CCR from the facility will be managed dry and waste water discharges associated with the Site and facility will decrease. Accordingly, the proposed action should be covered under the facility's current NPDES permit, as suggested by the issued construction permit. Illinois EPA has not informed SIPC that this position is incorrect, and SIPC must proceed with the proposed action immediately to achieve timely closure under the federal CCR rule.

Additionally, the Illinois Department of Natural Resources dam permit re-classified the Emery Pond Dam as a Class III dam on December 16, 2020.

5.4.4 Availability of Necessary Equipment and Specialists

Excavation and recompacted soil placement are common earth work activities done by many contractors with the needed earthmoving equipment and trained operators. Drainage systems, like the perimeter drain, are also common construction activities. The water-tight placement of the geomembrane is the only specialty task associated with the selected remedy. Although specialized, there are several trained installation companies. Many of these installers are associated with the geomembrane manufacturing companies.

5.5 Groundwater Monitoring Plan

Groundwater monitoring will continue at the Site. Groundwater monitoring proposed with respect to the Part 620 groundwater standards is detailed in Hanson's (2020c) Groundwater Monitoring Plan that accompanies this Plan. Additionally, assessment monitoring in accordance with 40 CFR 257 will continue. Thus, future monitoring will include both monitoring required by the federal CCR rule, which may be implemented by an Illinois rule once adopted and monitoring proposed to address Part 620 groundwater standard compliance.

5.5.1 Timetable

Active corrective action activities were proposed to coincide with the closure of Unit 4 in fall 2020. See Hanson's (2020b) Closure Plan for details. That timetable has been delayed given the need to work with Illinois EPA to obtain approval of these and related plans and reports with Illinois EPA. However, some work has begun, and the remainder must proceed in the very near future to timely close Emery Pond under the federal CCR rule.

Illinois EPA has requested that SIPC address permitting with respect to certain elements of the selected remedy described above. A 35 IAC 302, Subpart B construction permit for the work, including the new, non-CCR Storm Water Basin (that replaces Emery Pond) was issued by Illinois EPA Bureau of Water on October 16, 2020. In addition, SIPC earlier submitted a permit modification for its current NPDES permit. However, in light of the subsequent closure of Unit 4, and attendant reductions in wastewater discharges, and because the remedial action for this small pond would not cause the discharge of any new or different constituents and would not adversely impact any receiving water, SIPC believes that the proposed remedial action is covered under its current NPDES permit, which is

also supported by the terms of the issued construction permit. SIPC has been waiting for months for Illinois EPA to provide a further clarifying response, and SIPC respectfully asks once again for Illinois EPA's immediate concurrence that no further NPDES permit action is needed so that SIPC may timely complete closure of Emery Pond.

In addition to the proposed active remedies, SIPC is also requesting a GMZ and proposing future groundwater monitoring, including to assess the ameliorative impacts of CCR source removal with dispersive and diffusive flux of COCs over time. The duration and scope of the requested GMZ is described in Section 6, below.

6. Application for a Groundwater Management Zone (GMZ)

6.1 Technical Support Documentation

A previously submitted Hydrogeologic Investigation Report (Hanson, 2019a) and Hydrogeologic Investigation Addendum (Hanson, 2019b), as well as an updated Closure Plan (Hanson, 2020b), Groundwater Monitoring Plan (Hanson, 2020c), and Groundwater Protection Evaluation (Hanson, 2020a) submitted with this Plan, support this Plan and GMZ Application. These documents provide descriptions of the site geology, hydrogeology, closure methods, and groundwater monitoring.

6.2 Groundwater Management Zone

As part of this Plan, SIPC requests establishment of a Groundwater Management Zone (GMZ) pursuant to 35 IAC Part 620. As provided in 35 IAC 620.250(a)(2), a GMZ may be established for sites at which the owner or operator undertakes "an adequate corrective action in a timely and appropriate manner and provides a written confirmation to the Agency." A GMZ is defined as "a three-dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site." SIPC plans to undertake in the very near future, corrective actions, including CCR removal from the Site and installation of a liner in the new basin, as well as prospective groundwater monitoring to assess the ameliorative impacts of CCR source removal and dispersive and diffusive flux of COCs over time. This corrective action is both timely, considering the ongoing negotiations between Illinois EPA and SIPC in connection with the earlier issued violation notice and federal CCR rule requirements, and adequate to address any groundwater impacts to the Site. Further, as described below, recent investigations confirm that any groundwater impacts are not causing any measurable impact to nearby surface waters.

The horizontal extent of the proposed GMZ is depicted in the Plat found in Appendix D, and contains approximately 7.5 acres. The GMZ does not extend beyond the Plant boundaries. A description of the platted area is also found in Appendix D. Vertically, the GMZ is bounded by the ground surface down to the bottom of the upper (weathered) portion of the Bedrock Unit. Hanson has identified this depth as approximately 21.5 ft. BGS at bedrock boring, EBR, or an approximate elevation of 489 ft. The parameters to be covered by the GMZ include the following: Arsenic, Boron, Calcium, Chloride, pH, Sulfate, Selenium, Total Dissolved Solids, Cobalt, Thallium, Iron, Lead, Manganese, and Zinc. Pursuant to the modeling referenced below, the GMZ's expected duration is 27 years.

The Notice of Adequate Corrective Action forms are included in Appendix E.

Table 7. Lake of Egypt Sample Analytical Results

PARAMETER NAME	UNITS	LE-b1	LE-b2	LE-d	LE-in	LE-u
pH (field)	SU	7.09	7.25	7.07	6.57	7.19
Specific Conductivity	µS/cm	139.4	137.1	144.2	173.5	136.2
Temperature	°C	28.2	28.6	28.7	26.7	28.
Dissolved Oxygen	mg/L	5.06	6.21	6.22	4.71	5.65
Oxidation/Reduction Potential	mV	+171.4	+184.7	+172.5	+231.4	+186.7
Turbidity	NTU	3.53	2.88	2.55	4.45	2.54
Arsenic, total	µg/L	<25.	<25.	<25.	<25.	<25.
Barium, total	µg/L	2.52	2.65	2.27	2.34	2.51
Bicarbonate, total	mg/L	38.	38.	39.	39.	38.
Boron, total	µg/L	<20.	<20.	<20.	<20.	<20.
Cadmium, total	µg/L	<1.	<1.	<1.	<1.	<1.
Calcium, total	mg/L	14.1	14.1	13.7	15.4	14.1
Carbonate, total	mg/L	0.	0.	0.	0.	0.
Chloride, total	mg/L	<4.	4.	<4.	<4.	<4.
Chromium, total	µg/L	<5.	<5.	<5.	<5.	<5.
Cobalt, total	µg/L	<5.	<5.	<5.	<5.	<5.
Copper, total	µg/L	<5.	<5.	<5.	<5.	5.6
Fluoride, total	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Iron, total	mg/L	0.077	0.076	0.056	0.099	0.057
Lead, total	µg/L	<1.	<1.	<1.	<1.	<1.
Magnesium, total	mg/L	3.97	3.98	3.92	3.96	3.97
Manganese, total	µg/L	395.	423.	236.	250.	371.
Mercury, total	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel, total	µg/L	<5.	<5.	<5.	<5.	<5.
Nitrogen, Ammonia, total	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen, Nitrate, total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen, Nitrite, total	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphorus, total (as P)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium, total	mg/L	1.96	2.	1.94	1.94	2.
Selenium, total	µg/L	<1.	<1.	<1.	<1.	<1.
Silver, total	µg/L	<1.	<1.	<1.	<1.	<1.
Sodium, total	mg/L	4.11	4.16	4.03	4.03	4.13
Sulfate, total	mg/L	16.	17.	16.	16.	17.
Thallium, total	µg/L	<2.	<2.	<2.	<2.	<2.
Total Dissolved Solids	mg/L	60.	56.	44.	56.	46.
Total Suspended Solids	mg/L	<6.	<6.	<6.	<6.	<6.
Zinc, total	µg/L	<10.	<10.	<10.	<10.	<10.

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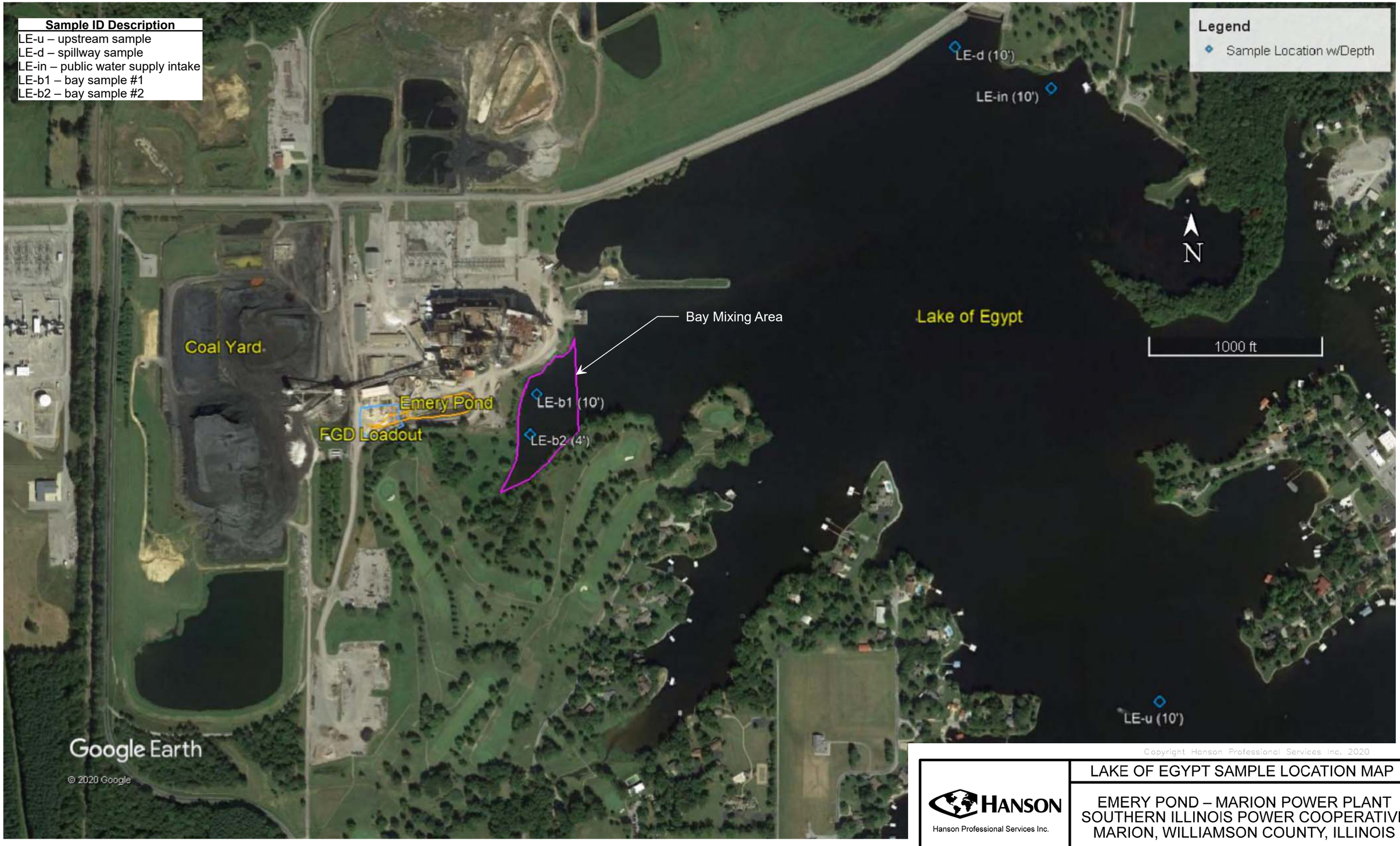

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LAKE OF EGYPT SAMPLE LOCATION MAP

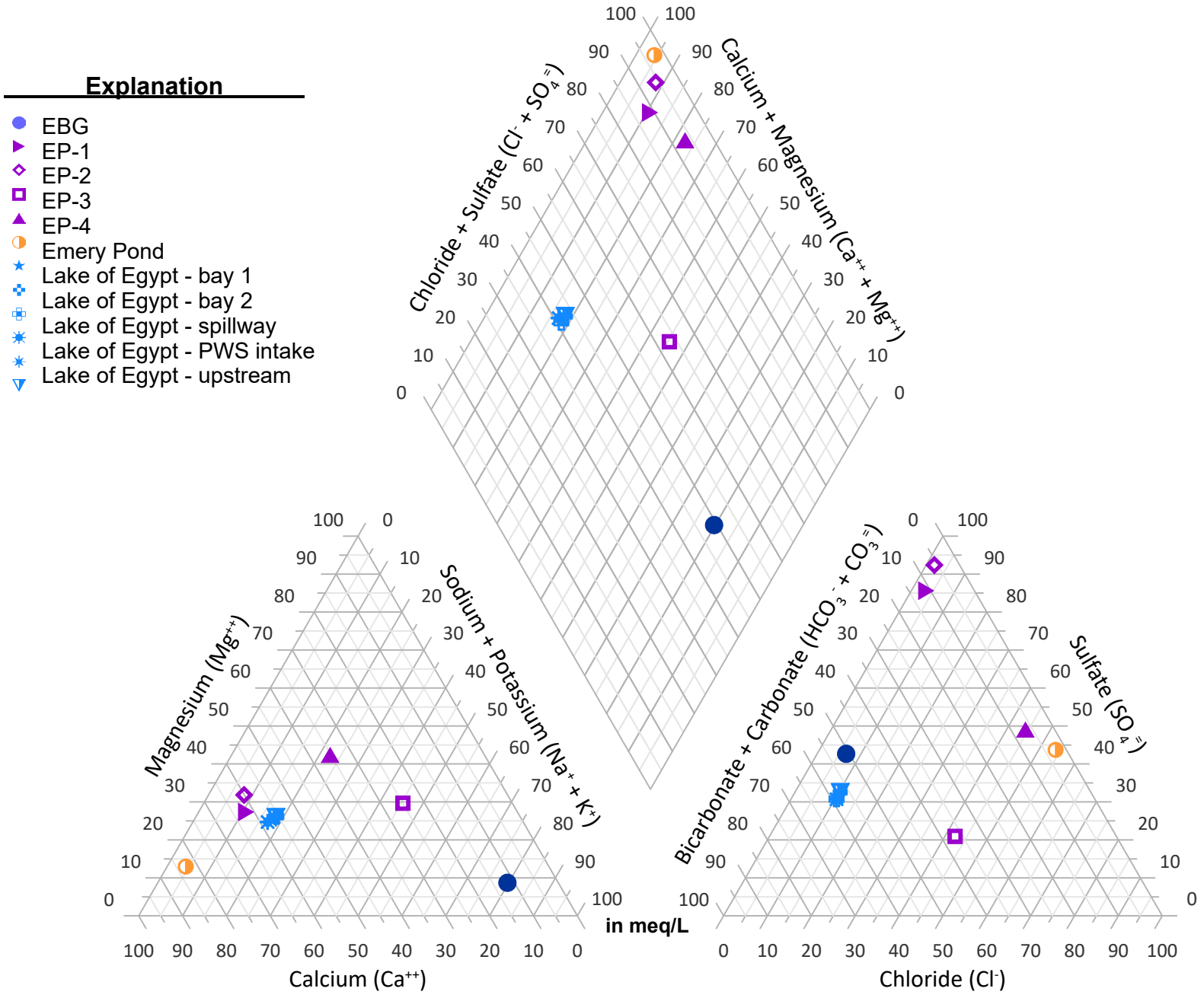
EMERY POND – MARION POWER PLANT
SOUTHERN ILLINOIS POWER COOPERATIVE
MARION, WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022B FIGURE 5

Revised 7/17/2020 – added Bay Mixing Area and label to figure.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIGURE 6. June 2020 Piper (Tri-linear) Diagram



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6.3 Environmental Impact of Proposed Corrective Action

Implementation of this Plan and establishment of the GMZ will have a positive environmental impact. The removal of existing CCR materials and installation of a new CCR Rule compliant liner in the new storm water basin will reduce the impact from the COCs at the Site. The GMZ will remain in place until the groundwater meets applicable Part 620 water quality standards, as established through proposed monitoring.

The Groundwater Protection Evaluation (Hanson, 2020a) submitted herewith, assesses groundwater flow and contaminant transport utilizing the USGS MODFLOW groundwater flow model (McDonald and Harbaugh, 1988) and MT3D contaminant transport model (Zheng, 1990) incorporated into the pre- and post-processor software, Processing Modflow X (Simcore, 2020), to evaluate some of the corrective measures options for Emery Pond and determine the time needed for contaminant concentrations to fall below Class I: Potable Resource groundwater standards (35 IAC 620.410). After selecting the CCR removal with Liner and Drain scenario as the appropriate remedy, each of the contaminants of concern were modeled using a worst-case source concentration (maximum observed concentration from various potential sources). Based on these evaluations, it was found that total Boron took the longest to achieve Class I compliance, with concentrations at a compliance point located adjacent to Lake of Egypt returning to below Class I limits at 27 years. Meeting the Part 257 GPS for Arsenic and Cobalt occurs much quicker. Table 3 lists the time to compliance at each of the downgradient monitoring wells.

Section 5 of the Groundwater Protection Evaluation (Hanson, 2020a) used calculated surface water concentrations, based on mass flux discharges from groundwater to the General Head Boundary (representing Lake of Egypt), to show no predicted surface water standard exceedances due to any groundwater impacts from the Site.

To substantiate this prediction, samples were collected in June 2020 from Lake of Egypt and analyzed for the COCs. Results are presented in Table 7 and sample locations are shown on Figure 6. Analytical results showed no appreciable differences in analyte concentrations between the five lake samples taken adjacent to Emery Pond and other more distant locations. The Piper diagram (Figure 6) also shows the lake samples clustered with no apparent groundwater mixing trends. In addition, no surface water quality standard exceedances were observed.

Illinois EPA has questioned if plant operations and the number of operating units could influence surface water quality. To limit how the calculated results could be interpreted, Hanson (2020a) chose to limit the mixing zone used in the surface water mixing calculations. The bay mixing area shown in Figure 5 does not reach the cooling water intake structure, and therefore groundwater/surface water interactions, based on the calculations in the Groundwater Protection Evaluation, should not be influenced by plant operations.

6.4 Corrective Action Completion Report

Upon meeting the Corrective Action Completion requirements described in 35 IAC 845.680(c) a Corrective Action Completion Report and Certification, meeting the requirements of 35 IAC 845.680(e) will be prepared and submitted to Illinois EPA.

7. Conclusion

Hanson has reviewed the available groundwater data at the Marion Power Plant's Emery Pond and has found concentrations of Arsenic, Boron, Calcium, Chloride, Lead, pH, Sulfate, Thallium, and TDS, above the Class I: Potable Resource Groundwater Standards (35 IAC 620.410) and Class II: General Use Groundwater Standards (35 IAC 620.420). Only assessment monitoring for Cobalt and Arsenic yielded SSLs of GPS exceedances. Hanson also found concentrations of Iron, Manganese, and Zinc that were above the Class I and Class II Standards, but the exceedances do not appear attributable to the Site. Hanson believes that groundwater concentrations of Arsenic, Boron, Calcium, Chloride, Cobalt, Lead, pH, Sulfate, Thallium, and TDS, found above the Class I or Class II Standards are the result of pond and contact water migration from the Site.

This Plan proposes to address and mitigate the release of contaminants and resulting groundwater impacts by clean closing the Emery Pond and Gypsum Loadout Area. A new Storm Water Basin will be constructed within the footprint of the current Emery Pond and the Gypsum Loadout Area will be filled with clean earthen materials that meet the requirements of the applicable state and/or federal regulation. By removing the sources of the groundwater impacts, the concentration of contaminants will be reduced over time, as indicated by Hanson's (2020a) contaminant transport modeling. Time for all COC concentration levels to drop below Class I: Potable Resource limits is approximately 27 years after closure by removal. Meeting the GPS for Arsenic and Cobalt (SSL of GPS) occurs much quicker, with Arsenic modeled to reach the GPS in approximately 7 years and Cobalt never modeled to cause a GPS compliance issue at the modeled compliance point adjacent to Lake of Egypt.

Groundwater monitoring, as required by the CCR Rule will continue after clean closure. Additional groundwater monitoring proposed as part of this Corrective Action and request for a GMZ, is detailed in Hanson's (2020c) Groundwater Monitoring Plan. Prospective groundwater monitoring will assess the expected ameliorative impacts of the corrective actions proposed in this Plan.

8. Licensed Professional Signature/Seal

The geological work product contained in this document has been prepared under my personal supervision and has been prepared and administered in accordance with the standards of reasonable professional skill and diligence.

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Seal:

Expires 31 March 2023

Signature: _____ Date: 30 March 2021

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Appendix A

Tabulated Groundwater Monitoring Results

TABLE A-1. Analytical Data for Emery Pond (2017-2018)

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			Appendix III Constituents																															
Analyte Name			Boron		Calcium		Chloride		Fluoride		pH		Sulfate		TDS		Appendix IV Constituents																			
																	Antimony		Arsenic		Barium		Beryllium		Cadmium		Chromium		Cobalt		Fluoride			
Units			mg/L		mg/L		mg/L		mg/L		S.U.		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L			
Downgradient Wells	EP-01	03/23/17	0.13		220.		54.		0.5	U	6.94		820.		2000.		0.0004	J	0.005	U	0.045		0.0002	U	0.005	U	0.005	U	0.0017	J	0.5	U		
		04/24/17	0.21		280.		54.		0.5	U	6.89		910.		2300.	H1	0.0002	U	0.005	U	0.04		0.0002	U	0.006		0.005	U	0.0008	J	0.5	U		
		05/25/17	0.28		310.		48.		0.5	U	6.55		850.		2300.		0.005	U	0.005	U	0.041		0.005	U	0.01	U	0.01	U	0.005	U	0.5	U		
		06/22/17	0.26		310.		50.		0.5	U	6.52		850.		2300.		0.0006	J	0.005	U	0.032		0.0002	U	0.01	U	0.01	U	0.0008	J	0.5	U		
		06/29/17	0.32		310.		50.		0.5	U	6.64		440.		2200.		0.001	J	0.005	U	0.033		0.0002	U	0.01	U	0.01	U	0.0006	J	0.5	U		
		07/24/17	0.21		270.		51.		0.5	U	6.57		540.		2200.		0.005	U	0.005	U	0.029		0.005	U	0.01	U	0.01	U	0.005	U	0.5	U		
		08/01/17	0.23		250.		48.		0.5	U	6.82		520.		2100.		0.0002	U	0.005	U	0.028		0.0002	U	0.01	U	0.01	U	0.0007	J	0.5	U		
		08/31/17	0.17		240.		48.		0.5	U	6.79		440.		2100.		0.005	U	0.005	U	0.026		0.005	U	0.01	U	0.01	U	0.005	U	0.5	U		
		03/22/18	0.38		330.		60.		0.5	U	6.25		510.		2400.																			
		08/27/18	0.92		410.		63.		0.5	U	6.36		1000.		2700.		0.012	U	0.3	U	0.023	U	0.008	U	0.01	U	0.01	U	0.01	U	0.05	U		
	EP-02	03/23/17	0.22		190.		42.		0.5	U	6.18		860.		1800.		0.0003	J	0.005	U	0.039		0.0002	U	0.005	U	0.005	U	0.052		0.5	U		
		04/24/17	0.19		170.		39.		0.5	U	6.39		660.		1800.	H1	0.0002	U	0.005	U	0.035		0.0002	U	0.005	U	0.005	U	0.029		0.5	U		
		05/25/17	0.2		200.		36.		0.5	U	6.31		780.		1900.		0.005	U	0.005	U	0.038		0.005	U	0.01	U	0.01	U	0.023		0.5	U		
		06/22/17	0.23		200.		37.		0.5	U	6.1		780.		1800.		0.0004	J	0.005	U	0.03		0.0002	U	0.01	U	0.01	U	0.016		0.5	U		
		06/29/17	0.29		470.		36.		0.5	U	5.75		470.		1900.		0.0007	J	0.005	U	0.029		0.0002	U	0.01	U	0.01	U	0.0087		0.5	U		
		07/24/17	0.26		200.		36.		0.5	U	5.86		430.		1800.		0.005	U	0.005	U	0.025		0.005	U	0.01	U	0.01	U	0.005	U	0.5	U		
		08/01/17	0.31		190.		36.		0.5	U	5.88		770.		1800.		0.0002	U	0.005	U	0.025		0.0002	U	0.01	U	0.01	U	0.0009	J	0.5	U		
		08/31/17	0.23		180.		36.		0.5	U	6.33		340.		1800.		0.005	U	0.005	U	0.025		0.005	U	0.01	U	0.01	U	0.005	U	0.5	U		
		03/22/18	0.24		230.		30.		0.5	U	6.27		420.		1700.																			
		08/27/18	0.2		190.		35.		0.5	U	6.28		740.		1800.		0.012	U	0.3	U	0.018		0.008	U	0.01	U	0.01	U	0.01	U	0.5	U		
	EP-03	03/23/17	0.11		34.		100.		0.5	U	5.99		120.		680.		0.0002	J	0.005	U	0.072		0.0002	U	0.005	U	0.005	U	0.11		0.5	U		
		04/24/17	0.089		29.		120.		0.5	U	5.96		180.		820.	H1	0.0002	U	0.0088		0.059		0.0002	U	0.005	U	0.005	U	0.12		0.5	U		
		05/25/17	0.081		45.		140.		0.5	U	6.03		190.		1400.		0.005	U	0.0076		0.059		0.005	U	0.01	U	0.01	U	0.091		0.5	U		
		06/22/17	0.057		93.		220.		0.5	U	6.08		300.		560.		0.0003	J	0.0061		0.061		0.0002	U	0.01	U	0.01	U	0.037		0.5	U		
		06/29/17	0.085		30.		66.		0.5	U	6.01		73.		570.		0.0009	J	0.005	U	0.065		0.0002	U	0.01	U	0.01	U	0.11		0.5	U		
		07/24/17	0.083		32.		110.		0.5	U	5.96		130.		720.		0.005	U	0.0093		0.064		0.005	U	0.01	U	0.01	U	0.12		0.5	U		
		08/01/17	0.09		34.		120.		0.5	U	6.02		140.		630.		0.0002	U	0.0062		0.057		0.0002	U	0.01	U	0.01	U	0.1		0.5	U		
		08/31/17	0.09		33.		110.		0.5	U	6.13		110.		1000.		0.005	U	0.0069		0.058		0.005	U	0.01	U	0.01	U	0.11		0.5	U		
		03/22/18	0.078		34.		110.		0.5	U	6.1		110.		700.																			
		08/27/18	0.082		38.		140.		0.5	U	6.1		150.		690.		0.012	U	0.3	U	0.064		0.008	U	0.01	U	0.01	U	0.088		0.5	U		
	EP-04	03/23/17	15.	D	190.		460.		0.5	U	5.51		620.		2300.		0.0003	J	0.035		0.035		0.0002	U	0.005	U	0.005	U	0.39		0.5	U		
		04/24/17	23.	D	170.		290.		0.5	U	5.88		530.		2300.	H1	0.0002	U	0.039		0.026		0.0002	U	0.0052		0.005	U	0.41		0.5	U		
		05/25/17	14.	D	170.		380.		0.5	U	5.77		660.		2400.		0.005	U	0.037		0.028		0.005	U	0.01	U	0.01	U	0.41		0.5	U		
		06/22/17	11.	D	150.		430.		0.5	U	5.8		730.		2000.		0.0003	J	0.053		0.029		0.0002	U	0.01	U	0.01	U	0.44		0.5	U		
		06/29/17	13.	D	190.		250.		0.5	U	5.81		410.		2100.		0.0005	J	0.044		0.037		0.0002	U	0.01	U	0.01	U	0.34		0.5	U		
		07/24/17	11.	D	160.		180.		0.5	U	5.8		290.		2300.		0.005	U	0.044		0.026		0.005	U	0.01	U	0.01	U	0.41		0.5	U		
		08/01/17	14.	D	150.		210.		0.5	U	5.8		330.		2200.		0.0002	U	0.035		0.031		0.0002	U	0.01	U	0.01	U	0.42		0.5	U		
		08/31/17	11.	D	150.		210.		0.5	U	5.85		340.		2300.		0.005	U	0.049		0.023		0.005	U	0.01	U	0.01	U	0.38		0.5	U		
		03/22/18	13.		200.		200.		0.5	U	6.04		320.		2100.																			
		08/27/18	11.		150.		310.		0.5	U	5.85		520.		1900.		0.012	U	0.3	U	0.023		0.008	U	0.01	U	0.011		0.31		0.5	U		
Upgradient Wells	EBG	03/23/17	0.12		23.		55.		0.5	U	6.5		64.		480.		0.0006	J	0.005	U	0.13		0.0003	J	0.005	U	0.006	U	0.008		0.5	U		
		04/24/17	0.079		10.		11.		0.5	U	6.8		54.		400.	H1	0.0009	J	0.005	U	0.029		0.0002	U	0.005	U	0.005	U	0.0002	J	0.5	U		
		05/25/17	0.1		30.		84.		0.5	U	6.41		42.		440.		0.005	U	0.005	U	0.17		0.005	U	0.01	U	0.01	U	0.014		0.5	U		
		06/22/17	0.071		23.		68.		0.5	U	6.45		57.		470.		0.0007	J	0.005	U	0.049		0.0002	U	0.01	U	0.01	U	0.0002	J	0.5	U		
		06/29/17	0.073		32.		79.		0.5	U	6.53		50.		280.		0.0014	J	0.005	U	0.086		0.0002	U	0.01	U	0.01	U	0.0014	J	0.5	U		
		07/24/17	0.079		37.		27.	M2	0.64	M1	6.59		61.	M2	420.		0.005	U	0.005	U	0.19		0.005	U	0.01	U	0.01	U	0.0093		0.64	M1		
		08/01/17	0.074		35.	M3	86.		0.5	U	6.66		45.		380.		0.0002	J	0.005	U	0.18		0.0002	U	0.01	U	0.01	U	0.0038	J	0.5	U		
		08/31/17	0.056		35.		82.		0.5	U	6.26		44.		470.		0.005	U	0.005	U	0.16		0.005	U	0.01	U	0.01	U	0.0073		0.5	U		
		03/22/18	0.033		14.		12.		0.53		6.35		63.		300.																			
		08/27/18	0.035		15.		16.		0.55		6.57		72.		360.		0.012	U	0.3	U	0.091		0.008	U	0.01	U	0.01	U	0.01	U	0.5	U		
GPS Upper Limit			**0.1216**		**46.304**		**118.631**		**0.64**		**6.94**		**68.6063**		**550.253**		**0.005**		**0.005**		**0.2491**		**0.005**		**0.01**		**0.01**		**0.0191**		**0.64**			
GPS Lower Limit											**6.11**																							

TABLE A-1. Analytical Data for Emery Pond (2017-2018)

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Appendix IV Constituents																				
Lead		Lithium		Mercury		Molybdenum		Selenium		Thallium		Radium 226* (pCi/L)			Radium 228* (pCi/L)			Radium 226+228 (pCi/L)		
mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		Result	Uncertainty		Result	Uncertainty		Result	Uncertainty	
0.005	U	0.024	J	0.0002	U	0.0028	J	0.0012	J	0.025	U	0.603	±0.277		0.0552	±0.431	U	0.6582	±0.708	U
0.005	U	0.028	J	0.0002	U	0.0016	J	0.0014	J	0.025	U	0.223	±0.196		0.496	±0.298		0.719	±0.494	
0.01	U	0.1	U	0.0002	U	0.005	U	0.005	U	0.025	U	0.805	±0.22		0.555	±0.448		1.36	±0.668	
0.01	U	0.032	J	0.0002	U	0.0008	J	0.005	J	0.05	U	0.313	±0.176		0.496	±0.245		0.809	±0.421	
0.01	U	0.029	J	0.0002	U	0.0018	J	0.0025	J	0.05	U	0.139	±0.129		0.0387	±0.323	U	0.1777	±0.452	U
0.01	U	0.1	U	0.0002	U	0.005	U	0.005	U	0.05	U	0.16			-0.27			-0.11		
0.01	U	0.024	J	0.0002	U	0.0019	J	0.0011	J	0.05	U	0.38			1.04			1.42		
0.01	U	0.1	U	0.0002	U	0.005	U	0.005	U	0.05	U	0.24			1.15			1.39		
0.01	U	0.1	U	0.0002	U	0.005	U	0.002	U	0.05	U	0.453	±0.384		0.992	±0.899		1.445	±1.283	
0.005	U	0.018	J	0.0002	U	0.0015	J	0.0038	J	0.025	U	0.187	±0.259	U	0.853	±0.396		1.04	±0.655	
0.005	U	0.015	J	0.0002	U	0.0017	J	0.0027	J	0.025	U	0.341	±0.194		0.55	±0.298		0.891	±0.492	
0.01	U	0.1	U	0.0002	U	0.005	U	0.005	U	0.05	U	0.37	±0.15		0.609	±0.224		0.979	±0.374	
0.01	U	0.02	JU	0.0002	U	0.0003	J	0.0074		0.05	U	0.197	±0.142		-0.127	±0.359	U	0.07	±0.501	U
0.01	U	0.025	J	0.0002	U	0.0006	J	0.0061		0.05	U	1.9	±0.416		0.458	±0.303		2.358	±0.719	
0.01	U	0.1	U	0.0002	U	0.005	U	0.0054		0.05	U	0.08			0.4			0.48		
0.01	U	0.021	J	0.0002	U	0.0008	J	0.0046	J	0.05	U	0.14			1.35			1.49		
0.01	U	0.1	U	0.0002	U	0.005	U	0.005	U	0.05	U	0.08			0.64			0.72		
0.01	U	0.1	U	0.0002	U	0.005	U	0.002	U	0.05	U	0.	±0.3	U	0.443	±0.322		0.443	±0.622	U
0.005	U	0.003	U	0.0002	U	0.0004	J	0.013		0.025	U	1.64	±0.517		0.438	±0.471	U	2.078	±0.988	
0.0056	U	0.0095	J	0.0002	U	0.0005	J	0.011		0.025	U	0.338	±0.285		0.0622	±0.587	U	0.4002	±0.872	U
0.01	U	0.1	U	0.0002	U	0.005	U	0.016		0.05	U	0.177	±0.327	U	0.126	±0.485	U	0.303	±0.812	U
0.01	U	0.12		0.0002	U	0.0002	U	0.028		0.05	U	0.355	±0.178		0.42	±0.259		0.775	±0.437	
0.01	U	0.012	J	0.0002	U	0.0002	U	0.013		0.05	U	0.317	±0.178		0.397	±0.364		0.714	±0.542	
0.01	U	0.1	U	0.0002	U	0.005	U	0.016		0.05	U	0.19			0.77			0.96		
0.01	U	0.028	j	0.0002	U	0.0005	J	0.012		0.05	U	0.46			2.42			2.88		
0.01	U	0.1	U	0.0002	U	0.005	U	0.022		0.05	U	0.41			0.77			1.18		
0.01	U	0.1	U	0.0002	U	0.005	U	0.002	U	0.05	U	0.679	±0.682	U	0.717	±0.403		1.396	±1.085	
0.009		0.0044	J	0.0002	U	0.0009	J	0.13		0.025	U	1.1	±0.489		0.442	±0.442		1.542	±0.931	
0.013		0.0062	J	0.0002	U	0.0011	J	0.12		0.065		0.715	±0.399		1.92	±0.406		2.635	±0.805	
0.011		0.1	U	0.0002	U	0.005	U	0.13		0.092		1.	±0.142		0.633	±0.36		1.633	±0.502	
0.017		0.0047	J	0.0002	U	0.0002	U	0.2		0.094		0.18	±0.13		0.897	±0.354		1.077	±0.484	
0.01	U	0.0063	J	0.0002	U	0.0006	J	0.13		0.058		0.219	±0.172		0.49	±0.32		0.709	±0.492	
0.011		0.1	U	0.0002	U	0.005	U	0.13		0.3		0.3			0.44			0.74		
0.012		0.0053	J	0.0002	U	0.001	J	0.11		0.075		0.15			0.96			1.11		
0.012		0.1	U	0.0002	U	0.005	U	0.16		0.075		0.33			2.14			2.47		
0.015		0.1	U	0.0002	U	0.005	U	0.021		0.14		0.262	±0.364	U	0.79	±0.384		1.052	±0.748	
0.005	U	0.0046	J	0.0002	U	0.0034	J	0.0019	J	0.025	U	0.878	±0.42		1.06	±0.33		1.938	±0.75	
0.005	U	0.0074	J	0.0002	U	0.0043	J	0.0005	U	0.025	U	1.17	±0.205		0.353	±0.416	U	1.523	±0.621	
0.01	U	0.1	U	0.0002	U	0.005	U	0.005	U	0.05	U	0.0457	±0.278	U	0.864	±0.289		0.9097	±0.567	
0.01	U	0.028	J	0.0002	U	0.0017	J	0.0036	J	0.05	U	0.262	±0.189		0.0695	±0.21	U	0.3315	±0.399	U
0.01	U	0.059	J	0.0002	U	0.0016	J	0.0019	J	0.05	U	0.245	±0.199		0.371	±0.289		0.616	±0.488	
0.01	U	0.1	U	0.0002	U	0.005	U	0.005	U	0.05	U	0.43			0.98			1.41		
0.01	U	0.082	J	0.0002	U	0.0024	J	0.0028	J	0.05	U	0.28			1.24			1.52		
0.01	U	0.1	U	0.0002	U	0.005	U	0.007		0.05	U	0.77			2.22			2.99		
0.01	U	0.1	U	0.0002	U	0.005	U	0.002	U	0.05	U	0.933	±0.543		0.447	±0.378		1.38	±0.921	
0.01		**0.1**		**0.0002**		**0.005**		**0.007**		**0.05**		**1.2076**			**2.7454**			**4.0038**		

Statistically significant increase (SSI) over baseline sampling using well specific and parameter specific statistical limits.

TDS = Total Dissolved Solids
NA = Not Analyzed
mg/L = milligrams per liter
S.U. = Standard Units
pCi/L = picoCurie/liter
D = Dilution
J = The analyte was positively identified, but the quanitation was 'below The RL.
U = analyte analyzed for but not detected
* = "U" flag for radionuclides is not detected above the minimum detectable concentration which differs from similar flag for aqueous results.
M1 = Matrix Spike recovery outside Control Limits due to sample matrix interference; biased high.
M2 = Matrix Spike recovery outside Control Limits due to sample Matrix interference; biased low
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.
H1 = Sample received outside of holding time for these analyses.

TABLE A-2. Extent of Contamination Study Results (2019)

PARAMETER NAME	UNITS	Class II Std	No. of Exceedances	EBG	EP-3	DP1a	DP1b	DP1c	DP1d	DP1e	EP-2	DP2a	DP2b	DP2c	DP2d	DP2e
Conductivity	µmhos/cm							3420.	1560.	4080.			3230.	2560.	1750.	1760.
pH	SU	6.5 - 9.0	9	6.85	6.11			6.28	6.16	7.74	6.62		6.92	7.06	6.61	6.94
Temperature	°C			8.9	17.2			11.8	8.9	5.6	13.5		13.3	12.8	13.3	12.2
Alkalinity, Bicarbonate, total	mg/L			160.	400.			350.	410.	9500.	140.		440.	470.	1300.	1620.
Alkalinity, Carbonate, total	mg/L			<5.	<5.			0.	0.	0.	<5.		0.	0.	0.	0.
Antimony, total	mg/L	0.024	0	<0.001	<0.001			<0.002	0.001	0.0008	<0.001		0.0011	<0.004	0.0008	0.001
Arsenic, total	mg/L	0.2	5	<0.0012	0.0068			0.163	0.28	0.0884	<0.001		0.0325	0.0941	0.012	0.0546
Barium, total	mg/L	2.	11	0.064	0.036			5.5	5.86	2.05	<0.01		0.316	2.9	0.276	0.78
Beryllium, total	mg/L	0.5	0	<0.0004	<0.001			0.0265	0.0345	0.0258	<0.001		0.0027	0.0245	0.001	0.0049
Boron, total	mg/L	2.	10	0.041	<0.1			5.16	0.404	7.29	0.35		0.157	<0.04	0.0627	0.013
Cadmium, total	mg/L	0.05	3	<0.01	<0.01			0.0032	0.0125	0.545	<0.01		0.0012	0.0012	0.0016	0.0007
Calcium, total	mg/L			13.	62.			892.	433.	16700.	280.		480.	343.	271.	285.
Chloride, total	mg/L	200.	14	12.	160.			368.	281.	454.	25.		54.	62.	62.	77.
Chromium, total	mg/L	1.	4	<0.01	<0.01			0.785	1.11	<0.015	<0.01		0.0839	0.606	0.0232	0.168
Cobalt, total	mg/L	1.	2	<0.0038	0.063			0.56	0.668	1.1	0.0005		0.131	0.225	0.0927	0.0806
Copper, total	mg/L	0.65	6	<0.0045	0.0012			0.552	0.936	2.32	0.0007		0.0541	0.341	0.0269	0.0714
Cyanide, total	mg/L	0.6	0	<0.005	<0.005			<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005
Fluoride, total	mg/L	4.	1	<0.5	<0.5			0.23	0.1	1.02	<0.5		0.49	0.3	0.49	0.26
Iron, total	mg/L	5.	25	4.4	57.			946.	1370.	592.	0.15		81.6	583.	24.3	177.
Lead, total	mg/L	0.1	15	<0.01	<0.01			0.632	0.949	3.28	<0.01		0.053	0.29	0.0239	0.0979
Magnesium, total	mg/L			6.1	54.			224.	159.	1860.	96.		195.	149.	64.6	77.
Manganese, total	mg/L	10.	16	0.65	8.			26.7	53.4	71.	0.064		12.3	10.3	6.83	6.02
Mercury, total	mg/L	0.01	2	<0.0002	<0.0002			0.0012	0.0015	0.0184	<0.0002		0.0001	0.0009	<0.0002	0.0001
Nickel, total	mg/L	2.	2	<0.0049	0.016			0.617	0.747	2.04	0.0061		0.201	0.367	0.115	0.115
Nitrogen, Nitrate, total	mg/L	100.	0	0.68	<0.11			0.084	0.052	0.551	1.		0.154	0.065	0.036	0.039
Potassium, total	mg/L			6.2	3.3			25.1	37.6	75.7	4.5		7.92	17.6	3.86	8.59
Selenium, total	mg/L	0.05	5	<0.0068	0.0007			<0.04	<0.004	<0.02	0.006		0.0012	<0.01	0.0006	<0.001
Silver, total	mg/L		0	<0.001	<0.001			<0.014	<0.014	<0.035	<0.001		<0.007	<0.014	<0.007	<0.007
Sodium, total	mg/L			100.	190.			122.	73.	262.	120.		142.	269.	95.6	195.
Sulfate, total	mg/L	400.	21	74.	220.			1250.	296.	1640.	1100.		1370.	732.	478.	379.
Thallium, total	mg/L	0.02	3	<0.05	<0.05			0.0049	0.0062	0.0441	<0.05		<0.002	<0.008	<0.002	0.001
Total Dissolved Solids (TDS)	mg/L	1200.	22	350.	1300.			2590.	1040.	3400.	1900.		2810.	1880.	1260.	1160.
Vanadium, total	mg/L	0.1	20	<0.0079	0.0012			1.1	1.52	<0.01	0.0011		0.111	0.822	0.0398	0.211
Zinc, total	mg/L	5.	3	<0.021	0.011			1.52	2.45	27.3	0.0049		0.298	0.882	0.195	0.214

CCR (Appendix III or IV) parameter =	*Lead, total*
Upgradient monitoring well =	EBG
Downgradient monitoring well =	EP-3
Extent investigation boring =	DP2c
Concentration exceeds Class II Std. =	65.
Insuficient water to sample =	

Some CCR parameters (Lithium, Molybdenum, & Radium 226/228) do not have Class II GW Standards

TABLE A-2. Extent of Contamination Study Results (2019)

PARAMETER NAME	UNITS	Class II Std	No. of Exceedances	DP2f	DP2g	DP2h	EP-1	DP3a	DP3b	DP3c	DP3d	DP4a	DP4b	DP4c	DP4d	DP5a
Conductivity	µmhos/cm			1630.	869.	733.		1980.	3320.	3060.	672.				512.	8540.
pH	SU	6.5 - 9.0	9	7.06	6.41	6.03	6.33	7.23	7.11	7.21	7.38				7.07	12.5
Temperature	°C			12.8	12.5	12.2	13.9	10.7	12.1	12.9	10.7				8.8	13.8
Alkalinity, Bicarbonate, total	mg/L			690.	120.	120.	240.	560.	480.	470.	70.				50.	n/a
Alkalinity, Carbonate, total	mg/L			0.	0.	0.	<5.	0.	0.	0.	0.				0.	840.
Antimony, total	mg/L	0.024	0	0.0009	0.0049	<0.004	<0.005	<0.002	<0.004	0.0008	0.0006				0.0009	0.0027
Arsenic, total	mg/L	0.2	5	0.11	0.07	0.0681	<0.005	0.0989	0.0882	0.0281	0.0355				0.043	0.0214
Barium, total	mg/L	2.	11	4.87	1.68	3.41	<0.01	2.2	2.83	0.641	0.589				0.91	0.288
Beryllium, total	mg/L	0.5	0	0.006	0.0082	0.0207	<0.005	0.0128	0.018	0.0023	0.0036				0.0043	0.003
Boron, total	mg/L	2.	10	<0.02	0.014	<0.04	0.73	0.054	<0.04	<0.02	<0.02				0.0324	0.854
Cadmium, total	mg/L	0.05	3	0.0024	<0.002	0.0025	<0.01	0.0019	0.0023	0.0008	<0.002				0.0005	0.0031
Calcium, total	mg/L			97.1	96.9	86.1	390.	376.	446.	209.	34.2				67.2	1360.
Chloride, total	mg/L	200.	14	148.	48.	31.	70.	224.	150.	226.	7.				4.	848.
Chromium, total	mg/L	1.	4	0.155	0.274	0.574	<0.01	0.395	0.473	0.0754	0.138				0.108	0.0345
Cobalt, total	mg/L	1.	2	0.127	0.321	0.466	0.0004	0.136	0.225	0.0454	0.0594				0.0587	0.0089
Copper, total	mg/L	0.65	6	0.0901	0.208	0.604	0.0009	0.246	0.31	0.0369	0.0657				0.0982	0.0455
Cyanide, total	mg/L	0.6	0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				<0.005	<0.005
Fluoride, total	mg/L	4.	1	0.38	0.44	0.14	<0.5	0.58	0.32	0.23	0.18				0.18	0.05
Iron, total	mg/L	5.	25	253.	329.	546.	0.44	389.	519.	84.7	122.				128.	18.
Lead, total	mg/L	0.1	15	0.0956	0.157	0.414	<0.01	0.183	0.289	0.037	0.0593				0.0621	0.0676
Magnesium, total	mg/L			45.2	54.4	85.2	160.	129.	177.	90.3	24.2				40.3	5.16
Manganese, total	mg/L	10.	16	37.7	23.8	33.8	0.035	8.44	13.7	4.38	1.79				2.61	0.312
Mercury, total	mg/L	0.01	2	0.0001	0.0006	0.0017	<0.0002	0.0007	0.0008	0.0001	0.0002				0.0002	0.0007
Nickel, total	mg/L	2.	2	0.225	0.236	0.449	0.0066	0.329	0.404	0.0728	0.0931				0.127	0.0415
Nitrogen, Nitrate, total	mg/L	100.	0	0.035	0.023	0.059	<0.11	0.112	0.079	0.068	1.1				0.113	0.341
Potassium, total	mg/L			5.93	18.9	17.6	4.6	11.6	15.2	4.95	4.5				6.13	545.
Selenium, total	mg/L	0.05	5	<0.001	<0.001	0.0027	<0.005	<0.01	<0.01	0.0023	0.0083				<0.001	0.0762
Silver, total	mg/L		0	<0.007	<0.007	<0.007	<0.001	<0.007	<0.007	<0.007	<0.007				<0.007	<0.007
Sodium, total	mg/L			303.	85.4	61.1	180.	234.	322.	331.	104.				26.3	211.
Sulfate, total	mg/L	400.	21	167.	222.	213.	1600.	724.	1270.	651.	254.				234.	1270.
Thallium, total	mg/L	0.02	3	0.0015	0.0013	0.0057	<0.05	0.0021	0.0033	<0.002	<0.002				0.0017	0.0023
Total Dissolved Solids (TDS)	mg/L	1200.	22	1030.	555.	500.	2800.	1230.	2520.	2140.	470.				365.	4520.
Vanadium, total	mg/L	0.1	20	0.31	0.397	0.727	<0.025	0.415	0.602	0.0902	0.166				0.175	0.178
Zinc, total	mg/L	5.	3	0.26	0.504	1.18	<0.01	0.682	0.896	0.117	0.195				0.503	0.196

CCR (Appendix III or IV) parameter =	*Lead, total*
Upgradient monitoring well =	EBG
Downgradient monitoring well =	EP-3
Extent investigation boring =	DP2c
Concentration exceeds Class II Std. =	65.
Insuficient water to sample =	

Some CCR parameters (Lithium, Molybdenum, & Radium 226/228) do not have Class II GW Standards

TABLE A-2. Extent of Contamination Study Results (2019)

PARAMETER NAME	UNITS	Class II Std	No. of Exceedances	DP5b	DP6a	DP6b	DP6c	EP-4	DP7a	DP7b	DP7c	DP7d	Emery Pond	Gypsum
Conductivity	µmhos/cm			6020.	5160.		3380.		4000.	3580.	3210.	2470.	9630.	
pH	SU	6.5 - 9.0	9	10.6	6.48		7.11	6.07	6.51	6.61	6.44	6.66	7.77	
Temperature	°C			9.9	6.3		5.8	16.	9.7	7.6	9.8	8.9	17.3	
Alkalinity, Bicarbonate, total	mg/L			1260.	1320.		72700.	110.	294.	750.	500.	754.	100.	16.
Alkalinity, Carbonate, total	mg/L			200.	0.		0.	<5.	0.	0.	0.	0.	0.	0.
Antimony, total	mg/L	0.024	0	0.0096	<0.01		0.0018	<0.005	<0.004	<0.01	<0.002	<0.01	0.0007	<0.001
Arsenic, total	mg/L	0.2	5	0.181	0.359		0.188	0.014	1.1	1.64	0.339	0.14	0.0025	<0.01
Barium, total	mg/L	2.	11	1.32	3.22		1.48	0.024	1.49	1.59	2.84	2.46	0.121	0.0111
Beryllium, total	mg/L	0.5	0	0.019	0.083		0.0091	<0.005	0.037	0.06	0.0171	0.0226	<0.0005	<0.0005
Boron, total	mg/L	2.	10	4.88	14.		8.09	12.	3.38	3.38	6.9	0.06	72.7	0.498
Cadmium, total	mg/L	0.05	3	0.018	0.127		0.0147	<0.01	0.0565	0.044	0.0053	0.0005	0.019	<0.002
Calcium, total	mg/L			2820.	1850.		6180.	140.	2000.	2870.	505.	331.	899.	629.
Chloride, total	mg/L	200.	14	1210.	980.		309.	420.	380.	371.	495.	129.	2190.	15.
Chromium, total	mg/L	1.	4	0.328	1.52		0.702	<0.01	1.39	1.95	0.457	0.681	0.0075	0.0149
Cobalt, total	mg/L	1.	2	0.0895	3.87		0.173	0.39	0.421	0.658	0.547	0.281	0.0149	<0.005
Copper, total	mg/L	0.65	6	0.325	1.43		1.1	0.0016	2.12	3.27	0.48	0.292	0.0077	<0.005
Cyanide, total	mg/L	0.6	0	<0.005	<0.005		<0.025	<0.005	<0.005	0.003	0.004	<0.005	0.183	<0.005
Fluoride, total	mg/L	4.	1	0.15	0.21		2.26	<0.5	1.26	0.3	0.14	0.43	17.1	1.67
Iron, total	mg/L	5.	25	177.	1780.		332.	230.	1570.	2660.	824.	780.	0.899	0.0719
Lead, total	mg/L	0.1	15	0.527	1.87		0.375	<0.01	2.47	5.17	0.583	0.319	0.0026	<0.0075
Magnesium, total	mg/L			42.1	470.		495.	120.	322.	499.	211.	114.	673.	4.45
Manganese, total	mg/L	10.	16	2.85	112.		11.8	77.	30.7	53.4	45.1	12.3	4.56	0.0444
Mercury, total	mg/L	0.01	2	0.0129	0.0078		0.0014	<0.0002	0.0099	0.0069	0.0006	0.0005	0.0004	<0.0002
Nickel, total	mg/L	2.	2	0.348	2.23		0.513	0.056	1.45	1.45	0.476	0.39	0.118	0.01
Nitrogen, Nitrate, total	mg/L	100.	0	0.235	0.336		0.334	<0.11	0.122	0.033	0.185	<0.05	4.86	<0.05
Potassium, total	mg/L			488.	61.5		20.4	2.7	51.9	66.2	18.	15.	8.66	0.11
Selenium, total	mg/L	0.05	5	0.137	0.0288		0.0347	<0.005	0.407	0.304	<0.002	0.0083	0.082	0.0462
Silver, total	mg/L		0	<0.007	<0.07		<0.035	<0.001	<0.014	<0.035	<0.014	<0.007	<0.007	<0.007
Sodium, total	mg/L			158.	136.		189.	110.	149.	169.	134.	218.	408.	2.68
Sulfate, total	mg/L	400.	21	1200.	1640.		1680.	740.	1790.	1590.	1040.	485.	2000.	1350.
Thallium, total	mg/L	0.02	3	0.0089	0.0251		0.0032	0.097	0.0059	<0.02	0.0044	<0.004	0.002	<0.002
Total Dissolved Solids (TDS)	mg/L	1200.	22	4080.	3700.		3220.	2000.	3240.	2900.	2450.	1640.	6540.	2140.
Vanadium, total	mg/L	0.1	20	1.01	2.47		0.508	<0.025	1.59	2.34	0.761	0.659	0.0161	<0.01
Zinc, total	mg/L	5.	3	1.69	4.88		2.79	0.02	6.06	7.75	1.72	0.913	0.215	<0.01

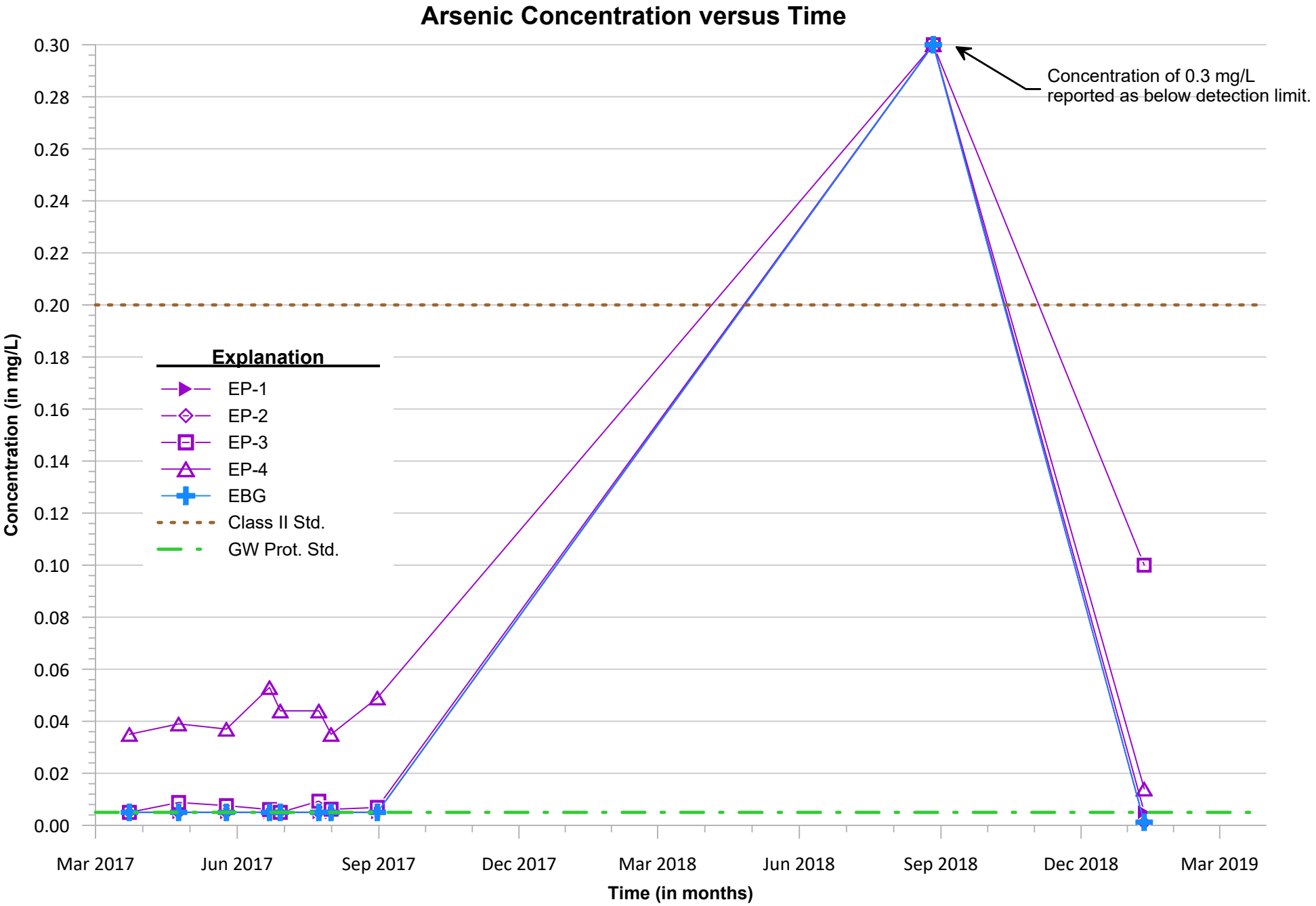
CCR (Appendix III or IV) parameter =	*Lead, total*
Upgradient monitoring well =	EBG
Downgradient monitoring well =	EP-3
Extent investigation boring =	DP2c
Concentration exceeds Class II Std. =	65.
Insuficient water to sample =	

Some CCR parameters (Lithium, Molybdenum, & Radium 226/228) do not have Class II GW Standards

Appendix B

Graphical Groundwater Monitoring Results

Electronic Filing: Received, Clerk's Office 01/13/2023



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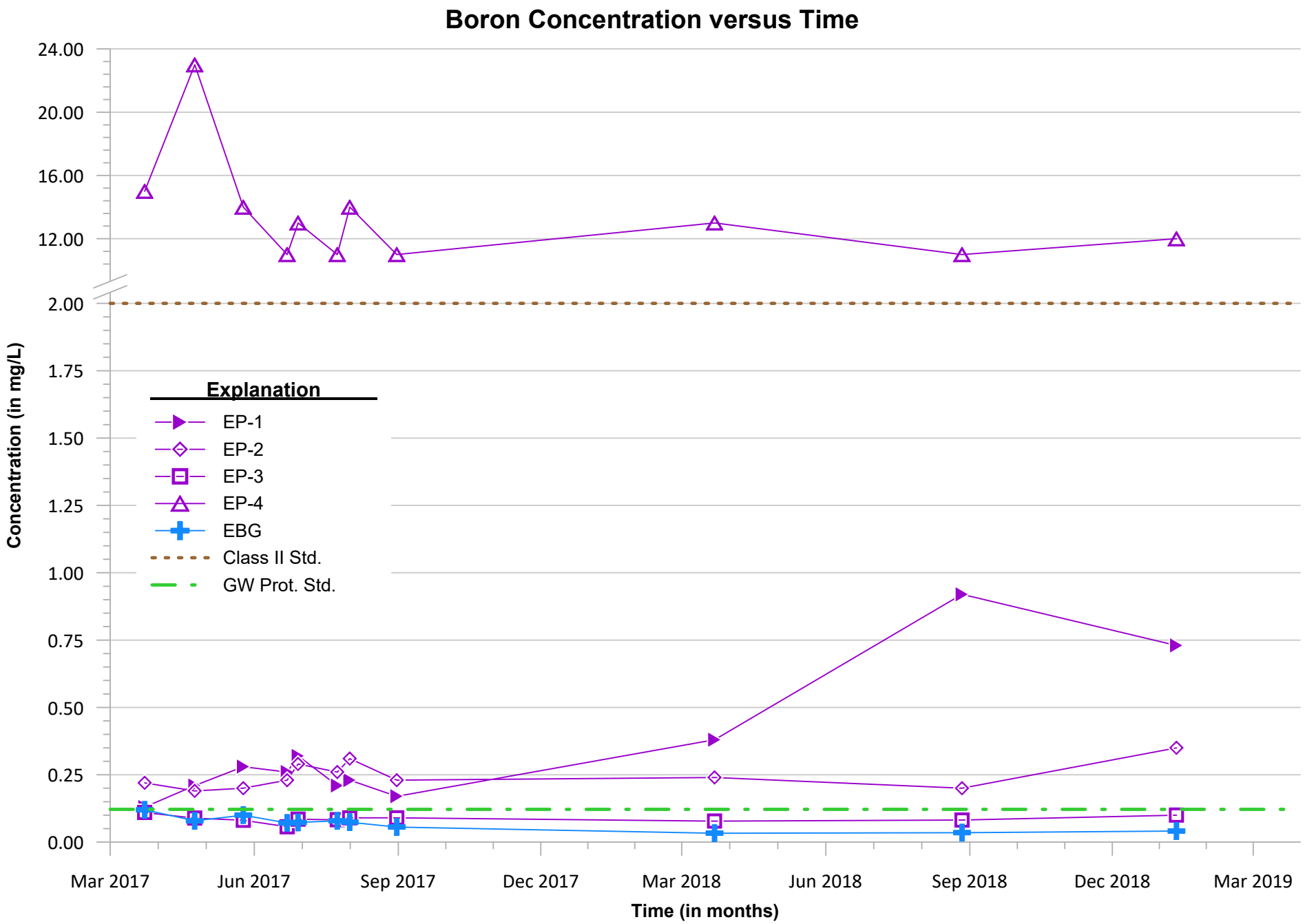

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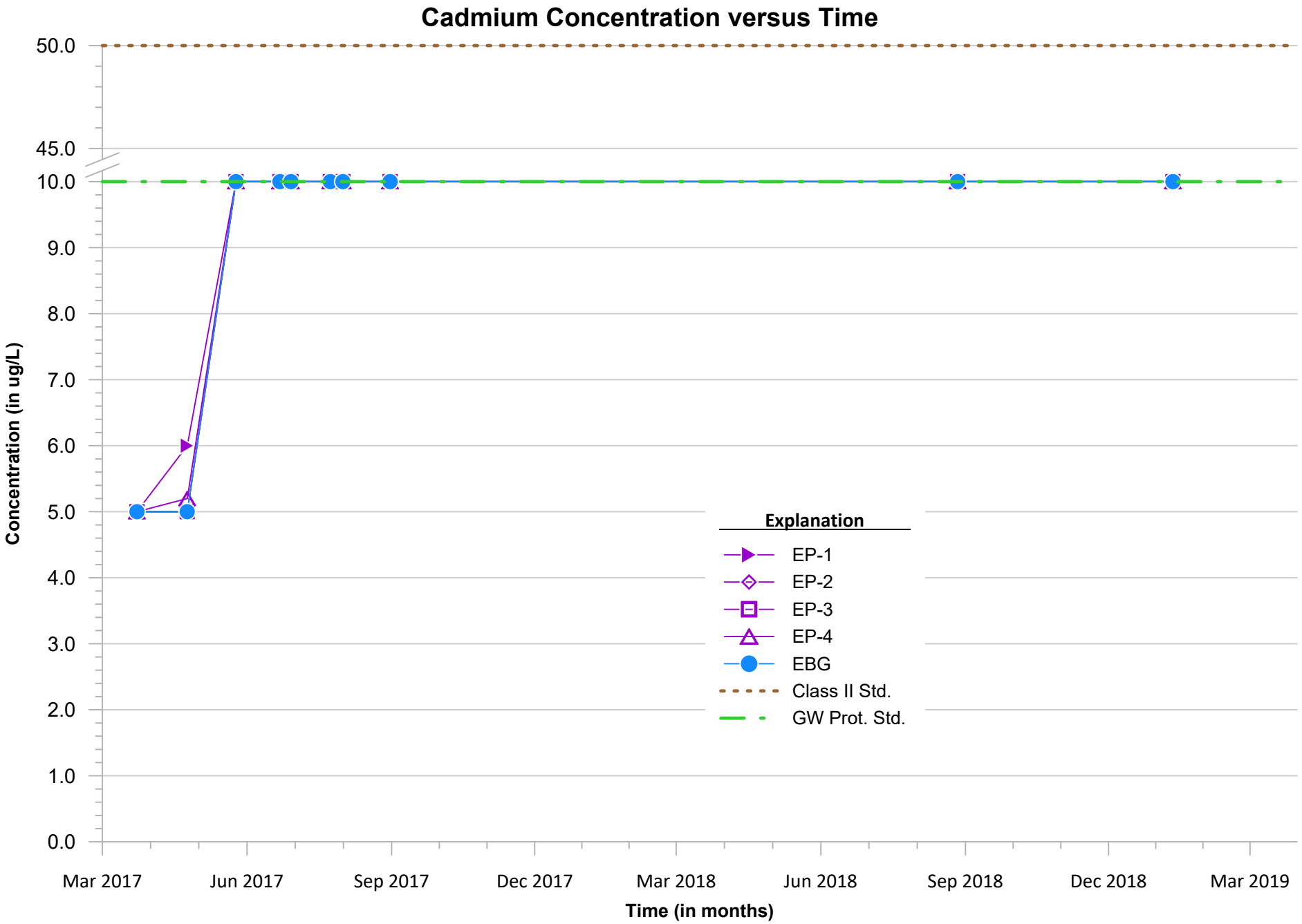
Electronic Filing: Received, Clerk's Office 01/13/2023



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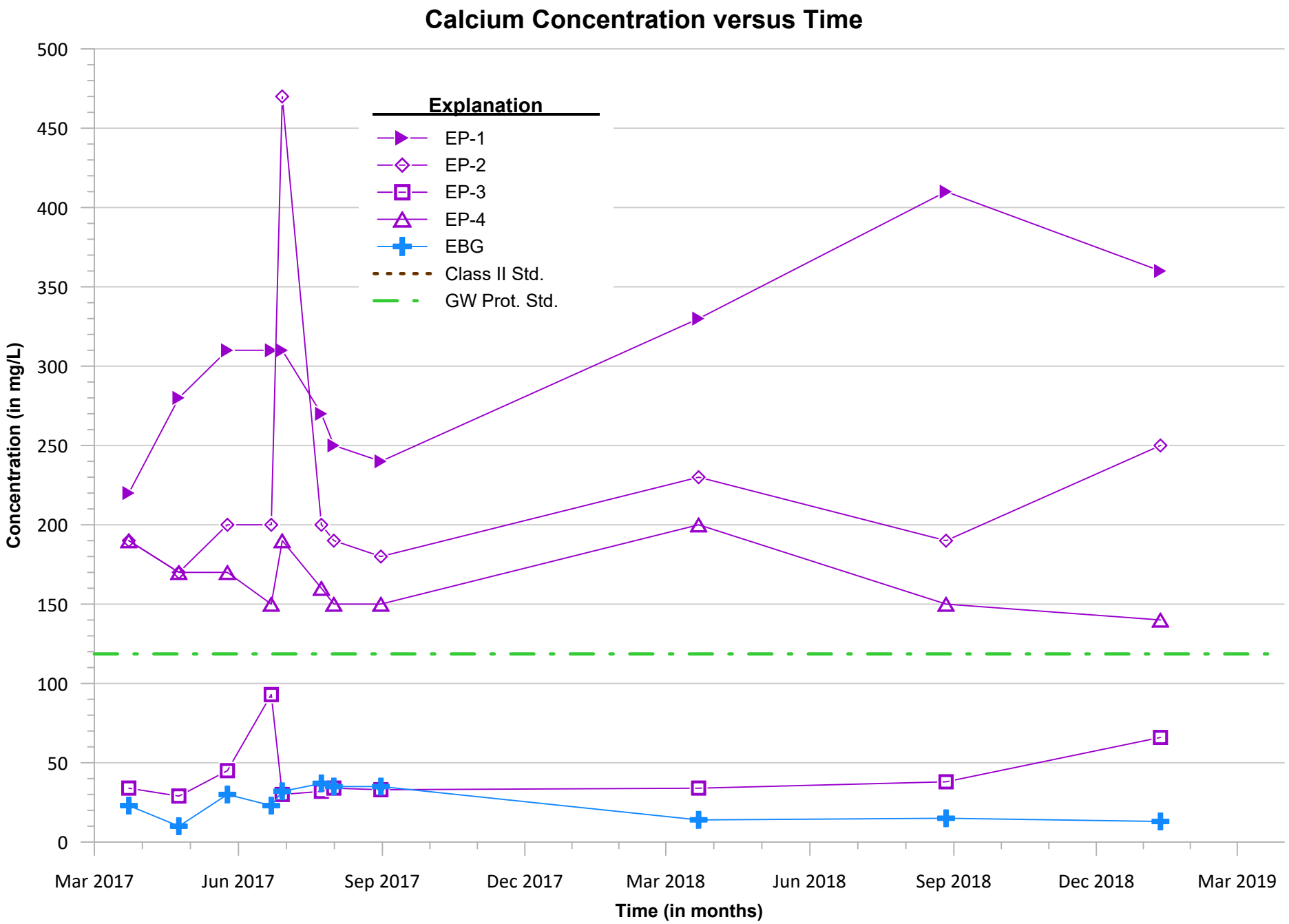
Electronic Filing: Received, Clerk's Office 01/13/2023



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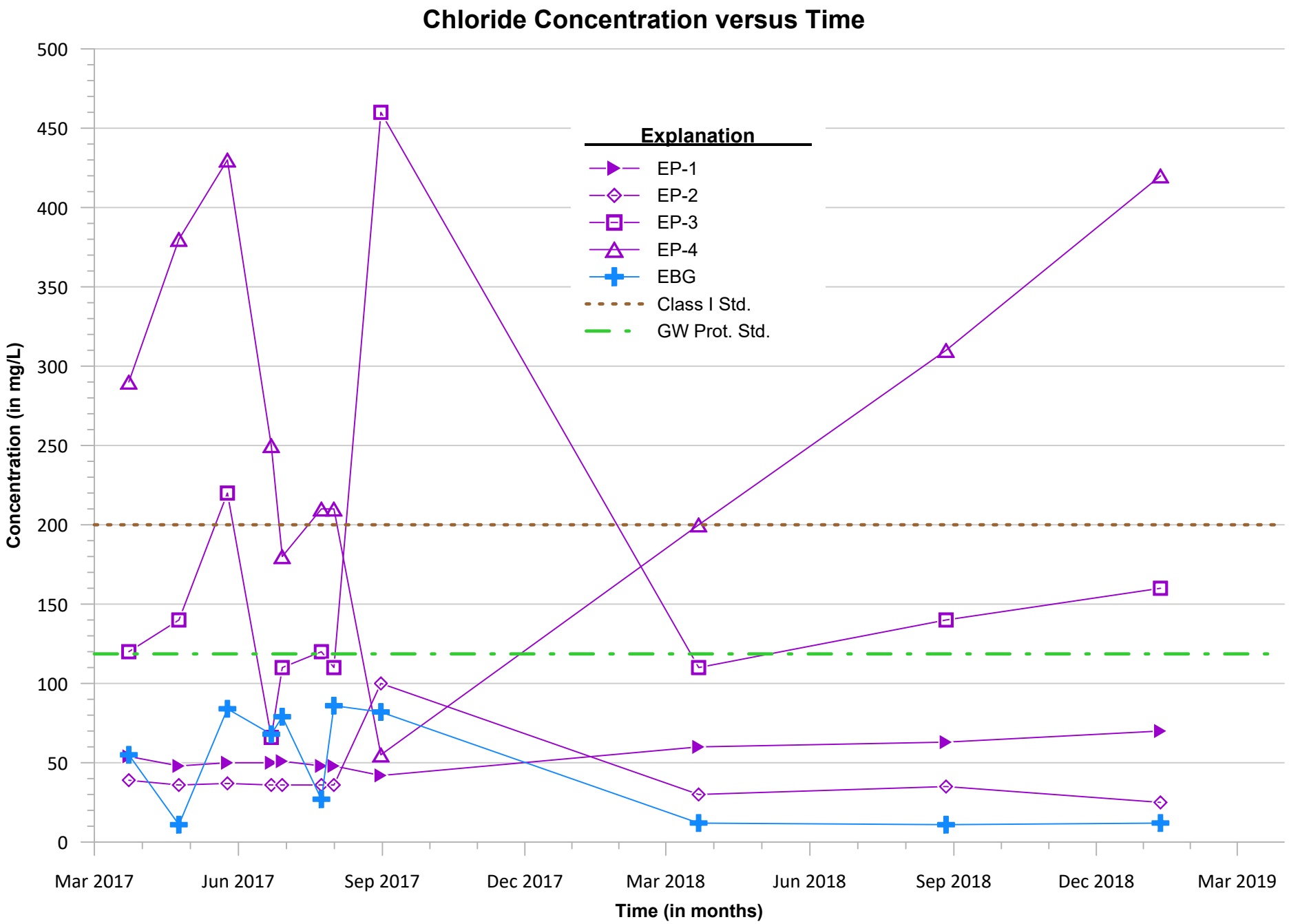

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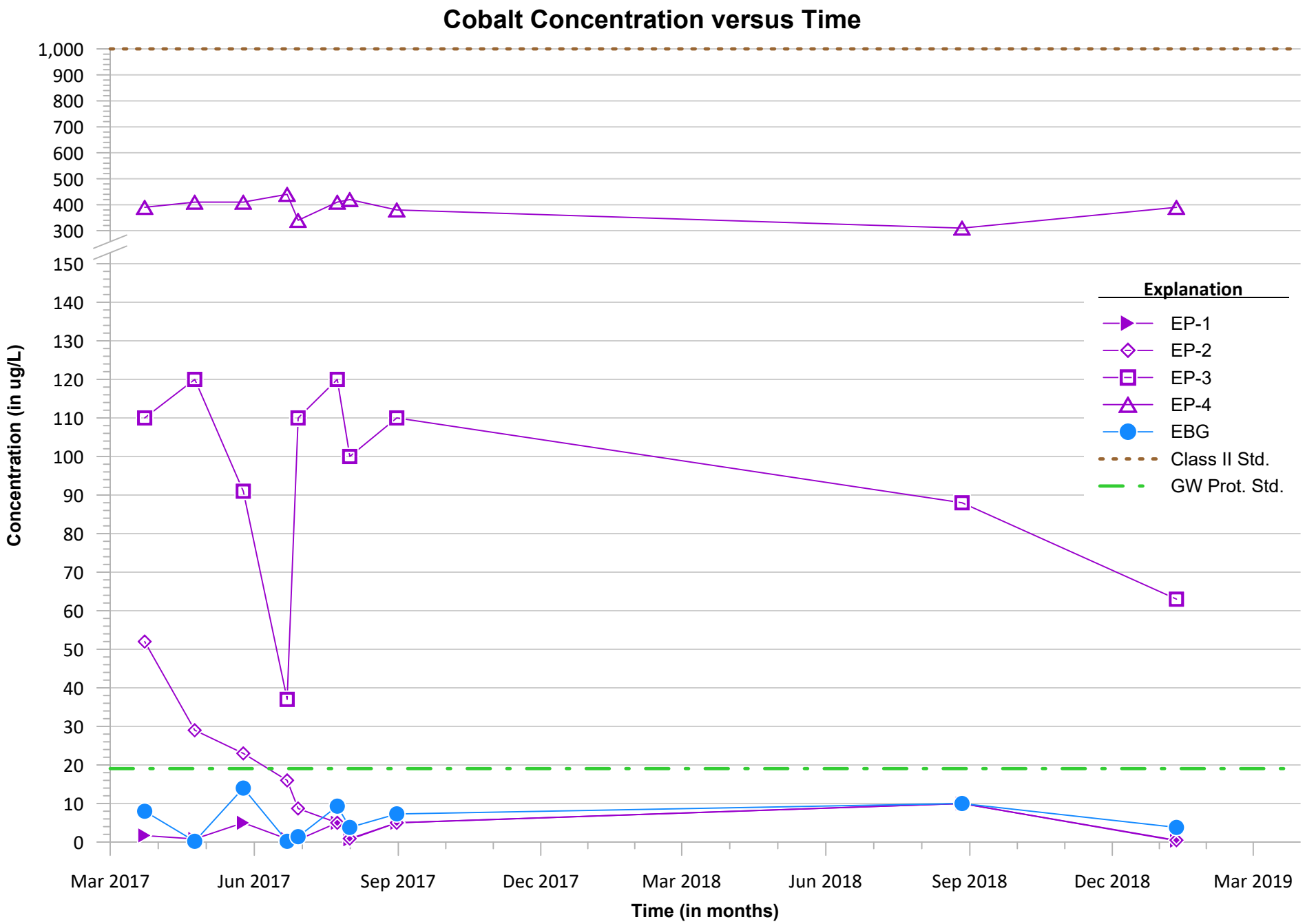
Electronic Filing: Received, Clerk's Office 01/13/2023



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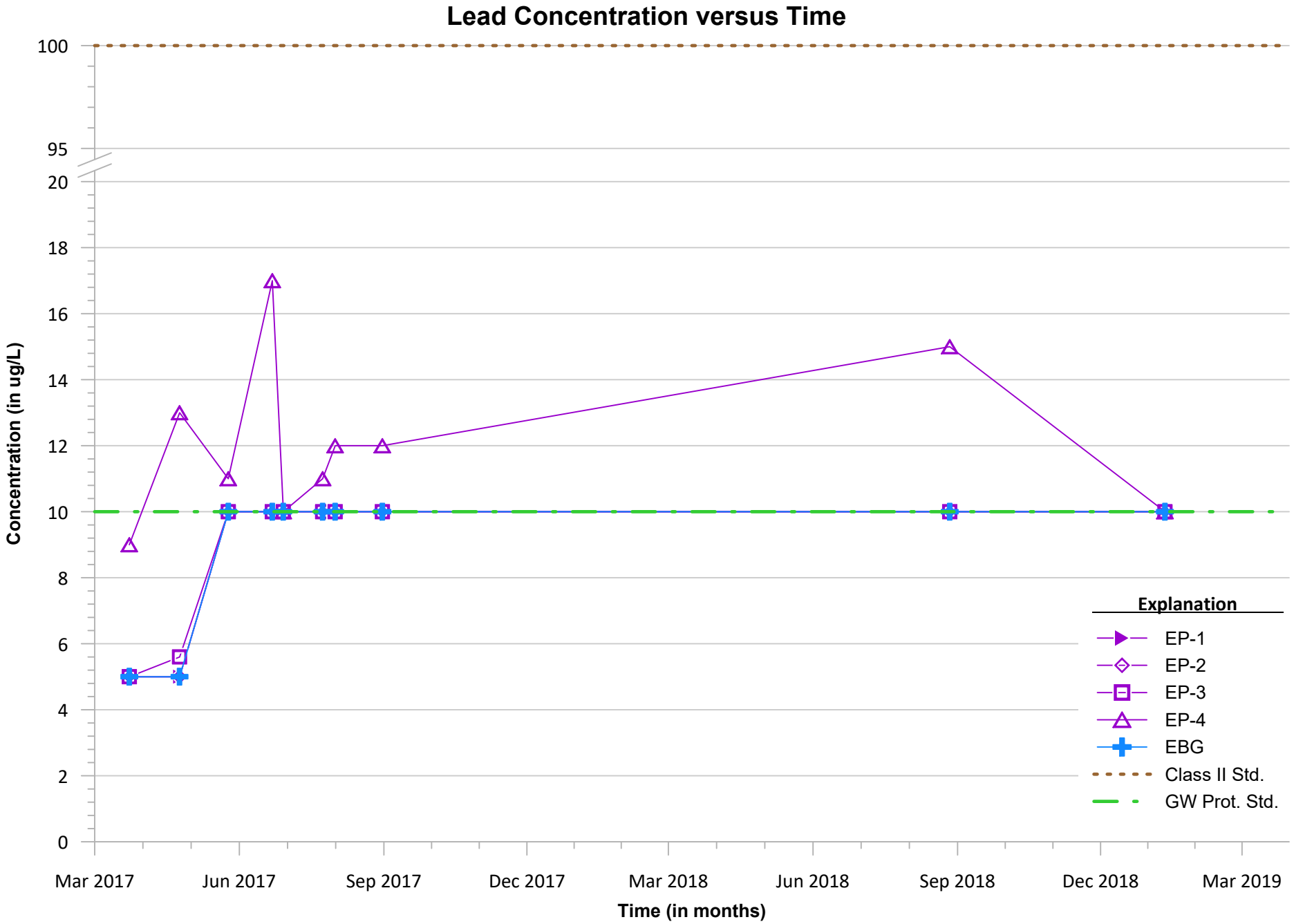
Electronic Filing: Received, Clerk's Office 01/13/2023



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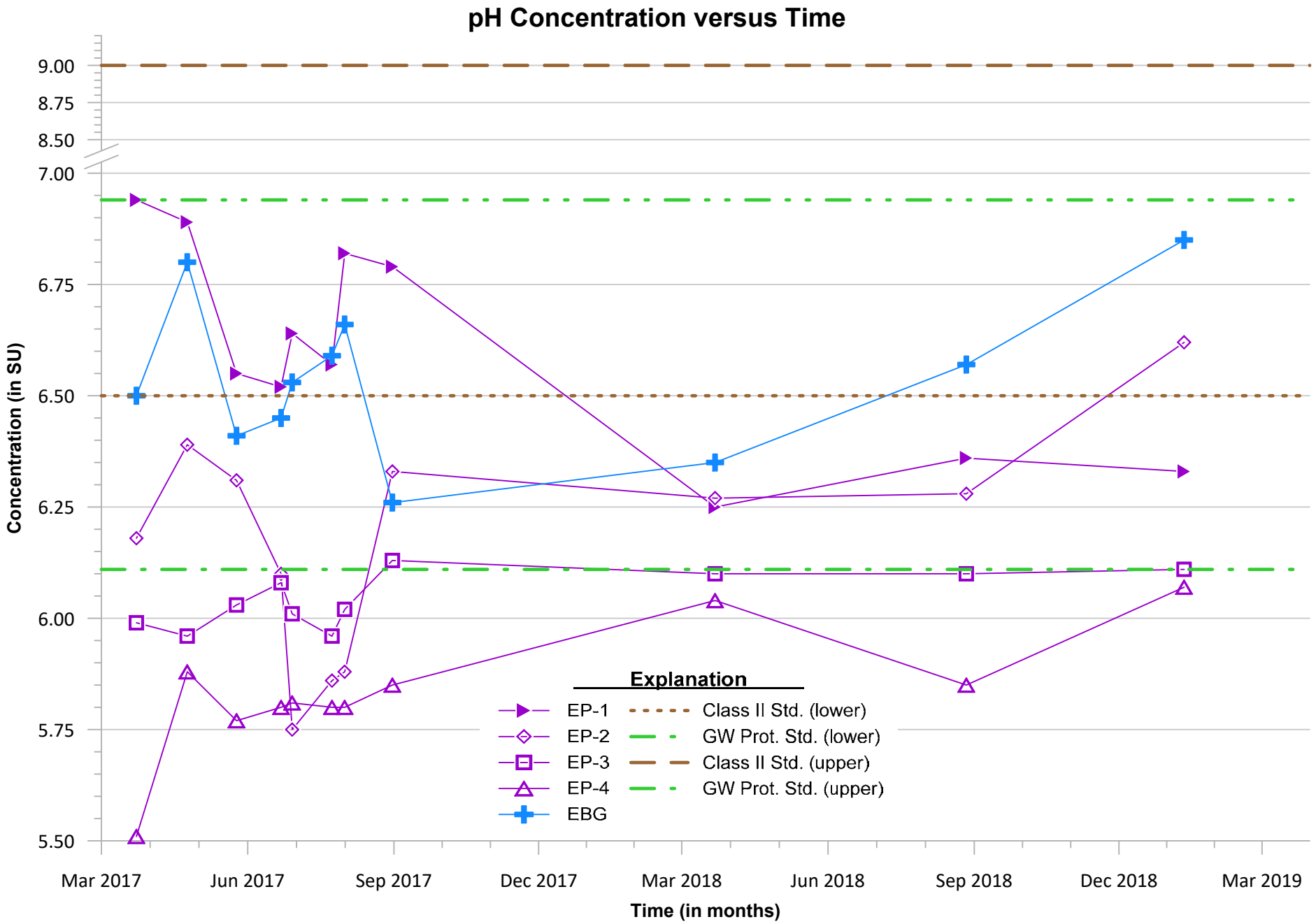
Electronic Filing: Received, Clerk's Office 01/13/2023



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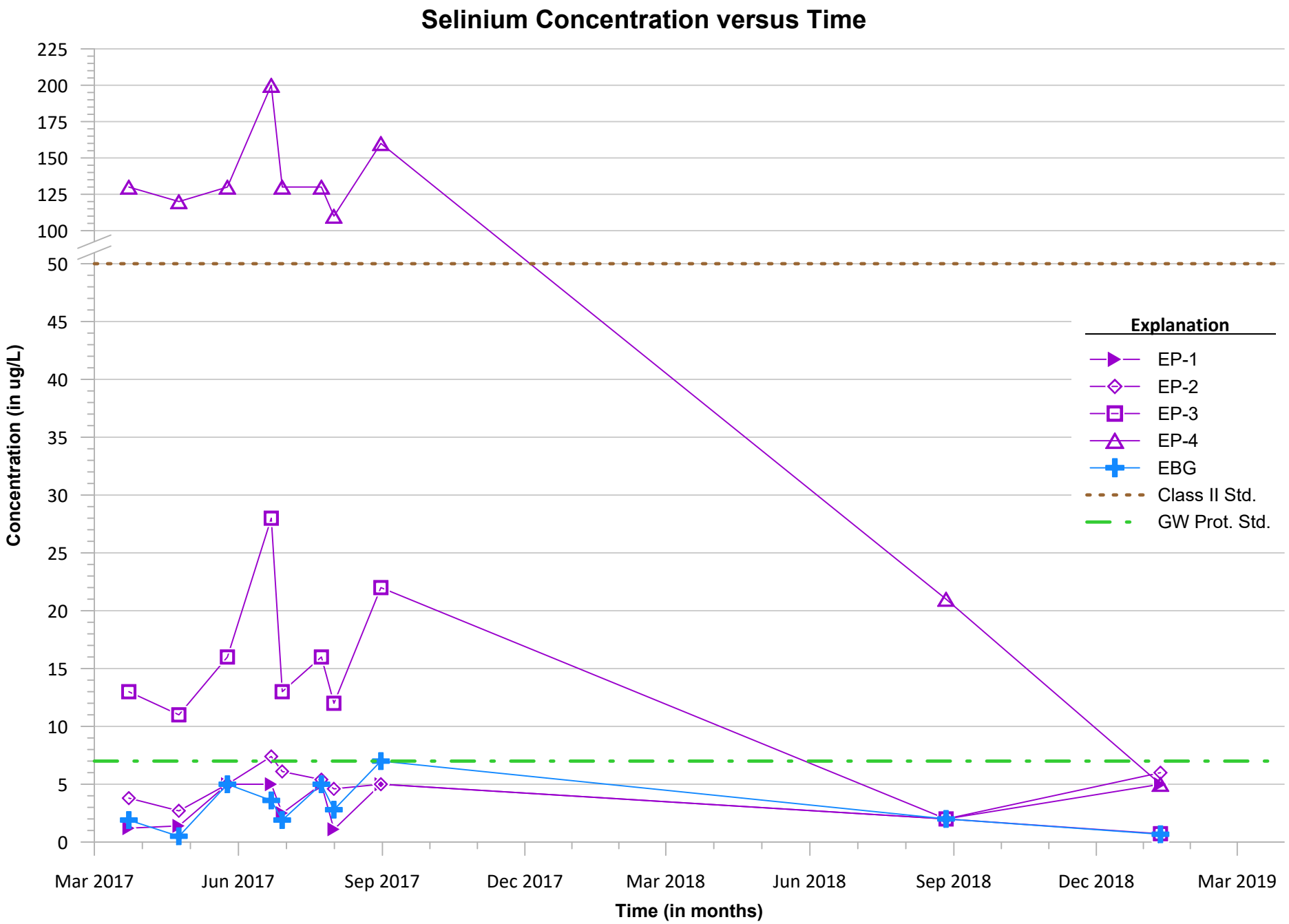
Electronic Filing: Received, Clerk's Office 01/13/2023



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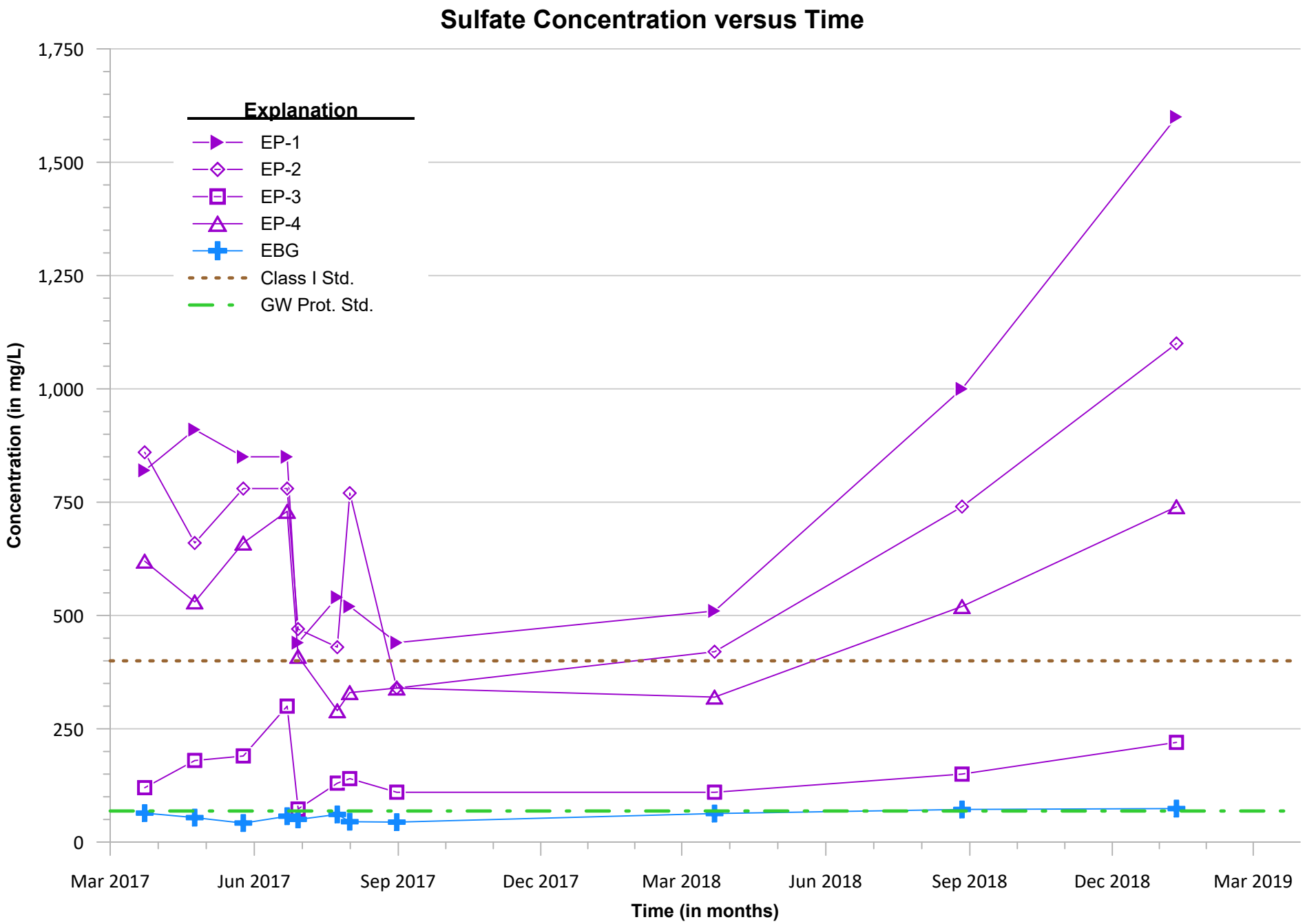

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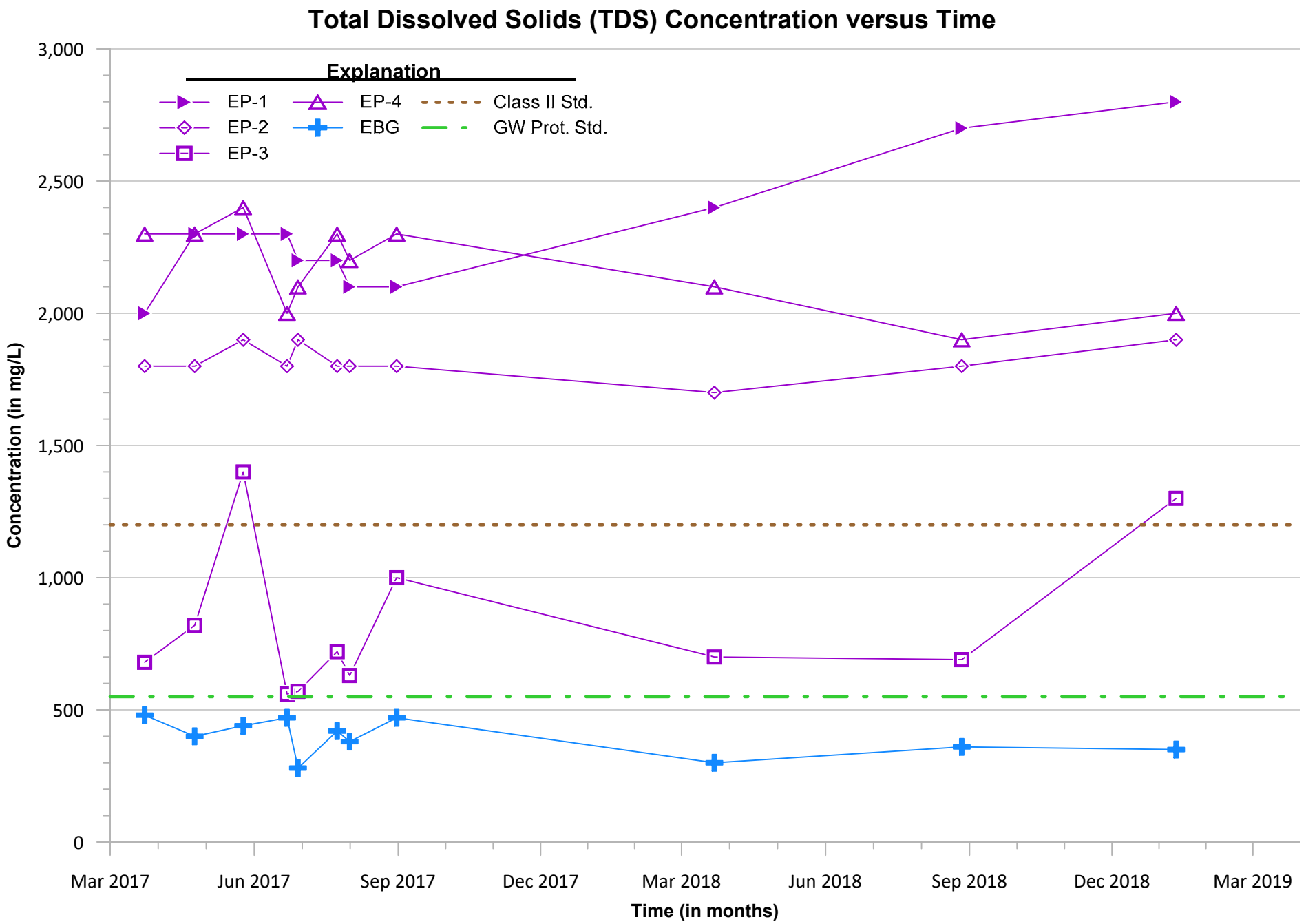

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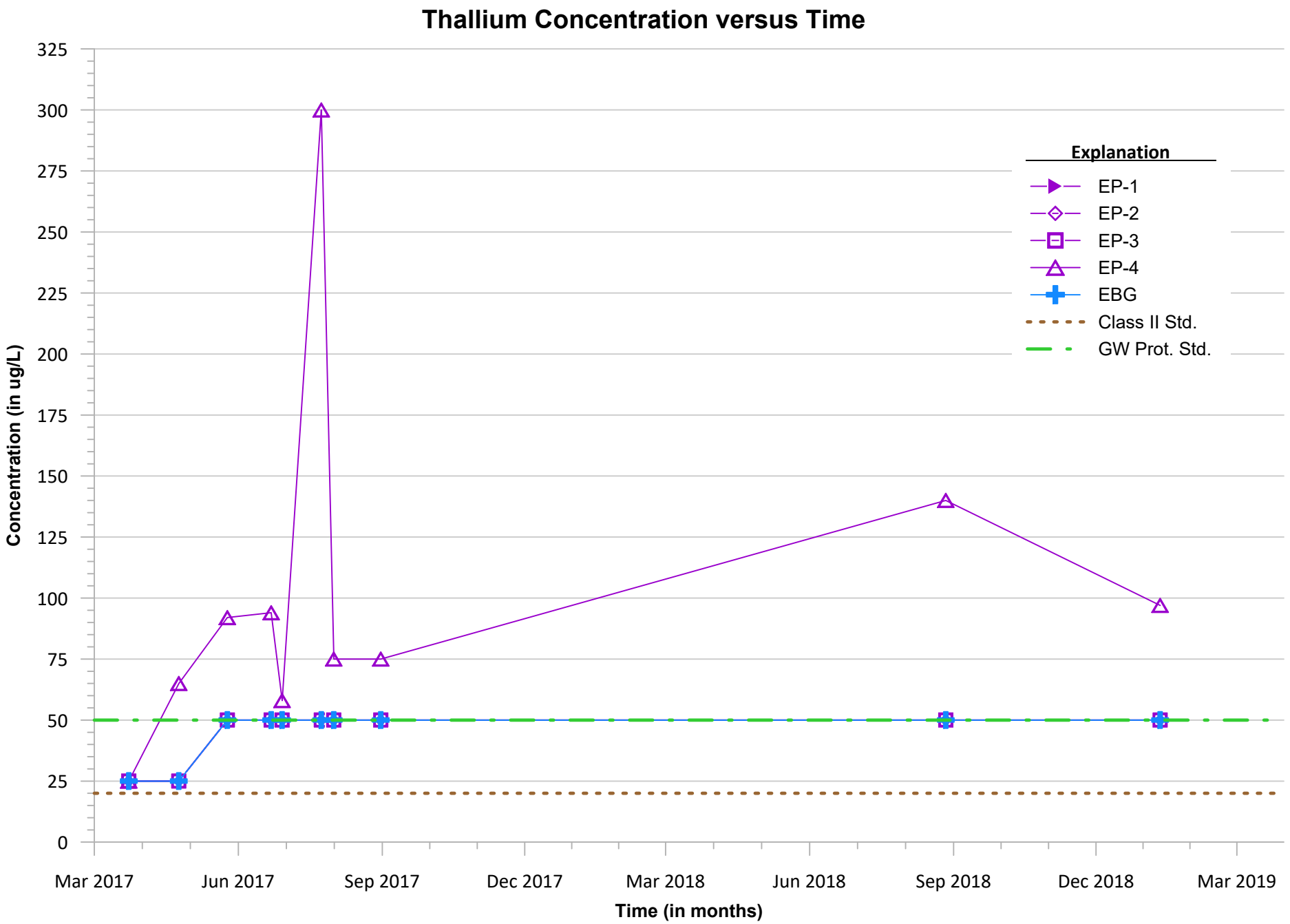
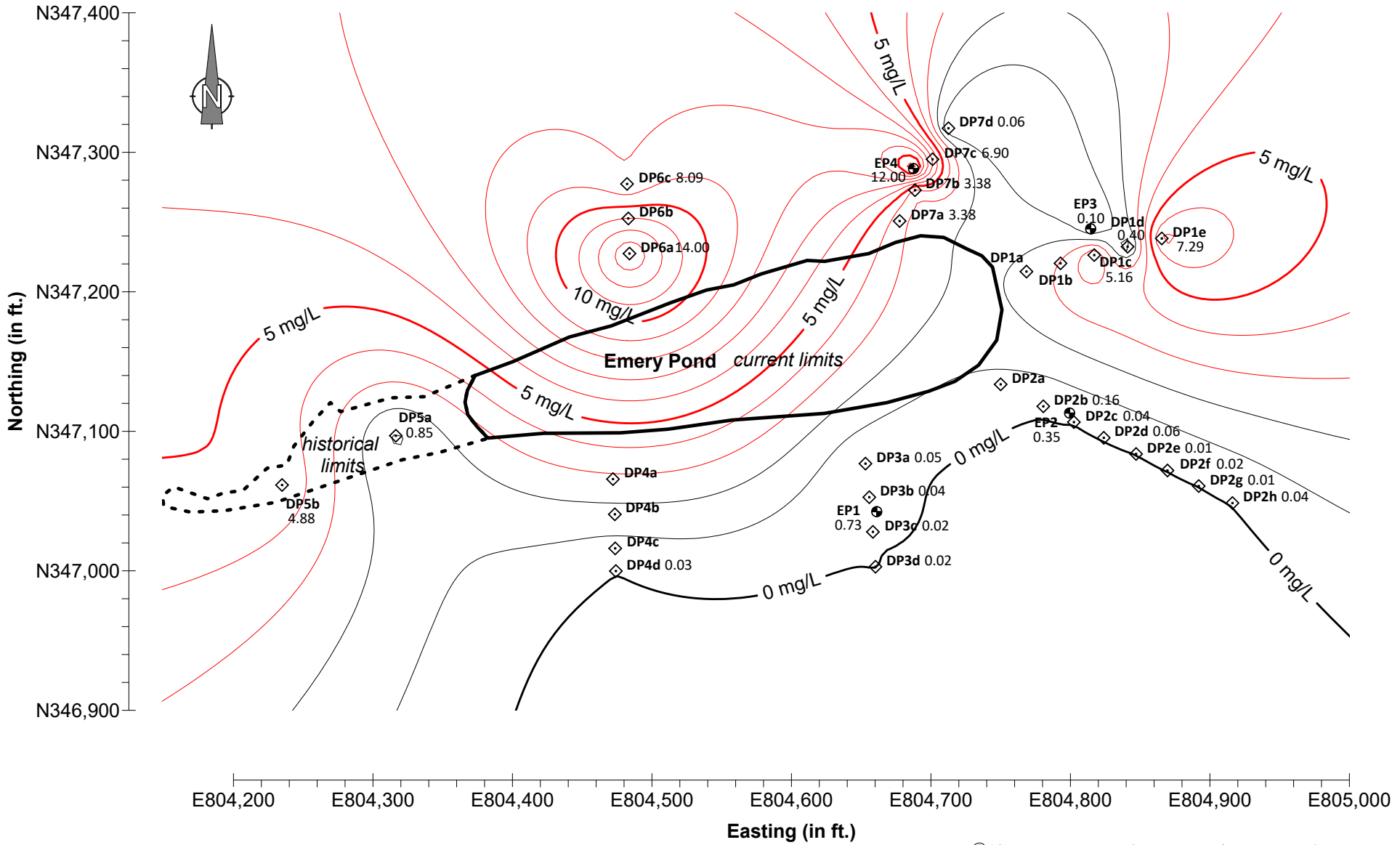


I:\18jobs\18E0022A\Admin\14-Reports\CAP\Graphs\ThalliumGraph.grf

Appendix C

Extent of Impacted Groundwater Isopleth Maps

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (2.0 mg/L)

Contour Interval = 1 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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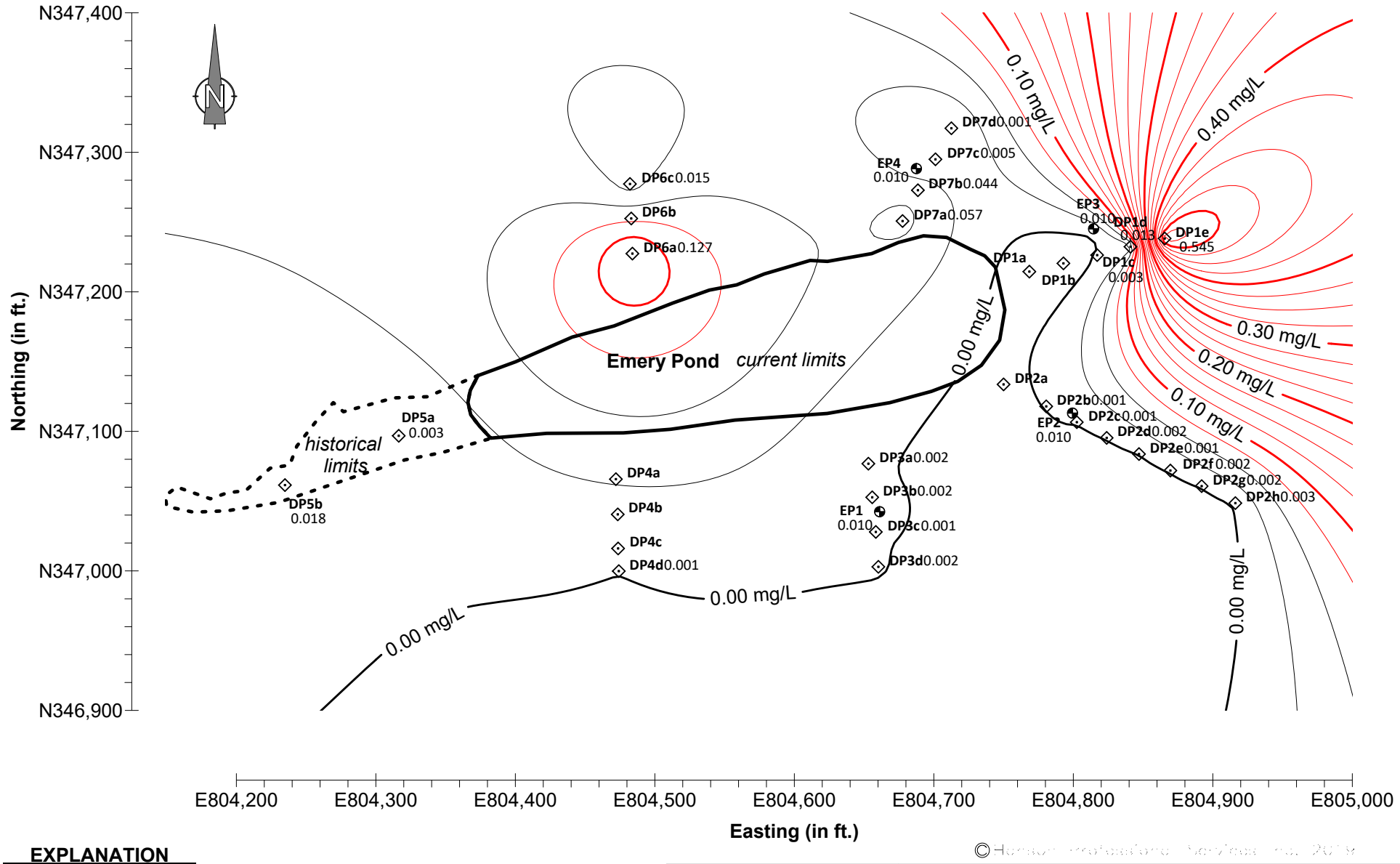
Boron Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-1

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (0.05 mg/L)

Contour Interval = 1 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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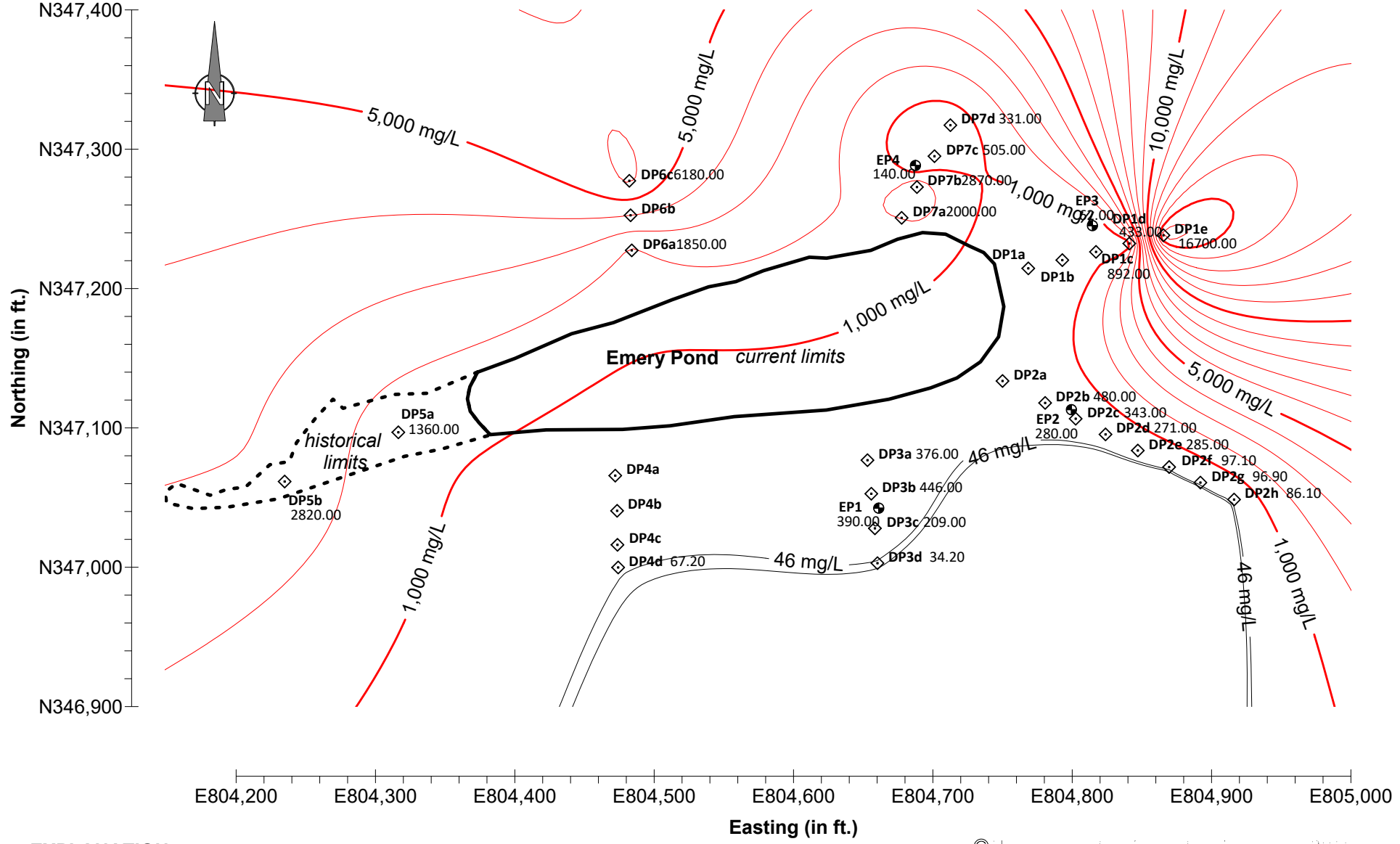
Cadmium Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-2

Electronic Filing: Received, Clerk's Office 01/13/2023



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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above the GW Protection Std. (46.304 mg/L)

Contour Interval = 1 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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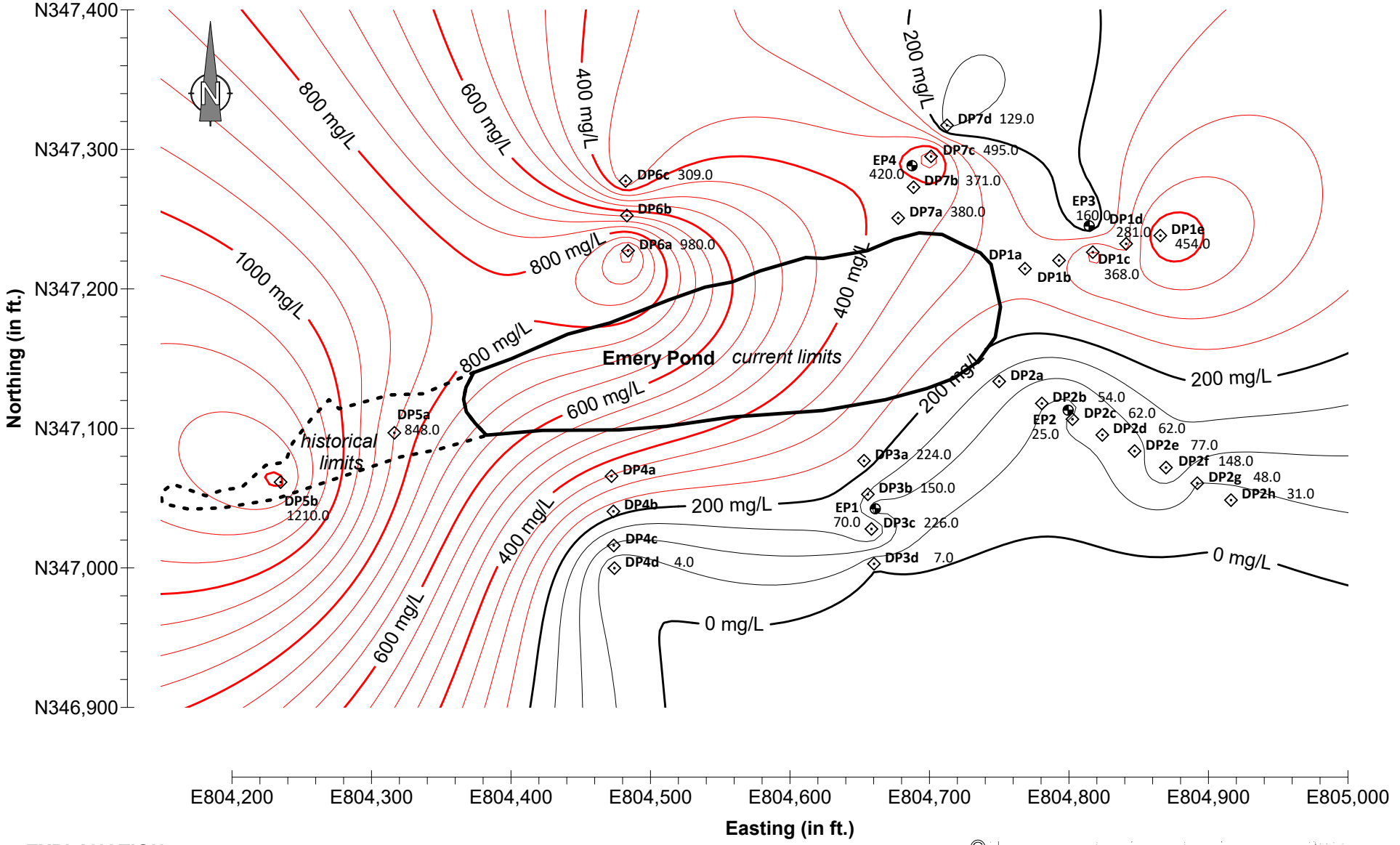
Calcium Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-3

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (200 mg/L)

Contour Interval = 50 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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Chloride Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-4

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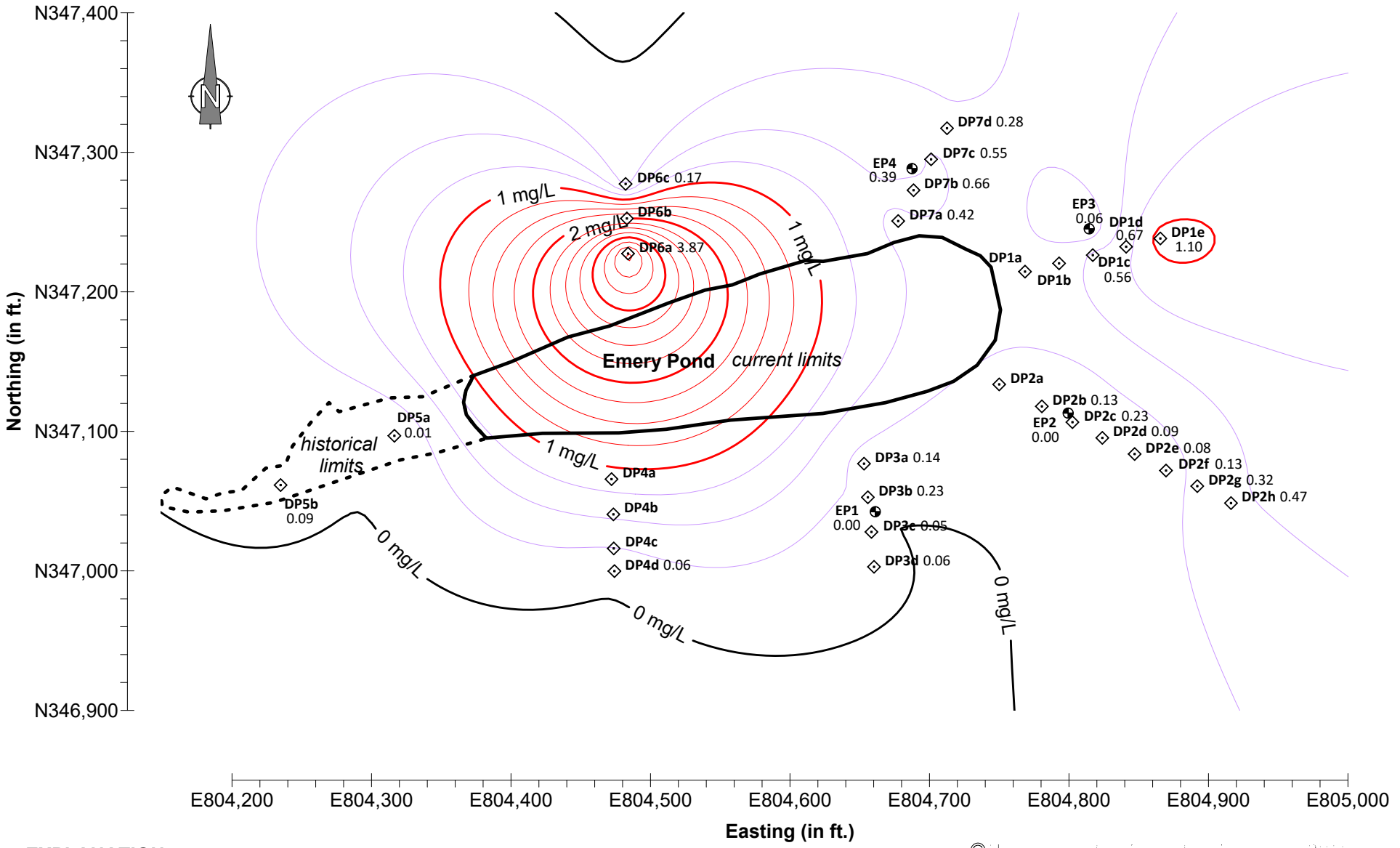

EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Purple contours above the GW Protection Std. (0.0191 mg/L) and Red contours are above the Class II Standard (1.0 mg/L).

Contour Interval = 1 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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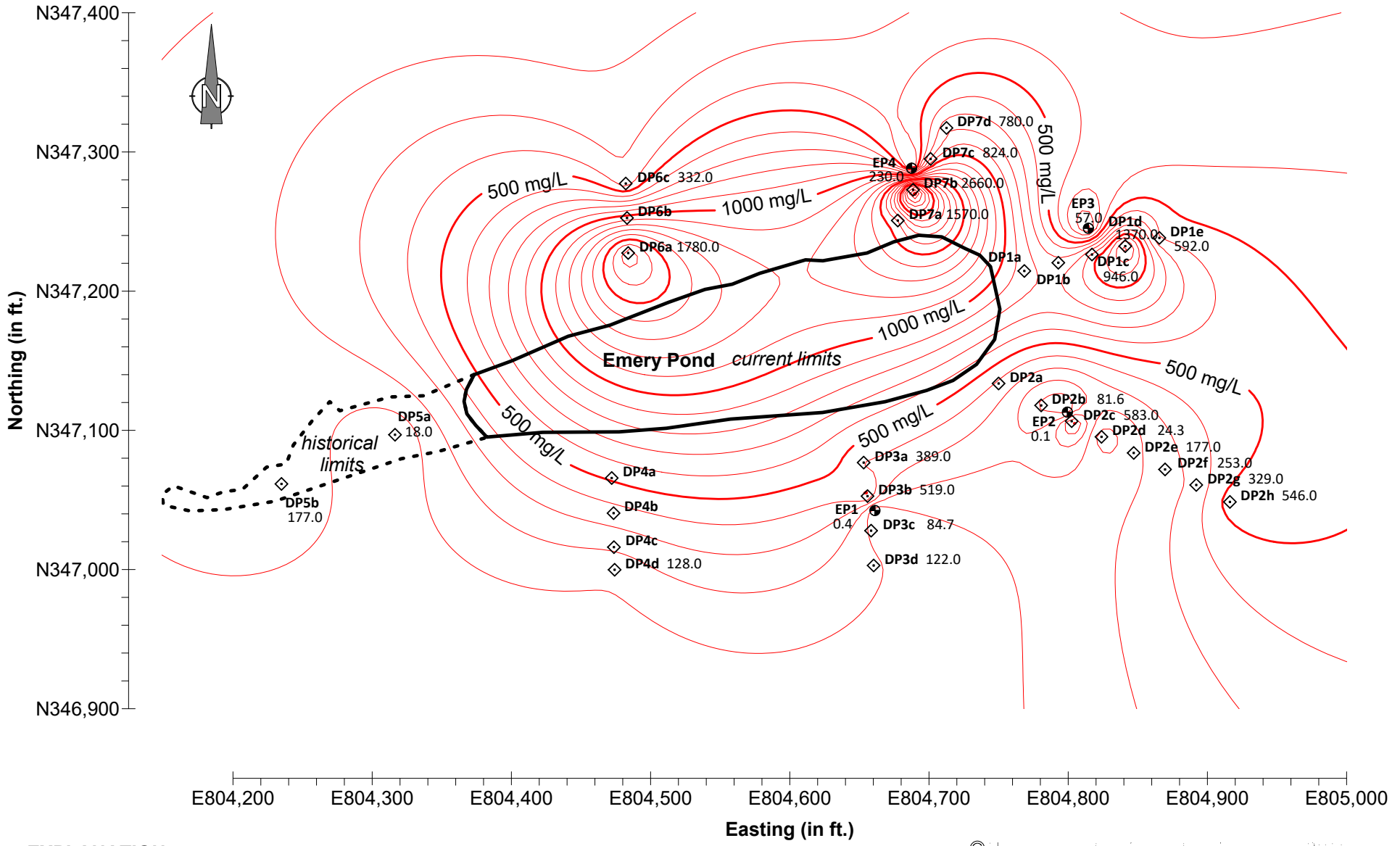
Cobalt Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-5

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (5.0 mg/L)

Contour Interval = 50 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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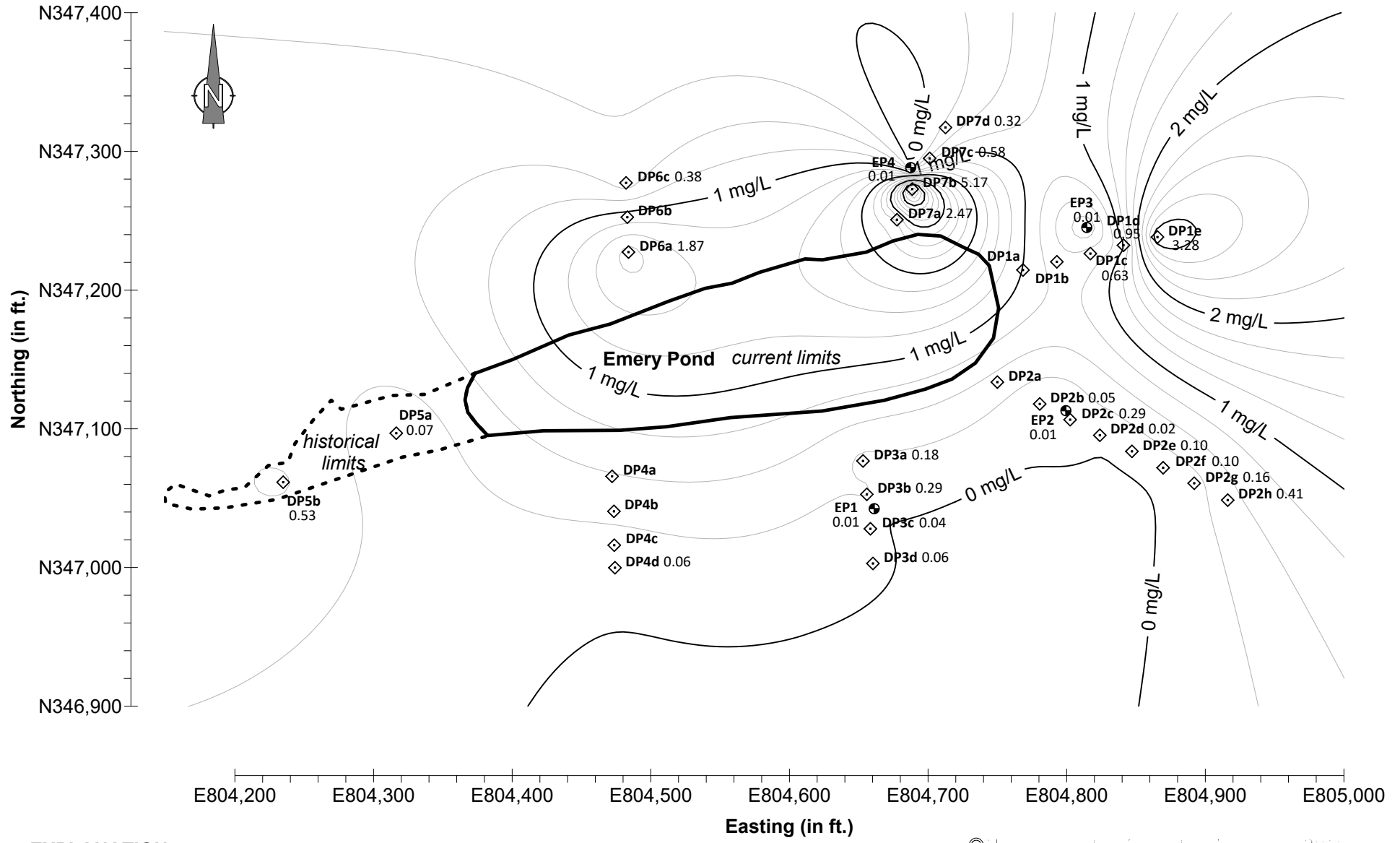
Iron Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-6

Electronic Filing: Received, Clerk's Office 01/13/2023



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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 0.25 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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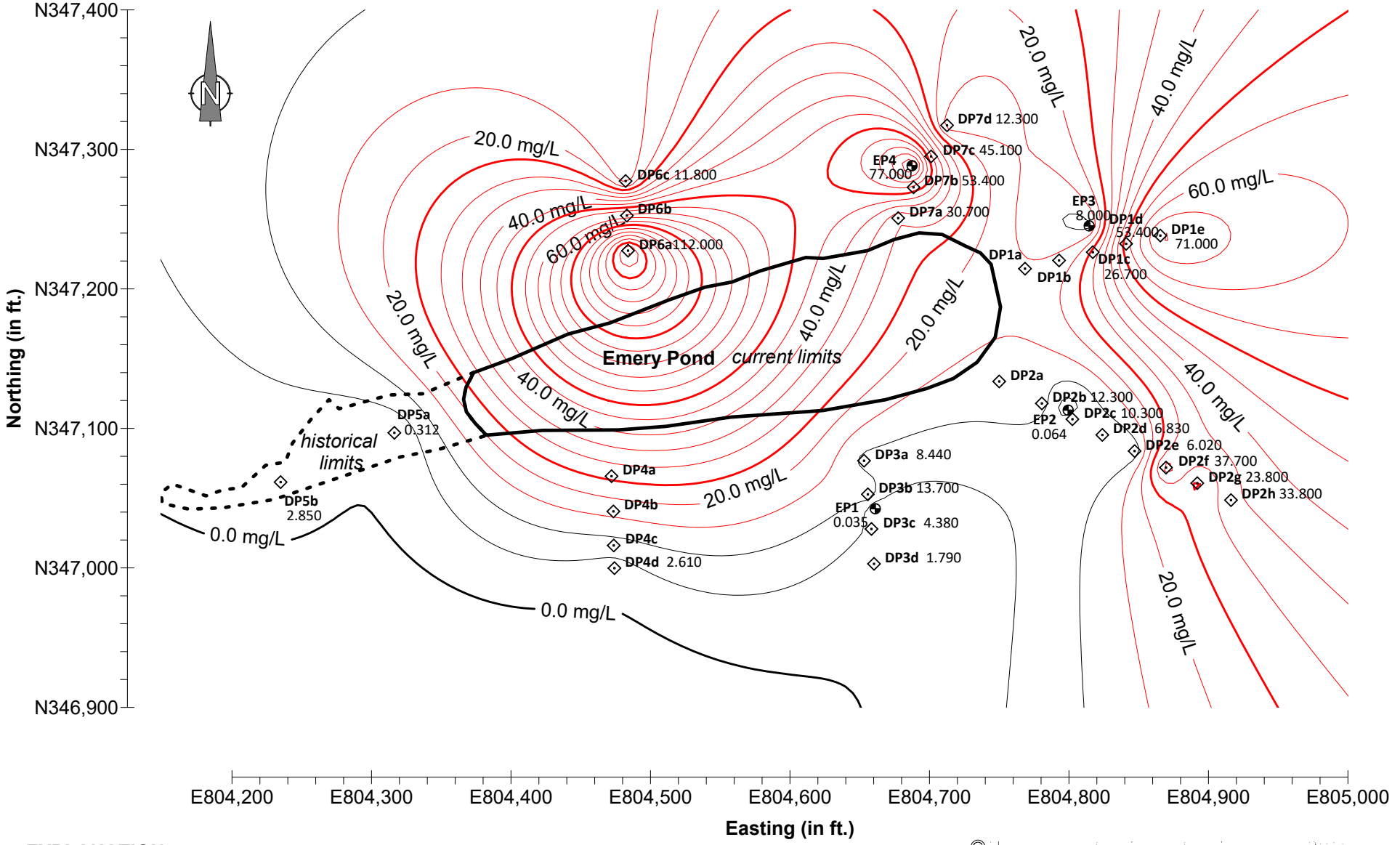
Lead Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-7

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (10.0 mg/L)

Contour Interval = 1 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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Manganese Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-8

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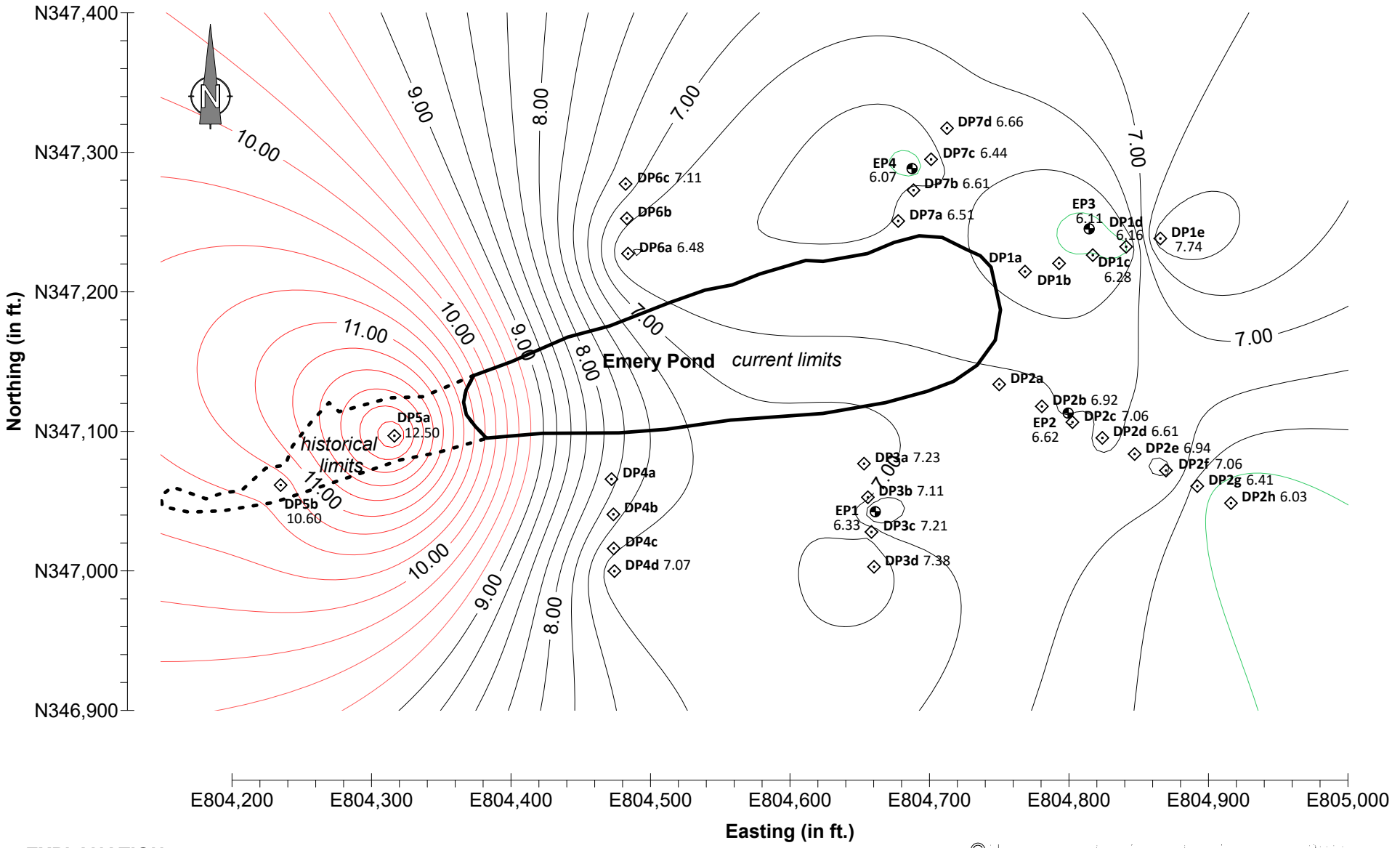
Electronic Filing: Received, Clerk's Office 01/13/2023



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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Green contours below lower GW Std. and red contours above upper GW Std.

Contour Interval = 0.25 SU
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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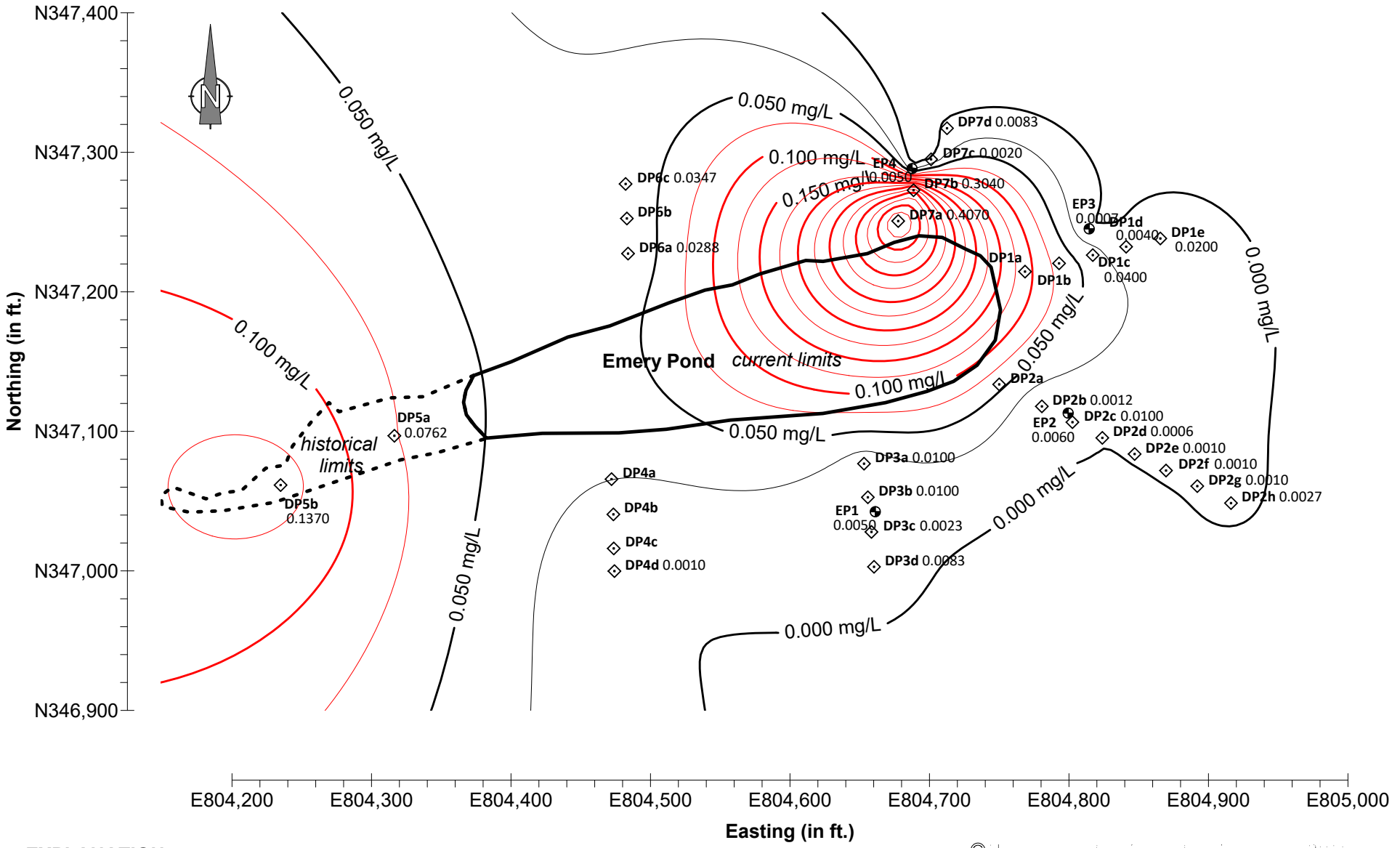
pH Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-9

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (0.05 mg/L)

Contour Interval = 0.025 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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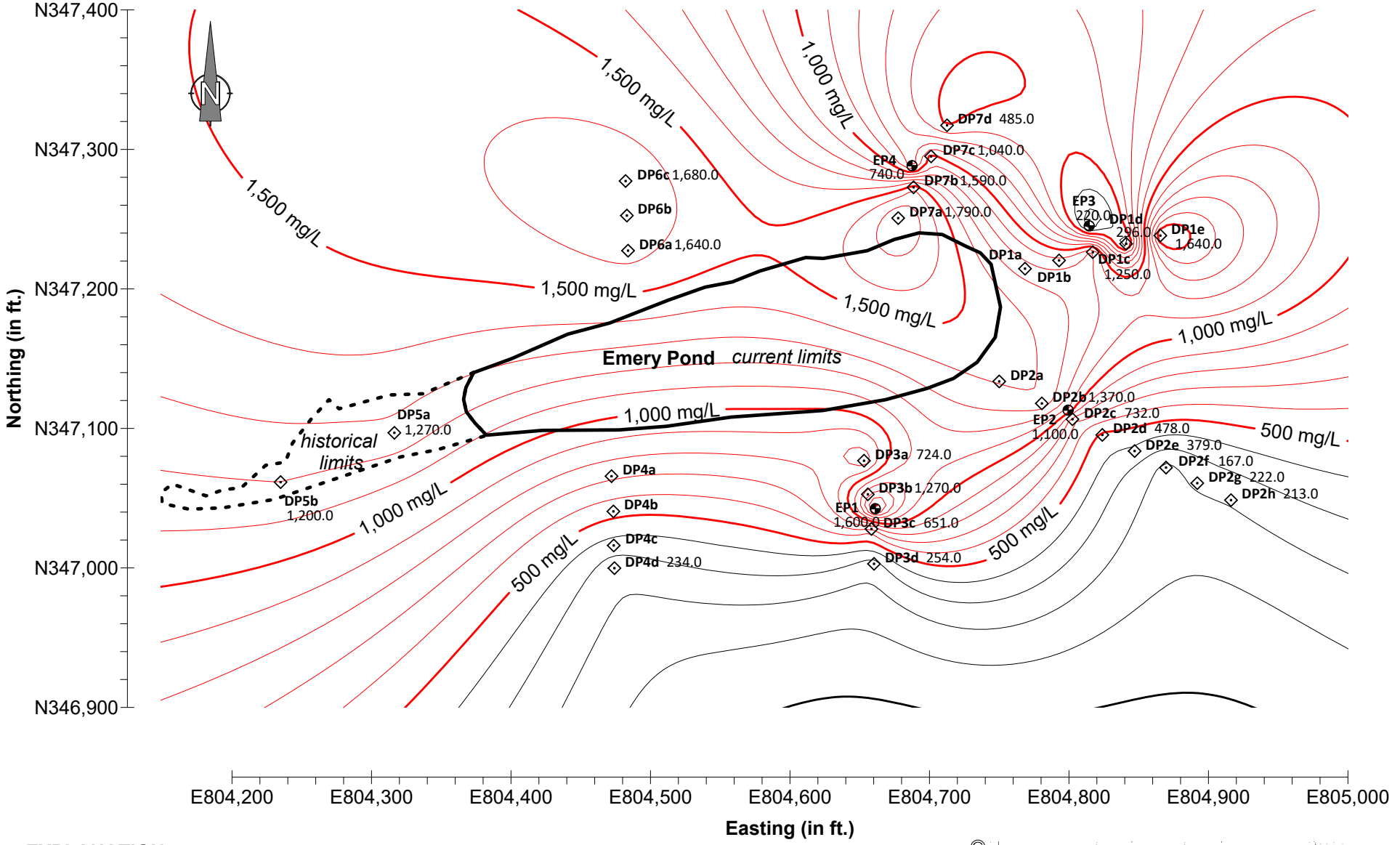
Selenium Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-10

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (400 mg/L)

Contour Interval = 100 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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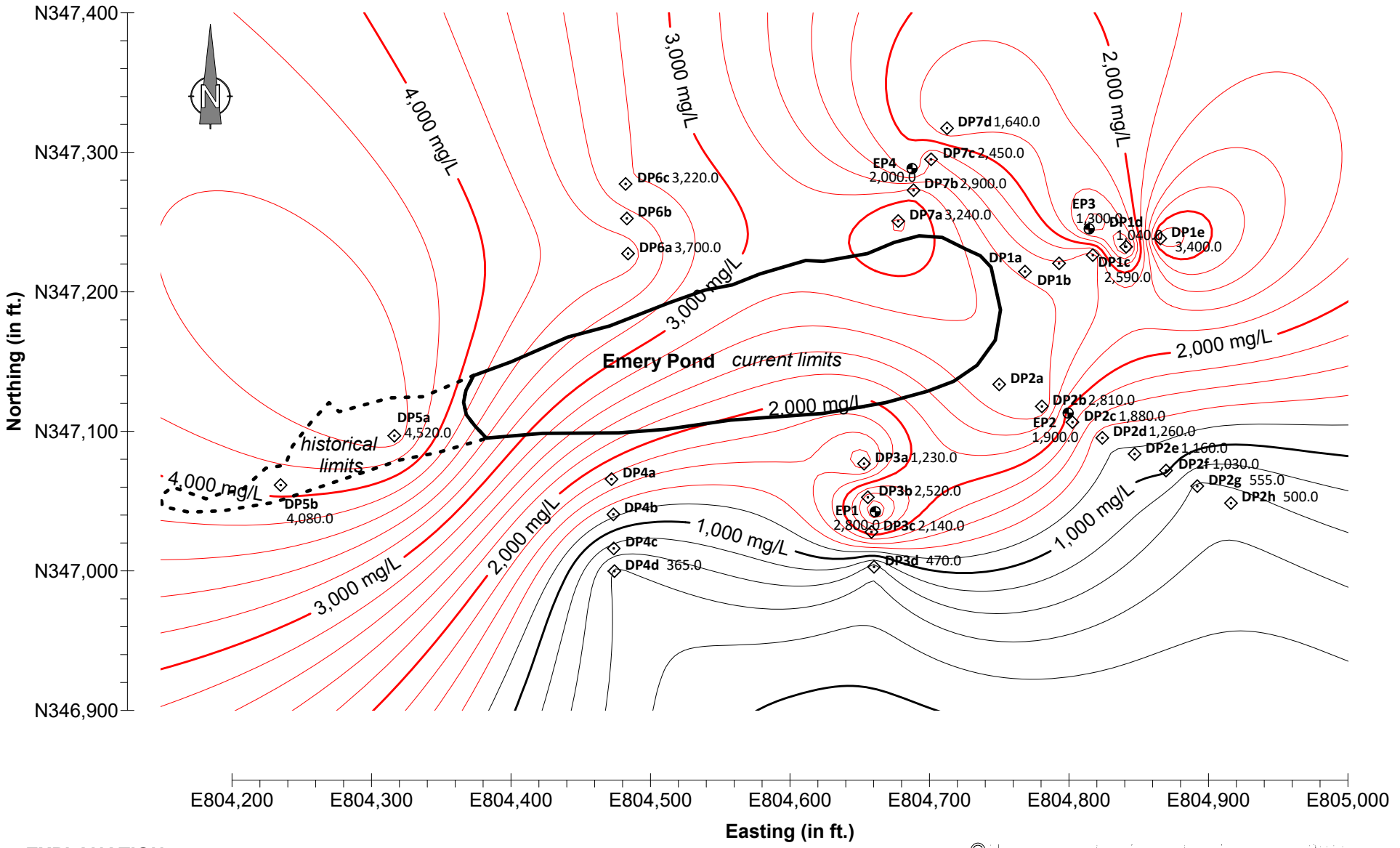
Sulfate Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-11

Electronic Filing: Received, Clerk's Office 01/13/2023



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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 200 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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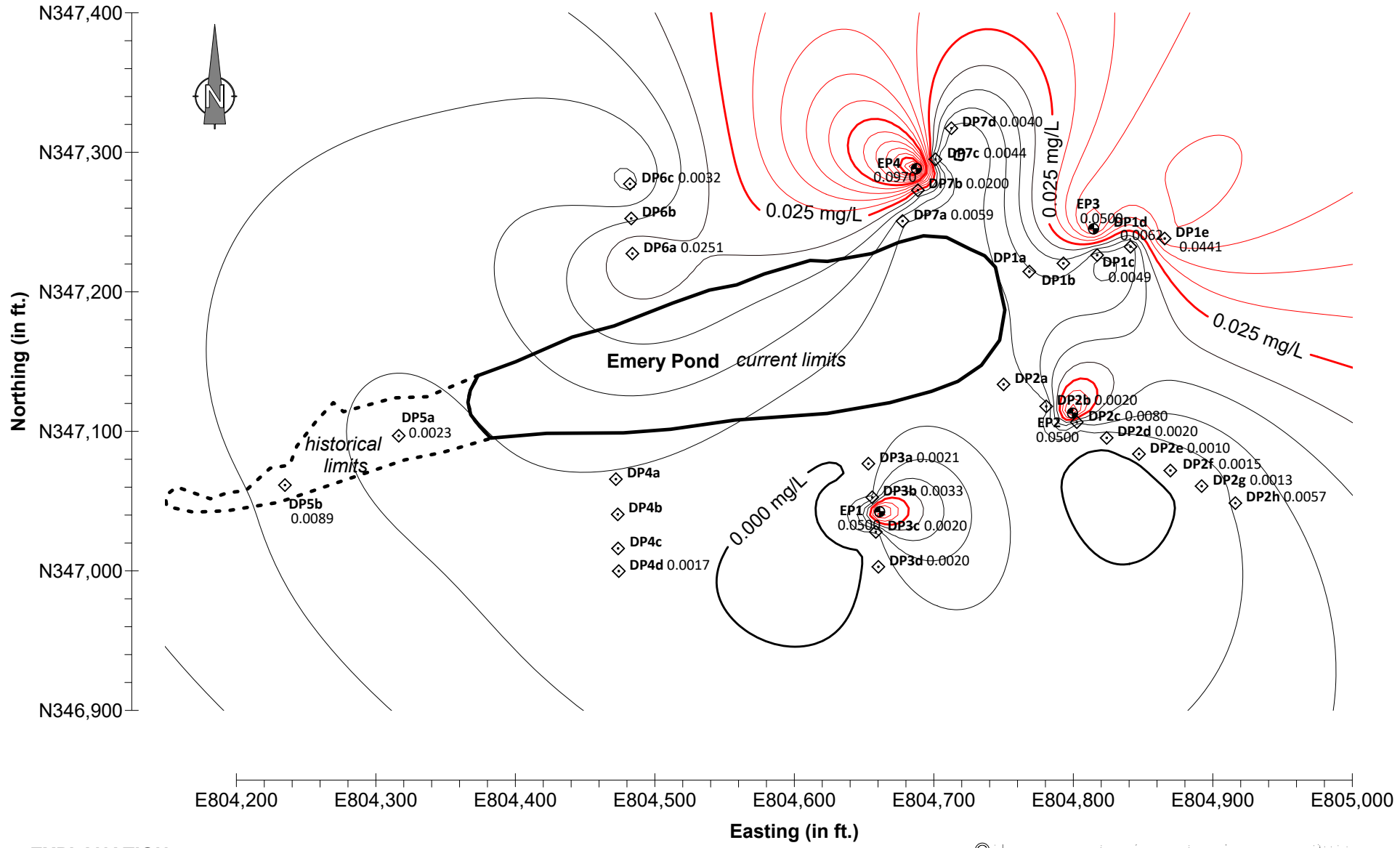
Total Dissolved Solids Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-12

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (0.02 mg/L)
Microbac Laboratory detection limit was 0.05 mg/L.

Contour Interval = 0.005 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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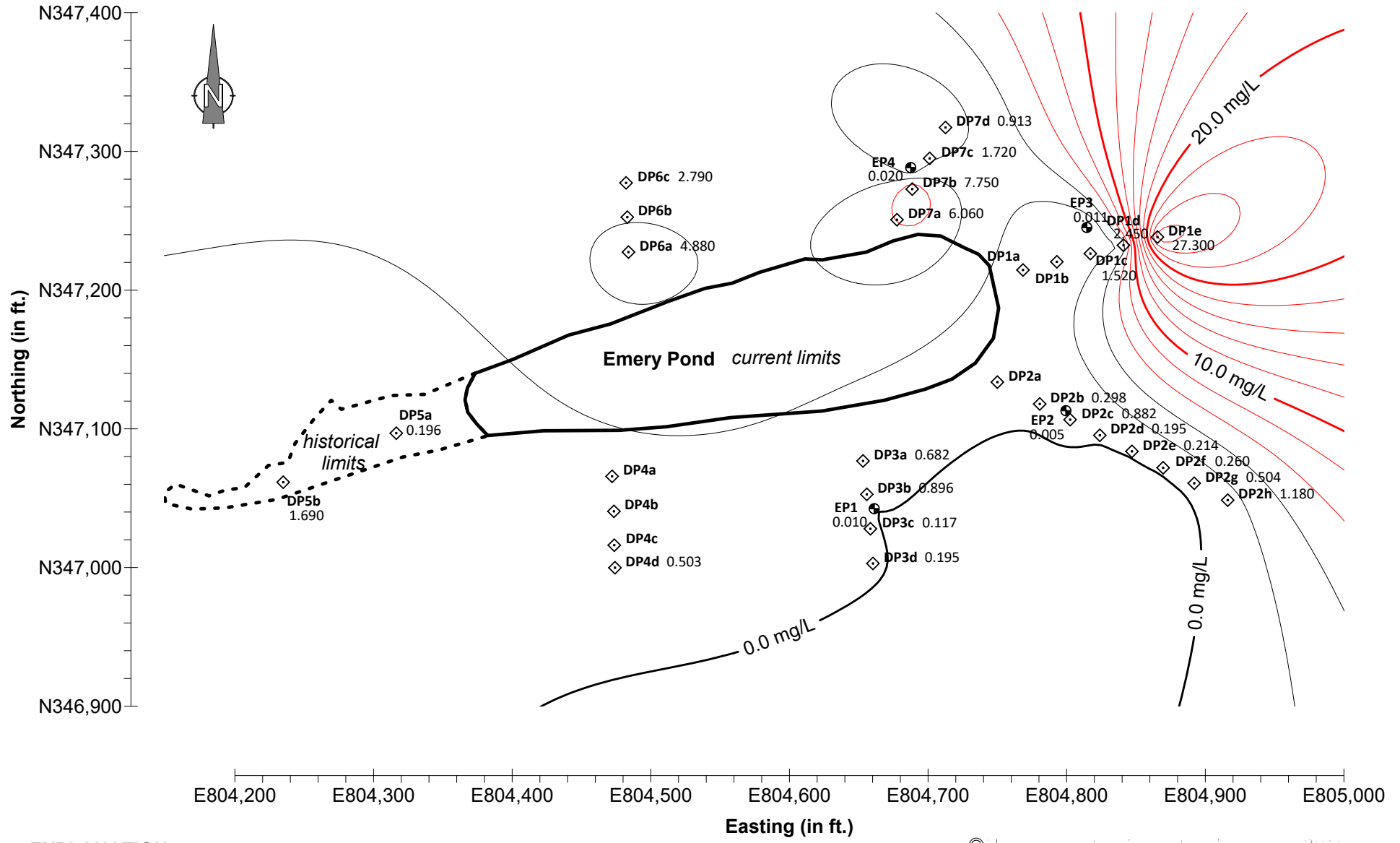
Thallium Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-13

Electronic Filing: Received, Clerk's Office 01/13/2023



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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (5.0 mg/L)

Contour Interval = 1 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

HANSON
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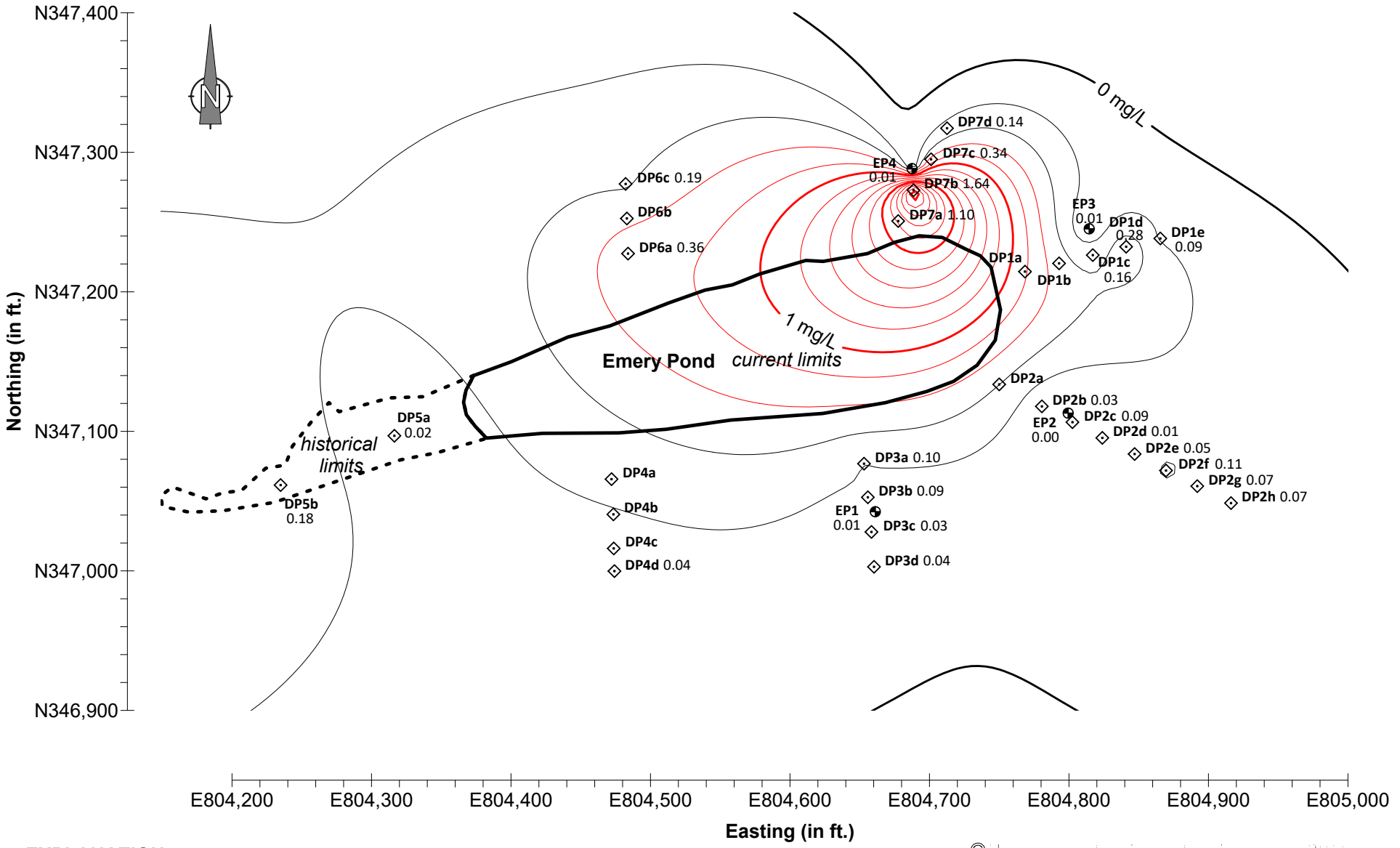
Zinc Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-14

Electronic Filing: Received, Clerk's Office 01/13/2023



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EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

NOTE: Red contours above Class II GW Std. (0.2 mg/L)

Contour Interval = 1 mg/L
SCALE: 1 inch equals 100 feet

0 ft. 100 ft. 200 ft. 300 ft.

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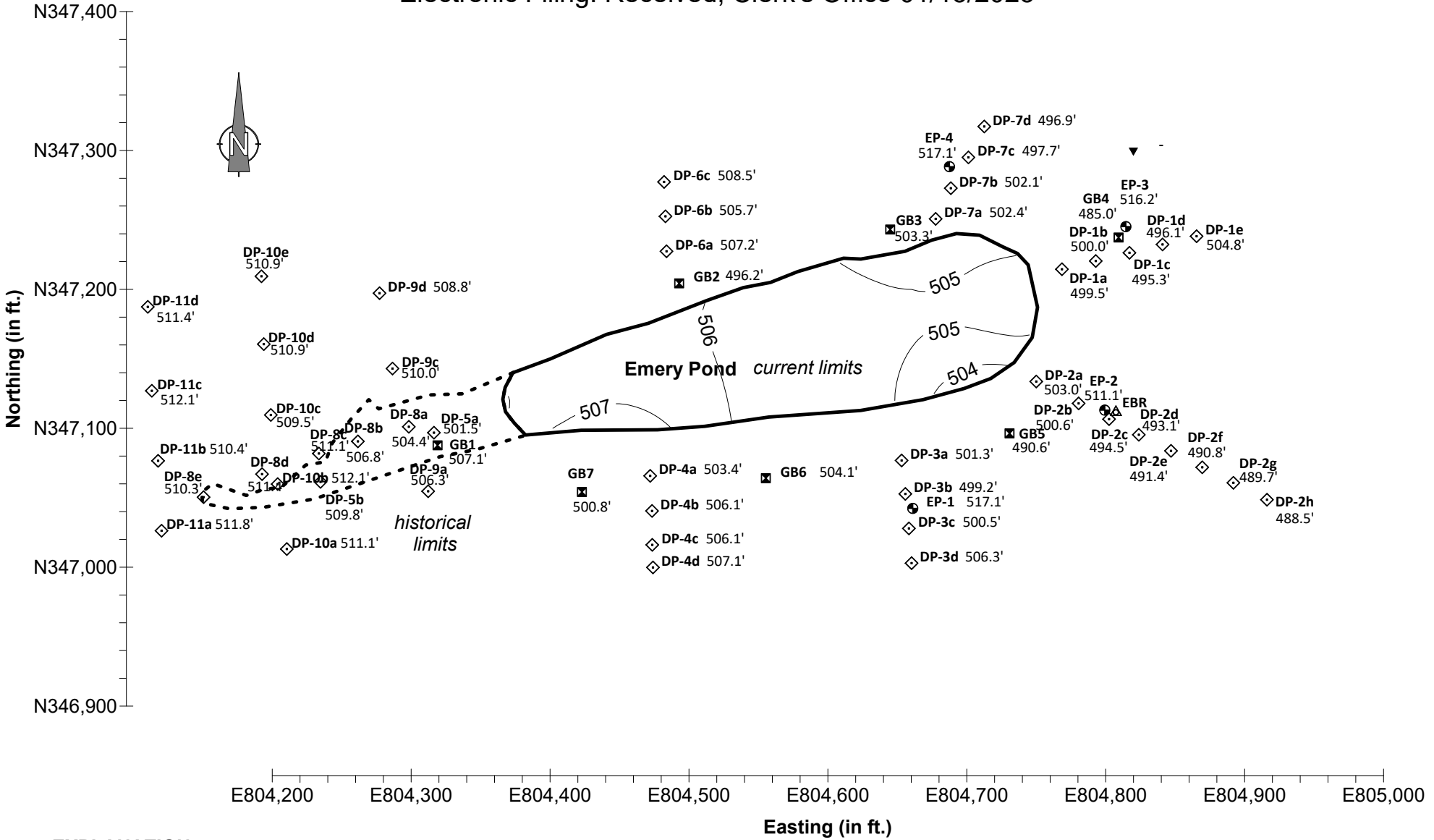
Arsenic Concentration Isopleth Map

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-15

Electronic Filing: Received, Clerk's Office 01/13/2023



EXPLANATION

- Monitoring Well
- Direct Push Boring
- Bedrock Boring

Contour Interval = 1 foot

SCALE: 1 inch equals 100 feet

0 ft. 30 ft. 61 ft. 91 ft.

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Borehole Bottom Relative to Emery Pond Bottom

EMERY POND
MARION POWER PLANT
WILLIAMSON CO., ILLINOIS

HANSON NO. 18E0022A FIGURE C-16

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Appendix D

Groundwater Management Zone Plat and Description

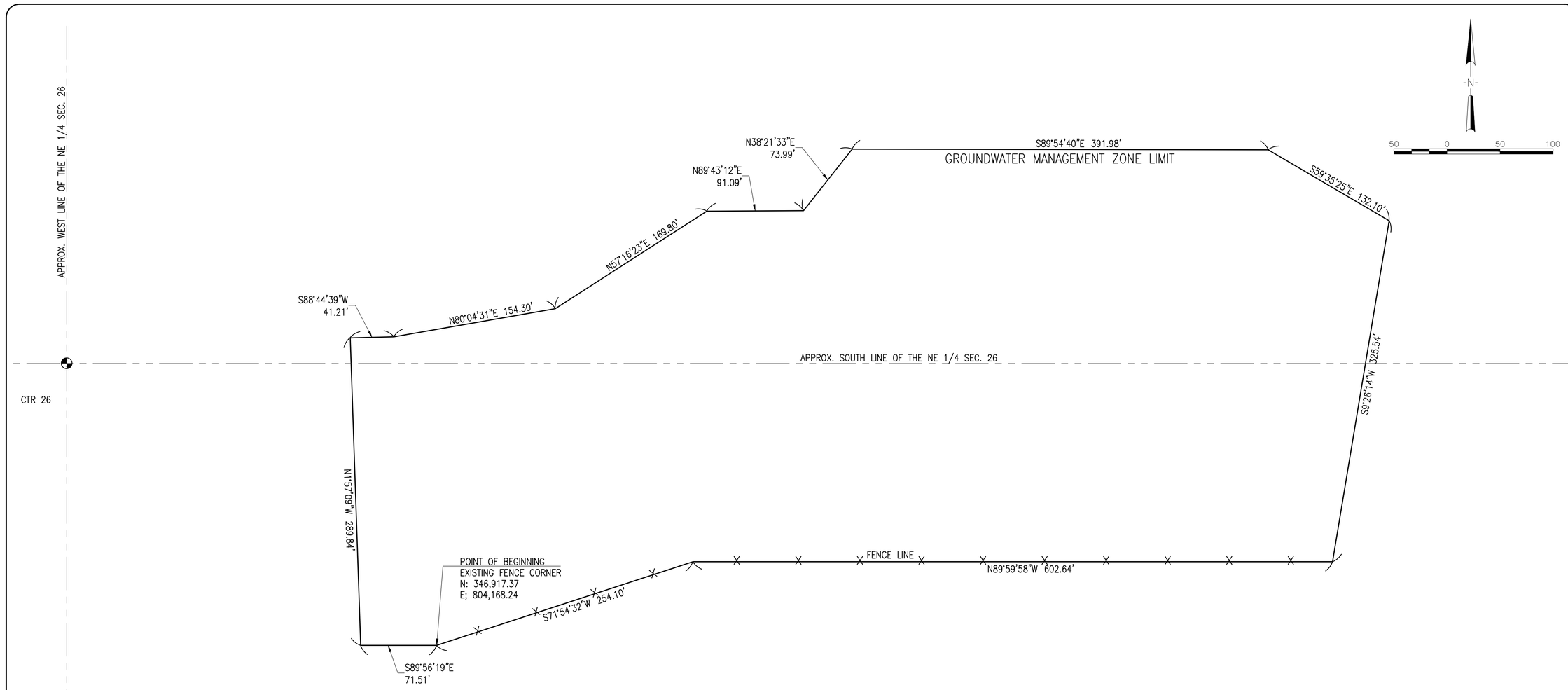
Groundwater Management Zone (GMZ) Limit

LEGAL DESCRIPTION

Part of Parcel 10-2 “A” of the Southern Illinois Power Co-Operative Lake of Egypt area property boundary, being part of the East Half of Section 26, Township 10 South, Range 2 East, Third Principal Meridian, Williamson County, Illinois, more particularly described as follows:

Beginning at a fence corner having an Illinois State Plane Coordinate of Northing 346,917.37 and Easting 804,168.24 (North American Datum of 1983, East Zone), thence on a grid bearing of N 89°-56'-19" W a distance of 71.51 feet; thence N 01°-57'-09" W a distance of 289.84; thence N 88°-44'-39" E a distance of 41.21 feet; thence N 80°-04'-31" E a distance of 154.30 feet; thence N 57°-16'-23" E a distance of 169.80 feet; thence N 89°-43'-12" E a distance of 91.09 feet; thence N 38°-21'-33" E a distance of 73.99 feet; thence S 89°-54'-40" E a distance of 391.98 feet; thence S 59°-35'-25" E a distance of 132.10 feet; thence S 09°-26'-14" W a distance of 325.54 feet; thence N 89°-59'-58" W a distance of 602.64 feet; thence S 71°-54'-32" W a distance of 254.10 feet to the POINT OF BEGINNING.

Containing 7.545 Acres, more or less.



LEGEND

- PARCEL LINE
- SECTION LINE
- FENCE LINE

State of Illinois)
SS
County of Williamson)

We, Hanson Professional Services Inc., Professional Design Firm No. 184–001084, do hereby certify that this is a true and correct representation of an exhibit made for the Southern Illinois Power Co–operative.

Dated, this 26 day of March, 2019.

By: Gary C. Rogers

Gary C. Rogers
Illinois Professional Land Surveyor No. 2957
License Expires 11–30–2020

GARY C. ROGERS
035–2957
PROFESSIONAL
LAND
SURVEYOR
STATE OF
ILLINOIS
SPRINGFIELD

NOTE:
BASIS OF BEARING ILLINOIS STATE PLANE NORTH AMERICAN DATUM OF 1983, EAST ZONE.

LEGAL DESCRIPTION

Part of Parcel 10–2 "A" of the Southern Illinois Power Co–Operative Lake of Egypt area property boundary, being part of the East Half of Section 26, Township 10 South, Range 2 East, Third Principal Meridian, Williamson County, Illinois, more particularly described as follows:

Beginning at a fence corner having an Illinois State Plane Coordinate of Northing 346,917.37 and Easting 804,168.24 (North American Datum of 1983, East Zone), thence on a grid bearing of N 89°–56'–19" W a distance of 71.51 feet; thence N 01°–57'–09" W a distance of 289.84; thence N 88°–44'–39" E a distance of 41.21 feet; thence N 80°–04'–31" E a distance of 154.30 feet; thence N 57°–16'–23" E a distance of 169.80 feet; thence N 89°–43'–12" E a distance of 91.09 feet; thence N 38°–21'–33" E a distance of 73.99 feet; thence S 89°–54'–40" E a distance of 391.98 feet; thence S 59°–35'–25" E a distance of 132.10 feet; thence S 09°–26'–14" W a distance of 325.54 feet; thence N 89°–59'–58" W a distance of 602.64 feet; thence S 71°–54'–32" W a distance of 254.10 feet to the POINT OF BEGINNING.

Containing 7.545 Acres, more or less.

REVISION | DATE

Hanson No. 18E0022A
Filename C–PROP.DWG
Scale 1"=50'
Date 03/26/2019

LAYOUT	GCR	03/26/2019
DRAWN	WTP	03/26/2019
REVIEWED	GCR	03/26/2019

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Peoria, IL 61614
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GROUNDWATER MANAGEMENT ZONE (GMZ) BOUNDARY EXHIBIT

SOUTHERN ILLINOIS POWER CO-OPERATIVE

C1

1 of 1 sheets

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Appendix E

Confirmation of an Adequate Corrective Action Forms

Title 35, Illinois Admin. Code, Part 620 – APPENDIX D
Confirmation of an Adequate Corrective Action Pursuant to 35 Ill. Adm. Code 620.250(a)(2)

Pursuant to 35 Ill. Adm. Code 620.250(a) if an owner or operator provides a written confirmation to the Agency that an adequate corrective action, equivalent to a corrective action process approved by the Agency, is being undertaken in a timely and appropriate manner, then a groundwater management zone may be established as a three-dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site. This document provides the form in which the written confirmation is to be submitted to the Agency.

Note 1. Parts I and II are to be submitted to IEPA at the time that the facility claims the alternative groundwater standards. Part III is to be submitted at the completion of the site investigation. At the completion of the corrective process, a final report is to be filed which includes the confirmation statement included in Part IV.

Note 2. The issuance of a permit by IEPA's Division of Air Pollution Control or Water Pollution Control for a treatment system does not imply that the Agency has approved the corrective action process.

Note 3. If the facility is conducting a cleanup of a unit which is subject to the requirements of the Resource Conservation and Recovery Act (RCRA) or the 35 Ill. Adm. Code 731 regulations for Underground Storage Tanks, this confirmation process is not applicable and cannot be used.

Note 4. If the answers to any of these questions require explanation or clarification, provide such in an attachment to this document.

Part I. Facility Information

Facility Name	***Southern Illinois Power Cooperative Marion Power Plant***
Facility Address	***11543 Lake Egypt Road, Marion, IL 62959***
County	***Williamson***
Standard Industrial Code (SIC)	***4911***

1. Provide a general description of the type of industry, products manufactured, raw materials used, location and size of the facility.

   Electric power generation and coal combustion residual (CCR) handling. The Emery Pond is an approx. 1-acre CCR Impoundment located within the Marion Power Plant which encompasses approximately 350 acres at the northwest shore of Lake of Egypt.

2. What specific units (operating or closed) are present at the facility which are or were used to manage waste, hazardous waste, hazardous substances, or petroleum?

	YES	NO
Landfill	X	
Surface Impoundment	X	
Land Treatment		X
Spray Irrigation		X
Waste Pile		X
Incinerator		X
Storage Tank (above ground)	X	
Storage Tank (underground)		X
Container Storage Area		X
Injection Well		X
Water Treatment Units	X	
Septic Tanks		X
French Drains		X
Transfer Station		X
Other Units (please describe)		

2. Provide an extract from a USGS topographic or county map showing the location of the site and a more detailed scaled map of the facility with each waste management unit identified in Question 2 or known/suspected source clearly identified. Map scale must be specified, and the location of the facility must be provided with respect to Township, Range and Section.

   The Plant is in the north half of Section 26, Tier 10 South, Range 2 East, of the 3rd PM. Figure 1 has the facility located on a USGS topographic map (7½ minute). Figure 2 shows a scaled map of the Site.

4. Has the facility ever conducted operations which involved the generation, manufacture, processing, transportation, treatment, storage, or handling of "hazardous substances" as defined by the Illinois Environmental Protection Act? Yes ☒ No ☐
   If the answer to this question is "yes" generally describe these operations.

   Chlorine – prior to 1/1/2015, SIPC utilized Liquefied Chlorine Gas to control biofouling in its plant condenser circulating cooling water. Since 1/1/2015, SIPC has used Sodium Hypochlorite Solution (Bleach) to control biofouling.

   Ammonia – Anhydrous Ammonia is utilized on Units 123 and 4 for NOx emission control.

5. Has the facility generated, stored, or treated hazardous waste as defined by the Resource Conservation and Recovery Act? Yes ☐ No ☒
   If the answer to this question is "yes" generally describe these operations.

   SIPC does not generate, store, or treat hazardous wastes. Solid waste generator numbers are listed in Part I. 7., below.

6. Has the facility conducted operations which involved the processing, storage, or handling of petroleum? Yes ☒ No ☐
   If the answer to this question is "yes" generally describe these operations.

   #2 fuel oil is used for coal handling equipment operations and boiler startup fuel for Units 123 & 4.

7. Has the facility ever held any of the following permits?

   a. Permits for any waste storage, waste treatment or waste disposal operation. Yes ☒ No ☐
      If the answer to this question is "yes", identify the IEPA permit numbers.

      Illinois EPA Land (Solid Waste Generator) – 1990555005

      US EPA Land (Solid Waste Generator) – ILD 007813900

      Illinois EPA Water (Construct/Operate) – 2020-EA-65428

   b. Interim Status under the Resources Conservation and Recovery Act (filing of a RCRA Part A application). Yes ☐ No ☒
      If the answer to this question is "yes", attach a copy of the last approved Part A application.

   c. RCRA Part B Permits. Yes ☐ No ☒
      If the answer to this question is "yes", identify the permit log number.

8. Has the facility ever conducted the closure of a RCRA hazardous waste management unit? Yes ☐ No ☒

9. Have any of the following State or federal government actions taken place for a release at the facility?

   a. Written notification regarding known, suspected, or alleged contamination on or emanating from the property (e.g., a Notice pursuant to Section 4(q) of the Environment Protection Act)? Yes ☒ No ☐
      If the to this question is "yes", identify the caption and date of issuance.

      Illinois EPA issued Violation Notice No. W-2018-00041 (ID No. 6364) on July 3, 2018.

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c. If either of Items a. or b. were answered by checking "yes", is the notice, order, or decree still in effect? Yes ☒ No ☐

10. What groundwater classification will the facility be subject to at the completion of the remediation?

    Class I ☒ Class II ☒ Class III ☐ Class IV ☐
    If more than one Class applies, please explain.

    Class II groundwater in the Unlithified Unit and upper Bedrock Unit (to a depth of approx. 21.5 ft. BGS at EBR or approx. elevation of 489 ft.) and Class I groundwater in the remaining (identified) Bedrock Unit (where sandstone is thicker than 10 ft.).

11. Describe the circumstances which the release to groundwater was identified.

    Through the monitoring well installation and water sampling guidelines listed in 40 CFR 257.90 Subpart (e).

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true and accurate.

Marion Power Station	Donald R Bilby
Facility Name	Signature of Owner/Operator
11543 Lake Egypt Road, Marion, IL 62959	***Southern Illinois Power Cooperative***
Location of Facility	Name of Owner/Operator
1990555005	***July 24, 2020***
Illinois EPA Identification Number	Date

PART II: Release Information

1. Identify the chemical constituents release to the groundwater. Attach additional documents, as necessary.

Chemical Description	Chemical Abstract No.
Arsenic	***7440-38-2***
Boron	***7440-42-8***
Calcium	***14808-79-8***
Chloride	***7782-50-5***
Cobalt	***7440-48-4***
Iron	***7439-89-6***
Lead	***7439-92-1***
Manganese	***7439-96-5***
pH	***13967-14-1***
Selenium	***7782-49-2***
Sulfate	***14808-79-8***
Thallium	***7440-28-0***
Total Dissolved Solids	***10-05-2***
Zinc	***7440-66-6***

1. Describe how the site will be investigated to determine the source or sources of the release.

   The Emery Pond has been investigated as described in the Hydrogeologic Investigation Report (Hanson, 2019a) and subsequent Hydrogeologic Investigation Addendum (Hanson, 2019b).

2. Describe how the site will be investigated to determine the source or sources of the release.

   The investigation is documented in the Hydrogeologic Investigation Report (Hanson, 2019a).

3. Describe how groundwater will be monitored to determine the rate and extent of the release.

   A study of the extent of contamination is included as part of the Hydrogeologic Investigation Report (Hanson, 2019a) and this Corrective Action and Selected Remedy Plan. The monitoring network to monitor the rate and extent of the release is described in the Groundwater Monitoring Plan (Hanson, 2020c).

4. Has the release been contained on-site at the facility?

   Migration of CCR constituents is limited by Lake of Egypt, which acts as a groundwater discharge area and hydraulic barrier.

5. Describe the groundwater monitoring network and groundwater and soil sampling protocols in place at the facility.

   The groundwater monitoring network and sampling protocols are described in the Groundwater Monitoring Plan (Hanson, 2020c).

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6. Provide the schedule for investigation and monitoring.

   The site investigation is complete and groundwater monitoring will continue for the regulatory/permitted frequency and monitoring period as described in the Groundwater Monitoring Plan Section 4.2: Sampling Schedule (Hanson, 2020c).

7. Describe the laboratory quality assurance program utilized for the investigation.

   All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with the National Environmental Laboratory Accreditation Program (NELAP) unless noted.

8. Provide a summary of the results of available soil testing and groundwater monitoring associated with the release at the facility. The summary or results should provide the following information: dates of sampling; types of samples taken (soil or water); locations and depths of samples; sampling and analytical methods; analytical laboratories used; chemical constituents for which analyses were performed; analytical detection limits; and concentrations of chemical constituents in ppm (levels below detection should be identified as "ND").

   A narrative summary of the results of groundwater monitoring is discussed in Section 2.1: Groundwater Monitoring History of this report. Analytical data summary tables are available in Appendix A of this report and graphs are available in Appendix B of this report.

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of knowledge and belief, true and accurate and confirm that the actions identified herein will be undertaken in accordance with the schedule set forth herein.

Marion Power Station	Donald L Gulley
Facility Name	Signature of Owner/Operator
11543 Lake Egypt Road, Marion, IL 62959	***Southern Illinois Power Cooperative***
Location of Facility	Name of Owner/Operator
1990555005	***July 24, 2020***
Illinois EPA Identification Number	Date

Part III: Remedy Selection Information

1. Describe the selected remedy.

   The selected remedy consists of:

   1. ***clean close the current Emery Pond,***
   2. ***clean close the Gypsum Loadout Area and historical portion of the Emery Pond***
   3. ***backfill the Gypsum Loadout Area with clean soil,***
   4. ***construct a new, storm water basin with a CCR compliant composite liner,***
   5. ***add a perimeter drain beneath the outboard toe of the liner for liner protection and to augment groundwater collection, and***
   6. ***use a Groundwater Management Zone (GMZ) during the return to compliance.***

2. Describe other remedies which were considered and why they were rejected.

   Additional mitigation for major cation/anion contaminants is difficult and expensive. Secondary containments (such as slurry walls) are also expensive.

3. Will waste, contaminated soil, or contaminated groundwater be removed from the site in the course of this remediation? Yes ☒ No ☐
   If the answer to this question is "yes", where will the contaminated material be taken?

   Any material removed during the clean closure activities will be taken to a permitted disposal facility (Illinois EPA or DNR Permit) after any needed pre-disposal testing.

4. Describe how the selected remedy will accomplish the maximum practical restoration of beneficial use of groundwater.

   A new, composite liner system (recompacted soil with HDPE) will limit contaminant migration from the new pond and the perimeter drain will aid in collecting impacted groundwater. Groundwater quality will improve over time as identified in the Groundwater Protection Evaluation (Hanson, 2020a).

5. Describe how the selected remedy will minimize any threat to public health or the environment.

   Clean closure of the Emery Pond and Gypsum *Loadout* Area will limit any new or continuing groundwater impacts. The perimeter toe drain will assist with removal of currently impacted groundwater.

6. Describe how the selected remedy will result in compliance with the applicable groundwater standards.

   The* Groundwater Protection Evaluation (Hanson, 2020a) indicates that water quality will meet the Class I: Potable Resource groundwater standard in approximately 8 years after *the clean closure is completed. The 8-year period is needed for total Arsenic to reach 0.01 mg/L at the downgradient edge of the former CCR impoundment.

7. Provide a schedule for design, construction, and operation of the remedy, including dates for the start and completion.

   A schedule for the remedies is included in Appendix C of the Closure Plan (Hanson, 2020b).

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8. Describe how the remedy will be operated and maintained.

   The new pond liner and cover systems will be installed using a quality assurance (QA) program. The pond will be operated in such a way as to reduce the likelihood of any liner damage.

9. Have any of the following permits been issued for the remediation?

   a. Construction or Operating permit from the Division of Water Pollution Control. Yes ☐ No ☒

      But a construction/operating permit application is currently under review with Illinois EPA Bureau of Water.

   b. Land treatment permit from the Division of Water Pollution Control. Yes ☐ No ☒
      If the answer to this question is "yes", identify the permit number.

   c. Construction or Operating permit from the Division of Air Pollution Control. Yes ☐ No ☒
      If the answer to this question is "yes", identify the permit number.

10. How will groundwater at the facility be monitored following completion of the remedy to ensure that the groundwater standards have been attained?

    Quarterly monitoring of the 40 CFR 257 Appendix III and Appendix IV parameter will help determine compliance over time. Assessment monitoring under 40 CFR 257 will also continue.

Based on my inquiry of those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true and accurate and confirm that the actions identified herein will be undertaken in accordance with the schedule set forth herein.

Marion Power Station	Donald R Gulley
Facility Name	Signature of Owner/Operator
11543 Lake Egypt Road, Marion, IL 62959	***Southern Illinois Power Cooperative***
Location of Facility	Name of Owner/Operator
1990555005	***July 24, 2020***
Illinois EPA Identification Number	Date

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APPENDIX H

Proof of Permanent Marker Installation

CCR
IMPOUNDMENT
[EMERY POND]
SOUTHERN ILLINOIS
POWER COOPERATIVE
STORM WATER
BASIN
W19986
00002-10

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APPENDIX I

Groundwater Monitoring Plan

35 IAC 845.630(g) Groundwater Monitoring System Certification
Southern Illinois Power Cooperative, Marion Power Plant,
Storm Water Basin (formerly Emery Pond)

In accordance with Title 35 Illinois Administrative Code (35 IAC) 'Part 845, Subpart F, Section 845.630(g), the owner or operator of a coal combustion residual (CCR) unit must obtain a certification from a qualified professional engineer stating that the groundwater monitoring system at the CCR unit has been designed and constructed to meet the requirements of 35 IAC§ 845.630. If the groundwater monitoring system includes the minimum number of monitoring wells specified in 35 IAC § 845.630(c)(1), the certification must document the basis supporting use of the minimum number of monitoring wells. Further, in accordance with 35 IAC § 845.630(e)(1), when completing the groundwater monitoring system certification, the qualified professional engineer must be given access to documentation regarding the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices.

The groundwater monitoring system designed and constructed for the Storm Water Basin includes one (1) upgradient and seven (7) downgradient monitoring wells which exceed the minimum requirements of 35 IAC § 845.630(c)(1). The undersigned has been given access to documentation regarding the design, installation, development, and decommissioning of monitoring wells, piezometers and other measurement, sampling, and analytical devices concerning the Storm Water Basin as described in the Groundwater Monitoring Plan dated March 29, 2019, revised March 24, 2021 and written by Hanson Professional Services Inc.

I, John M. Heyen, a qualified professional engineer in good standing in the State of Illinois, certify that the groundwater monitoring system at the Marion Power Plant Storm Water Basin has been designed and constructed to meet the requirements of 35 IAC § 845.630.

John M. Heyen
Illinois Licensed Professional Engineer
062-058721
(expires November 30, 2021)
signed October 14, 2021

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Emery Pond

Groundwater Monitoring Plan

Marion Power Plant
Southern Illinois Power Cooperative
Marion, Williamson County, Illinois

March 29, 2019
revised March 24, 2021

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Engineering | Planning | Allied Services

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1. Introduction

The following monitoring plan is for the Southern Illinois Power Cooperative [SIPC] Marion Power Plant's [Plant] Emery Pond [Site]. This update is needed due to the development of a Corrective Action Plan [CAP] and Closure Plan for the Site. Figure 1 shows the location of the Plant.

2. Site Hydrogeology

The site is located in the Shawnee Hills section within the Interior Low Plateaus (physiographic) Province (Leighton et al., 1948). Site geology consists of glacially derived deposits of the Illinoisan Stage overlying Pennsylvanian Age bedrock. Table 1 list the hydro- and litho-stratigraphic units with their descriptions located within 50 feet of the surface at the Site (Willman et al, 1995 and Berg & Kempton, 1988).

Table 1. Site Geologic/Hydrogeologic Units

Litho-stratigraphic Unit	Hydro-stratigraphic Unit	Lithologic Description
Peoria/Roxana Silt	Unlithified Unit	light yellow tan to gray, fine sandy silt
Glasford Formation (undifferentiated)		silty/sandy diamictons with thin lenticular bodies of silt, sand, and gravel
Caseyville Formation	Bedrock Unit	primarily sandstone with shales

As identified in the Hydrogeologic Investigation Report (Hanson, 2019a), groundwater at the Site has been classified as Class II: General Resource Groundwater (35 IAC 620.240) in the Unlithified Unit and the upper (approx. 11 ft.) of the Bedrock Unit. This is the strata the current monitoring system is evaluating. This investigation also concluded that there is no aquifer (as defined by the CCR Rule) at the Site. However, after further review and discussions with Illinois EPA, SIPC continues to monitor the shallow groundwater as the uppermost aquifer for compliance with US EPA and proposed Illinois EPA rules.

3. Groundwater Monitoring Network

The current groundwater monitoring wells for the Site are all screened at the Unlithified Unit/Bedrock Unit interface. Five (5) monitoring wells were installed at five (5) locations around the facility by Holcomb Foundation Engineering Inc. in early-February 2017 under the direction of AECOM (2018). The wells consisted of 2-inch diameter, schedule 40 PVC pipe with 10-ft long, 0.010-inch slotted well screens. A silica sand (grain size 10/20) filter medium was used to construct the sand pack around each well screen. The depth of the screen and the depth to the top of the filter pack were measured and recorded in the field by the geologist. Bentonite chips were placed on top of the sand pack filling the borehole to 2 to 3 ft. below the ground surface or a minimum thickness of 2 ft.

A steel, lockable, protective outer casing was installed for each well. A concrete monument was constructed around the outer casing with the concrete extending from the ground surface to the top of the bentonite seal. After installation, the locations and elevations of the wells were surveyed using the State Plane horizontal grid and elevation system. All surveying was performed under the direction of an Illinois Licensed Professional Land Surveyor. The monitoring system and individual wells were installed to meet the requirements of 40 CFR 257.90-97. Table 2 lists the current monitoring well, locations and elevations.

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EXPLANATION

Monitoring Well (existing) ◔ EP-2

Monitoring Well (proposed) ⊕ EP-5

Scale: 1 inch = 125 feet

Image from Google Earth

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Monitoring Well Location Map

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A FIGURE 1

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Table 2. Current Monitoring Well Network

Well ID	Northing	Easting	Ground Elev.	MP[1] Elev.	Gradient
EBG	346,358.14	804,168.155	521.74	524.87	Up
EP-1	347,042.31	804,661.17	517.07	519.72	Down
EP-2	347,113.03	804,799.41	511.15	513.79	Down
EP-3	347,245.08	804,814.53	516.24	518.95	Down
EP-4	347,288.30	804,687.53	517.07	519.74	Down

[1]Measuring Point

3.1. Groundwater Monitoring Program Standards

3.1.1. Monitoring Well Installation

Hanson proposes to add three (3) additional monitoring wells to evaluate groundwater at the limits of the groundwater management zone (GMZ). Locations are shown on Figure 1 with approximate coordinates and elevations listed in Table 3.

Table 3. GMZ Monitoring Wells

Well ID	Northing	Easting	Ground Elev.	Gradient
EP-5	347,113.00	804,800.00	524.00	Edge of GMZ
EP-6	347,245.00	804,815.00	502.00	Edge of GMZ
EP-7	347,288.00	804,688.00	512.00	Edge of GMZ

The groundwater monitoring wells will be designed and constructed in accordance with:

1. Illinois Department of Public Health (IDPH) standards as cited in 77 IAC 920.170; and
2. Chapter 6 – Monitoring Well Design and Construction, RCRA Groundwater Monitoring Technical Enforcement Guidance Document, United States Environmental Protection Agency (U.S. EPA), November 1992.

A typical as-built diagram for groundwater monitoring well construction is provided in Figure 2. New monitoring wells will be constructed to yield groundwater samples that represent the quality of groundwater within the geologic formation(s) monitored at the Site. The monitoring wells should yield sufficient representative quantities of groundwater for the laboratory analyses required.

4. Groundwater Sampling

Hanson (2019a) concluded as part of the Hydrogeologic Investigation that there is no aquifer† present beneath the Emery Pond, as that term is defined in both federal and state regulations. However, after further review and discussions with Illinois EPA, SIPC will continue to monitor the shallow groundwater as the uppermost aquifer for compliance with US EPA and proposed Illinois EPA rules.

† As defined by 40 CFR 257.53 and 35 IAC 620.110.

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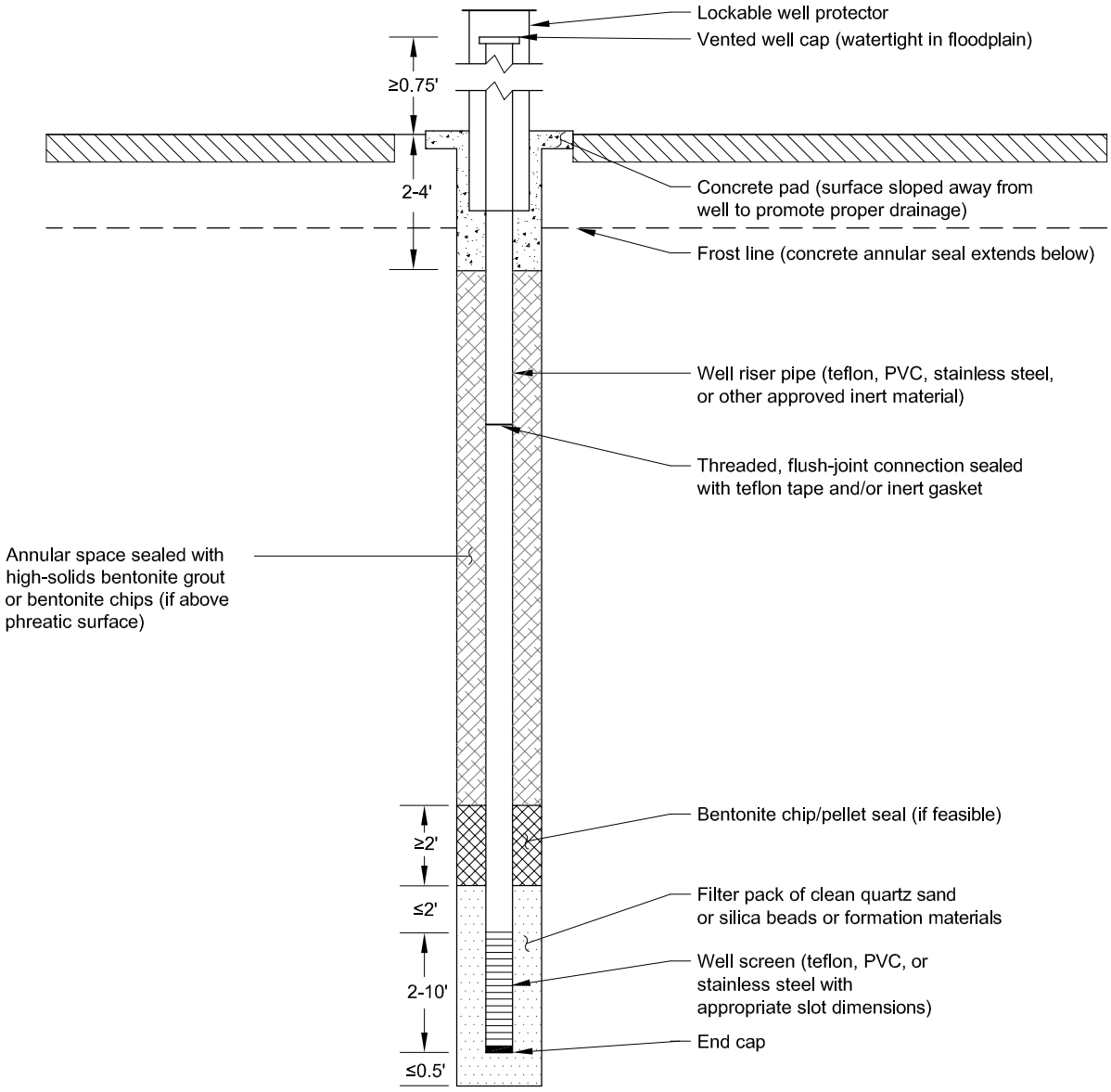

After 77 IAC 920.170 and I.E.P.A. Groundwater Monitoring Network for Non-Hazardous Solid Waste Disposal Facilities (Final Draft, April 1990)

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GROUNDWATER MONITORING WELL DETAIL

EMERY POND
MARION POWER PLANT
WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022A FIGURE 2

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I:\18JOBS\18E0022A\ADMIN\14-REPORTS\MONPLAN\FIG_2WELLDETAIL_20200707.DWG

Therefore, as discussed with IEPA, SIPC agrees to continue monitoring the groundwater surrounding Emery Pond consistent with the Part 845 proposal and as further described below. Should groundwater monitoring requirements under Part 845 change during the rulemaking proceeding, the parties may agree in writing at that time to modify the groundwater monitoring including, potentially, frequency and the constituent list to be consistent with the final rule.

4.1. Sampling Schedule

Groundwater monitoring at the Emery Pond will be conducted quarterly. Sampling for routine analysis shall be conducted in accordance with the low-flow techniques described in Appendix A. The schedule for quarterly sampling is summarized in Table 4.

Table 4. Groundwater Monitoring Schedule

Sampling Quarter	Sampling Months	Report Due Date	Sampling List
1st Quarter	January - March	May 31	G1
2nd Quarter	April - June	August 31	G1
3rd Quarter	July - September	November 30	G1
4th Quarter	October - December	February 28	G1

Groundwater monitoring will continue the schedule outlined in Table 4 until down-gradient water quality has dropped below the relevant standards [40 CFR 257.102(c) and 35 IAC 845.740(b), once approved].

4.2. Parameter Lists

The parameters selected for groundwater monitoring are those parameters found in 40 CFR 257 Appendix III and Appendix IV.‡

Table 5. List G1 – Groundwater Monitoring Constituents

Field Parameters	STORET	Indicator Parameters [in ug/L]	STORET
Dissolved Oxygen	00300	Calcium, total [in mg/L]	00916
pH [S.U.]	00400	Chloride, total [in mg/L]	00940
Oxidation-Reduction Potential [mV]	00090	Chromium, total	01034
Specific Conductance [umohs/cm]	00094	Cobalt, total	01037
Temperature [ºF]	00011	Fluoride, total [in mg/L]	00951
Turbidity [NTU]	00076	Lead, total	01051
Depth to Water [ft below MP]	72109	Lithium, total	01132
Elevation of GW Surface [ft AMSL]	71993	Mercury, total	71900
Indicator Parameters [in ug/L]	**STORET**	Molybdenum, total	01062
Antimony, total	01095	Selenium, total	00147
Arsenic, total	01002	Sulfate, total [in mg/L]	00945
Barium, total	01007	Total Dissolved Solids (TDS) [in mg/L]	70300
Beryllium, total	01012	Thallium, total	01059
Boron, total	01022	Radium 226/228 combined [in pCi/L]	11503
Cadmium, total	01034		

‡ The indicator parameters include all the constituents listed at proposed 35 IAC 845.600 plus Calcium.

4.3. Sampling Procedures

The Sampling Protocol included as Appendix A shall be followed for collecting groundwater samples at the Site. If conditions exist at the time of sampling that could influence the results, such as farmers applying herbicides/pesticides on adjacent fields, it may be necessary to postpone sampling until a later date. Under no circumstances will sample collection deviate from the schedule noted in Section 4.1.

5. Analysis of Site Monitoring Samples

5.1. Laboratory Analysis

Laboratory analysis and testing methods will typically be in accordance with U.S. EPA publication Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (U.S. EPA, 2018) or as superseded by future editions. The specific testing method used for analysis shall have Practical Quantitation Limit (PQL) values that can determine if regulatory and/or site groundwater standards are exceeded. For example, 35 IAC Part 724, Appendix I lists three methods and PQLs for Chromium (7190 = 500 ppb; 6010 = 70 ppb; and 7191 = 10 ppb). Since 35 IAC 620.410 sets the standard for Chromium at 100 ppb, the method necessary to meet or exceed this standard would be 6010. Specific testing methods shall be referenced in the Laboratory Analysis Report.

Other references (unless superseded) for testing methods may include:

a. Test Method: The Determination of Inorganic Anions in Water by Ion (U.S. EPA, 1993),
b. Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (U.S. EPA, 1982),
c. Methods for the Determination of Organic Compounds in Drinking Water (U.S. EPA, 1988, and
d. Standard Methods for Determination of Organic and Inorganic Compounds in Drinking Water (U.S. EPA, 2000).

Quality Assurance/Quality Control (QA/QC) programs will likely vary from laboratory to laboratory but will contain the same general methodologies. The QA/QC programs are implemented: to evaluate the accuracy and precision of analytical data in order to establish the quality of the data; to provide an indication of the need for corrective actions, when comparison with existing regulatory or program criteria or data trends show that activities must be changed or monitored to a different degree; and to determine the effect of corrective actions (U.S. EPA, 2018).

Several methodologies will be used by the laboratory to ensure representative analytical results. Some methodologies that may be used are:

a. Calibration checks shall be used to enhance instrument reliability. Instrumental calibration curves will be generated in a manner consistent with the instrument and method utilized. Calibration verification shall be conducted on a regular basis;
b. Laboratory control samples and/or quality control check standards that have been spiked with analyses may be used to monitor the performance of the analytical method;
c. Matrix spike/matrix spike duplicate analyses are samples in which solutions of specific aliquots are added to a sample matrix prior to sample extraction/digestion and analysis. Samples are split into duplicates, spiked, and analyzed. Percent recoveries and relative percent differences are calculated for each of the analyses detected;

d. Replicate samples shall be routinely analyzed to check the precision of the instrumentation and/or methodology employed for all analytical methods; and

e. Where applicable, method blanks are prepared and analyzed each day or samples are batched to ensure that the system is free of contamination.

The QA/QC program at the laboratory will follow method requirements in the U.S. EPA publication Test Methods for Evaluation Solid Waste, Physical/Chemical Methods (U.S. EPA, 2018) and which may be periodically revised in the future. Other published QA/QC methods may be utilized as part of laboratory policy.

6. Licensed Professional Signature/Seal

The geological work product contained in this document has been prepared under my personal supervision and has been prepared and administered in accordance with the standards of reasonable professional skill and diligence.

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(217) 788-2450
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Seal:

Expires 31 March 2023

Signature: _____ Date: 24 March 2021

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Appendix A

Sampling Protocol

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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I

LOW STRESS (low flow) PURGING AND SAMPLING PROCEDURE FOR THE COLLECTION OF GROUNDWATER SAMPLES FROM MONITORING WELLS

Quality Assurance Unit
U.S. Environmental Protection Agency – Region 1
11 Technology Drive
North Chelmsford, MA 01863

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Prepared by: ROBERT REINHART Digitally signed by ROBERT REINHART Date: 2017.09.19 16:15:38 -04'00' _____
(Robert Reinhart, Quality Assurance Unit) Date

Approved by: JOHN SMALDONE Digitally signed by JOHN SMALDONE Date: 2017.09.20 15:11:00 -04'00' _____
(John Smaldone, Quality Assurance Unit) Date

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Revision Page

Date	Rev #	Summary of changes	Sections
7/30/96	1	Finalized	
01/19/10	2	Updated	All sections
3/23/17	3	Updated	All sections
9/20/17	4	Updated	Section 7.0

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1.0 USE OF TERMS

Equipment blank: The equipment blank shall include the pump and the pump's tubing. If tubing is dedicated to the well, the equipment blank needs only to include the pump in subsequent sampling rounds. If the pump and tubing are dedicated to the well, the equipment blank is collected prior to its placement in the well. If the pump and tubing will be used to sample multiple wells, the equipment blank is normally collected after sampling from contaminated wells and not after background wells.

Field duplicates: Field duplicates are collected to determine precision of the sampling procedure. For this procedure, collect duplicate for each analyte group in consecutive order (VOC original, VOC duplicate, SVOC original, SVOC duplicate, etc.).

Indicator field parameters: This SOP uses field measurements of turbidity, dissolved oxygen, specific conductance, temperature, pH, and oxidation/reduction potential (ORP) as indicators of when purging operations are sufficient and sample collection may begin.

Matrix Spike/Matrix Spike Duplicates: Used by the laboratory in its quality assurance program. Consult the laboratory for the sample volume to be collected.

Potentiometric Surface: The level to which water rises in a tightly cased well constructed in a confined aquifer. In an unconfined aquifer, the potentiometric surface is the water table.

QAPP: Quality Assurance Project Plan

SAP: Sampling and Analysis Plan

SOP: Standard operating procedure

Stabilization: A condition that is achieved when all indicator field parameter measurements are sufficiently stable (as described in the "Monitoring Indicator Field Parameters" section) to allow sample collection to begin.

Temperature blank: A temperature blank is added to each sample cooler. The blank is measured upon receipt at the laboratory to assess whether the samples were properly cooled during transit.

Trip blank (VOCs): Trip blank is a sample of analyte-free water taken to the sampling site and returned to the laboratory. The trip blanks (one pair) are added to each sample cooler that contains VOC samples.

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2.0 SCOPE & APPLICATION

The goal of this groundwater sampling procedure is to collect water samples that reflect the total mobile organic and inorganic loads (dissolved and colloidal sized fractions) transported through the subsurface under ambient flow conditions, with minimal physical and chemical alterations from sampling operations. This standard operating procedure (SOP) for collecting groundwater samples will help ensure that the project's data quality objectives (DQOs) are met under certain low-flow conditions.

The SOP emphasizes the need to minimize hydraulic stress at the well-aquifer interface by maintaining low water-level drawdowns, and by using low pumping rates during purging and sampling operations. Indicator field parameters (e.g., dissolved oxygen, pH, etc.) are monitored during purging in order to determine when sample collection may begin. Samples properly collected using this SOP are suitable for analysis of groundwater contaminants (volatile and semi-volatile organic analytes, dissolved gases, pesticides, PCBs, metals and other inorganics), or naturally occurring analytes. This SOP is based on Puls, and Barcelona (1996).

This procedure is designed for monitoring wells with an inside diameter (1.5-inches or greater) that can accommodate a positive lift pump with a screen length or open interval ten feet or less and with a water level above the top of the screen or open interval (Hereafter, the "screen or open interval" will be referred to only as "screen interval"). This SOP is not applicable to other well-sampling conditions.

While the use of dedicated sampling equipment is not mandatory, dedicated pumps and tubing can reduce sampling costs significantly by streamlining sampling activities and thereby reducing the overall field costs.

The goal of this procedure is to emphasize the need for consistency in deploying and operating equipment while purging and sampling monitoring wells during each sampling event. This will help to minimize sampling variability.

This procedure describes a general framework for groundwater sampling. Other site specific information (hydrogeological context, conceptual site model (CSM), DQOs, etc.) coupled with systematic planning must be added to the procedure in order to develop an appropriate site specific SAP/QAPP. In addition, the site specific SAP/QAPP must identify the specific equipment that will be used to collect the groundwater samples.

This procedure does not address the collection of water or free product samples from wells containing free phase LNAPLs and/or DNAPLs (light or dense non-aqueous phase

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liquids). For this type of situation, the reader may wish to check: Cohen, and Mercer (1993) or other pertinent documents.

This SOP is to be used when collecting groundwater samples from monitoring wells at all Superfund, Federal Facility and RCRA sites in Region 1 under the conditions described herein. Request for modification of this SOP, in order to better address specific situations at individual wells, must include adequate technical justification for proposed changes. All changes and modifications must be approved and included in a revised SAP/QAPP before implementation in field.

3.0 BACKGROUND FOR IMPLEMENTATION

It is expected that the monitoring well screen has been properly located (both laterally and vertically) to intercept existing contaminant plume(s) or along flow paths of potential contaminant migration. Problems with inappropriate monitoring well placement or faulty/improper well installation cannot be overcome by even the best water sampling procedures. This SOP presumes that the analytes of interest are moving (or will potentially move) primarily through the more permeable zones intercepted by the screen interval.

Proper well construction, development, and operation and maintenance cannot be overemphasized. The use of installation techniques that are appropriate to the hydrogeologic setting of the site often prevent "problem well" situations from occurring. During well development, or redevelopment, tests should be conducted to determine the hydraulic characteristics of the monitoring well. The data can then be used to set the purging/sampling rate, and provide a baseline for evaluating changes in well performance and the potential need for well rehabilitation. Note: if this installation data or well history (construction and sampling) is not available or discoverable, for all wells to be sampled, efforts to build a sampling history should commence with the next sampling event.

The pump intake should be located within the screen interval and at a depth that will remain under water at all times. It is recommended that the intake depth and pumping rate remain the same for all sampling events. The mid-point or the lowest historical midpoint of the saturated screen length is often used as the location of the pump intake. For new wells, or for wells without pump intake depth information, the site's SAP/QAPP must provide clear reasons and instructions on how the pump intake depth(s) will be selected, and reason(s) for the depth(s) selected. If the depths to top and bottom of the well screen are not known, the SAP/QAPP will need to describe how the sampling depth will be determined and how the data can be used.

Stabilization of indicator field parameters is used to indicate that conditions are suitable for sampling to begin. Achievement of turbidity levels of less than 5 NTU, and stable drawdowns of less than 0.3 feet, while desirable, are not mandatory. Sample collection

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may still take place provided the indicator field parameter criteria in this procedure are met. If after 2 hours of purging indicator field parameters have not stabilized, one of three optional courses of action may be taken: a) continue purging until stabilization is achieved, b) discontinue purging, do not collect any samples, and record in log book that stabilization could not be achieved (documentation must describe attempts to achieve stabilization), c) discontinue purging, collect samples and provide full explanation of attempts to achieve stabilization (note: there is a risk that the analytical data obtained, especially metals and strongly hydrophobic organic analytes, may reflect a sampling bias and therefore, the data may not meet the data quality objectives of the sampling event).

It is recommended that low-flow sampling be conducted when the air temperature is above 32°F (0°C). If the procedure is used below 32°F, special precautions will need to be taken to prevent the groundwater from freezing in the equipment. Because sampling during freezing temperatures may adversely impact the data quality objectives, the need for water sample collection during months when these conditions are likely to occur should be evaluated during site planning and special sampling measures may need to be developed. Ice formation in the flow-through-cell will cause the monitoring probes to act erratically. A transparent flow-through-cell needs to be used to observe if ice is forming in the cell. If ice starts to form on the other pieces of the sampling equipment, additional problems may occur.

4.0 HEALTH & SAFETY

When working on-site, comply with all applicable OSHA requirements and the site's health/safety procedures. All proper personal protection clothing and equipment are to be worn. Some samples may contain biological and chemical hazards. These samples should be handled with suitable protection to skin, eyes, etc.

5.0 CAUTIONS

The following cautions need to be considered when planning to collect groundwater samples when the below conditions occur.

If the groundwater degasses during purging of the monitoring well, dissolved gases and VOCs will be lost. When this happens, the groundwater data for dissolved gases (e.g., methane, ethene, ethane, dissolved oxygen, etc.) and VOCs will need to be qualified. Some conditions that can promote degassing are the use of a vacuum pump (e.g., peristaltic pumps), changes in aperture along the sampling tubing, and squeezing/pinching the pump's tubing which results in a pressure change.

When collecting the samples for dissolved gases and VOCs analyses, avoid aerating the groundwater in the pump's tubing. This can cause loss of the dissolved gases and VOCs in

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the groundwater. Having the pump's tubing completely filled prior to sampling will avoid this problem when using a centrifugal pump or peristaltic pump.

Direct sun light and hot ambient air temperatures may cause the groundwater in the tubing and flow-through-cell to heat up. This may cause the groundwater to degas which will result in loss of VOCs and dissolved gases. When sampling under these conditions, the sampler will need to shade the equipment from the sunlight (e.g., umbrella, tent, etc.). If possible, sampling on hot days, or during the hottest time of the day, should be avoided. The tubing exiting the monitoring well should be kept as short as possible to avoid the sun light or ambient air from heating up the groundwater.

Thermal currents in the monitoring well may cause vertical mixing of water in the well bore. When the air temperature is colder than the groundwater temperature, it can cool the top of the water column. Colder water which is denser than warm water sinks to the bottom of the well and the warmer water at the bottom of the well rises, setting up a convection cell. "During low-flow sampling, the pumped water may be a mixture of convecting water from within the well casing and aquifer water moving inward through the screen. This mixing of water during low-flow sampling can substantially increase equilibration times, can cause false stabilization of indicator parameters, can give false indication of redox state, and can provide biological data that are not representative of the aquifer conditions" (Vroblesky 2007).

Failure to calibrate or perform proper maintenance on the sampling equipment and measurement instruments (e.g., dissolved oxygen meter, etc.) can result in faulty data being collected.

Interferences may result from using contaminated equipment, cleaning materials, sample containers, or uncontrolled ambient/surrounding air conditions (e.g., truck/vehicle exhaust nearby).

Cross contamination problems can be eliminated or minimized through the use of dedicated sampling equipment and/or proper planning to avoid ambient air interferences. Note that the use of dedicated sampling equipment can also significantly reduce the time needed to complete each sampling event, will promote consistency in the sampling, and may reduce sampling bias by having the pump's intake at a constant depth.

Clean and decontaminate all sampling equipment prior to use. All sampling equipment needs to be routinely checked to be free from contaminants and equipment blanks collected to ensure that the equipment is free of contaminants. Check the previous equipment blank data for the site (if they exist) to determine if the previous cleaning procedure removed the contaminants. If contaminants were detected and they are a concern, then a more vigorous cleaning procedure will be needed.

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6.0 PERSONNEL QUALIFICATIONS

All field samplers working at sites containing hazardous waste must meet the requirements of the OSHA regulations. OSHA regulations may require the sampler to take the 40 hour OSHA health and safety training course and a refresher course prior to engaging in any field activities, depending upon the site and field conditions.

The field samplers must be trained prior to the use of the sampling equipment, field instruments, and procedures. Training is to be conducted by an experienced sampler before initiating any sampling procedure.

The entire sampling team needs to read, and be familiar with, the site Health and Safety Plan, all relevant SOPs, and SAP/QAPP (and the most recent amendments) before going onsite for the sampling event. It is recommended that the field sampling leader attest to the understanding of these site documents and that it is recorded.

7.0 EQUIPMENT AND SUPPLIES

A. Informational materials for sampling event

A copy of the current Health and Safety Plan, SAP/QAPP, monitoring well construction data, location map(s), field data from last sampling event, manuals for sampling, and the monitoring instruments' operation, maintenance, and calibration manuals should be brought to the site.

B. Well keys.

C. Extraction device

Adjustable rate, submersible pumps (e.g., centrifugal, bladder, etc.) which are constructed of stainless steel or polytetrafluoroethylene (PTFE, i.e. Teflon®) are preferred. PTFE, however, should not be used when sampling for per- and polyfluoroalkyl substances (PFAS) as it is likely to contain these substances.

Note: If extraction devices constructed of other materials are to be used, adequate information must be provided to show that the substituted materials do not leach contaminants nor cause interferences to the analytical procedures to be used. Acceptance of these materials must be obtained before the sampling event.

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If bladder pumps are selected for the collection of VOCs and dissolved gases, the pump setting should be set so that one pulse will deliver a water volume that is sufficient to fill a 40 mL VOC vial. This is not mandatory, but is considered a "best practice". For the proper operation, the bladder pump will need a minimum amount of water above the pump; consult the manufacturer for the recommended submergence. The pump's recommended submergence value should be determined during the planning stage, since it may influence well construction and placement of dedicated pumps where water-level fluctuations are significant.

Adjustable rate, peristaltic pumps (suction) are to be used with caution when collecting samples for VOCs and dissolved gases (e.g., methane, carbon dioxide, etc.) analyses. Additional information on the use of peristaltic pumps can be found in Appendix A. If peristaltic pumps are used, the inside diameter of the rotor head tubing needs to match the inside diameter of the tubing installed in the monitoring well.

Inertial pumping devices (motor driven or manual) are not recommended. These devices frequently cause greater disturbance during purging and sampling, and are less easily controlled than submersible pumps (potentially increasing turbidity and sampling variability, etc.). This can lead to sampling results that are adversely affected by purging and sampling operations, and a higher degree of data variability.

D. Tubing

PTFE (Teflon®) or PTFE-lined polyethylene tubing are preferred when sampling is to include VOCs, SVOCs, pesticides, PCBs and inorganics. As discussed in the previous section, PTFE tubing should not be used when sampling for PFAS. In this case, a suitable alternative such as high-density polyethylene tubing should be used.

PVC, polypropylene or polyethylene tubing may be used when collecting samples for metal and other inorganics analyses.

Note: If tubing constructed of other materials is to be used, adequate information must be provided to show that the substituted materials do not leach contaminants nor cause interferences to the analytical procedures to be used. Acceptance of these materials must be obtained before the sampling event.

The use of 1/4 inch or 3/8 inch (inside diameter) tubing is recommended. This will help ensure that the tubing remains liquid filled when operating at very low pumping rates when using centrifugal and peristaltic pumps.

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Silastic tubing should be used for the section around the rotor head of a peristaltic pump. It should be less than a foot in length. The inside diameter of the tubing used at the pump rotor head must be the same as the inside diameter of tubing placed in the well. A tubing connector is used to connect the pump rotor head tubing to the well tubing. Alternatively, the two pieces of tubing can be connected to each other by placing the one end of the tubing inside the end of the other tubing. The tubing must not be reused.

E. The water level measuring device

Electronic ”tape”, pressure transducer, water level sounder/level indicator, etc. should be capable of measuring to 0.01 foot accuracy. Recording pressure transducers, mounted above the pump, are especially helpful in tracking water levels during pumping operations, but their use must include check measurements with a water level “tape” at the start and end of each sampling event.

F. Flow measurement supplies

Graduated cylinder (size according to flow rate) and stopwatch usually will suffice.

Large graduated bucket used to record total water purged from the well.

G. Interface probe

To be used to check on the presence of free phase liquids (LNAPL, or DNAPL) before purging begins (as needed).

H. Power source (generator, nitrogen tank, battery, etc.)

When a gasoline generator is used, locate it downwind and at least 30 feet from the well so that the exhaust fumes do not contaminate samples.

I. Indicator field parameter monitoring instruments

Use of a multi-parameter instrument capable of measuring pH, oxidation/reduction potential (ORP), dissolved oxygen (DO), specific conductance, temperature, and coupled with a flow-through-cell is required when measuring all indicator field parameters, except turbidity. Turbidity is collected using a separate instrument. Record equipment/instrument identification (manufacturer, and model number).

Transparent, small volume flow-through-cells (e.g., 250 mLs or less) are preferred. This allows observation of air bubbles and sediment buildup in the cell, which can interfere with the operation of the monitoring instrument probes, to be easily detected. A small volume

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cell facilitates rapid turnover of water in the cell between measurements of the indicator field parameters.

It is recommended to use a flow-through-cell and monitoring probes from the same manufacturer and model to avoid incompatibility between the probes and flow-through-cell.

Turbidity samples are collected before the flow-through-cell. A "T" connector coupled with a valve is connected between the pump's tubing and flow-through-cell. When a turbidity measurement is required, the valve is opened to allow the groundwater to flow into a container. The valve is closed and the container sample is then placed in the turbidimeter.

Standards are necessary to perform field calibration of instruments. A minimum of two standards are needed to bracket the instrument measurement range for all parameters except ORP which use a Zobell solution as a standard. For dissolved oxygen, a wet sponge used for the 100% saturation and a zero dissolved oxygen solution are used for the calibration.

Barometer (used in the calibration of the Dissolved Oxygen probe) and the conversion formula to convert the barometric pressure into the units of measure used by the Dissolved Oxygen meter are needed.

J. Decontamination supplies

Includes (for example) non-phosphate detergent, distilled/deionized water, isopropyl alcohol, etc.

K. Record keeping supplies

Logbook(s), well purging forms, chain-of-custody forms, field instrument calibration forms, etc.

L. Sample bottles

M. Sample preservation supplies (as required by the analytical methods)

N. Sample tags or labels

O. PID or FID instrument

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If appropriate, to detect VOCs for health and safety purposes, and provide qualitative field evaluations.

P. Miscellaneous Equipment

Equipment to keep the sampling apparatus shaded in the summer (e.g., umbrella) and from freezing in the winter. If the pump's tubing is allowed to heat up in the warm weather, the cold groundwater may degas as it is warmed in the tubing.

8.0 EQUIPMENT/INSTRUMENT CALIBRATION

Prior to the sampling event, perform maintenance checks on the equipment and instruments according to the manufacturer's manual and/or applicable SOP. This will ensure that the equipment/instruments are working properly before they are used in the field.

Prior to sampling, the monitoring instruments must be calibrated and the calibration documented. The instruments are calibrated using U.S Environmental Protection Agency Region 1 *Calibration of Field Instruments (temperature, pH, dissolved oxygen, conductivity/specific conductance, oxidation/reduction [ORP], and turbidity),* March 23, 2017, or latest version or from one of the methods listed in 40CFR136, 40CFR141 and SW-846.

The instruments shall be calibrated at the beginning of each day. If the field measurement falls outside the calibration range, the instrument must be re-calibrated so that all measurements fall within the calibration range. At the end of each day, a calibration check is performed to verify that instruments remained in calibration throughout the day. This check is performed while the instrument is in measurement mode, not calibration mode. If the field instruments are being used to monitor the natural attenuation parameters, then a calibration check at mid-day is highly recommended to ensure that the instruments did not drift out of calibration. Note: during the day if the instrument reads zero or a negative number for dissolved oxygen, pH, specific conductance, or turbidity (negative value only), this indicates that the instrument drifted out of calibration or the instrument is malfunctioning. If this situation occurs the data from this instrument will need to be qualified or rejected.

9.0 PRELIMINARY SITE ACTIVITIES (as applicable)

Check the well for security (damage, evidence of tampering, missing lock, etc.) and record pertinent observations (include photograph as warranted).

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If needed, lay out a sheet of clean polyethylene for monitoring and sampling equipment, unless equipment is elevated above the ground (e.g., on a table, etc.).

Remove well cap and if appropriate measure VOCs at the rim of the well with a PID or FID instrument and record reading in field logbook or on the well purge form.

If the well casing does not have an established reference point (usually a V-cut or indelible mark in the well casing), make one. Describe its location and record the date of the mark in the logbook (consider a photographic record as well). All water level measurements must be recorded relative to this reference point (and the altitude of this point should be determined using techniques that are appropriate to site's DQOs.

If water-table or potentiometric surface map(s) are to be constructed for the sampling event, perform synoptic water level measurement round (in the shortest possible time) before any purging and sampling activities begin. If possible, measure water level depth (to 0.01 ft.) and total well depth (to 0.1 ft.) the day before sampling begins, in order to allow for re-settlement of any particulates in the water column. This is especially important for those wells that have not been recently sampled because sediment buildup in the well may require the well to be redeveloped. If measurement of total well depth is not made the day before, it should be measured after sampling of the well is complete. All measurements must be taken from the established referenced point. Care should be taken to minimize water column disturbance.

Check newly constructed wells for the presence of LNAPLs or DNAPLs before the initial sampling round. If none are encountered, subsequent check measurements with an interface probe may not be necessary unless analytical data or field analysis signal a worsening situation. This SOP cannot be used in the presence of LNAPLs or DNAPLs. If NAPLs are present, the project team must decide upon an alternate sampling method. All project modifications must be approved and documented prior to implementation.

If available check intake depth and drawdown information from previous sampling event(s) for each well. Duplicate, to the extent practicable, the intake depth and extraction rate (use final pump dial setting information) from previous event(s). If changes are made in the intake depth or extraction rate(s) used during previous sampling event(s), for either portable or dedicated extraction devices, record new values, and explain reasons for the changes in the field logbook.

10.0 PURGING AND SAMPLING PROCEDURE

Purging and sampling wells in order of increasing chemical concentrations (known or anticipated) are preferred.

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The use of dedicated pumps is recommended to minimize artificial mobilization and entrainment of particulates each time the well is sampled. Note that the use of dedicated sampling equipment can also significantly reduce the time needed to complete each sampling event, will promote consistency in the sampling, and may reduce sampling bias by having the pump's intake at a constant depth.

A. Initial Water Level

Measure the water level in the well before installing the pump if a non-dedicated pump is being used. The initial water level is recorded on the purge form or in the field logbook.

B. Install Pump

Lower pump, safety cable, tubing and electrical lines slowly (to minimize disturbance) into the well to the appropriate depth (may not be the mid-point of the screen/open interval). The Sampling and Analysis Plan/Quality Assurance Project Plan should specify the sampling depth (used previously), or provide criteria for selection of intake depth for each new well. If possible keep the pump intake at least two feet above the bottom of the well, to minimize mobilization of particulates present in the bottom of the well.

Pump tubing lengths, above the top of well casing should be kept as short as possible to minimize heating the groundwater in the tubing by exposure to sun light and ambient air temperatures. Heating may cause the groundwater to degas, which is unacceptable for the collection of samples for VOC and dissolved gases analyses.

C. Measure Water Level

Before starting pump, measure water level. Install recording pressure transducer, if used to track drawdowns, to initialize starting condition.

D. Purge Well

From the time the pump starts purging and until the time the samples are collected, the purged water is discharged into a graduated bucket to determine the total volume of groundwater purged. This information is recorded on the purge form or in the field logbook.

Start the pump at low speed and slowly increase the speed until discharge occurs. Check water level. Check equipment for water leaks and if present fix or replace the affected equipment. Try to match pumping rate used during previous sampling event(s). Otherwise, adjust pump speed until there is little or no water level drawdown. If the

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minimal drawdown that can be achieved exceeds 0.3 feet, but remains stable, continue purging.

Monitor and record the water level and pumping rate every five minutes (or as appropriate) during purging. Record any pumping rate adjustments (both time and flow rate). Pumping rates should, as needed, be reduced to the minimum capabilities of the pump to ensure stabilization of the water level. Adjustments are best made in the first fifteen minutes of pumping in order to help minimize purging time. During pump start-up, drawdown may exceed the 0.3 feet target and then "recover" somewhat as pump flow adjustments are made. Purge volume calculations should utilize stabilized drawdown value, not the initial drawdown. If the initial water level is above the top of the screen do not allow the water level to fall into the well screen. The final purge volume must be greater than the stabilized drawdown volume plus the pump's tubing volume. If the drawdown has exceeded 0.3 feet and stabilizes, calculate the volume of water between the initial water level and the stabilized water level. Add the volume of the water which occupies the pump's tubing to this calculation. This combined volume of water needs to be purged from the well after the water level has stabilized before samples are collected.

Avoid the use of constriction devices on the tubing to decrease the flow rate because the constrictor will cause a pressure difference in the water column. This will cause the groundwater to degas and result in a loss of VOCs and dissolved gasses in the groundwater samples.

Note: the flow rate used to achieve a stable pumping level should remain constant while monitoring the indicator parameters for stabilization and while collecting the samples.

Wells with low recharge rates may require the use of special pumps capable of attaining very low pumping rates (e.g., bladder, peristaltic), and/or the use of dedicated equipment. For new monitoring wells, or wells where the following situation has not occurred before, if the recovery rate to the well is less than 50 mL/min., or the well is being essentially dewatered during purging, the well should be sampled as soon as the water level has recovered sufficiently to collect the volume needed for all anticipated samples. The project manager or field team leader will need to make the decision when samples should be collected, how the sample is to be collected, and the reasons recorded on the purge form or in the field logbook. A water level measurement needs to be performed and recorded before samples are collected. If the project manager decides to collect the samples using the pump, it is best during this recovery period that the pump intake tubing not be removed, since this will aggravate any turbidity problems. Samples in this specific situation may be collected without stabilization of indicator field parameters. Note that field conditions and efforts to overcome problematic situations must be recorded in order to support field decisions to deviate from normal procedures described in this SOP. If this type of problematic situation persists in a well, then water sample collection should be

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changed to a passive or no-purge method, if consistent with the site's DQOs, or have a new well installed.

E. Monitor Indicator Field Parameters

After the water level has stabilized, connect the "T" connector with a valve and the flow-through-cell to monitor the indicator field parameters. If excessive turbidity is anticipated or encountered with the pump startup, the well may be purged for a while without connecting up the flow-through-cell, in order to minimize particulate buildup in the cell (This is a judgment call made by the sampler). Water level drawdown measurements should be made as usual. If possible, the pump may be installed the day before purging to allow particulates that were disturbed during pump insertion to settle.

During well purging, monitor indicator field parameters (turbidity, temperature, specific conductance, pH, ORP, DO) at a frequency of five minute intervals or greater. The pump's flow rate must be able to "turn over" at least one flow-through-cell volume between measurements (for a 250 mL flow-through-cell with a flow rate of 50 mLs/min., the monitoring frequency would be every five minutes; for a 500 mL flow-through-cell it would be every ten minutes). If the cell volume cannot be replaced in the five minute interval, then the time between measurements must be increased accordingly. Note: during the early phase of purging, emphasis should be put on minimizing and stabilizing pumping stress, and recording those adjustments followed by stabilization of indicator parameters. Purging is considered complete and sampling may begin when all the above indicator field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings are within the following limits:

Turbidity (10% for values greater than 5 NTU; if three Turbidity values are less than 5 NTU, consider the values as stabilized),
Dissolved Oxygen (10% for values greater than 0.5 mg/L, if three Dissolved Oxygen values are less than 0.5 mg/L, consider the values as stabilized),
Specific Conductance (3%),
Temperature (3%),
pH (± 0.1 unit),
Oxidation/Reduction Potential (±10 millivolts).

All measurements, except turbidity, must be obtained using a flow-through-cell. Samples for turbidity measurements are obtained before water enters the flow-through-cell. Transparent flow-through-cells are preferred, because they allow field personnel to watch for particulate build-up within the cell. This build-up may affect indicator field parameter values measured within the cell. If the cell needs to be cleaned during purging operations, continue pumping and disconnect cell for cleaning, then reconnect after cleaning and

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continue monitoring activities. Record start and stop times and give a brief description of cleaning activities.

The flow-through-cell must be designed in a way that prevents gas bubble entrapment in the cell. Placing the flow-through-cell at a 45 degree angle with the port facing upward can help remove bubbles from the flow-through-cell (see Appendix B Low-Flow Setup Diagram). Throughout the measurement process, the flow-through-cell must remain free of any gas bubbles. Otherwise, the monitoring probes may act erratically. When the pump is turned off or cycling on/off (when using a bladder pump), water in the cell must not drain out. Monitoring probes must remain submerged in water at all times.

F. Collect Water Samples

When samples are collected for laboratory analyses, the pump's tubing is disconnected from the "T" connector with a valve and the flow-through-cell. The samples are collected directly from the pump's tubing. Samples must not be collected from the flow-through-cell or from the "T" connector with a valve.

VOC samples are normally collected first and directly into pre-preserved sample containers. However, this may not be the case for all sampling locations; the SAP/QAPP should list the order in which the samples are to be collected based on the project's objective(s). Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

If the pump's flow rate is too high to collect the VOC/dissolved gases samples, collect the other samples first. Lower the pump's flow rate to a reasonable rate and collect the VOC/dissolved gases samples and record the new flow rate.

During purging and sampling, the centrifugal/peristaltic pump tubing must remain filled with water to avoid aeration of the groundwater. It is recommended that 1/4 inch or 3/8 inch (inside diameter) tubing be used to help ensure that the sample tubing remains water filled. If the pump tubing is not completely filled to the sampling point, use the following procedure to collect samples: collect non-VOC/dissolved gases samples first, then increase flow rate slightly until the water completely fills the tubing, collect the VOC/dissolved gases samples, and record new drawdown depth and flow rate.

For bladder pumps that will be used to collect VOC or dissolved gas samples, it is recommended that the pump be set to deliver long pulses of water so that one pulse will fill a 40 mL VOC vial.

Use pre-preserved sample containers or add preservative, as required by analytical methods, to the samples immediately after they are collected. Check the analytical methods

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(e.g. EPA SW-846, 40 CFR 136, water supply, etc.) for additional information on preservation.

If determination of filtered metal concentrations is a sampling objective, collect filtered water samples using the same low flow procedures. The use of an in-line filter (transparent housing preferred) is required, and the filter size (0.45 μm is commonly used) should be based on the sampling objective. Pre-rinse the filter with groundwater prior to sample collection. Make sure the filter is free of air bubbles before samples are collected. Preserve the filtered water sample immediately. Note: filtered water samples are not an acceptable substitute for unfiltered samples when the monitoring objective is to obtain chemical concentrations of total mobile contaminants in groundwater for human health or ecological risk calculations.

Label each sample as collected. Samples requiring cooling will be placed into a cooler with ice or refrigerant for delivery to the laboratory. Metal samples after acidification to a pH less than 2 do not need to be cooled.

G. Post Sampling Activities

If a recording pressure transducer is used to track drawdown, re-measure water level with tape.

After collection of samples, the pump tubing may be dedicated to the well for re-sampling (by hanging the tubing inside the well), decontaminated, or properly discarded.

Before securing the well, measure and record the well depth (to 0.1 ft.), if not measured the day before purging began. Note: measurement of total well depth annually is usually sufficient after the initial low stress sampling event. However, a greater frequency may be needed if the well has a “silting” problem or if confirmation of well identity is needed.

Secure the well.

11.0 DECONTAMINATION

Decontaminate sampling equipment prior to use in the first well, and then following sampling of each subsequent well. Pumps should not be removed between purging and sampling operations. The pump, tubing, support cable and electrical wires which were in contact with the well should be decontaminated by one of the procedures listed below.

The use of dedicated pumps and tubing will reduce the amount of time spent on decontamination of the equipment. If dedicated pumps and tubing are used, only the initial sampling event will require decontamination of the pump and tubing.

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Note if the previous equipment blank data showed that contaminant(s) were present after using the below procedure or the one described in the SAP/QAPP, a more vigorous procedure may be needed.

Procedure 1

Decontaminating solutions can be pumped from either buckets or short PVC casing sections through the pump and tubing. The pump may be disassembled and flushed with the decontaminating solutions. It is recommended that detergent and alcohol be used sparingly in the decontamination process and water flushing steps be extended to ensure that any sediment trapped in the pump is removed. The pump exterior and electrical wires must be rinsed with the decontaminating solutions, as well. The procedure is as follows:

Flush the equipment/pump with potable water.

Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.

Flush with potable or distilled/deionized water to remove all of the detergent solution. If the water is recycled, the water must be changed periodically.

Optional - flush with isopropyl alcohol (pesticide grade; must be free of ketones {e.g., acetone}) or with methanol. This step may be required if the well is highly contaminated or if the equipment blank data from the previous sampling event show that the level of contaminants is significant.

Flush with distilled/deionized water. This step must remove all traces of alcohol (if used) from the equipment. The final water rinse must not be recycled.

Procedure 2

Steam clean the outside of the submersible pump.

Pump hot potable water from the steam cleaner through the inside of the pump. This can be accomplished by placing the pump inside a three or four inch diameter PVC pipe with end cap. Hot water from the steam cleaner jet will be directed inside the PVC pipe and the pump exterior will be cleaned. The hot water from the steam cleaner will then be pumped from the PVC pipe through the pump and collected into another container. Note: additives or solutions should not be added to the steam cleaner.

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Pump non-phosphate detergent solution through the inside of the pump. If the solution is recycled, the solution must be changed periodically.

Pump potable water through the inside of the pump to remove all of the detergent solution. If the solution is recycled, the solution must be changed periodically.

Pump distilled/deionized water through the pump. The final water rinse must not be recycled.

12.0 FIELD QUALITY CONTROL

Quality control samples are required to verify that the sample collection and handling process has not compromised the quality of the groundwater samples. All field quality control samples must be prepared the same as regular investigation samples with regard to sample volume, containers, and preservation. Quality control samples include field duplicates, equipment blanks, matrix spike/matrix spike duplicates, trip blanks (VOCs), and temperature blanks.

13.0 FIELD LOGBOOK

A field log shall be kept to document all groundwater field monitoring activities (see Appendix C, example table), and record the following for each well:

Site name, municipality, state.

Well identifier, latitude-longitude or state grid coordinates.

Measuring point description (e.g., north side of PVC pipe).

Well depth, and measurement technique.

Well screen length.

Pump depth.

Static water level depth, date, time and measurement technique.

Presence and thickness of immiscible liquid (NAPL) layers and detection method.

Pumping rate, drawdown, indicator parameters values, calculated or measured total volume pumped, and clock time of each set of measurements.

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Type of tubing used and its length.

Type of pump used.

Clock time of start and end of purging and sampling activity.

Types of sample bottles used and sample identification numbers.

Preservatives used.

Parameters requested for analyses.

Field observations during sampling event.

Name of sample collector(s).

Weather conditions, including approximate ambient air temperature.

QA/QC data for field instruments.

Any problems encountered should be highlighted.

Description of all sampling/monitoring equipment used, including trade names, model number, instrument identification number, diameters, material composition, etc.

14.0 DATA REPORT

Data reports are to include laboratory analytical results, QA/QC information, field indicator parameters measured during purging, field instrument calibration information, and whatever other field logbook information is needed to allow for a full evaluation of data usability.

Note: the use of trade, product, or firm names in this sampling procedure is for descriptive purposes only and does not constitute endorsement by the U.S. EPA.

15.0 REFERENCES

Cohen, R.M. and J.W. Mercer, 1993, *DNAPL Site Evaluation*; C.K. Smoley (CRC Press), Boca Raton, Florida.

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Vroblesky, Don A., Clifton C. Casey, and Mark A. Lowery, Summer 2007, Influence of Dissolved Oxygen Convection on Well Sampling, *Ground Water Monitoring & Remediation* 27, no. 3: 49-58.

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APPENDIX A

PERISTALTIC PUMPS

Before selecting a peristaltic pump to collect groundwater samples for VOCs and/or dissolved gases, (e.g., methane, carbon dioxide, etc.) consideration should be given to the following:

- The decision of whether or not to use a peristaltic pump is dependent on the intended use of the data.
- If the additional sampling error that may be introduced by this device is NOT of concern for the VOC/dissolved gases data's intended use, then this device may be acceptable.
- If minor differences in the groundwater concentrations could affect the decision, such as to continue or terminate groundwater cleanup or whether the cleanup goals have been reached, then this device should NOT be used for VOC/dissolved gases sampling. In these cases, centrifugal or bladder pumps are a better choice for more accurate results.

EPA and USGS have documented their concerns with the use of the peristaltic pumps to collect water sample in the below documents.

- "Suction Pumps are not recommended because they may cause degassing, pH modification, and loss of volatile compounds" *A Compendium of Superfund Field Operations Methods*, EPA/540/P-87/001, December 1987.
- "The agency does not recommend the use of peristaltic pumps to sample ground water particularly for volatile organic analytes" *RCRA Ground-Water Monitoring Draft Technical Guidance*, EPA Office of Solid Waste, November 1992.
- "The peristaltic pump is limited to shallow applications and can cause degassing resulting in alteration of pH, alkalinity, and volatiles loss", *Low-flow (Minimal drawdown) Ground-Water Sampling Procedures*, by Robert Puls & Michael Barcelona, April 1996, EPA/540/S-95/504.
- "Suction-lift pumps, such as peristaltic pumps, can operate at a very low pumping rate; however, using negative pressure to lift the sample can result in the loss of volatile analytes", USGS Book 9 Techniques of Water-Resources Investigation, Chapter A4. (Version 2.0, 9/2006).

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APPENDIX B

SUMMARY OF SAMPLING INSTRUCTIONS

These instructions are for using an adjustable rate, submersible pump or a peristaltic pump with the pump's intake placed at the midpoint of a 10 foot or less well screen or an open interval. The water level in the monitoring well is above the top of the well screen or open interval, the ambient temperature is above 32°F, and the equipment is not dedicated. Field instruments are already calibrated. The equipment is setup according to the diagram at the end of these instructions.

1. Review well installation information. Record well depth, length of screen or open interval, and depth to top of the well screen. Determine the pump's intake depth (e.g., mid-point of screen/open interval).

2. On the day of sampling, check security of the well casing, perform any safety checks needed for the site, lay out a sheet of polyethylene around the well (if necessary), and setup the equipment. If necessary a canopy or an equivalent item can be setup to shade the pump's tubing and flow-through-cell from the sun light to prevent the sun light from heating the groundwater.

3. Check well casing for a reference mark. If missing, make a reference mark. Measure the water level (initial) to 0.01 ft. and record this information.

4. Install the pump's intake to the appropriate depth (e.g., midpoint) of the well screen or open interval. Do not turn-on the pump at this time.

5. Measure water level and record this information.

6. Turn-on the pump and discharge the groundwater into a graduated waste bucket. Slowly increase the flow rate until the water level starts to drop. Reduce the flow rate slightly so the water level stabilizes. Record the pump's settings. Calculate the flow rate using a graduated container and a stop watch. Record the flow rate. Do not let the water level drop below the top of the well screen.

If the groundwater is highly turbid or discolored, continue to discharge the water into the bucket until the water clears (visual observation); this usually takes a few minutes. The turbid or discolored water is usually from the well-being disturbed during the pump installation. If the water does not clear, then you need to make a choice whether to continue purging the well (hoping that it will clear after a reasonable time) or continue to

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the next step. Note, it is sometimes helpful to install the pump the day before the sampling event so that the disturbed materials in the well can settle out.

If the water level drops to the top of the well screen during the purging of the well, stop purging the well, and do the following:

> Wait for the well to recharge to a sufficient volume so samples can be collected. This may take a while (pump may be removed from well, if turbidity is not a problem). The project manager will need to make the decision when samples should be collected and the reasons recorded in the site's log book. A water level measurement needs to be performed and recorded before samples are collected. When samples are being collected, the water level must not drop below the top of the screen or open interval. Collect the samples from the pump's tubing. Always collect the VOCs and dissolved gases samples first. Normally, the samples requiring a small volume are collected before the large volume samples are collected just in case there is not sufficient water in the well to fill all the sample containers. All samples must be collected, preserved, and stored according to the analytical method. Remove the pump from the well and decontaminate the sampling equipment.

If the water level has dropped 0.3 feet or less from the initial water level (water level measure before the pump was installed); proceed to Step 7. If the water level has dropped more than 0.3 feet, calculate the volume of water between the initial water level and the stabilized water level. Add the volume of the water which occupies the pump's tubing to this calculation. This combined volume of water needs to be purged from the well after the water level has stabilized before samples are be collected.

7. Attach the pump's tubing to the "T" connector with a valve (or a three-way stop cock). The pump's tubing from the well casing to the "T" connector must be as short as possible to prevent the groundwater in the tubing from heating up from the sun light or from the ambient air. Attach a short piece of tubing to the other end of the end of the "T" connector to serve as a sampling port for the turbidity samples. Attach the remaining end of the "T" connector to a short piece of tubing and connect the tubing to the flow-through-cell bottom port. To the top port, attach a small piece of tubing to direct the water into a calibrated waste bucket. Fill the cell with the groundwater and remove all gas bubbles from the cell. Position the flow-through-cell in such a way that if gas bubbles enter the cell they can easily exit the cell. If the ports are on the same side of the cell and the cell is cylindrical shape, the cell can be placed at a 45-degree angle with the ports facing upwards; this position should keep any gas bubbles entering the cell away from the monitoring probes and allow the gas bubbles to exit the cell easily (see Low-Flow Setup Diagram). Note:

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make sure there are no gas bubbles caught in the probes' protective guard; you may need to shake the cell to remove these bubbles.

8. Turn-on the monitoring probes and turbidity meter.

9. Record the temperature, pH, dissolved oxygen, specific conductance, and oxidation/reduction potential measurements. Open the valve on the "T" connector to collect a sample for the turbidity measurement, close the valve, do the measurement, and record this measurement. Calculate the pump's flow rate from the water exiting the flow-through-cell using a graduated container and a stop watch, and record the measurement. Measure and record the water level. Check flow-through-cell for gas bubbles and sediment; if present, remove them.

10. Repeat Step 9 every 5 minutes or as appropriate until monitoring parameters stabilized. Note: at least one flow-through-cell volume must be exchanged between readings. If not, the time interval between readings will need to be increased. Stabilization is achieved when three consecutive measurements are within the following limits:

Turbidity (10% for values greater than 5 NTUs; if three Turbidity values are less than 5 NTUs, consider the values as stabilized),
Dissolved Oxygen (10% for values greater than 0.5 mg/L, if three Dissolved Oxygen values are less than 0.5 mg/L, consider the values as stabilized),
Specific Conductance (3%),
Temperature (3%),
pH (± 0.1 unit),
Oxidation/Reduction Potential (±10 millivolts).

If these stabilization requirements do not stabilize in a reasonable time, the probes may have been coated from the materials in the groundwater, from a buildup of sediment in the flow-through-cell, or a gas bubble is lodged in the probe. The cell and the probes will need to be cleaned. Turn-off the probes (not the pump), disconnect the cell from the "T" connector and continue to purge the well. Disassemble the cell, remove the sediment, and clean the probes according to the manufacturer's instructions. Reassemble the cell and connect the cell to the "T" connector. Remove all gas bubbles from the cell, turn-on the probes, and continue the measurements. Record the time the cell was cleaned.

11. When it is time to collect the groundwater samples, turn-off the monitoring probes, and disconnect the pump's tubing from the "T" connector. If you are using a centrifugal or peristaltic pump check the pump's tubing to determine if the tubing is completely filled with water (no air space).

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All samples must be collected and preserved according to the analytical method. VOCs and dissolved gases samples are normally collected first and directly into pre-preserved sample containers. However, this may not be the case for all sampling locations; the SAP/QAPP should list the order in which the samples are to be collected based on the project's objective(s). Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

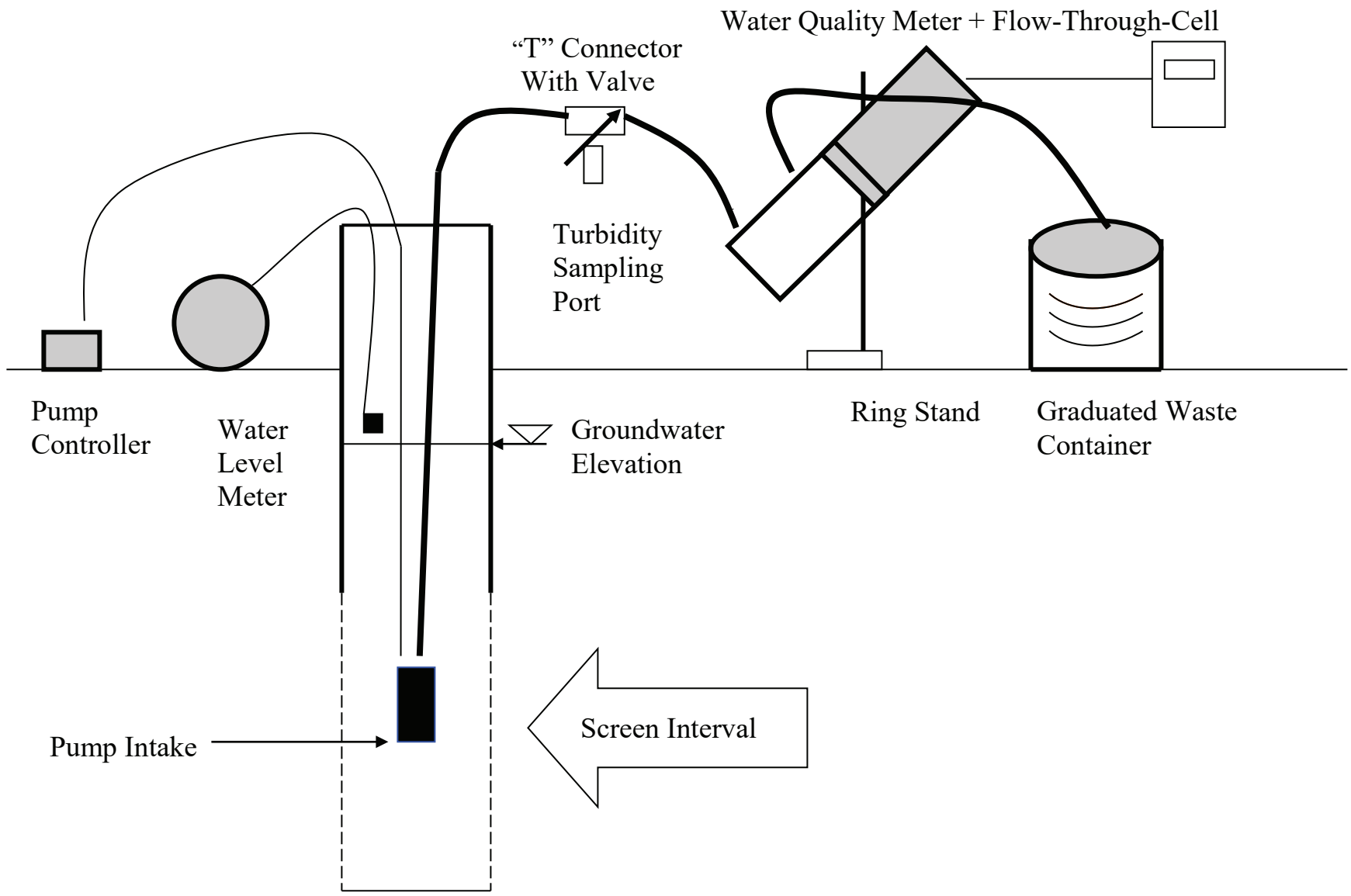
If the pump's tubing is not completely filled with water and the samples are being collected for VOCs and/or dissolved gases analyses using a centrifugal or peristaltic pump, do the following:

> All samples must be collected and preserved according to the analytical method. The VOCs and the dissolved gases (e.g., methane, ethane, ethene, and carbon dioxide) samples are collected last. When it becomes time to collect these samples increase the pump's flow rate until the tubing is completely filled. Collect the samples and record the new flow rate.

12. Store the samples according to the analytical method.

13. Record the total purged volume (graduated waste bucket). Remove the pump from the well and decontaminate the sampling equipment.

Low-Flow Setup Diagram



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APPENDIX C

EXAMPLE (Minimum Requirements)

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)_____ Depth to _____/_____ of screen
Well Number_____ Date_____ (below MP) top bottom
Field Personnel_____ Pump Intake at (ft. below MP)_____
Sampling Organization_____ Purging Device; (pump type)_____
Identify MP_____ Total Volume Purged _____

Clock Time 24 HR	Water Depth below MP ft	Pump Dial[1]	Purge Rate ml/min	Cum. Volume Purged liters	Temp. "C	Spec. Cond.[2] µS/cm	pH	ORP[3] mv	DO mg/L	Tur-bidity NTU	Comments
Stabilization Criteria					3%	3%	±0.1	±10 mv	10%	10%	

1. Pump dial setting (for example: hertz, cycles/min, etc).
2. µSiemens per cm(same as µmhos/cm)at 25°C.
3. Oxidation reduction potential (ORP)

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APPENDIX J

Groundwater Monitoring Plan Addendum #1

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GOLDER
MEMBER OF WSP

WORK PLAN

Groundwater Monitoring Plan Addendum #1

Marion Power Plant
Former Emery Pond
Southern Illinois Power Cooperative

Submitted to:

Southern Illinois Power Cooperative

Submitted by:

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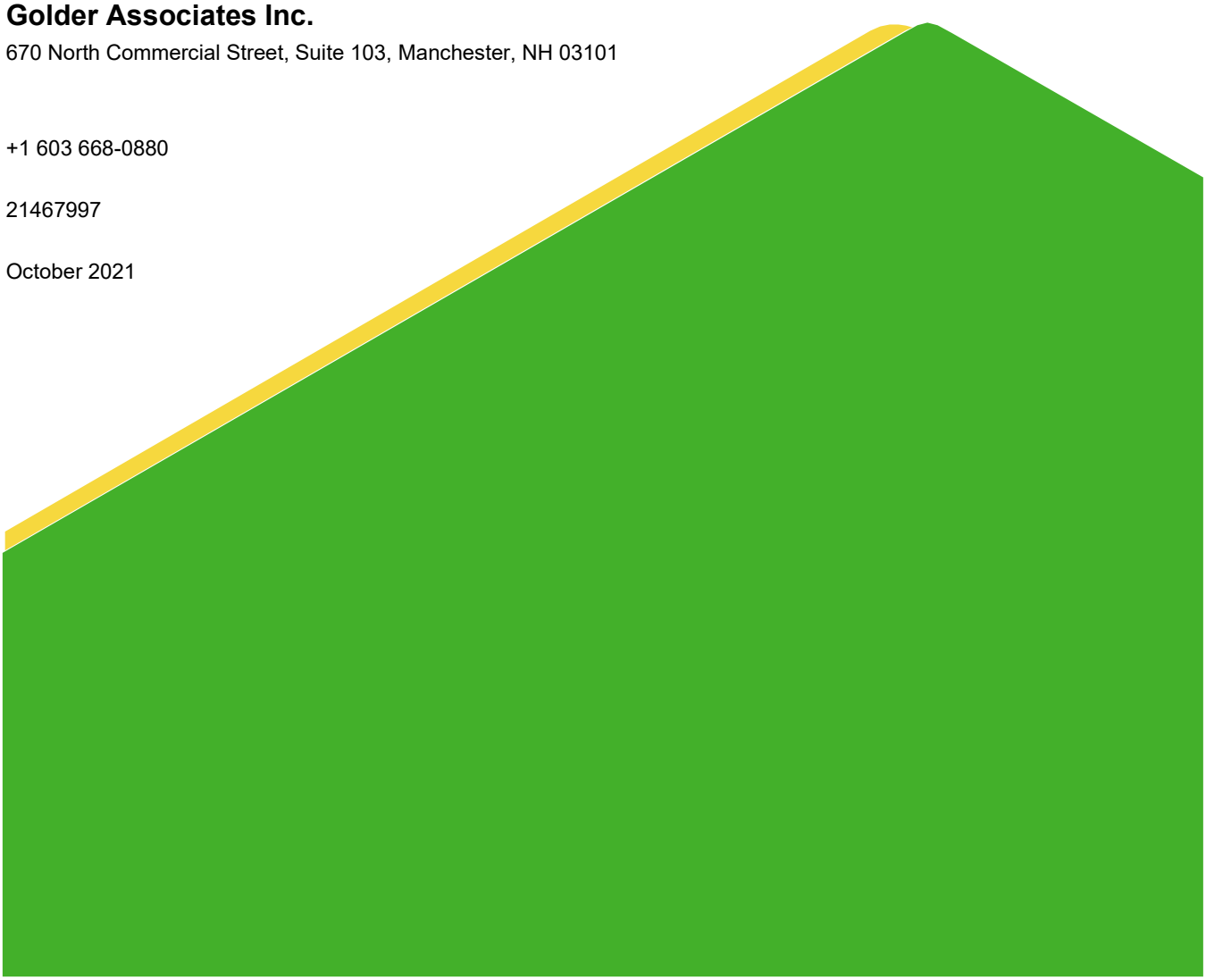
October 2021



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APPENDICES

Appendix A Standard Operating Procedures

ACRONYMS

ASD	Alternative Source Demonstration
CCR	Coal Combustion Residual
CFR	Code of Federal Regulations
COC	Chain of Custody
CSM	Conceptual Site Models
DOE	Department of Energy
DQO	Data Quality Objectives
DQR	Data Quality Review
FPR	False Positive Rate
GMP	Groundwater Monitoring Plan
GMZ	Groundwater Management Zone
GPS	Groundwater Protection Standards
IAC	Illinois Administrative Code
IDPH	Illinois Department of Public Health
IEPA	Illinois Environmental Protection Agency
LCL	Lower Confidence Limit
LOD	Limit of Detection
LPL	Lower Prediction Limit
LTL	Lower Tolerance Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MCL	Maximum Contaminant Level
MNA	Monitored Natural Attenuation
NBS	National Bureau of Standards
ND	Not Detected
NTU	Nephelometric Turbidity Unit
NEIC	National Enforcement Investigation Center

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NELAC	National Environmental Laboratory Accreditation Conference
PARCC	Precision, Accuracy, Representativeness, Completeness, Comparability
ORP	Oxidation-Reduction Potential
PQL	Practical Quantitation Limit
PVC	Polyvinyl Chloride
QA	Quality Assurance
QAM	Quality Assurance Manual
QC	Quality Control
SIPC	Southern Illinois Power Cooperative
SSD	Statistically Significant Decrease
SSI	Statistically Significant Increase
SOP	Standard Operating Procedure
TDS	Total Dissolved Solids
UCL	Upper Confidence Limit
UPL	Upper Prediction Limit
USEPA	United States Environmental Protection Agency
UTL	Upper Tolerance Limit

1.0 INTRODUCTION

Addendum #1 is the first to the Groundwater Monitoring Plan (GMP) revised March 24, 2021 (Hanson, 2021). The GMP and Addendum #1 were prepared for Southern Illinois Power Cooperative's (SIPC's) Coal Combustion Residual (CCR) surface impoundment, former Emery Pond. The former Emery Pond is subject to the 40 Code of Federal Regulations (CFR) Part 257 (until the United States Environmental Protection Agency (USEPA) approves the Illinois CCR program to operate in lieu of Part 257), and the corresponding Illinois Environmental Protection Agency (IEPA) 35 Illinois Administrative Code (IAC) Part 845. SIPC completed an IEPA approved closure by removal for Emery Pond prior to July 30, 2021. As such, the former Emery Pond is currently in post-closure Corrective Action Monitoring. Together, the GMP and Addendum #1 address the construction, operation, maintenance, and sampling of, and the management and evaluation of field and analytical information from, the groundwater monitoring well network for the former Emery Pond.

The GMP and Addendum #1 provide SIPC technical and administrative information relevant to the requirements of 40 CFR §257.91–257.98 and 35 IAC §845.600-845.680 which state that the owner or operator (i.e., SIPC) of an existing CCR surface impoundment will install, operate, and maintain a groundwater monitoring system; develop and implement a sampling and analysis program; and perform data evaluation, reporting, and notifications. The GMP and Addendum #1 address the methods and practices of constructing and operating the CCR groundwater monitoring program and serve SIPC and contractor personnel as the procedures documents for: a) groundwater monitoring well standard specifications, development, and operation; b) collection, quality assurance/quality control, transportation, and laboratory analysis of groundwater samples; and c) receipt, evaluation, including statistical analysis, validation, and management of data for the former Emery Pond. To address both quality and consistency issues that may arise during monitoring well installation, maintenance and sampling, the groundwater monitoring program makes extensive use of detailed Standard Operating Procedures (SOPs) attached in Appendix A.

This Addendum #1 also provides the requisite information upon which the Illinois qualified professional engineer is relying to certify the appropriateness of the statistical method chosen for evaluating groundwater monitoring data pursuant to 40 CFR §257.93(f)(6) and 35 IAC 845.640(f)(2).

Addendum #1 and the current GMP revised March 24, 2021 (Hanson, 2021) should be consulted and used in combination with one another.

2.0 SYSTEM DESIGN, INSTALLATION, OPERATION AND MAINTENANCE

Based upon the Conceptual Site Model (CSM), supporting hydrogeologic information, and CCR groundwater monitoring regulatory requirements, the groundwater monitoring system has been designed and installed pursuant to 40 CFR §257.91(a), (b), and (c). Supporting details including the hydrogeologic data considered is included in the GMP (Hanson, 2021).

2.1 Monitoring Approach and Well Placement

The groundwater monitoring network was designed to monitor the quality of background groundwater that has not been affected by leakage from a regulated CCR unit and the quality of groundwater passing the waste boundary(ies) of the regulated CCR unit. Based on the CSM and other Site-specific information evaluated during design of the monitoring system, the monitoring well network consists of one background well (EBG) and four downgradient monitoring wells installed around the perimeter of the former Emery Pond. Additionally, as described in the GMP (Hanson, 2021), three additional monitoring well were installed to evaluate groundwater at

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the limits of the groundwater management zone (GMZ). The groundwater monitoring approach as designed and implemented provides adequate, representative coverage for the former Emery Pond and is protective of human health and the environment. The monitoring well network is displayed on Figure 1 of the GMP (Hanson, 2021) and a summary of the well construction details is provided in Table 1.

2.2 Monitoring Well Construction, Development, and Decommissioning

The current groundwater monitoring wells for the Site were installed by Holcomb Foundation Engineering Inc. in February 2017 under the direction of AECOM (2018) and by Hanson Engineering in October 2021. Drilling and installation of all monitoring wells at the Site have been in accordance with industry-accepted practices. The current groundwater monitoring wells are, and any future groundwater monitoring wells if applicable will be, constructed in accordance with:

1) Illinois Department of Public Health (IDPH) standards as cited in 77 IAC §920.170; and

2) Chapter 6- Monitoring Well Design and Construction, RCRA Groundwater Monitoring Technical Enforcement Guidance Document, United States Environmental Protection Agency, November 1992.

Monitoring well material specifications include two-inch diameter polyvinyl chloride (PVC) riser and screens. All monitoring wells are completed with a locking protective standpipe and a concrete apron for access and surface protection. A typical as-built diagram for groundwater monitoring well construction is provided in Figure 2 of the GMP (Hanson, 2021).

Monitoring wells will be periodically inspected, their condition assessed at each sampling event, and they will be maintained such that they perform to design specifications throughout the life of the monitoring program. New and existing wells will be surveyed by a licensed surveyor to within ±0.05 foot on the horizontal plane and ±0.01 foot vertically. New wells will be surveyed upon installation and existing wells will be surveyed as needed.

Newly constructed wells will be developed to remove particulates that are typically present in the well casing, filter pack, and adjacent aquifer matrix due to construction activities. Development of new monitoring wells will be performed no sooner than 24 hours after well construction. Wells will be developed using an electric submersible pump (whale pump) that can also serve as a surge block (1.82 inches in diameter x 27 inches long).

Wells will be developed using the pump as a surge block and continuous cycles of over-pumping and recovery until relatively clear water is produced, and field parameters (pH, specific conductance, oxidation-reduction potential (ORP), temperature, and turbidity) stabilize indicating good hydraulic communication with the surrounding water bearing zone. Measurements will be collected approximately every five minutes until the parameters stabilize based on three consecutive readings within the following ranges:

- Temperature: +/- 10% - Degrees Celsius
- pH: +/- 0.1 - Standard Units
- Conductivity: +/- 3% - milliSiemens
- ORP: +/- 10 mV - millivolt
- DO: +/- 10% (or +/- 0.1 mg/L if less than 1.0 mg/L) – milligrams per liter
- Turbidity: Less than 5 Nephelometric Turbidity Unit (NTU)

Samples withdrawn from the Facility's monitoring wells should be particulate-free; therefore, wells may require redevelopment from time to time based upon observed turbidity levels during sampling activities. If redevelopment of a monitoring well is required, it will be performed and documented in a manner similar to that used for a new well. The standard well development procedures are provided in Appendix A.

If a CCR monitoring well becomes unusable or deemed no longer required during the life of the groundwater monitoring program, SIPC will decommission the monitoring well. Documentation describing the decommissioning procedures will be included in the Facility operating record. Decommissioned monitoring wells will also be identified in the Annual Monitoring and Corrective Action Report required by 40 CFR §257.90(e) and 35 IAC §845.550(a)(3).

3.0 GROUNDWATER SAMPLING AND ANALYSIS

In accordance with 40 CFR §257.93 and 35 IAC §845.640-650, SIPC has developed and implemented a groundwater monitoring program that includes sampling and analysis procedures that provide an accurate representation of water quality at background and downgradient monitoring wells. The following sections include procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, chain of custody control, and quality assurance and quality control.

3.1 Sample Goal, Personnel, Approach, and Controls

SIPC's overall goals for the CCR groundwater monitoring program are the collection of representative samples that a) achieve data quality objectives, b) document the effectiveness of the selected groundwater remedy and c) demonstrate compliance with the groundwater protection standards. The collection of samples by qualified, consistent field staff familiar with both program requirements and the specifics of the monitoring network represent a key component and serve as a quality control function that allows the achievement of program goals.

Sampling is being performed by a dedicated contractor team of experienced individuals in accordance with generally accepted practices within the industry and the SOPs discussed herein and provided in Appendix A. The following sections, which are consistent with USEPA low-flow sampling guidance, the requirements of 40 CFR 257, and the requirements of 35 IAC 845, outline the program sample collection procedures.

3.2 Sampling Order

All background and downgradient wells are equipped with dedicated bladder pumps; therefore, the use of dedicated pumps, combined with specific field techniques that address sample collection procedures, minimize the likelihood of cross-contamination and associated effects on samples. Accordingly, the routine sampling order typically follows a sequence based on consideration of field conditions (e.g., access, individual well recharge rates at the time of sampling, potential or actual weather impacts), not necessarily a simple default approach of sampling background locations prior to any downgradient locations.

3.3 Monitoring Well Condition

In accordance with 40 CFR §257.91(e)(2) and 35 IAC §845.630(e)(2), the monitoring wells are being operated and maintained so they perform to their design specifications throughout the life of the monitoring program. During each sampling event, all wells subject to monitoring, are located and their identity confirmed. Prior to performing any water level measurements, purging, or sampling, each monitoring well is visually inspected to assess its integrity. The condition of each monitoring well, including protective bollards, protective steel casings or road boxes, operation and security of locks, concrete pads, PVC casing, and inner cap is assessed for any

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physical damage or other breach that may indicate compromised integrity. The results of the well inspections are documented in the comments section of the field sampling forms and/or in field notebooks. In addition, any indications of significant damage, tampering, etc. are promptly reported to SIPC site personnel for appropriate follow-up action.

3.4 Equipment Calibration

Equipment used to record field water quality parameters is calibrated each day prior to use. Calibrations are performed following manufacturers' recommendations and, at a minimum, re-checked at the end of each day. Calibration solutions for standardization materials are freshly prepared or taken from non-expired stock. In the absence of manufacturer specifications or regulatory guidance, field equipment is calibrated to within +/- 10 percent of the standard (or 0.1 standard units for pH meters), if possible. Equipment that fails calibration may not be used until repaired and calibrated or replaced. Calibration data are recorded in the field and records are maintained as part of the permanent project file. A sample field Instrument Calibration Form is included in Appendix A.

3.5 Water Level Gauging

To meet the requirements of 40 CFR §257.93(c) and 35 IAC §845.640(c), water levels are determined prior to groundwater purging/sampling. Additionally, monthly water levels are collected to meet the requirements of 35 IAC §845.650(b). Static water levels are measured in each monitoring well prior to purging using an electric meter accurate to 0.01 foot. Measurements are obtained from the surveyed measuring point on each well. To the extent feasible, these measurements are taken within a 24-hour period Facility-wide. Data are recorded on the Record of Water Level Readings form or Groundwater Sample Collection form, examples of which are included in Appendix A.

Prior to initial use and between wells, the portion of the water level indicator that comes in contact with the groundwater in the well is decontaminated to avoid cross-contamination between monitoring wells. In addition to decontaminating the downhole equipment, sampling personnel don new gloves between wells, and more frequently as needed, to minimize potential for cross-contamination.

3.6 Pre-sampling Well Purging

The monitoring wells are sampled following USEPA low-flow sampling protocols. Low-flow sampling is advantageous because it can greatly reduce the volume of water that must be purged from a well before representative samples can be collected, and typically provides for the collection of more representative samples than do other purge methods, as well as consistency in analytical results between sampling events. Low-flow sampling is accomplished using dedicated low-flow bladder pumps.

Purging is targeted at a rate equal to the well yield to avoid drawing stagnant well column water into the pump (i.e., between 100 and 300 milliliters per minute). During the well purge activities, the flow rate and the depth to groundwater is typically monitored on regular intervals (every 3 to 5 minutes) to verify that the purge activities are not removing stagnant water from the water column in the monitoring well. Stabilization of the water column is considered achieved when three consecutive water level measurements vary by 0.3 foot or less at a pumping rate of no more than 300 ml/min.

Depth to water and field water quality parameter measurements are made during purging on approximate 3- to 5-minute intervals. If a field meter equipped with a flow cell is used, the volume of the flow cell is purged between

field measurements. Stabilization is attained and purging deemed complete when three consecutive measurements of each field parameter vary within the following ranges:

- Temperature: +/- 10% - Degrees Celsius
- pH: +/- 0.1 - Standard Units
- Conductivity: +/- 3% - milliSiemens
- ORP: +/- 10 mV - millivolt
- DO: +/- 10% (or +/- 0.1 mg/L if less than 1.0 mg/L) – milligrams per liter
- Turbidity: Less than 5 Nephelometric Turbidity Unit (NTU)

If stabilization of the above field parameters is not achieved after purging for two hours, field personnel will proceed with sampling and note on the low-flow sampling field form which parameters were not successfully stabilized. All data gathered during monitoring well purging are recorded on a Groundwater Sample Collection form. Field personnel manage purge water generated during sampling activities in consultation with SIPC site personnel.

In the event that dedicated equipment malfunctions during a sampling event, non-dedicated equipment may be used to collect a groundwater sample, provided the pump and tubing is decontaminated prior to use in each well. The pump and associated discharge hoses will be decontaminated using a non-phosphate-based detergent and water mixture followed by a deionized water rinse to avoid cross-contamination between monitoring wells as provided in the SOPs provided in Appendix A.

3.7 Sample Collection

Once the water quality field measurement data indicate that purging activities have been successfully completed, required samples are collected directly from the discharge line on the dedicated, low-flow pump into laboratory-provided, pre-preserved sample containers selected for the required parameters or compatible parameters (e.g., all metals samples are collected in one bottle). Sample collection is performed at the same rate (or lower) than was used during the well purging process. Sample containers are kept closed until the time each set of sample containers is to be filled. In accordance with 40 CFR §257.93(i) and 35 IAC §845.640(i), groundwater samples collected as part of the monitoring program are not filtered prior to analysis. Groundwater samples are collected in the designated size and type of containers required for specific parameters. Sample containers are filled in such a manner as to prevent loss of preservatives due to spilling or overfilling. The parameter list sampled for is provided in Table 2 and the analytical methods and practical quantitation limits (PQLs) associated with these parameters are provided in Table 3. Planned sample containers, minimum volumes, chemical preservatives, and holding times for each analyte are provided in Table 4. These may change depending on laboratory requirements and will be verified by the field team prior to each sampling event.

3.8 Sample Preservation and Handling

Upon obtaining the groundwater samples, they are packed into insulated, ice-filled coolers that are kept closed unless contents are being removed or added. Sample preservation methods including chemical addition, refrigeration, and protection from light are used to retard biological action, retard hydrolysis, and reduce sorption effects. Samples are kept at no more than 6°C from collection to laboratory delivery. Samples are delivered directly to the laboratory or sent via overnight courier following chain-of-custody (COC) procedures.

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3.9 Chain-of-Custody Program

The COC program allows for tracing and documenting sample possession and handling from the time of field collection through laboratory analysis. The COC program includes sample labels, sample seals, field Groundwater Sample Collection forms, and the COC record. Each sample is assigned a unique sample identification number to be recorded on the sample label. Each sample identification number and description is recorded on the field Groundwater Sample Collection form and on the COC document. The COC SOP and sample COC form are provided in Appendix A.

3.9.1 Sample Labels

Sample labels sufficiently durable to remain legible when wet contain the following information, written with indelible ink:

- Site and sample identification number
- Monitoring well number or other location
- Date and time of collection
- Name of collector
- Parameters to be analyzed
- Preservative, if applicable

3.9.2 Sample Seal

The shipping container is sealed to prevent the samples from being disturbed during transport to the laboratory. A seal is placed across the front and back of each cooler containing samples when coolers are ready for shipment. All custody seals are signed and dated.

3.9.3 Field Forms

All field information is completely and accurately documented to become part of the final report for the groundwater monitoring event. Equipment calibration readings are included on field forms. Example field forms are included in Appendix A. The field forms document the following information:

- Identification of the monitoring well
- Sample identification number
- Field meter calibration information
- Static water level depth
- Purge volume
- Time monitoring well was purged
- Date and time of collection
- Parameters requested for analysis
- Preservative used

- Field water quality parameter measurements
- Water levels recorded during low-flow purge
- Field observations on sampling event
- Name of collector(s)
- Weather conditions including air temperature and precipitation

3.9.4 Chain-of-Custody Record

The COC record is required for tracking sample possession from time of collection to time of receipt at the laboratory. The National Enforcement Investigations Center (NEIC) of USEPA considers a sample to be in custody under any of the following conditions:

- It is in the individual's possession
- It is in the individual's view after being in his possession
- It was in the individual's possession, and he/she locked it up
- It is in a designated secure area

All environmental samples are handled under strict COC procedures beginning in the field. The sampler is the field sample custodian, responsible for ensuring that COC procedures are followed. A COC record accompanies each individual shipment. The record contains the following information:

- Sample destination and transporter
- Sample identification numbers
- Signature of collector
- Date and time of collection
- Sample type
- Identification of monitoring well
- Number of sample containers in shipping container
- Parameters requested for analysis
- Signature of person(s) involved in the chain of possession
- Inclusive dates of possession

A copy of the completed COC form is placed in a water resistant bag, accompanies the shipment, and is returned to the shipper after the shipping container reaches its destination. The COC record is also used as the analysis request sheet. When shipping by courier, the courier does not sign the COC record: copies of shipping forms are retained to document custody.

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4.0 GROUNDWATER MONITORING PROGRAM

SIPC completed an IEPA approved closure by removal for Emery Pond prior to July 30, 2021. As such, the former Emery Pond is currently in post-closure Corrective Action Monitoring pursuant to the requirements of 40 CFR §257.98 and 257.95 and 35 IAC 35 §845.680 and 845.650.

4.1 Background Monitoring

Background monitoring provides a representative baseline of water quality data for each well in the monitoring well network. Pursuant to 40 CFR §257.90(b)(iii) and 257.94(b) and 35 IAC §845.650(b)(1)(A), a minimum of eight independent unfiltered samples are to be collected from each upgradient (i.e., background) and downgradient compliance well at an existing CCR unit. The results of the background monitoring phase are used during statistical analysis of data from samples collected during subsequent Corrective Action Monitoring events. Development of appropriate, statistically valid background values for each constituent/monitoring well is discussed in Section 6.0.

The current background groundwater data set includes all groundwater monitoring data collected prior to the closure by removal of Emery Pond. Background monitoring samples were collected between March 2017 and May 2021. Samples were analyzed by a contract laboratory for the constituents listed in 40 CFR §257 Appendices III and IV. A list of the groundwater quality monitoring parameters analyzed during background monitoring is provided in Section 4.1.1, below. The analytical methods and PQL used during the background phase of the groundwater monitoring program are provided in Table 3. The collected background groundwater data set satisfies the requirements specified in 35 IAC §845.650(b)(1)(A).

4.1.1 Constituents

Samples from all upgradient and downgradient wells monitored during the background phase have been analyzed for 40 CFR §257 Appendix III (boron, calcium, chloride, fluoride, pH [field measurement], sulfate, and total dissolved solids [TDS]) parameters, Appendix IV (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, thallium, and radium 226 and 228 [combined]) parameters, and turbidity.

4.2 Corrective Action Monitoring Program

The Corrective Action Monitoring Program is designed to at a minimum meet the requirements of an Assessment Monitoring Program, document the effectiveness of the corrective action remedy, and demonstrate compliance with the groundwater protection standards. Components of the CCR Corrective Action Monitoring Program, including analytical requirements, sampling frequency, and data evaluation, are discussed in the following sections.

4.2.1 Constituents and Sampling Frequency

For at least three years following the April 2021 completion of closure of Emery Pond, SIPC will on at least a quarterly basis sample and analyze groundwater for all constituents listed in 35 IAC §600(a), including calcium and turbidity. Three years after either the closure of Emery Pond, or after three consecutive years of groundwater monitoring whereunder an exceedance of the groundwater protection standard established under 35 IAC §600 does not occur, whichever is longer, SIPC may complete groundwater monitoring as described in 35 IAC §740.

If the Corrective Action monitoring requirements have not already been met, after completion of five years of monitoring SIPC may ask IEPA for approval of a semiannual monitoring frequency if a) the groundwater

monitoring effectiveness will not be compromised by reduced frequency of monitoring, b) in the opinion of SIPC, sufficient data have been collected to characterize groundwater, c) the groundwater monitoring does not currently show any statistically significant trends, and d) the concentrations of all constituents are below the groundwater protection standards described below in Section 4.2.2.

4.2.2 Groundwater Protection Standards

Pursuant to 40 CFR §257.95, the Federal Groundwater Protection Standards (GPS) are established for CCR Rule Appendix IV constituents. The proposed GPS is developed based on:

- For constituents for which a maximum contaminant level (MCL) has been established under 40 CFR §141.62 (MCLs for Inorganic Contaminants) or 40 CFR §141.66 (MCLs for Radionuclides) the applicable MCL for that constituent
- For cobalt, lead, lithium, and molybdenum, constituents that do not have MCLs, the health-based standard included in the amended CCR Rule (i.e., Phase 1 Part 1 amendment)
- For constituents for which the background level is higher than the MCL or health-based standard, the background concentration established from the upgradient wells.

Pursuant to 35 IAC §845.600, the IEPA GPS are established for 35 IAC §600(a) constituents. The proposed GPS is developed based on:

- The groundwater protection standard provided in 35 IAC §845.600(a)(1)
- For constituents for which the background level is higher than the levels identified in 35 IAC §845.600(a)(1), the background concentration established from the upgradient wells.

The applicable established GPS will be included in the 40 CFR §257.90(e) and 35 IAC §845.550(a)(3) required Annual Groundwater Monitoring and Corrective Action Reports. The GPS will be updated upon USEPA's and IEPA's promulgation of new and/or revised MCLs. The background-based GPS will be updated every two years by incorporating the monitoring results from the two most recent years into the existing background as described in Section 6.4.

4.2.3 Evaluation and Response

After each monitoring event, the 35 IAC §845.600 constituents detected in the downgradient compliance wells will be evaluated as follows:

- After receipt of the data from the analytical laboratory, SIPC will determine if any constituents are detected above the GPS. If one or more constituents are detected above the GPS, SIPC may choose to confirm the detection with an immediate resample.
- If one or more constituents are detected, and confirmed by immediate resample, SIPC will provide a GPS exceedance notification to IEPA and place the notification in the Facility's operating record and on the publicly available website.
- Within 60 days of completing the quarterly sampling, SIPC will submit all groundwater data and the results of the statistical analysis performed to IEPA.
- Within 60 days of completing the quarterly sampling, SIPC will place all groundwater monitoring data in the operating record as required by 40 CFR §257.105(h)(6) and 35 IAC §845.800(d)(15).

- Within 60 days of a detected GPS exceedance, SIPC may complete an Alternative Source Demonstration (ASD). The ASD would be certified by a qualified professional engineer and placed on the publicly available website within 24 hours of submittal to IEPA.

Corrective Action Monitoring will be considered complete if compliance with the groundwater protection standards has been achieved by demonstrating that concentrations of 35 IAC §845.600 constituents have not exceeded the GPS for a period of three consecutive years.

4.3 Annual Groundwater Monitoring Report

As required by 35 IAC §845.550(a)(3), an Annual Groundwater Monitoring and Corrective Action Report will be submitted to IEPA by January 31 of each year as part of an annual consolidated report. In accordance with IAC 35 §845.610(e), the Annual Groundwater Monitoring and Corrective Action Report will include:

- a depiction of the former Emery Pond and the associated groundwater monitoring network with a visual delineation of any exceedances
- identification of any monitoring wells installed or decommissioned during the preceding year with a narrative description of why those actions were taken
- a potentiometric surface map for each groundwater elevation sampling event required by IAC 35 §845.650(b)(2)
- a summary including the number of groundwater samples that were collected or analysis for each background and downgradient well with the dates samples were collected
- a narrative discussion of any statistically significant increases over background levels for IAC 35 §845.600(a)(1) listed constituents
- a section at the beginning of the annual report providing an overview of the current status of the groundwater monitoring program and corrective action plan as required by 35 §845.610(e)(4).

As required by 40 CFR §257.90(e), a separate, Groundwater Monitoring and Corrective Action Report will be completed to comply with the Federal monitoring program. This annual groundwater monitoring report is similar to that required by IEPA, however, due to the differences in data evaluation requirements (i.e., GPS), two separate reports will be completed until the USEPA approves the Illinois CCR program to operate in lieu of Part 257. The annual groundwater monitoring reports will comply with the recordkeeping requirements specified in 40 CFR §257.105(h)(1) and 35 IAC §845.800, the notification requirements specified in 40 CFR §257.106(h)(1), and the internet requirements specified in 40 CFR §257.107(h)(1) and 35 IAC §845.810.

Records of the background groundwater quality data and subsequent measurements, including concentration data, will be kept in the Facility operating record and placed on the publicly available website in accordance with the 40 CFR §257.107 and 35 IAC §845.810. These records will be maintained throughout the active life of the Facility and the required groundwater monitoring care period. For each parameter, the laboratory certificates-of-analysis will identify the analytical PQL, the analytical Limit of Detection (LOD), the reported concentration, and applicable laboratory quality assurance/quality control (QA/QC) data on surrogate and standards analyses. Statistical evaluations of the analytical data, GPS comparisons, static water level determinations and evaluations, field water quality parameters, and equipment calibration forms will be retained throughout the active life of the Facility.

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5.0 ANALYTICAL AND QUALITY CONTROL PROCEDURES

5.1 Data Quality Objectives

As part of the evaluation component of the QA program, analytical results are evaluated for precision, accuracy, representativeness, completeness, and comparability (PARCC). These are defined as follows:

- Precision is the agreement or reproducibility among individual measurements of the same property, usually made under the same conditions
- Accuracy is the degree of agreement of a measurement with the true or accepted value
- Representativeness is the degree to which a measurement accurately and precisely represents a characteristic of a population, parameter, or variations at a sampling point, a process condition, or an environmental condition
- Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under correct normal conditions
- Comparability is an expression of the confidence with which one data set can be compared with another data set in regard to the same property.

The accuracy, precision and representativeness of data will be functions of the sample origin, analytical procedures and the specific sample matrices. QC practices for the evaluation of these data quality indicators include the use of accepted analytical procedures, adherence to hold time, and analysis of QC samples (e.g., blanks, replicates, spikes, calibration standards, and reference standards).

Quantitative QA objectives for precision and accuracy, along with sensitivity (detection limits) are established in accordance with the specific analytical methodologies, historical data, laboratory method validation studies, and laboratory experience with similar samples. The representativeness of the analytical data is a function of the procedures used to process the samples.

Completeness is a qualitative characteristic which is defined as the fraction of valid data obtained from a measurement system (e.g., sampling and analysis) compared to that which was planned. Completeness can be less than 100 percent due to poor sample recovery, sample damage, or disqualification of results, which are outside of control limits due to laboratory error or matrix-specific interferences. Completeness is documented by including sufficient information in the laboratory reports to allow the data user to assess the quality of the results. The overall completeness goal for each task is difficult to determine prior to data acquisition. For this project, all reasonable attempts will be made to attain 90% completeness or better (laboratory).

Comparability is a qualitative characteristic, which allows for comparison of analytical results with those obtained by other laboratories. This may be accomplished through the use of standard accepted methodologies, traceability of standards to the National Bureau of Standards (NBS) or USEPA sources, use of appropriate levels of quality control, reporting results in consistent, standard units of measure, and participation in inter-laboratory studies designed to evaluate laboratory performance.

Data quality and the standard commercial report package will be evaluated with respect to PARCC criteria using the laboratory's QA practices, use of standard analytical methods, certifications, participation in inter-laboratory studies, temperature control, adherence to hold times, and COC documentation following the data quality assessment procedures (also frequently referred to Data Validation) described herein. The laboratory QC control

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limits in place at the time of sample analysis, which are routinely re-evaluated following the procedures in the laboratory quality assurance policies and the requirements of the analytical methods, will be used as the quantitative QC criteria.

5.2 Quality Assurance/Quality Control Samples

This section describes the various QA/QC samples that are collected in the field and analyzed in the laboratory and the frequency at which they will be performed. A summary of the groundwater and QA/QC samples is provided in Table 5.

5.2.1 Field Equipment Rinsate Blanks

In situations where sampling equipment is not dedicated or disposable, an equipment rinsate blank is collected. The equipment rinsate blanks are prepared in the field using laboratory-supplied analyte-free water. The water is poured over and through each type of sampling equipment following decontamination and submitted to the laboratory for analysis of target constituents. One rinsate blank is collected for every 10 samples, if needed (e.g., equipment malfunction requires use of different, non-dedicated bladder pump).

5.2.2 Field Duplicates

Field duplicates are collected by sampling the same location twice, but the field duplicate is assigned a unique sample identification number. Samplers document which location is used for the duplicate sample. One field duplicate is collected for every 10 samples.

Field duplicate samples are given a unique sample ID and is submitted with a generic sampling time of 12:00 so that the sample time cannot be used to deduce the sampling location. The location where the field duplicate sample is collected is recorded on both the field form and in the field notebook.

5.2.3 Field Blank

Field blanks are also collected as part of the field sampling QA/QC program. The purpose of the field blank is to detect any contamination that might be introduced into the groundwater samples through the air or through sampling activities.

Field blanks are prepared in the field (at the sampling site) using laboratory-supplied bottles and deionized or laboratory reagent-quality water. Each field blank is prepared by pouring the deionized water into the sample bottles at the location of one of the wells in the sampling program. Preservatives are added to specific sample bottles as required. The well at which the field blank is prepared is identified on the Field Log along with any observations that may help explain anomalous results (e.g., prevailing wind direction, up-wind potential sources of contamination). Once a field blank is collected, it is handled and shipped in the same manner as the rest of the samples.

Field blank results are reported in the laboratory results as separate samples. One field blank is collected for every 15 samples.

5.2.4 Laboratory Quality Control Samples

SIPC will select a laboratory to analyze the groundwater sample with an established QC check program using procedural (method) blanks, laboratory control spikes, matrix spikes, and duplicates. These QC samples are used to determine if results may have been affected by field activities or procedures used in sample transportation

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or if matrix interferences are an issue. One (1) Matrix Spike (MS)/ Matrix Spike Duplicate (MSD) set (i.e., one sample plus one MS, and one MSD sample at one location) is collected per 20 samples.

5.3 Laboratory Quality Control Procedures

The laboratory selected by SIPC will adhere to a quality assurance program that complies with the National Environmental Laboratory Accreditation Conference (NELAC) program, documented in a Quality Assurance Manual (QAM). The QAM will describe the laboratory's experience, its organizational structure, and procedures in place to provide quality analytical data. The QAM will outline the sampling, analysis, and reporting procedures used by the laboratory. The laboratory selected by SIPC will be responsible for the implementation of and adherence to the QA/QC requirements outlined in their QAM.

Audits are an important component of a quality assurance program at a laboratory. Therefore, a laboratory with internal system and performance audits conducted periodically to ensure adherence by all laboratory departments to the QAM will be selected. External audits are conducted by accrediting agencies or states. These reports are transmitted to department managers for review and response. The selected laboratory will take corrective measures for any finding or deficiency found in an audit per their accreditation requirements.

Data Quality Reviews (DQRs), or equivalent, are requests submitted to a laboratory to formally review results that differ from historical results, or that exceed certain permit requirements or quality control criteria. The laboratory prepares a formal written response to DQRs explaining discrepancies. The DQR is the first line of investigation following any anomalous result.

5.3.1 Laboratory Documentation

Upon receipt of the samples at the laboratory selected, it is recommended that the laboratory complete the following:

- The samples will be examined upon receipt to ensure collection in USEPA-approved containers for the requested analysis. The sample collection data and time will also be reviewed to ensure the USEPA-required sample holding time has not expired or will not expire before the analysis can be performed.
- The information concerning transportation mode and manner will be reported on the form. Samples will be transported on ice or under refrigeration, and the inside temperature of the cooler recorded upon opening.
- The pH of each sample as well as the sample appearance will be recorded if required by the analytical method. Also, preservative adjustments, filtration, and sample splitting will also occur as required prior to distribution. Sample adjustments will be fully documented.

During analysis of the samples, it is recommended that the laboratory agent maintain the integrity of the samples as follows:

- During the sample analysis period, the samples will be preserved in accordance with method guidelines.
- If at any point during the analysis process, the results are considered technically inaccurate, the analysis will be performed again if holding times have not been exceeded.
- Documentation activities should be completed with permanent ink in a legible manner with mistakes crossed out with a single line and initialed by the laboratory agent.

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5.4 Laboratory Analyses

Analytical procedures will be performed in accordance with USEPA *Test Methods for Evaluating Solid Waste - Physical/Chemical Methods, SW-846,* as updated and other USEPA-approved methods. The monitoring program constituents, along with proposed test methods and PQLs, are listed in Tables 2 and 3. The selected analytical methods provide PQLs that are below applicable groundwater standards.

Alternate methods may be used if they have the same or lower PQL. Methods with higher PQLs will be considered if the concentration of the parameter is such that an alternate test method with a higher PQL will provide the same result.

5.4.1 Practical Quantification Limits

Laboratory-specific PQLs will be used as the reporting limits for quantified detections of required monitored constituents. Laboratory PQLs should be reported with the sample results.

5.4.2 Limits of Detection

Laboratory-specific LODs will be used as the reporting limits for estimated detections of required monitored constituents. Constituents detected at concentrations above the LOD but below the PQL will be reported as estimated with a qualifying flag on the laboratory certificates of analysis. Laboratory PQLs should be reported with the sample results.

5.4.3 Method Blanks

Laboratory method blanks are used during the analytical process to detect any laboratory-introduced contamination that may occur during analysis. A minimum of one method blank should be analyzed by the laboratory per sample batch.

5.5 Data Review, Verification, and Validation

Following receipt of the analytical data from the subcontract laboratory, Golder validates the groundwater data in accordance with the National Function Guidelines for Inorganic Data Review (USEPA 2017) and Evaluation of Radiochemistry Fata Usability- Department of Energy (DOE 1997) including a review for completeness and compliance of sample specific information and field QC. Data is evaluated for precision, accuracy, representativeness, completeness, and comparability. Professional judgment, in conjunction with USEPA guidance documents, is used to determine data usability and where necessary, professional judgment is used to evaluate scenarios not specifically described in the referenced documents. Should the data validation identify deficiencies that were not addressed, after consultation with SIPC, Golder would move to a more extensive validation for that data package. Complete data packages and analytical results are stored in the operating record.

5.6 Reconciliation with User Requirements

Throughout the project, SIPC and Golder will determine if project data quality objectives (DQO) are being met and assess whether the data being collected is sufficient and appropriate. Periodic evaluations of the monitoring program will be made to determine if a change in frequency or analytical parameters is appropriate. Individuals making measurements throughout the process will also assess whether the DQO are being met.

Individuals making field measurements will determine whether field quality control criteria were met. The field QA/QC will be overseen by the sampler. Corrective actions will be initiated in the field as necessary. This corrective action may include recalibration of instruments or use of a different type of instrument.

The analysts in the laboratory will determine if analytical QC criteria are achieved. Corrective action in the form of re-analysis or re-calibration may be warranted. Laboratory analytical data and field data will be assessed by a data validation specialist under the direction of the QA Manager to determine usability with regard to the DQO.

As noted in the data validation guidelines, data may not always meet precision and accuracy requirements but may still be considered usable. The data will be assessed with regard to the project DQO, and professional judgment used in conjunction with guidance documents will determine data usability.

6.0 STATISTICAL EVALUATION OF DATA

Following completion of data validation, statistical analysis of the data is performed as discussed in the following subsections. These techniques represent an appropriate, reasonable approach to groundwater data analysis for a CCR Unit in the Corrective Action monitoring phase, are protective of human health and the environment, and incorporate statistical and other evaluation methodologies appropriate for determining compliance with the GPS. SIPC will use a statistical analysis program meeting the applicable requirements of 40 CFR §257.98 and 35 IAC §845.680, which references the statistical analysis provisions of 40 CFR §257.93(f) and 257.93(g) and 35 IAC §845.640(f) and 845.640(g).

6.1 Overall Statistical Approach for Corrective Action

This section outlines the statistical methodologies that will be used to evaluate the data collected from the Site during the Corrective Action monitoring period. Previous statistical analyses for the former Emery Pond used methodologies that were appropriate for Detection and Assessment monitoring, specifically identifying statistically significant increases (SSI) relative to background concentrations and the GPS. However, SIPC has since completed an approved closure by removal for Emery Pond, which also served as part of the approved corrective action. Thus, the former Emery Pond has entered the Corrective Action phase (40 CFR §257.98 and 35 IAC §845.680). As described in the United States Environmental Protection Agency's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (*Unified Guidance*), dated March 2009, during the Detection and Assessment monitoring phases, the goal of the statistical monitoring program is to identify SSIs relative to background or the established criteria, allowing the owner/operator to determine if a release(s) has occurred and to respond by implementing Corrective Action (i.e., a groundwater remedy), if necessary. Conversely, the goal of the post-remedy Corrective Action monitoring program is to demonstrate compliance with the GPS (described below in Section 6.3.1). Thus, the goal of the statistical analysis procedures being employed pursuant to this addendum is to analyze the data to determine when groundwater concentrations are consistently below the established criteria, which the *Unified Guidance* refers to as "statistically significant decreases" (SSDs). According to both the Federal and Illinois rules, under Corrective Action monitoring, groundwater compliance is demonstrated when concentrations are below the established GPS for a period of three consecutive years, at which point groundwater monitoring is no longer required.

SIPC intends to fulfill the requirements of 40 CFR §257.98 and 35 IAC §845.680 using a confidence interval approach relative to a fixed GPS. This methodology is the recommended approach for Corrective Action programs in the *Unified Guidance*. As stated therein, "confidence intervals provide a flexible and statistically accurate method to test how a parameter estimated from a single sample compares to a fixed numerical limit. Confidence intervals explicitly account for variation and uncertainty in the sample data used to construct them."

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6.2 General Statistical Methods

Although confidence intervals are the general statistical approach for data evaluation during the Corrective Action program, it will continue to be necessary to examine the data for outliers, anomalies, and trends during the Corrective Action monitoring period. Outliers and anomalies are generally defined as inconsistently large or small values that can occur as a result of sampling, laboratory, transportation, or transcription errors, or even by chance alone. Statistically significant trends indicate a source of systematic error, or may be indicative of actual contamination. Both outliers/anomalies and trends will be evaluated and corrected (if appropriate) before valid statistical evaluation can be implemented. If outliers or trends are not identified and addressed appropriately, false positives (i.e., an indication of a release when none exists) and/or false negatives (i.e., falsely concluding there is no release in the presence of an actual release) could result.

6.2.1 Outliers

To prevent the inclusion of anomalous data in the dataset, the background monitoring data will be evaluated using time vs. concentration graphs. Following the receipt of data from each Corrective Action monitoring event, parameter concentrations that appear anomalous on a time vs. concentration graph or concentrations that are identified as outliers based on a statistical test may be marked as outliers in the database. Alternatively, consistent with the groundwater monitoring program standard procedures (see Sections 4.1 and 4.2), additional independent samples may be collected to verify the anomalous result. If the anomalous result is not verified, the outlier/anomaly will be removed from the dataset to maintain the accuracy of the evaluation method.

An outlier is a value that is statistically different from most other values in a data set for a given groundwater chemical constituent. Reasons for outliers may include:

- Sampling errors or field contamination
- Analytical errors or laboratory contamination
- Recording or transcription errors
- Faulty sample preparation or preservation, or shelf-life exceedance
- Extreme, but accurately detected, environmental conditions (e.g., spills, migration from the Facility).

Formal testing for outliers will be performed on each data set. Testing for the presence of outliers will be performed using the methods described in the *Unified Guidance*. The outlier test assumes the background data are normally distributed. Thus, if the background data are log-normally distributed, the outlier test will be applied to the log-normally transformed data and not the raw data.

If a statistical outlier is identified based on an outlier test, the source of the abnormal measurement will be investigated. Valid reasons for the outlier values may include: contaminated sampling equipment, laboratory contamination of the sample, errors in transcription of the data values, or the value may be a true, but extreme data point. Once a specific reason for the outlier is documented, the data point will be excluded from further statistical analysis. If a plausible reason cannot be identified, the result should be treated as a true but extreme value and should remain in the database. However, in some cases, professional judgement may be necessary and would be used to remove extreme outliers, even when an underlying cause cannot be identified. As described in Section 5.2.3 of the *Unified Guidance*, the removal of extreme outliers (even those for which a cause cannot be identified) has the effect of reducing the background mean and standard deviation, thus resulting in more conservative (i.e., protective) statistical calculations. If the most recent data point is identified as an outlier,

it is generally inappropriate to remove the data point until additional data (e.g., verification sample or next sampling event) are available to support the data removal.

Identified outliers should not actually be removed from the database, but should be maintained in SIPC's database and simply flagged as outliers. Even extreme outliers may ultimately be identified as members of the actual sample population over time, as additional data are added to the database. It is important to remember that the true population can never be known, because it would take an infinite number of samples to perfectly identify a given population. Statistical analysis is a procedure for modeling the true population using a limited number of existing data points, but as more data are gathered, the true population can be more closely modeled.

6.2.2 Managing Linear Trends

Along with data normality and sample independence, one of the important assumptions of statistical data analysis is the absence of trends in the background data set. It is generally inappropriate to calculate a confidence interval when a data series exhibits a trend. If, based on a statistical trend analysis (e.g., Mann-Kendall/Sen's Slope Analysis), trends are noted in the intrawell Corrective Action monitoring data, additional information and records will be evaluated to determine an underlying cause. Trends can result from a multitude of causes, including natural temporal variability, incomplete well development (particularly for new background wells), well damage or deterioration, systematic laboratory or field sampling errors, influence of an off-Site upgradient source, and leakage from a CCR unit. No matter the source, it is generally considered inappropriate to incorporate trending data in statistical calculations, since trends will typically result in an over-estimate of the background variability.

However, following Corrective Action (i.e., closure by removal), trends in the data are expected and, in fact, may be considered a positive indicator. Specifically, because SIPC elected to perform closure by removal, decreasing trends are expected in those wells that have reported SSIs during the Detection and Assessment monitoring periods. If trends are noted during the Corrective Action period, the most appropriate course is to apply "confidence bands" around the trend line. Confidence bands are simply a confidence interval method that is applied to trending datasets. The Unified Guidance recommends the use of confidence bands for determining compliance of trending data during both the Assessment and Corrective Action monitoring periods. Additional discussion of confidence intervals and confidence bands is provided below in Section 6.3.3. For those constituent-well pairs that show statistically significant trends, the results of the confidence band approach will be used for the purpose of determining compliance with GPS.

6.2.3 Normality Testing

Following the review of data for outliers and trends, the data will be tested for normality using the Shapiro-Wilk Test of Normality (either single group or multiple group version) for sample size up to 50, and the Shapiro-Francia Test of Normality for sample size more than 50, or other acceptable test methods. If an alternative test method is proposed for evaluating the normality of data, SIPC will provide supporting information with the statistical analysis results demonstrating that the alternative method has a similar level of power to detect deviations from the normal distribution as the Shapiro-Wilk and Shapiro-Francia test methods, as appropriate. The following guidelines are used for decisions in normality testing:

1) If the raw data are not normally distributed, then the data should be natural log-transformed and re-tested for normality using the above methods.

2) If the raw or the natural log-transformed data are normally distributed, then a normal distribution test (also referred to as a Parametric test) can be applied.

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3) If neither the raw nor the natural log-transformed data fit a normal distribution, then a distribution-free test will be applied.

6.2.4 Reporting of Low and Zero Values

Constituents that are not present above the LOD for the analytical procedure are reported as not detected (ND), or less than the LOD, rather than as zero or not present, and the laboratory's LOD is to be provided on the analytical report. There are a variety of ways to deal with data that include values below detection limits. However, during Corrective Action, when intrawell confidence intervals are calculated from datasets that include ND values, a value of ½ of the LOD will be used in the calculation.

If concentrations are above the LOD but below the laboratory PQL, the value will be reported as a J-flagged concentration (J-value). J-values will be used in the statistical calculations to be performed during the Corrective Action monitoring period.

6.2.5 Statistical Power

As discussed above, one of the primary goals of the selection of a proper statistical evaluation method is to limit the potential for results to indicate false positives or false negatives. During Corrective Action, the primary concern is a false negative (i.e., compliance has been achieved when concentrations are actually still exceeding the GPS). As stated in the *Unified Guidance*, during Corrective Action, "the most important consideration is to ensure that the true population parameter is actually below the clean-up standard before declaring remediation a success". Thus, the *Unified Guidance* recommends the use of a "reasonably low, fixed, test-wise false positive rate" (FPR). For the former Emery Pond, the test-wise FPR (α) will be 0.05, which means that during future monitoring there will be a 5% chance of incorrectly declaring that a well-constituent pair is "in compliance" when its concentrations are actually above the GPS.

6.2.6 Verification Sampling

Verification Sampling is an important aspect of any statistical analysis program, as it decreases the potential for false positives and false negatives. For the former Emery Pond, verification sampling will be completed as a "1 of 2 pass strategy". As described above, if an initial statistical exceedance is reported, then verification sampling will be performed to confirm the initial exceedance. Verification samples should be collected on a schedule that allows for physical independence of the samples. In a 1 of 2 pass strategy, if the concentration of the verification sample does not confirm the original sample result, then the original result is flagged as an outlier in the database. If the verification result confirms the original result, both values are retained in the database.

6.3 Corrective Action Statistical Analysis Method

This section discusses the procedures, methods, and processes that will be implemented as part of the Corrective Action statistical evaluation. As described above, Corrective Action statistics are appropriate given that SIPC has completed closure by removal for the former Emery Pond. The following sections discuss the procedures, methods, and processes that will be implemented as part of the Corrective Action statistical evaluation.

As described above, the general statistical procedures described in Sections 6.2 (outliers, trends, normality, etc.) will be performed prior to the calculation of confidence intervals described below. Please refer to those sections for descriptions on the methods and techniques required to complete these analyses.

6.3.1 Establishing a Ground Water Protection Standard

Following the removal of outliers and the performance of general statistics described in Sections 6.2, the GPS will be developed. The GPS is a key element of Corrective Action, in that it is used to determine when groundwater concentrations are “in compliance” and the former Emery Pond can exit Corrective Action. A GPS has been established for all Appendix IV constituents according to 40 CFR §257.95 and each of the constituents in 35 IAC §845.600. Pursuant to 40 CFR §257.95, the Federal GPS is equal to either the MCL, the health-based standard included in the Phase 1 Part 1 amendment for constituents that do not have MCLs, or for those constituents whose background concentration is greater than the MCL or health-based standard, the background concentration established from upgradient wells. Pursuant to 35 IAC §845.600, the IEPA GPS is equal to the value published in 35 IAC §845.600(1). However, as indicated in 35 IAC §845.600(2), for those constituents whose background concentration[1] is greater than the default values in 35 IAC §845.600(1), a GPS will be established from the background data.

The *Unified Guidance* provides two acceptable approaches for establishing a background-based GPS (unless all values are ND, in which case the background-based GPS will be set equal to the LOD). The two methods are: (1) the tolerance interval and (2) the prediction interval.

6.3.1.1 Tolerance Interval Based GPS

If the background dataset is normally or transformed normally distributed, the *Unified Guidance* recommends Tolerance Intervals over the Prediction Intervals for establishing a GPS. The GPS should be based on a 95 percent coverage/95 percent confidence tolerance interval. If the background data are non-normal (even after transformation), then a large number of background observations are required to calculate a non-parametric tolerance interval (typically a minimum of 60 background observations are required to meet these requirements). If there is an insufficient number of background observations to calculate a non-parametric tolerance interval, then a non-parametric Prediction Interval approach should be used, as described below.

The Upper Tolerance Limit (UTL) is calculated for each detected 40 CFR Part 257 Appendix IV and 35 IAC §845.600 constituent (and the Lower Tolerance Limit (LTL) for pH). Tolerance Limits, as outlined in the *Unified Guidance* (Section 17.2), are a concentration limit that is designed to contain a pre-specified percentage of the dataset population. Two coefficients associated tolerance intervals are (1) the specified population proportion and (2) the statistical confidence. The coverage coefficient (γ), which is used to contain the population portion, and the tolerance coefficient (or confidence level (1-α)), which is used to set the confidence of the test. Typically, the UTL is calculated to have both coverage and confidence of 95%.

Tolerance limits can be completed using both parametric (Section 17.2.1 of *Unified Guidance*) or non-parametric methods (Section 17.2.2 of *Unified Guidance*). However, as described above, the non-parametric method requires at least 60 background (or historical) measurements in order to achieve 95% confidence with 95% coverage. Tolerance Intervals can be calculated using most groundwater statistical software packages.

6.3.1.2 Prediction Interval Based GPS

If the minimum requirements for calculating a Tolerance Intervals cannot be met, then a Prediction Interval method should be used. The *Unified Guidance* suggests using a prediction interval about a future mean for

1 The background concentration is based on data from a monitoring well (or wells) that is uninfluenced by the CCR unit.

normally/transformed-normally distributed datasets or a prediction interval about a future median for datasets with a high percent of ND or non-normally distributed data.

For the establishment of a GPS, a one-sided prediction interval (or two-sided for pH) is calculated using background (or historical) datasets based on a specified number of future comparisons - four future comparisons is typical. The Upper Prediction Limit (UPL), and Lower Prediction Limit (LPL) for pH, that is calculated as a product of this method then becomes the GPS, and is compared against the confidence interval for the compliance data, as described below.

6.3.2 Confidence Intervals for Corrective Action

Once the GPS is established for each constituent, the *Unified Guidance* recommends the confidence interval method to evaluate the groundwater data from the Corrective Action monitoring network. Using confidence intervals, compliance is identified by comparing the calculated intrawell confidence interval for each well and constituent pair against the established GPS. A confidence interval statistically defines the upper and lower bounds of a specified population within a stipulated level of significance. As described above under Statistical Power, confidence intervals for the former Emery Pond will be calculated using a FPR of 0.05, which is also referred to as the 95% Confidence Interval. Confidence intervals are required to be calculated based on a minimum of four independent observations, but more representative confidence intervals are achieved with a growing data set. Thus, confidence intervals will be recalculated following the receipt and incorporation of new data from each Corrective Action monitoring event.

Confidence intervals will be calculated on a well-constituent pair basis for each constituent in 40 CFR Part 257 Appendix IV and 35 IAC §845.600. A minimum of four values are required to calculate a confidence interval. Closure by removal of the former Emery Pond was completed on April 5, 2021 with final inspection May 28, 2021. Thus, the first Corrective Action statistical analysis will be completed following the first quarter 2022 monitoring event, which will be the fourth Corrective Action monitoring event following the completion of the closure by removal. It is inappropriate to calculate the confidence interval using data from the period prior to the completion of closure by removal, because those data represent conditions prior to completion of the closure process, and the results of statistical analysis of those data would produce inappropriate conclusions.

The specific type of confidence interval should be based the attributes of the data being analyzed, including: (1) the data distribution, (2) the detection frequency, and (3) potential trends in the data. The table below identifies the criteria for determining which confidence interval method should be applied to each well-constituent pair. The method and procedure for calculating the Upper Confidence Limit (UCL) and Lower Confidence Limit (LCL) is provided in the section reference from the *Unified Guidance*, which is listed in the last column of the table below.

Data Distribution	Non-detect Frequency	Data Trend	*Unified Guidance* Confidence Interval Method
Normal	Low	Stable	Confidence Interval Around Normal Mean (Section 21.1.1)
Transformed Normal (Log-Normal)	Low	Stable	Confidence Interval Around Lognormal Arithmetic Mean (Section 21.1.3)
Non-normal	N/A	Stable	Nonparametric Confidence Interval Around Median (Section 21.2)
Statistically Significant Trend Noted	Low	Trend	Confidence Band Around Theil-Sen Line (Section 21.3.2)

In a Corrective Action program, the UCL is the attribute of prime interest for determining compliance. If the UCL is below the GPS, the well-constituent pair is considered to be in compliance. If the UCL (or both the UCL and LCL) is greater than the GPS, the test is considered to be a statistical exceedance and the well-constituent pair is not in compliance, and additional Corrective Action monitoring is required.

During Corrective Action, a per test FPR (α) of 0.05 will be used as an initial error level for calculating the two-tailed confidence intervals for the Corrective Action well network (which means 2.5% FPR per tail). In some cases, it is appropriate to adjust the FPR of the confidence interval based on the number of data points available as well as the distribution of the data being evaluated. If deemed necessary, an approach is provided in Section 22 of the *Unified Guidance* for determining an appropriate per test FPR based on the data characteristics.

6.3.3 Confidence Intervals for Trending Data

As described above in Section 6.2.2, trends are expected during Corrective Action monitoring, because the remedy is expected to result in improving groundwater conditions, which may mean increasing trends for naturally occurring constituents whose concentrations were diminished by CCR impacts, and decreasing trends for other constituents that increased due to influence from the CCR unit.

If a trend is not managed when constructing a confidence interval, the confidence interval will inadvertently incorporate both natural variability in the underlying population and variation due to the trend. Thus, the confidence interval will be wider than it should be, making it more difficult to demonstrate compliance with the GPS. The confidence interval will have less statistical power to judge the success of remedial efforts.

As stated in the *Unified Guidance*, “when a linear trend is present, it is possible to construct an appropriate confidence interval built around the estimated trend. A continuous series of confidence intervals is estimated at each point along the trend”, which is “termed a simultaneous confidence band. An upper or lower confidence band will tend to follow the estimated trend line whether the trend is increasing or decreasing. It is computed once the trend line has been estimated.”

For the former Emery Pond, if a statistically significant trend is noted in the Corrective Action monitoring data, a confidence band will be constructed around the trend. The trend analysis method for the former Emery Pond will be the Mann-Kendall/Sens Slope Analysis. The Theil-Sen trend line that results from a Sens Slope Analysis is a non-parametric alternative to linear regression, meaning the Theil-Sen method can be applied to data with less regard for the data normality assumptions required to construct a linear regression line. As indicated in the table above, the non-parametric confidence band method is further described in Section 21.3.2 of the *Unified Guidance*.

In some situations, anticipated or existing trends may temporarily reverse during the monitoring program, especially in early stages post-remedy. As described above, due to the removal of the source materials, it is anticipated that trends will decrease with time; however, an initial increase may occur prior to the onset of decreasing concentrations. Ground-disturbing activity related to the removal can sometimes result in short-term increases in concentrations, as the stable groundwater regime is destabilized by the removal. Typically, however, the groundwater regime eventually returns to stabilized conditions and trends return to normal. In the event trend reversals are noted during future Corrective Action groundwater monitoring, it may be necessary to adjust the data set to correct for these trend reversals. Adjustments may include the exclusion of data prior to the trend reversal and/or the institution of moving windows. If a moving window approach is selected, a minimum of eight values will be contained in the moving window, starting with the most recent observation, and including at least the seven previous observations. The same confidence band approach will be applied to the adjusted data set,

regardless of whether the data set is adjusted to exclude data prior to a trend reversal or whether a moving window approach is used.

6.3.4 Response to Statistical Exceedances during Corrective Action

If the UCL exceeds the GPS during future Corrective Action monitoring events, other than natural attenuation and confirmatory monitoring, no additional actions are required. As described in the *Corrective Action and Selected Remedy Plan, Including GMZ Petition*, by Hanson, dated March 29, 2019 and revised March 30, 2021, because the selected remedy for the former Emery Pond was closure by removal, if statistical exceedances are noted during future Corrective Action monitoring events, monitored natural attenuation (MNA) will be used to aid in returning groundwater to achieve the applicable standards. Complementing the removal of the CCR source materials from Emery Pond, MNA functions as a finishing or polishing step in the timely return to groundwater standards compliance.

6.3.5 Exiting Corrective Action

As specified in 40 CFR §257.98(c) and 35 IAC §845.680(c), in order to exit Corrective Action, it must be demonstrated that:

1) The owner or operator of the CCR surface impoundment demonstrates compliance with the GPS established by IAC 35 §845.600 has been achieved at all points within the plume of contamination that lies beyond the waste boundary;

2) The GPS has not been exceeded for each well-constituent pair for a period of three consecutive years, based on the results of the confidence interval/confidence band approach described above; and,

3) All actions required to complete the remedy have been satisfied.

6.4 Updating Background Values in Corrective Action

The *Unified Guidance* suggests that updating statistical limits should only be completed after a minimum of 4 to 8 new measurements are available (i.e., every 2 to 4 years of semiannual monitoring, assuming no verification sampling). The periodic update of background datasets, during which additional data are incorporated into the background, improves statistical power and accuracy by providing a more conservative estimate of the true background population. For the Corrective Action monitoring program, updating of background values will only apply to those GPS that are based on background data.

Prior to incorporating additional data into the background dataset, a test should be performed to demonstrate that the "new data" are from the same statistical population as the existing background results. Below are three methods that can be used in determining if the new data should be included in the background:

- Time Series Graphs can be used as a qualitative test to assist with the determination whether a new group of data match the historical data or if there is a concentration trend that could be indicative of a release or evolving groundwater conditions.
- Box-Whisker plots can also be used to determine whether or not the datasets are similar.
- Mann-Whitney (or Wilcoxon Rank) Test is a quantitative test used to evaluate the ranked medians of both the historical and "new dataset" populations. An α of 0.05 should be used for this evaluation. After calculation, if the Mann-Whitney statistic does not exceed the calculated critical value, the test assumes that the two data populations have equal medians, and therefore are likely from the same statistical population.

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Ultimately, the Mann-Whitney (Wilcoxon Rank Sum) Test is the statistical test that will be used to determine whether new observations should be included in the background dataset. It is important to note that a failure of the Mann-Whitney Test does not automatically preclude the incorporation of new data into the background; however, if differences are noted, a review of the new data will be conducted to determine if the noted difference is a result of a change in the natural conditions of the groundwater or if it is the result of a potential release from the CCR Unit. If the new data are included in the background dataset, the GPS will be recalculated, as described in Section 6.3.1 above.

7.0 FUTURE REVISIONS

In conformance with the applicable requirements of the CCR Rule, and of 35 IAC §845 this Addendum #1 addresses the construction, operation, maintenance, and sampling of, and the management and evaluation of field and analytical information from, the groundwater monitoring well network at former Emery Pond. Should future amendments to the regulations create additional or different requirements, and/or Site changes occur that require modifications to the existing program, SIPC will modify the Groundwater Monitoring Plan and/or prepare an Addendum #2 and implement appropriate procedural modifications to the existing program.

8.0 REFERENCES

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Table 1: Monitoring Well Construction Details
Southern Illinois Power Cooperative Marion Station
Marion, Illinois

CCR Unit	Monitoring Well ID	Ground Surface Elevation (ft-msl)	Total Borehole Depth (ft)	Top of Casing Elevation (ft-msl)	Sounded Well Depth (ft-btoc)	Well Material	Screen Length (ft)	Screen Depth		Screen Elevation		
								Top (ft-btoc)	Bottom (ft-btoc)	Top (ft-btoc)	Middle (ft-msl)	Bottom (ft-msl)
Emery Pond	EBG	521.74	25.00	524.87	28.13	2" Sch 40 PVC	10	18.13	28.13	506.74	501.74	496.74
	EP-1	517.07	31.00	519.72	33.65	2" Sch 40 PVC	10	23.65	33.65	496.07	491.07	486.07
	EP-2	511.15	15.00	513.79	17.64	2" Sch 40 PVC	10	7.64	17.64	506.15	501.15	496.15
	EP-3	516.24	26.50	518.95	29.21	2" Sch 40 PVC	10	19.21	29.21	499.74	494.74	489.74
	EP-4	517.07	18.50	519.74	21.17	2" Sch 40 PVC	10	11.17	21.17	508.57	503.57	498.57
	EP-5	524.64	16.32	527.59	16.32	2" Sch 40 PVC	4.5	11.30	15.79	516.29	514.05	511.80
	EP-6	502.08	13.62	505.11	13.62	2" Sch 40 PVC	4.5	8.59	13.12	496.52	494.26	491.99
	EP-7	512.49	18.50	515.44	18.50	2" Sch 40 PVC	9.6	9.36	18.00	506.08	501.26	497.44

Notes:

ft-msl = Feet above mean sea level

ft-btoc = Feet below top of casing

2" Sch 40 PVC = Two-inch diameter well, constructed of schedule 40 polyvinyl chloride materials

AECOM, 2018, 2017 Annual Groundwater Monitoring and Corrective Action Report, January 31, 2018.

Prepared by: DFSC
Checked by: DPJ
Reviewed by: MAH

Table 2: Groundwater Quality Monitoring Parameters
Southern Illinois Power Cooperative Marion Station
Marion, Illinois

Monitoring Parameter	
Field Parameters	Temperature, pH, Conductivity, Dissolved Oxygen, and Turbidity
Appendix III[1]	Boron
	Calcium
	Chloride
	Fluoride
	Sulfate
	pH
	Total Dissolved Solids (TDS)
Appendix IV[1]	Antimony
	Arsenic
	Barium
	Beryllium
	Cadmium
	Chromium
	Cobalt
	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 combined

Notes:

1.) Analyte lists match requirements for monitoring from USEPA Rule 40 CFR Part 257.94(b) and 35 IAC Part 845.600(a)

Prepared By:	DFSC
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Reviewed By:	MAH

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Table 3: Analytical Methods and Limits of Quantitation
Southern Illinois Power Cooperative Marion Station
Marion, Illinois

Analyte[1]	Analytical Method[2,3,4]	Preservative	Hold Times	PQL (mg/L)	LOD (mg/L)	MCL (mg/L)	IEPA Part 845 Standard (mg/L)[5]
Antimony	SW-846 6020A	HNO_3, pH <2	6 months	0.001	0.00045	0.006	0.006
Arsenic	SW-846 6020A	HNO_3, pH <2	6 months	0.001	0.00038	0.010	0.01
Barium	SW-846 6010B	HNO_3, pH <2	6 months	0.0025	0.0007	2.000	2
Beryllium	SW-846 6020A	HNO_3, pH <2	6 months	0.001	0.00025	0.004	0.004
Boron	SW-846 6010B	HNO_3, pH <2	6 months	0.02	0.009	-	2
Cadmium	SW-846 6020A	HNO_3, pH <2	6 months	0.001	0.00013	0.005	0.005
Calcium	SW-846 6010B	HNO_3, pH <2	6 months	0.1	0.035	-	NA
Chloride	SM 4500-Cl E	Unpreserved	28 days	1	0.5	-	200
Chromium	SW-846 6020A	HNO_3, pH <2	6 months	0.0015	0.0007	0.100	0.1
Cobalt	SW-846 6020A	HNO_3, pH <2	6 months	0.001	0.000115	0.100	0.006
Fluoride	SW-846 9214	Unpreserved	28 days	0.1	0.037	4	4
Lead	SW-846 6020A	HNO_3, pH <2	6 months	0.001	0.0006	0.015	0.0075
Lithium	SW-846 6020A	HNO_3, pH <2	6 months	0.003	0.00145	-	0.04
Mercury	SW-846 7470A	HNO_3, pH <2	28 days	0.0002	0.000055	0.002	0.002
Molybdenum	SW-846 6020A	HNO_3, pH <2	6 months	0.0015	0.0006	-	0.1
pH	SW-846 9040B Field	Unpreserved	15 Minutes	1	0	-	6.5-9.0
Radium 226 & 228	EPA 903.0/904.0	HNO_3, pH <2	6 months	1.0 (pCi/L)	-	5.0 (pCi/L)	5.0 (pCi/L)
Selenium	SW-846 6020A	HNO_3, pH <2	6 months	0.001	0.0006	0.050	0.05
Sulfate	SW-846 9036	Unpreserved	28 days	10	6.14	-	400
Thallium	SW-846 6020A	HNO_3, pH <2	6 months	0.002	0.00095	0.002	0.002
Total Dissolved Solids	SM 2540 C	Unpreserved	7 days	20	16	-	1200
Turbidity	SM 2130 B Field	Unpreserved	15 Minutes	1	1	-	-

Notes:

1.) Analyte lists matches requirements USEPA Appendix III and Appendix IV Constituents - 40 CFR Part 257. Monitoring, and IEPA 35 IAC 845.600
2.) SW-846 denotes Test Methods for Evaluating Solid Waste, Physical- Chemical Methods, EPA publication SW-846, 3rd edition, and subsequent updates.
3.) Other industry-used or agency-approved methods may be used provided that they produce the necessary level of precision and accuracy for data use and reporting.
4.) Updates to the methods listed here are approved for use.
5.) Groundwater protection standard provided in 35 IAC 845.600(a)(1).
Dash (-) = no information available

HNO_3 - Nitric acid

MCL = Maximum Contaminant Level from USEPA 2016 Edition of the Drinking Water Standards and Health Advisories. (http://water.epa.gov/drink/contaminants/index.cfm.)

mg/L = Milligrams per liter

LOD = Limit of Detection

pCi/L = Picocuries per liter

PQL = Practical Quantitation Limit

SM = Standard Method

Prepared By: DFSC
Checked By: HTV
Reviewed By: MAH

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Table 4: Sample Container Information and Hold Times
Southern Illinois Power Cooperative Marion Station
Marion, Illinois

Parameter	Container & Volume	Preservative	Maximum Holding Time
pH, Specific Conductance, temperature, ORP, turbidity	Flow through cell	None	15 minutes (field analysis)
Mercury (total)	Plastic, 250 mL	HNO_3 to pH<2	28 days
Metals (total) except mercury			6 months
Total Dissolved Solids (TDS)	Plastic, 250 mL	None	7 days
Fluoride, Chloride, Sulfate			28 days
Radium 226/228	Plastic, 2 L	HNO_3 to pH<2	6 months

Notes:
mL = Milliliter
HNO_3 = Nitric acid

Prepared By: DFSC
Checked By: HTV
Reviewed By: MAH

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Table 5: Groundwater and QA/QC Sampling Plan
Southern Illinois Power Cooperative Marion Station
Marion, Illinois

CCR Unit	Well ID	Analyte Group	Field Samples	Filtered?	Field Duplicates[1]	Field Blank[2]	MS/MSD[3]
Former Emery Pond	EBG, EP-1, EP-2, EP-3, EP-4, EP-5, EP-6, EP-7	Radium	7	No	1	1	2
		Metals					
		TDS/Anions/pH					
		Field Parameters					
			Total Samples:		**11**		

Notes:
1.) Field duplicates will be collected at a frequency of 1 per 10 samples, per analysis, per sampling round.
2.) Field blank will be collected at a frequency of 1 per 15 samples, per analysis, per sampling round using laboratory provided deionized water
3.) Matrix spike and matrix spike duplicate (MS/MSD) samples will be collected at a frequency of 1 per 20 samples, per analysis, per sampling round (2 MS/MSD samples equals 1 MS and 1 MSD)
4.) Must sample for monitoring well water-quality parameters including temperature, pH, dissolved oxygen, specific conductance, oxidation-reduction potential, and turbidity. Turbidity must be <5 NTU's in all samples

Prepared By: DFSC
Checked By: DPJ
Reviewed By: MAH

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APPENDIX A

Standard Operating Procedures

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Appendix A - SOPs

Field Methods and Standard Operating Procedures

Submitted to:

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Marion, Illinois

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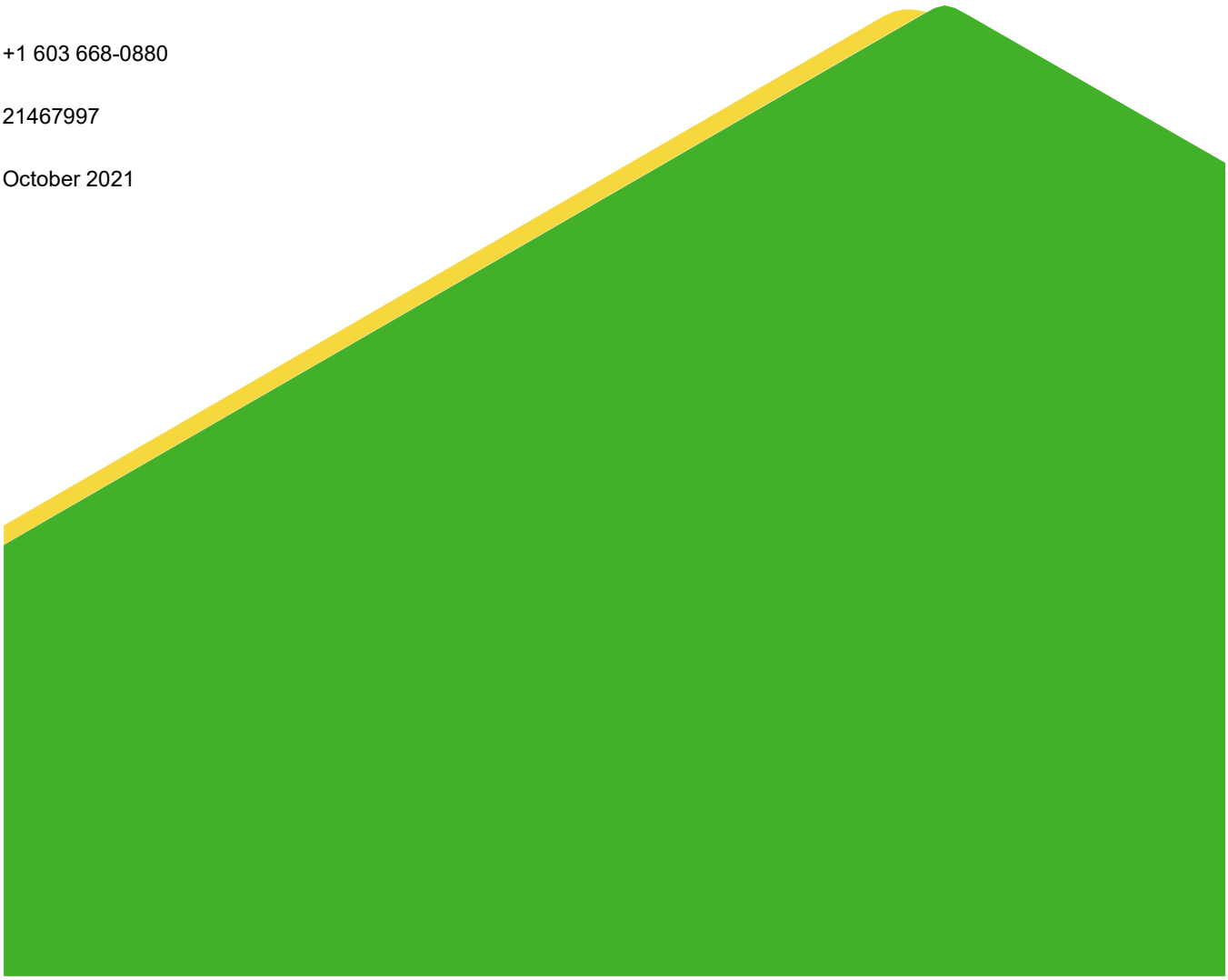
October 2021



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Typical Well Schematic

ATTACHMENT F
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Example Chain of Custody Form

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1.0 STANDARD OPERATING PROCEDURES

Standard Operating Procedures (SOPs) are instructions that an individual or organization follow to document routine or repetitive field or office activities. The development and use of SOPs are an integral part of a successful quality system as SOPs provide individuals with information to perform work properly, and facilitate consistency in the quality and integrity of work products and results. The proper use and execution of SOPs reduces variation and promotes quality through consistent implementation of a process or procedure, even in cases of temporary or permanent personnel changes.

Reporting to and in consultation with the Project Manager, the sampler's responsibilities include understanding and complying with all applicable project requirements including, but not limited to, work plans, data collection and documentation forms, field methods, equipment calibration, sample chain of custody, and standard operating procedures. The sampler will furthermore be responsible for his understanding of and adherence to these foundational elements of the project.

1.1 SOP-1 Utility Clearance Procedures

The potential for unknown or unmarked utilities is a potential issue at the Site. The purpose of this SOP is to describe the methods for clearing utility locations. The scope of this document is limited to field operations and protocols applicable during advancement of soil borings and monitoring wells on and off-Site.

Responsibilities

Southern Illinois Power Cooperative (SIPC) personnel will provide assistance locating the utilities. SIPC's subcontractors will be responsible to oversee the utility clearance procedures to reduce the potential for encountering a utility during the subsurface assessment activities. Field personnel are required to follow this SOP and adhere to utility mark out locations. An example utility clearance form is provided as Attachment A.

Procedures

The utility locating procedures will include:

- Contacting Call Before You Dig service to clear utilities within the public right-of-ways (***800-382-5544 or 811 in state)***. Golder personnel will use the Call Before You Dig clearance field form (Attachment A) to record the Call Before You Dig ticket number and list the utilities contacted by Call Before You Dig. Call Before You Dig does not contact local utilities including municipal water and sewer companies. SIPC or their subcontractors will be responsible for contacting the local utility companies. Utility color coding for Call Before You Dig companies include:

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RED	Electric power lines, cables or conduits, and lighting cables.
YELLOW	Gas, oil, steam, petroleum or other hazardous liquid or gaseous materials.
ORANGE	Communications, cable TV, alarm or signal lines, cables, or conduits.
BLUE	Water, irrigation, and slurry lines.
GREEN	Sewers, storm sewer facilities, or other drain lines.
WHITE	Proposed excavation
PINK	Temporary survey markings.
PURPLE	Reclaimed water, irrigation and slurry lines.

- Review existing Site utility maps with SIPC personnel knowledgeable with site utilities. SIPC personnel will pre-approve all intrusive sampling locations
- Advance the boring outside the area of a marked utility

1.2 SOP-2 Field Log Book and Field Form Procedures

The field log book provides a means to record daily significant events, observations, and measurements during sampling and monitoring activities. Sufficient data and observations shall be recorded in the field log book and/or field forms to enable reconstruction of field events.

Responsibilities

It is the responsibility of the sampler to maintain centralized daily records of all significant field events, observations, and measurements during field assessment activities. The sampler is responsible for maintaining complete records of their actions, observations, etc., in the field log books. If observations and measurements are taken in an area where the field log book may become contaminated separate waterproof bound and numbered field log books may be maintained. The sampler will make photocopies of all field data entries on a regular basis (preferably at the end of each day but at least on a weekly basis or upon return to home office) and submit the copies to SIPC for inclusion in the Facility operating record. The entries shall be signed and dated at the completion of each task or at the end of each day. The sampler is responsible for assuring that forms are completed in waterproof ink.

If an individual makes an error while filling out the log book, a line shall be drawn through the error and the correction entered. Individual pages, which will be sequentially numbered, shall not be removed from bound log books.

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1.2.1 Field Log Book

The sampler is responsible for logging dates, times, subcontractors, field personnel, field activities, field observations, and any other pertinent information during field activities. Field log book entries shall be legible and include, at a minimum, the following information:

- Date
- Project name and number
- Weather and temperature
- List of personnel present including subcontractors and visitors. The time of arrival and departure shall be noted next to each name
- Business phone calls along with the name of the field personnel making the call and the phone call recipient, time, and a brief description of the topic of conversation
- A description of the activities of subcontractors (e.g., drillers, survey contractor, etc.) and subcontractor down-time. Next to the entry, note the reason for the down-time. Log information or observations regarding the subcontractor's performance in the field log book
- Description of field activities completed including soil boring advancement, monitoring well installation and sampling activities including measurements if not noted on a field form

1.2.2 Photo-Documentation

Photographs may be taken during the sampling to document field activities and may serve to verify information entered in the field logbook. When a photograph is taken, the following information will be written in the logbook or will be recorded in a separate field photography book:

- Time, date, location, and, if appropriate, weather conditions
- Description of the subject photographed (including the photograph direction)
- Name of person taking the photograph

1.2.3 Equipment Calibration Forms Procedures

Equipment calibration forms are required to record and track daily calibration of each instrument. The equipment manual provides instructions on proper calibration procedures. Information to be recorded shall include the following:

- Date and time of calibration
- Equipment calibrated with model number and/or identification number
- Media used to calibrate instrument (e.g., solutions or gas)
- Calibration media information, lot numbers, and concentration
- Pre- and post-calibration readings

Follow the provided instructions and record the necessary information on the calibration field forms. Field personnel will provide the original Calibration Forms to SIPC, for inclusion in the Facility operating record. An example calibration form is provided as Attachment B.

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1.2.4 Groundwater *Sample* Collection Field Form Procedures

Information collected during groundwater sampling shall be recorded on groundwater sample collection field forms and field log books, as appropriate. The groundwater sample collection field form provides a record of the sampling methods and equipment, monitoring well information, and chemical analyses performed (see Attachment C). The field sampling records should accurately document field sampling procedures and data collection. Because sampling procedures may alter the chemical results, documenting sampling process is an important part of verifying the integrity of the samples. The following information shall be recorded in the groundwater sample collection form:

- Date and time of purging and sampling
- Sampling location designations
- Depth to water
- Total depth of well
- Standing water column
- Well inside diameter
- Volume of standing water in well
- Purging and sampling device
- Purge volume
- Sample time
- Field observations such as odor, color, and apparent turbidity
- Field water quality data including pH, ORP, specific conductivity, temperature, dissolved oxygen, and turbidity
- Chemical analyses requested
- Number of samples provided for each laboratory analysis and quality assurance samples, as required

The groundwater sample collection field forms shall be legible, dated, and signed by the person making the entry. Field personnel will provide the original groundwater sample collection forms to SIPC, for inclusion in the Facility operating record.

1.2.5 Soil Boring and Monitoring Well Installation Logging Procedures

Information collected during advancement of soil borings and installation of monitoring wells shall be recorded on soil borings and monitoring well logs, as appropriate (see Attachment D). The soil boring and well installation log provides a record of boring advancement methods and equipment, lithology, site and decontamination procedures, well construction methods, and well completion information (e.g., depth of well). These boring logs are intended to provide accurate descriptions of the lithology and sampling procedures. The following information shall be recorded in the soil boring and well installation log:

- Date and start/end time of boring advancement

- Type of equipment used and drillers name and company information
- Lithologic descriptions including lithology (i.e., Unified Soil Classification System), color, texture, moisture, and weathering
- Field screening readings (e.g., photo-ionization detector, as needed)
- Sampling depth and designations
- Depth to water
- Total depth of boring
- Well installation methods
- Well materials
- Boring diameter

The soil boring and well installation logs shall be legible, dated, and signed by the person making the entry. Field personnel will provide the original soil boring and well installation log to SIPC, for inclusion in the Facility operating record.

1.3 SOP-3 Groundwater Monitoring Well Installation/Development

A driller licensed by the Illinois Environmental Protection Agency (IEPA) will advance the soil borings and install monitoring wells. The driller will obtain drilling permits for the monitoring wells and piezometers, if needed; and a surveyor licensed in the State of Illinois will survey the wells.

1.3.1 Monitoring Well Installation Procedures

Monitoring wells will be installed by advancing 4.25-inch inside diameter (ID) hollow-stem augers or a six-inch diameter core barrel with a Sonic drill rig. The wells will be completed with two-inch diameter, five-foot long or 10-foot long, 0.010-inch (No. 10-slot) polyvinyl chloride (PVC) screen and appropriate lengths of two-inch diameter, 10-foot long flush–threaded (with a Teflon seal) PVC riser pipe. A sand pack consisting of a clean, washed, acid-resistant, #5-sized silica sand will be poured inside the boreholes. The sand pack will be poured and continuously sounded until it extends to at least two-feet above the top of the screened interval. A minimum two-foot bentonite seal will be placed on top of the filter pack and the remaining annular space between the borehole and the riser will be grouted (Portland Type I cement/bentonite mix) using tremie pipe (side discharge) from above the bentonite seal to approximately 1.5-feet ground surface. Bentonite content in the mix will be 2 to 5 percent by weight to help reduce shrinkage. The wells will be completed with stick-up protective steel casings and protective bollards. The outer protective casing will be lockable and locks will be keyed identically. A typical well construction schematic is provided in Attachment E.

1.3.2 Monitoring Well Development

All newly constructed wells and piezometers will be developed to remove particulates that are present in the well casing, filter pack, and adjacent aquifer matrix due to construction activities. Development of new monitoring wells will be performed no sooner than 24 hours after well construction. Wells will be developed using an electric

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submersible pump (whale pump) that can also serve as a surge block (1.82 inches in diameter x 27-inches long). Existing wells will also be developed before groundwater samples are collected.

Wells will be developed using the pump as a surge block and continuous cycles of over-pumping and recovery until relatively clear water is produced, and field parameters (pH, specific conductance, ORP, temperature, and turbidity) stabilize indicating good hydraulic communication with the surrounding water bearing zone. Measurements will be collected approximately every three to five minutes until the parameters stabilize based on three consecutive readings within the following ranges:

- Temperature: +/- 10% - Degrees Celsius
- pH: +/- 0.1 - Standard Units
- Conductivity: +/- 3% - milliSiemens
- ORP: +/- 10 mV - millivolt
- DO: +/- 10% (or +/- 0.1 mg/L if less than 1.0 mg/L) – milligrams per liter
- Turbidity: Less than 5 Nephelometric Turbidity Unit (NTU)

Samples withdrawn from the Facility's monitoring wells should be clay- and silt-free; therefore, wells may require redevelopment from time to time based upon observed turbidity levels during sampling activities. If redevelopment of a monitoring well is required, it will be performed and documented in a manner similar to that used for a new well. An example well development form is provided as Attachment F.

1.3.3 Dedicated Pumps

QED Environmental Systems (QED) dedicated bladder pumps will be placed into each monitoring well. The pumps will consist of MicroPurge bladder pumps with stainless-steel/Teflon construction, 316 stainless steel bladder pump inlet screen, and a Dura-Flex Teflon bladder. The polyethylene tubing is twin bonded, tangle-free design with ¼-inch outside diameter (OD) poly sample tube with ¼-inch OD poly air line.

1.4 SOP-4 Equipment Decontamination Procedures

This SOP describes the methods for decontaminating equipment and tools used during the assessment activities. The scope of this SOP is limited to field operations and protocols applicable during advancement of soil borings, monitoring well installation, and sampling equipment.

1.4.1 Decontamination Equipment and Solutions

Specifications for standard cleaning materials include:

- Soap shall be a phosphate-free laboratory detergent such as Liquinox® or Alconox®. Use of other detergent must be justified and documented in the field log books and investigative reports.
- Tap water may be used from any municipal water system. Use of an untreated potable water supply is not an acceptable substitute for tap water.

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- Analyte free water (distilled water) is tap water that has been treated with activated carbon and a standard deionizing resin column. At a minimum, the finished water should contain no detectable heavy metals or other organic or inorganic compounds (i.e., at or above analytical detection limits).

1.4.2 Field Water Quality Meter and Water Level Meter Decontamination Procedures

The drilling contractor will use the procedures in this section to decontaminate the drill rig and drilling tools used to advance the soil borings. The procedures include:

1. Thoroughly pressure steam-clean the drill rig and tools (e.g., macro core sampler) upon arrival on Site over a dedicated decontamination pad.
2. The driller will decontaminate downhole tools (e.g., split-spoons) between each boring location using an Alconox water solution and a distilled water rinse or pressure steam cleaner.
3. During well installation, the driller must use a new pair of disposal vinyl or latex gloves while handling the well materials.
4. Well materials used on Site must be new and wrapped in plastic.

1.5 SOP-5 Groundwater Sampling Procedures

Groundwater samples (see Table 5 from the Groundwater Monitoring Plan Addendum 1) shall be collected using the following equipment and procedures:

1.5.1 Sampling Equipment Description

Reusable and expendable equipment and materials required for groundwater sampling includes, but may not be limited to:

Reusable:

- Dedicated bladder pumps
- YSI 600XL flow-through cell or equivalent field water quality meter
- Electric groundwater level monitoring meter graduated in increments of 0.01 feet
- Groundwater Collection Form – Attachment C
- First-aid kit – present on-Site at all times
- Fire extinguisher – present on-Site at all times
- Monitoring well keys
- Calculator

Expendable:

- Sample bottles
- Coolers and ice – The laboratory will provide the coolers. Field sampling personnel will purchase ice as necessary to maintain sample temperatures less than 6°C
- Latex or Nitrile gloves as appropriate – purchased by the sampler as needed
- Alconox®/Liquinox® (mild detergent) – purchased by the sampler as needed
- Distilled water – purchased by the sampler as needed or provided by the lab

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1.5.2 Purging and Sampling Procedures

Groundwater samples will be collected using the low flow purge and sampling technique[1]. Groundwater sample collection procedures include:

- Calibrating the YSI 600XL or equivalent field water quality meter in accordance with the manufacturer's recommendations each day prior to collecting groundwater samples and checking the meter calibration at the end of each sampling day (see Attachment B).
- Connecting the discharge end of the polyethylene tubing to the YSI 600XL or equivalent field water quality meter and measuring and recording pH, specific conductance, ORP, turbidity, and temperature of the purge water. Field personnel will record the field water quality parameters once the flow-through cell is completely full. Do not wait for stabilization of the field water quality parameters before recording the readings from the field water quality meter.
- Each well will be purged at a rate between approximately 100 to 300 milliliters per minute (ml/min). The water level in the well will be monitored approximately every three to five minutes during pumping using an electronic water level meter, and ideally the pumping rate should equal the well recharge rate with little or no water level drawdown in the well (ideally less than 0.3 feet). At least one foot of water will be maintained over the intake to reduce the risk of the pump suction being broken, or entrainment of air in the sample.
- During purging, field parameters (temperature, pH, turbidity, specific conductance, ORP and DO) will be monitored with an in-line direct reading instrument (such as a YSI or equivalent flow-through cell) and turbidity meter. Measurements will be collected approximately every three to five minutes until the parameters stabilize based on three consecutive readings within the following ranges:
  - Temperature: +/- 10%
  - pH: +/- 0.1 Standard Units
  - Conductivity: +/- 3%
  - ORP: +/- 10 mV
  - DO: +/- 10% (or +/- 0.1 mg/L if less than 1.0 mg/L)
  - Turbidity: Less than 5 Nephelometric Turbidity Unit (NTU)

  In the event that one or more of the above field parameters does not completely stabilize after three well volumes have been purged, up to two additional well volumes will be purged for a total of five well volumes. Purging will then be considered complete.
- Following measurement of the field water quality parameters, cut the discharge end of the silicon tubing (just in front of the discharge end of the polyethylene pump tubing) and collect the groundwater samples using laboratory-prepared sample containers by allowing the pump discharge to flow gently down the inside of the bottle with minimal turbulence.
- Following sample collection, the groundwater sample will be placed in a cooler on ice for preservation during shipment to a laboratory for analysis in accordance with Chain-of-Custody SOP.

1.6 SOP-6 Chain-of-Custody Procedures

The intent of this SOP is to provide guidance to maintain sample integrity. The chain-of-custody form provides evidence and documentation of sample collection, shipment, laboratory receipt, and laboratory custody until

[1] The procedure is based upon the USEPA Region II document entitled "Groundwater Sampling Procedure, Low Stress (Low Flow) Purging and Sampling" dated March 20, 1998.

disposal of the sample. The chain-of-custody form identifies each sample collected and the individuals responsible for sample collection, shipment, and receipt.

Once collected, samples are considered to be in one's custody if they are: (1) in the custodian's possession or view; (2) in a secured location (under lock) with restricted access; or (3) in a container that is secured with an official seal(s) such that the sample cannot be reached without breaking the seal(s).

Responsibilities

Field personnel who collect the samples are responsible to initiate the chain-of-custody protocol. Upon sample collection, but prior to storage, shipment, or transportation, field personnel shall properly and completely fill out the chain-of-custody form with a waterproof ink pen. The sampler shall review the form prior to sample storage, shipment, or transportation. If an individual makes an error during the completion of the chain-of-custody form, a line shall be drawn through the error and the correction entered. Field personnel completing the form shall initial and date the error. Under no circumstances is white-out or erasing acceptable. Field sampling personnel are responsible for making a copy of the completed chain-of-custody form and giving the form to SIPC. SIPC or designee shall review the form and place it in the project file with the field sampling forms. Upon receipt by the laboratory, the laboratory sample custodian shall assume responsibility for completing the chain-of-custody procedures. Upon completion of analysis, the laboratory shall submit a copy of the completed chain-of-custody form with the analytical data for inclusion in the Facility operating record.

Equipment Description

- Chain-of-custody forms
- A waterproof ink pen

Procedures

Field personnel shall use a waterproof ink pen to complete the chain-of-custody forms. Preparation of the chain-of-custody form includes:

- Complete the chain-of-custody form by entering the project name, client name, laboratory name and address, the person to whom the chemical analyses results shall be reported, and invoicing information at the top of the form. An example Chain-of-custody form is provided as Attachment G.
- COC(s) will be completed and sent with the samples for each shipment.
- Sample-specific information shall include the field identification number, the date and time the sample is collected, the depth at which the sample was taken, the type of sample (e.g., groundwater, soil, etc.), the type of analyses requested, and preservatives used. Samples shall be grouped for shipment with other samples for similar analysis and use a common form. More than one chain-of-custody form shall be used if the number of samples placed in a cooler is greater than the number of entry spaces on the chain-of-custody form.
- The COC record will identify the contents of each shipment and maintain the custodial integrity of the samples. A locked seal will be placed across the front and back of each cooler containing

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samples when coolers are ready for shipment. All custody seals will be signed and dated. The chain-of-custody form will be cross-checked for errors and signed.

- Each person taking possession of the samples shall sign and date the chain-of-custody both as a recipient and as a relinquisher of the samples. When the samples are delivered to the laboratory, the laboratory sample custodian will sign the chain-of-custody as the last recipient of the samples.
- If the samples are directly transported to the laboratory, the chain-of-custody shall be kept in the possession of the person delivering the samples. Upon receipt by the laboratory, the sample receiver(s) shall open the shipping containers, compare the contents with the chain-of-custody form, and sign and date the form. Any discrepancies shall be noted on the chain-of-custody form and the Project Manager notified immediately.
- Prior to shipment by a commercial carrier, make a copy of the chain-of-custody form. If the samples are delivered directly to the laboratory by field personnel, a copy of the form shall be made after the laboratory representative signs and dates the chain-of-custody form.
- Chain-of-custody forms shall be maintained with the analytical data.

1.7 SOP-7 Investigation Derived Wastes

Field personnel will containerize the purge water generated during sampling activities and determine disposal options in consultation with SIPC personnel.

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ATTACHMENT A

Utility Contact Form

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JULIE BEFORE YOU DIG.COM Protect Yourself And Your Family

811 Call before you dig It's a free service

GOLDER MEMBER OF WSP

Golder field personnel must keep a copy of this completed form on Site during subsurface assessment activities and place a copy in the project file.

Date: Call Before You Dig contacted:

Call Before You Dig Ticket Number:

Project Name:

Project Number:

Golder Employee contacting Call Before You Dig:

Project Manager Name:

The following section need to be completed prior to contacting Call Before You Dig.

Name and City/State of boring/excavation contractor:

Address/location where work will be completed (address, city, state):

Closest Cross Street:

Type of Work:

Depth of excavation/boring:

Has the excavation/boring location been pre-marked with white paint? Yes ☐ No ☐

Marking Personnel:

Date:

Where on property will the work will be completed:

Dates work to be completed:

Complete the following section with information provided by Call Before You Dig.

Utilities that Call Before You Dig will contact under this ticket number (provided by Call Before You Dig):

1. 2.
3. 4.
5. 6.
7. 8.

Utilities not contacted by Call Before You Dig:

Town Sewer:	Date Contacted:	Contacted by:
Town Water:	Date Contacted:	Contacted by:
Other Utilities:	Date Contacted:	Contacted by:

Approved start date and time to begin work (provided by Call Before You Dig):

Call Berfore You Dig Ticket expiration date (provided by Call Before You Dig):

Indiana Call Before You Dig may not contact Town Water and Sewer Departments for markouts. It is Golder's responsibility to contact the Town Water and Sewer Departments for markouts.

Version 01-17-12

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ATTACHMENT B

YSI Calibration Form

CALIBRATION FORM

GAI Project Name: _____ **Project Number:** _____

Golder Personnel Present: _____

Date: _____

Meter Type: **YSI**

Model Number:

S/N

Specific Conductivity **Lot # :** **Expire Date:**

Standard	Unit		Meter reading		Time	
1.413	mS/cm					Initial
						Check
						Check

Acceptable Range 1.342-1.484

Dissolved Oxygen

Baro Pressure	Temp °C	% D.O.	mg / L D.O.	D.O. Charge	Time	
						Initial
						Check
						Check

pH

4.01 Buffer: Lot #: **Exp. Date:** **7.01 Buffer: Lot #:** **Exp. Date:**

Standard	Meter reading		Meter reading		Meter reading
	Initial		Check		Check
Time		Acceptable Range			
4.01		3.81-4.21			
7.01		6.75-7.36			
10.00		9.50-10.50			

10.00 Buffer: Lot #: **Exp. Date:**

ORP **Lot#:** **Expire Date:**

Standard	Meter reading		Meter reading		Meter reading
	Initial		Check		Check
Time		Acceptable Range			
240.0		228-252			

Turbidity

Meter Type: **LaMotte**

Model Number: **20/20**

S/N

Standard	Meter reading		Meter reading		Meter reading
	Initial		Check		Check
Time		Acceptable Range			
1.00		0.95-1.05			
10.00		9.50-10.5			

Comments:

Sampler Signature: Date:

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ATTACHMENT C

Groundwater Sample Collection Form

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GROUNDWATER SAMPLE COLLECTION FORM

GOLDER
MEMBER OF WSP

SITE DESCRIPTION

Project Name: SIPC
Project Number: 21467997
Location: Marion

WEATHER CONDITIONS

Temperature:
Wind:
Precipitation:

SAMPLE DESCRIPTION

Sample ID:
Date:
Time at Well Site:
Time of Sample Collection:
Sampled by:
Sampling Method: Bladder Pump
Type of Sampling Equipment: Pump tubing

FIELD BLANK NOTES

Field Blank Name:
Field Blank /Rinse Water type:

Lot Number:
Analyses:

VOLUME OF WATER TO BE PURGED

Casing Inside Diameter: inches
Casing Volume: liters/ft
Column of Water in Well: feet
Volume of Water in Well: liters
Well Volumes to Purge:
Min. Volume to be Purged: liters
Method of Purging:
Well Purged Dry?: Yes No

COLUMN OF WATER IN WELL BEFORE PURGE

Total Depth of Well: ft TOC
Depth to Water : ft TOC
Column of Water in Well: ft
Depth to Water after Purge: ft TOC

Appearance of Sample:

WELL PURGE CONTROL

	Purge 1	Purge 2	Purge 3	Purge 4	Purge 5	Purge 6	Purge 7
Time:							
Volume Removed (liters):							
pH:							
Specific Conductance (uS/cm):							
Temperature (Degrees C):							
Turbidity (NTU):							
ORP (millivolts):							
DO (mg/l) :							
Water Level (ft BTOC)							

Starting Purge Time:
Ending Purge Time:
Average Purge Rate: ml/min
Total Volume Purged: liters

SAMPLE CONTAINERS REQUIRED

Analysis	Container Number, Type and Size	Filter	Preservative and Source
Metals (6020A - 7471B)	(1) 500 ml Plastic Container	No	HNO3
Hardness (CaCO3) (2320B)	(1) 125 ml Plastic container	No	HNO3
Radium 226/228	(1) 2-Liter Plastic Container	No	None
Fluoride, Chloride, Sulfate	(1) 250-ml plastic container	No	None
Total Dissolved Solids (TDS)	(1) 200-ml Plastic Container	No	None

Chain of Custody #:
Shuttle ID:
Trip Blank ID:
Lab Name:
Air Bill #:

REMARKS: 2" - 0.617 liters/ft 1" - 0.053 liters/ft
1.5" - 0.347 liters/ft

Field Team Leader:

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ATTACHMENT D

Soil Boring and Monitoring Well Installation Log

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FIELD BORING LOG

GOLDER
MEMBER OF WSP
MANCHESTER, NEW HAMPSHIRE

Sep 26, 2001 - 4:14pm

DEPTH HOLE	JOB NO. 21467997	PROJECT SIPC			BORING NO.
DEPTH SOIL DRILL	GA INSP.	DRILLING METHOD			SHEET
DEPTH ROCK CORE	WEATHER	DRILLING COMPANY			SURFACE ELEV.
NO. DIST. SA. UD. SA.	TEMP.	DRILL RIG		DRILLER	DATUM
DEPTH WL.	HRS. PROD.	WT. SAMPLER HAMMER		DROP	STARTED
TIME WL. ----------	HRS. DELAYED	WT. CASING HAMMER		DROP	COMPLETED

Drawing file: FieldLog.dwg

SAMPLE TYPES

A.S.	AUGER SAMPLE
C.S.	CHUNK SAMPLE
D.O	DRIVE OPEN (SPLIT SPOON)
D.S.	DENISON SAMPLE
P.S.	PITCHER SAMPLE
R.C.	ROCK CORE
S.T.	SLOTTED TUBE
T.O.	THIN-WALLED OPEN
T.P.	THIN-WALLED PISTON
W.S.	WASH SAMPLE

ABBREVIATIONS

BL	BLACK	M	MEDIUM	SA	SAMPLE
BR	BROWN	MIC	MICACEOUS	SAT	SATURATED
C	COARSE	MOT	MOTTLED	SD	SAND
CA	CASING	MP	NON-PLASTIC	SI	SILT
CL	CLAY	OG	ORANGE	SIY	SILTY
CLY	CLAYEY	ORG	ORGANIC	SM	SOME
F	FINE	PH	PRESSURE-HYDRAULIC	TR	TRACE
FRAG	FRAGMENTS	PM	PRESSURE-MANUAL	WL	WATER LEVEL
GL	GRAVEL	R	RED	WH	WEIGHT OF HAMMER
LYD	LAYERED	RES	RESIDUAL	Y	YELLOW
LI	LITTLE	RX	ROCK		

SOIL DESCRIPTION
RANGE OF PROPORTITION

"TRACE"	0-10%
"LITTLE"	10%-20%
"SOME"	20%-35%
"ADJECTIVE" (e.g. "SILTY", "SANDY")	35%-50%
"AND"	50%

CONSISTENCY - BLOWS/FT.

NON-COHESIVE SOILS

VL	VERY LOOSE	0-4
LS	LOOSE	4-10
CP	COMPACT	10-30
DN	DENSE	30-50
VD	VERY DENSE	>50

COHESIVE SOILS

VS	VERY SOFT	0-2
S	SOFT	2-4
FM	FIRM	4-8
ST	STIFF	8-30
H	HARD	>30

ELEV. / DEPTH	WELL CONSTRUCTION	PID (ppm)		SAMPLES NO.	TYPE	HAMMER BLOWS PER 6" (FORCE)	REC. / ATT.	DEPTH	SAMPLE DESCRIPTION AND BORING NOTES

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ATTACHMENT E

Typical Well Schematic

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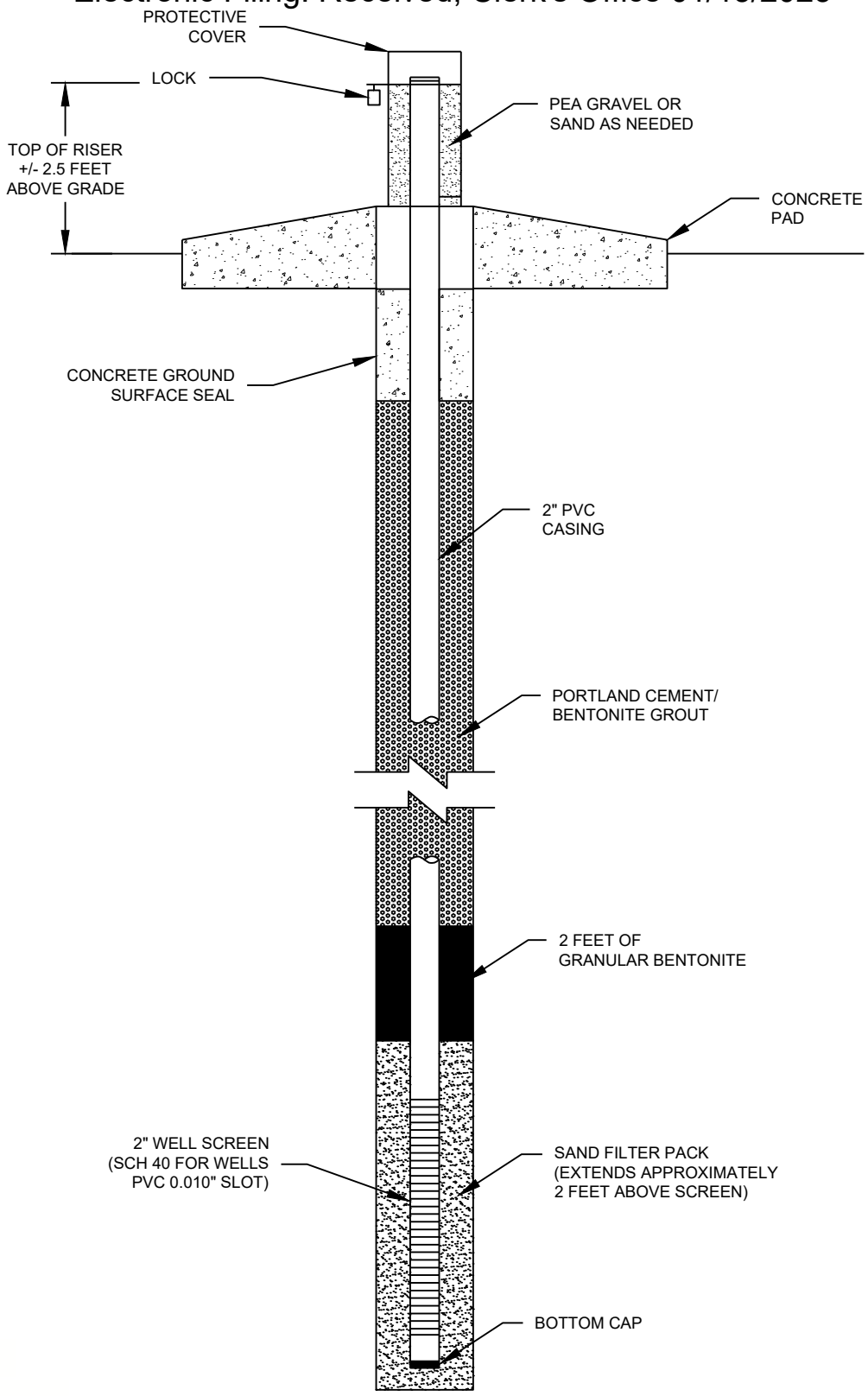

CLIENT
SIPC

PROJECT
GROUNDWATER MONITORING PROGRAM

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2016-07-08
DESIGNED	RWC
PREPARED	JSP
REVIEWED	
APPROVED	

TITLE
TYPICAL MONITORING WELL CONSTRUCTION DIAGRAM

PROJECT NO.	SUBTITLE	REV.	FIGURE
21467997	A	0	1

Path: ---- | File Name: 16.07.08 MW Detail_Npsco.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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ATTACHMENT F

Well Development Form

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GOLDER
MEMBER OF WSP

WELL DEVELOPMENT FIELD RECORD

JOB NAME _____ JOB NO. _____ WELL NO. _____

DEVELOPED BY _____ DATE OF INSTALL. _____ SHEET ___ OF ___

STARTED DEVEL. _____ / _____ COMPLETED DEVEL. _____ / _____
DATE TIME DATE TIME

W.L. BEFORE DEVEL. _____ / _____ / _____ AFTER DEVEL. _____ / _____ / _____
DEPTH DATE TIME DEPTH DATE TIME

WELL DEPTH: BEFORE DEVEL. _____ AFTER DEVEL. _____ WELL DIA. (In) _____

STANDING WATER COLUMN (FT.) _____ STANDING WELL VOLUME _____ gal.

SCREEN LENGTH _____ DRILLING WATER LOSS _____ gal.

DATE/TIME	VOLUME REMOVED (GALS)	FIELD PARAMETERS SPEC. COND. (umhos/cm)	TEMP. (C)	pH (s.u.)	OTHER	REMARKS
		= TOTAL VOLUME REMOVED (gal.)				

DEVELOPMENT METHOD: _____

NOTES:

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ATTACHMENT G

Example Chain of Custody Form

PRINT PDF

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CHAIN OF CUSTODY

Pg __ of __ Workorder # _____

TEKLAB INC, 5445 Horseshoe Lake Road, Collinsville, IL 62234 Phone (618) 344-1004 Fax (618) 344-1005

Client: _____

Address: _____

City/State/Zip: _____

Contact: _____ Phone: _____

Email: Fax:

Are these samples known to be involved in litigation? If yes, a surcharge will apply: ☐ Yes ☐ No

Are these samples known to be hazardous? ☐ Yes ☐ No

Are there any required reporting limits to be met on the requested analysis?. If yes, please provide limits in the comment section: ☐ Yes ☐ No

Samples on: ☐ ICE ☐ BLUE ICE ☐ NO ICE _____ °C LTG# _____

Preserved in: ☐ LAB ☐ FIELD **FOR LAB USE ONLY**

LAB NOTES:

Client Comments:

PROJECT NAME/NUMBER	SAMPLE COLLECTOR'S NAME

RESULTS REQUESTED

☐ Standard ☐ 1-2 Day (100% Surcharge)

☐ Other _____ ☐ 3 Day (50% Surcharge)

BILLING INSTRUCTIONS

Lab Use Only	Sample ID	Date/Time Sampled	Matrix	# and Type of Containers: UNP	HNO3	NaOH	H2SO4	HCL	MeOH	NaHSO4	TSP	Other	INDICATE ANALYSIS REQUESTED
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										
			Aqueous										

Relinquished By	Date/Time	Received By	Date/Time

*The individual signing this agreement on behalf of the client, acknowledges that he/she has read and understands the terms and conditions of this agreement, and that he/she has the authority to sign on behalf of the client. See www.teklabinc.com for terms and conditions

Terms and Conditions:
When Client requests analytical or other services from Teklab, Inc. (hereafter referred to as Teklab) the terms and conditions set forth in this agreement shall prevail. Requests for services may be in the form of apurchase order, electronic order, telephonic order or verbal order. Client's act of sample delivery or shipment to Teklab accompanied by a properly signed Chain of Custody shall constitute acceptance by Client todo business with Teklab under the terms and conditions of this agreement. Any conflicting and/or preprinted terms and conditions of any Client request/purchase order are null and void. Any third party agreementsbetween Client and another party are in no way to be incorporated into this agreement unless agreed to in writing by Teklab and Client. This agreement may be amended only by written agreement between Teklaband Client.

Pricing:
Fees for analysis or other services requested by Client shall be the current Teklab listed pricing schedule unless otherwise agreed to by Teklab and Client. Other pricing agreements may be in the form of a Teklabpricing quote. Teklab reserves the right to charge additional fees for expedited analytical results when Client requests expedited results, as determined by Teklab. No discounted pricing shall be accepted foranalytical results which take longer than the initially agreed upon time frame, unless specifically agreed to by Teklab and Client. Teklab reserves the right to change its listed pricing without notification.

Quality Assurance/Quality Control:
Teklab shall perform its services in a manner consistent with the Teklab Quality Assurance/Quality Control (QA/QC) manual and Teklab's Standard Operating Procedures (SOP's) in effect at the time of theagreement. It is the responsibility of Client to ensure that Teklab's QA/QC manual and SOP's conform to Client's specific requirements. Teklab reserves the right to deviate from its QA/QC manual and/or SOP'sprovided that the deviations are consistent with generally accepted industry practices and are deemed necessary, by Teklab personnel. In the event that Client desires deviations from the Teklab QA/QC manual orSOP's Client must submit the request in writing prior to submission of samples to Teklab. It is the responsibility of Client to submit any project or permit specific required methodologies, reporting limits or otherinformation prior to the submission of samples to Teklab.

Sample Acceptance:
Teklab reserves the right to refuse acceptance of samples or return previously accepted samples to Client when such action is deemed warranted by the Teklab laboratory director or his/her representative. It is theresponsibility of Client to inform Teklab, prior to sample submission, when samples are known to be involved with litigation or known to be hazardous. Client shall submit all samples either through personaldelivery, via a courier (such as the U.S. Mail, UPS, Federal Express, etc.) or through submission to a Teklab employee at a location other than the facility located at 5445 Horseshoe Lake Road. A properlycompleted Chain of Custody must accompany all samples.

It is the responsibility of Client to ensure that all samples are collected in accordance with generally accepted sampling protocols or site specific sampling requirements. It is the responsibility of Client to ensure thatall samples are shipped or transported in a manner consistent with all federal, state or local laws. The risk of loss or damage to any sample shall remain with Client until Teklab sample acceptance is complete.Sample acceptance shall be completed once Teklab personnel have signed the properly completed Chain of Custody that accompanied the samples. It is the responsibility of Client to ensure that all samples arereceived with an adequate amount of time for Teklab to perform analysis within the applicable holding times, as specified in the Teklab QA/QC manual. Samples with holding times of seven days or greater must bereceived with, at least, four days of holding time remaining. Samples with holding times less than seven days must be received with, at least, one half of the holding time still remaining. Teklab reserves the right tocharge and Client agrees to pay additional fees for samples received with less than the above stated holding times remaining.Go here for a full description of our sample acceptance policy.

Resampling:
In the event that resampling is required, for whatever reason, Teklab in no way accepts responsibility for fees associated with the resampling. Teklab may assume all or a portion of the resampling costs if agreed toin writing by Teklab and Client, such fees will be determined and agreement made prior to the initiation of the resampling event. The fees, which Teklab may agree to pay, shall be the lesser of the actual samplingfees or the total amount paid by Client for work covered under this agreement.

Re-analysis:
In the event that re-analysis is requested by Client, Client agrees to pay Teklab fees equivalent to those already agreed upon or the Teklab list price, plus any applicable surcharge for expedited analytical results.

Sample Retention:
Samples are routinely retained for 30 days after sample acceptance is complete. Samples may be returned to Client, at no cost to Teklab, if so requested or if deemed appropriate by the Teklab laboratory directoror his/her representative. Longer sample retention times may be possible, if requested by Client and agreed to by Teklab. Client agrees to pay Teklab an additional fee of $40.00 per month per sample whensamples are to be retained for a period longer than the time period indicated above. Sample retention times shall be calculated from the date of sample acceptance by Teklab and shall be rounded into wholemonths with sample storage during any one day of the month constituting a charge for storage during the entire month.

Subcontracting:
Teklab reserves the right to subcontract any or all portions of the services it provides. Subcontracting will occur in a manner consistent with the Teklab QA/QC manual and/or SOP's.

Continued on next page:

Reports and Data:
Teklab maintains copies of reports and data for the time period and in the manner specified in its QA/QC manual and/or applicable SOP's in effect at the time of sample acceptance. Additional copies of analyticalrepo and/or analytical data, including QA/QC data, pertaining to Client's samples may be obtained, prior to data destruction, for additional fees, as deemed appropriate by Teklab.

Indemnification:
Client shall indemnify and hold harmless Teklab and its respective owners, officers, directors and employees individually and jointly from and against any and all causes of action, claims, injuries, lawsuits,demands, judgements, damages, losses, liabilities, fines, penalties, expenses and other charges directly or indirectly arising from or related to:
(a) the negligent actions, omissions or willful misconduct of Client;
(b) Client's breach of its warranties or obligations under this agreement;
(c) Teklab's performance of services,provided, however that the foregoing indemnification shall not apply to the extent any damages are caused solely by the gross negligence or willful misconduct of Teklab. In any e Teklab's liability will be limitedto the lesser of (a) actual damages or (b) the amount of compensation paid to Teklab for services under this agreement.

Payment:
Client agrees to remit payment to Teklab within 30 days of receipt of invoice. If Client defaults in punctual payment, all past due amounts will bear interest at the rate of eighteen percent (18%) per annum or thehighes permitted by law, whichever is lesser, and customer shall reimburse Teklab for all costs of collection incurred, including (without limitation) reasonable attorney fees. Acceptance of payment by Teklab inno way constit a waiver of Teklab's rights or claims that Teklab may have against Client.

Termination:
Either Client or Teklab may terminate this agreement by sending written Notice of Termination. Upon termination, Client shall be invoiced for services performed and charges incurred prior to termination.

Miscellaneous:
(a) Except for the obligation to make payments hereunder, neither party shall be in default for its failure to perform or delay in performance caused by events beyond its reasonable control, including, but not limitedto, strikes, riots, imposition of laws or governmental orders, fires, acts of God, and inability to obtain acceptable Quality Control results, and the affected party shall be excused from performance during theoccurrence of s events;
(b) This Agreement shall be binding on and shall inure to the benefit of the parties hereto and their respective successors and assigns;
(c) This Agreement represents the entire agreement between the parties and supersedes any and all other agreements, whether written or oral, that may exist between the parties;
(d) This Agreement shall be construed in accordance with the law of the state of Illinois; and
(e) All written notification required by this Agreement shall be by Certified Mail, Return Receipt Requested. If any provision of this Agreement is declared invalid or unenforceable, then such provision shall besevered f and shall not affect the remainder of this Agreement; however, the parties shall amend this Agreement to give effect, to the maximum extent allowed, to the intent and meaning of the severedprovision. In the event Te successfully enforces its rights against Client hereunder, Client shall be required to pay Teklab's attorneys' fees and court costs.

APPENDIX K

Statistical Methods Certification

October 13, 2021

Certification of Appropriateness of Selected Statistical Method (35 IAC §845.640(f)(2))

Southern Illinois Power Cooperative
Former Emery Pond
Marion Power Plant

I, Mark Haddock, being a Professional Engineer in accordance with the laws of the State of Illinois, and having experience in the collection and interpretation of information from groundwater monitoring systems at surface impoundments, do hereby state that I am qualified in the subject matter of statistical analysis of CCR groundwater monitoring data. I have personally examined and am familiar with the statistical methods selected for evaluation of groundwater monitoring information for the Southern Illinois Power Cooperative (SIPC) former Emery Pond, prepared by Golder Associates Inc. and dated October 2021. Based on an inquiry of those individuals immediately responsible for selecting the statistical approach, I believe that the selected statistical methods, a narrative of which is provided herein, are appropriate for the applications outlined below.

SIPC has selected statistical methods that were developed in accordance with the requirements of 35 IAC §845.640 using methodology presented in Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance, March 2009, EPA 530/R-09-007 (Unified Guidance). The statistical evaluation techniques described in the Groundwater Monitoring Plan Addendum #1 (Golder, October 2021) will be used for Corrective Action monitoring.

In consideration of the above and in accordance with 35 IAC §845.640(f)(2), I certify to the best of my knowledge, information, and belief that the statistical methodologies described herein are appropriate for evaluating the groundwater monitoring data for the former Emery Pond.

Mark Haddock
Illinois Professional Engineer
License #062-058223

October 13, 2021
Date

golder.com

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EXHIBIT

JJ

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
BRUCE RAUNER, GOVERNOR ALEC MESSINA, DIRECTOR

217/785-0561

July 3, 2018

CERTIFIED MAIL # 7013 2630 0001 4707 9084
RETURN RECEIPT REQUESTED

Donald Gulley, President/CEO
Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, IL 62959

Re: Violation Notice: Southern Illinois Power Cooperative
Identification No.: 6364
Violation Notice No.: W-2018-00041

Dear Mr. Gulley:

This constitutes a Violation Notice pursuant to Section 31(a)(1) of the Illinois Environmental Protection Act ("Act"), 415 ILCS 5/31(a)(1), and is based upon a review of available information and an investigation by representatives of the Illinois Environmental Protection Agency ("Illinois EPA").

The Illinois EPA hereby provides notice of alleged violations of environmental laws, regulations, or permits as set forth in Attachment A to this notice. Attachment A includes an explanation of the activities that the Illinois EPA believes may resolve the specified alleged violations, including an estimate of a reasonable time period to complete the necessary activities. Due to the nature and seriousness of the alleged violations, please be advised that resolution of the violations may also require the involvement of a prosecutorial authority for purposes that may include, among others, the imposition of statutory penalties.

A written response, which may include a request for a meeting with representatives of the Illinois EPA, must be submitted via certified mail to the Illinois EPA within 45 days of receipt of this letter. If a meeting is requested, it shall be held within 60 days of receipt of this notice. The response must include information in rebuttal, explanation, or justification of each alleged violation and a statement indicating whether or not the facility wishes to enter into a Compliance Commitment Agreement ("CCA") pursuant to Section 31(a) of the Act. If the facility wishes to enter into a CCA, the written response must also include proposed terms for the CCA that includes dates for achieving each commitment and may include a statement that compliance has been achieved for some or all of the alleged violations. The proposed terms of the CCA should contain sufficient detail and must include steps to be taken to achieve compliance and the necessary dates by which compliance will be achieved.

Electronic Filing: Received, Clerk's Office 01/13/2023

ID: 6364 Southern Illinois Power Cooperative
VN W-2018-00041

The Illinois EPA will review the proposed terms for a CCA provided by the facility and, within 30 days of receipt, will respond with either a proposed CCA or a notice that no CCA will be issued by the Illinois EPA. If the Illinois EPA sends a proposed CCA, the facility must respond in writing by either agreeing to and signing the proposed CCA or by notifying the Illinois EPA that the facility rejects the terms of the proposed CCA.

If a timely written response to this Violation Notice is not provided, it shall be considered a waiver of the opportunity to respond and meet, and the Illinois EPA may proceed with referral to a prosecutorial authority.

Written communications should be directed to:

Illinois EPA – Division of Public Water Supplies
Attn: Andrea Rhodes, CAS #19
P.O. BOX 19276
Springfield, IL 62794-9276

All communications must include reference to this Violation Notice number, W-2018-00041.

Questions regarding this Violation Notice should be directed to Andrea Rhodes at 217/785-0561.

Sincerely,

Mary F. Reed
Manager, Compliance Assurance Section
Division of Public Water Supplies
Bureau of Water

Attachments

BOW ID: W1998600002

Electronic Filing: Received, Clerk's Office 01/13/2023

ATTACHMENT A

SOUTHERN ILLINOIS POWER COOPERATIVE, ID:6364
VIOLATION NOTICE NO. W-2018-00041:

Questions regarding the violations identified in this attachment should be referred to Andrea Rhodes at (217) 785-0561.

A review of information available to the Illinois EPA indicates the following violations of statutes, regulations, or permits. Included with each type of violation is an explanation of the activities that the Illinois EPA believes may resolve the violation including an estimated time period for resolution.

Groundwater Quality
No person shall cause, threaten or allow the release of any contaminant to a resource groundwater such that: treatment or additional treatment is necessary to continue an existing use or to assure a potential use of such groundwater; or an existing or potential use of such groundwater is precluded. No person shall cause, threaten or allow the release of any contaminant to groundwater so as to cause a groundwater quality standard to be exceeded. Southern Illinois Power Cooperative must take actions to mitigate existing contamination and prevent the continuing release of contaminants into the environment.

Violation Description
Operations at the Emery Pond have resulted in violations of the Groundwater Quality Standards at monitoring well EP-01 for the following constituents:

Awareness Date	Parameter	Sample Value	GW Standard	Collection Date
01/30/18	Cadmium	0.006 mg/l	0.005 mg/l	4/24/2017
	Sulfate	820 mg/l	400 mg/l	3/23/2017
	Sulfate	910 mg/l	400 mg/l	4/24/2017
	Sulfate	850 mg/l	400 mg/l	5/25/2017
	Sulfate	850 mg/l	400 mg/l	6/22/2017
	Sulfate	440 mg/l	400 mg/l	6/29/2017
	Sulfate	540 mg/l	400 mg/l	7/24/2017
	Sulfate	520 mg/l	400 mg/l	8/01/2017
	Sulfate	440 mg/l	400 mg/l	8/31/2017
	TDS	2000 mg/l	1200 mg/l	3/23/2017
	TDS	2300 mg/l	1200 mg/l	4/24/2017
	TDS	2300 mg/l	1200 mg/l	5/25/2017
	TDS	2300 mg/l	1200 mg/l	6/22/2017
	TDS	2200 mg/l	1200 mg/l	6/29/2017
	TDS	2200 mg/l	1200 mg/l	7/24/2018
	TDS	2100 mg/l	1200 mg/l	8/01/2017
	TDS	2100 mg/l	1200 mg/l	8/31/2017

Rule/Reg. Section 12 of the Act, 415 ILCS 5/12, 35 Ill. Adm. Code 620.115, 620.301 (a), 620.401, 620.405, and 620.410.

Electronic Filing: Received, Clerk's Office 01/13/2023

ATTACHMENT A

SOUTHERN ILLINOIS POWER COOPERATIVE, ID:6364
VIOLATION NOTICE NO. W-2018-00041:

Violation Description

Operations at the Emery Pond have resulted in violations of the Groundwater Quality Standards at monitoring well EP-02 for the following constituents:

Awareness Date	Parameter	Sample Value	GW Standard	Collection Date
01/30/18	pH	6.18 su	6.5 - 9.0 su	3/23/2017
	pH	6.39 su	6.5 - 9.0 su	4/24/2017
	pH	6.31 su	6.5 - 9.0 su	5/25/2017
	pH	6.10 su	6.5 - 9.0 su	6/22/2017
	pH	5.75 su	6.5 - 9.0 su	6/29/2017
	pH	5.86 su	6.5 - 9.0 su	7/24/2017
	pH	5.88 su	6.5 - 9.0 su	8/01/2017
	pH	6.33 su	6.5 - 9.0 su	8/31/2017
	Sulfate	860 mg/l	400 mg/l	3/23/2017
	Sulfate	660 mg/l	400 mg/l	4/24/2017
	Sulfate	780 mg/l	400 mg/l	5/25/2017
	Sulfate	780 mg/l	400 mg/l	6/22/2017
	Sulfate	470 mg/l	400 mg/l	6/29/2017
	Sulfate	430 mg/l	400 mg/l	7/24/2017
	Sulfate	770 mg/l	400 mg/l	8/01/2017
	TDS	1800 mg/l	1200 mg/l	3/23/2017
	TDS	1800 mg/l	1200 mg/l	4/24/2017
	TDS	1900 mg/l	1200 mg/l	5/25/2017
	TDS	1800 mg/l	1200 mg/l	6/22/2017
	TDS	1900 mg/l	1200 mg/l	6/29/2017
	TDS	1800 mg/l	1200 mg/l	7/24/2017
	TDS	1800 mg/l	1200 mg/l	8/01/2017
	TDS	1800 mg/l	1200 mg/l	8/31/2017

Rule/Reg. Section 12 of the Act, 415 ILCS 5/12, 35 Ill. Adm. Code 620.115, 620.301 (a), 620.401, 620.405, and 620.410.

Electronic Filing: Received, Clerk's Office 01/13/2023

ATTACHMENT A

SOUTHERN ILLINOIS POWER COOPERATIVE, ID:6364
VIOLATION NOTICE NO. W-2018-00041:

Violation Description

Operations at the Emery Pond have resulted in violations of the Groundwater Quality Standards at monitoring well EP-03 for the following constituents:

Awareness Date	Parameter	Sample Value	GW Standard	Collection Date
01/30/18	pH	5.99 su	6.5 - 9.0 su	3/23/2017
	pH	5.96 su	6.5 - 9.0 su	4/24/2017
	pH	6.03 su	6.5 - 9.0 su	5/25/2017
	pH	6.08 su	6.5 - 9.0 su	6/22/2017
	pH	6.01 su	6.5 - 9.0 su	6/29/2017
	pH	5.96 su	6.5 - 9.0 su	7/24/2017
	pH	6.02 su	6.5 - 9.0 su	8/01/2017
	pH	6.13 su	6.5 - 9.0 su	8/31/2017
	Chloride	220 mg/l	200 mg/l	6/22/2017
	TDS	1400 mg/l	1200 mg/l	5/25/2017

Rule/Reg. Section 12 of the Act, 415 ILCS 5/12, 35 Ill. Adm. Code 620.115, 620.301 (a), 620.401, 620.405, and 620.410.

Violation Description

Operations at the Emery Pond have resulted in violations of the Groundwater Quality Standards at monitoring well EP-04 for the following constituents:

Awareness Date	Parameter	Sample Value	GW Standard	Collection Date
01/30/18	pH	5.51 su	6.5 - 9.0 su	3/23/2017
	pH	5.88 su	6.5 - 9.0 su	4/24/2017
	pH	5.77 su	6.5 - 9.0 su	5/25/2017
	pH	5.80 su	6.5 - 9.0 su	6/22/2017
	pH	5.81 su	6.5 - 9.0 su	6/29/2017
	pH	5.80 su	6.5 - 9.0 su	7/24/2017
	pH	5.80 su	6.5 - 9.0 su	8/01/2017
	pH	5.85 su	6.5 - 9.0 su	8/31/2017
	Arsenic	0.035 mg/l	0.010 mg/l	3/23/2017
	Arsenic	0.039 mg/l	0.010 mg/l	4/24/2017
	Arsenic	0.037 mg/l	0.010 mg/l	5/25/2017
	Arsenic	0.053 mg/l	0.010 mg/l	6/22/2017
	Arsenic	0.044 mg/l	0.010 mg/l	6/29/2017
	Arsenic	0.044 mg/l	0.010 mg/l	7/24/2017

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ATTACHMENT A

SOUTHERN ILLINOIS POWER COOPERATIVE, ID:6364
VIOLATION NOTICE NO. W-2018-00041:

Emery Pond monitoring well EP-04 continued:

Awareness Date	Parameter	Sample Value	GW Standard	Collection Date
01/30/18	Arsenic	0.035 mg/l	0.010 mg/l	8/01/2017
	Arsenic	0.049 mg/l	0.010 mg/l	8/31/2017
	Boron	15.0 mg/l	2.0 mg/l	3/23/2017
	Boron	23.0 mg/l	2.0 mg/l	4/24/2017
	Boron	14.0 mg/l	2.0 mg/l	5/25/2017
	Boron	11.0 mg/l	2.0 mg/l	6/22/2017
	Boron	13.0 mg/l	2.0 mg/l	6/29/2017
	Boron	11.0 mg/l	2.0 mg/l	7/24/2017
	Boron	14.0 mg/l	2.0 mg/l	8/01/2017
	Boron	11.0 mg/l	2.0 mg/l	8/31/2017
	Cadmium	0.0052 mg/l	0.005 mg/l	4/24/2017
	Chloride	460.0 mg/l	200 mg/l	3/23/2017
	Chloride	290.0 mg/l	200 mg/l	4/24/2017
	Chloride	380.0 mg/l	200 mg/l	5/25/2017
	Chloride	430.0 mg/l	200 mg/l	6/22/2017
	Chloride	250.0 mg/l	200 mg/l	6/29/2017
	Chloride	210.0 mg/l	200 mg/l	8/01/2017
	Chloride	210.0 mg/l	200 mg/l	8/31/2017
	Lead	0.0090 mg/l	0.0075 mg/l	3/23/2017
	Lead	0.0130 mg/l	0.0075 mg/l	4/24/2017
	Lead	0.0110 mg/l	0.0075 mg/l	5/25/2017
	Lead	0.0170 mg/l	0.0075 mg/l	6/22/2017
	Lead	0.0110 mg/l	0.0075 mg/l	7/24/2017
	Lead	0.0120 mg/l	0.0075 mg/l	8/01/2017
	Lead	0.0120 mg/l	0.0075 mg/l	8/31/2017
	Selenium	0.130 mg/l	0.05 mg/l	3/23/2017
	Selenium	0.120 mg/l	0.05 mg/l	4/24/2017
	Selenium	0.130 mg/l	0.05 mg/l	5/25/2017
	Selenium	0.200 mg/l	0.05 mg/l	6/22/2017
	Selenium	0.130 mg/l	0.05 mg/l	6/29/2017
	Selenium	0.130 mg/l	0.05 mg/l	7/24/2017
	Selenium	0.110 mg/l	0.05 mg/l	8/01/2017
	Selenium	0.160 mg/l	0.05 mg/l	8/31/2017
	Sulfate	620 mg/l	400 mg/l	3/23/2017
	Sulfate	530 mg/l	400 mg/l	4/24/2017
	Sulfate	660 mg/l	400 mg/l	5/25/2017
	Sulfate	730 mg/l	400 mg/l	6/22/2017
	Sulfate	410 mg/l	400 mg/l	6/29/2017

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ATTACHMENT A

SOUTHERN ILLINOIS POWER COOPERATIVE, ID:6364
VIOLATION NOTICE NO. W-2018-00041:

Emery Pond monitoring well EP-04 continued:

Awareness Date	Parameter	Sample Value	GW Standard	Collection Date
01/30/18	TDS	2300 mg/l	1200 mg/l	3/23/2017
	TDS	2300 mg/l	1200 mg/l	4/24/2017
	TDS	2400 mg/l	1200 mg/l	5/25/2017
	TDS	2000 mg/l	1200 mg/l	6/22/2017
	TDS	2100 mg/l	1200 mg/l	6/29/2017
	TDS	2300 mg/l	1200 mg/l	7/24/2017
	TDS	2200 mg/l	1200 mg/l	8/01/2017
	TDS	2300 mg/l	1200 mg/l	8/31/2017
	Thallium	0.065 mg/l	0.002 mg/l	4/24/2017
	Thallium	0.092 mg/l	0.002 mg/l	5/25/2017
	Thallium	0.094 mg/l	0.002 mg/l	6/22/2017
	Thallium	0.058 mg/l	0.002 mg/l	6/29/2017
	Thallium	0.300 mg/l	0.002 mg/l	7/24/2017
	Thallium	0.075 mg/l	0.002 mg/l	8/01/2017
	Thallium	0.075 mg/l	0.002 mg/l	8/31/2017

Rule/Reg. Section 12 of the Act, 415 ILCS 5/12, 35 Ill. Adm. Code 620.115, 620.301 (a), 620.401, 620.405, and 620.410.

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EXHIBIT

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W1998600002

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217)782-2829
Pat Quinn, Governor Lisa Bonnett, Director

July 2, 2013

IEPA-DIVISION OF RECORDS MANAGEMENT
RELEASABLE
JUL 28 2017
REVIEWER: MJK

Jason McLaurin, Environmental Coordinator
Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, Illinois 62959

Re: Southern Illinois Power Cooperative, Marion Power Plant, Marion, IL – Groundwater Monitoring Data

Dear Mr. McLaurin:

This letter is in response to the Marion Power Plant groundwater monitoring well sampling results received by the Illinois Environmental Protection Agency (Illinois EPA), dated April 3, 2013.

The HCU completed its review of the monitoring well information provided. It has been determined that there are elevated chemical concentrations in groundwater at the Marion Power Plant site. Down gradient monitoring wells S2 and S3 show elevated chemical concentrations of arsenic, iron, manganese and lead. Monitoring well C1 has elevated chloride concentrations, and nearby monitoring well C2 indicates low concentrations of chloride. Monitoring well C3 has elevated TDS, chloride and manganese. A more detailed hydrogeologic assessment is necessary to determine the nature and extent of the elevated concentrations found in groundwater on the Marion Power Plant site.

Please provide a plan to further assess elevated chemical constituents at the Marion Power Plant site to the Illinois EPA for review and approval within 45 days of the date of this letter.

If you have any additional questions regarding this correspondence, please contact Carl Kamp or me at 217-785-4787.

Sincerely,

William E. Buscher, P.G.
Manager, Hydrogeology and Compliance Unit
Division of Public Water Supplies
Bureau of Water

CC: Mike Crumly Rick Cobb Darin LeCrone Carl Kamp Records

4302 N. Main St., Rockford, IL 61103 (815)987-7760
595 S. State, Elgin, IL 60123 (847)608-3131
2125 S. First St., Champaign, IL 61820 (217)278-5800
2009 Mall St., Collinsville, IL 62234 (618)346-5120
9511 Harrison St., Des Plaines, IL 60016 (847)294-4000
5407 N. University St., Arbor 113, Peoria, IL 61614 (309)693-5462
2309 W. Main St., Suite 116, Marion, IL 62959 (618)993-7200
100 W. Randolph, Suite 10-300, Chicago, IL 60601 (312)814-6026

Please Print on Recycled Paper

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EXHIBIT

MM

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Illinois Environmental Protection Agency
Division of Water Pollution Control

Fee Exempt: No

Account Name
Southern Illinois Power Coop

WPC State Permit Lifecycle Worksheet

Monday, September 21, 2020

Date Received: 5/26/2020 (New Application Receipt)
Due Date: 8/24/2020
Bureau ID: W1998600002
Application Facility: Southern Il Power Coop-Marion
County: Williamson Region: Marion
Project Name: Southern IL Power Coop - Marion - Emery Pond retrofit
Project Type(s): Industrial Treatment/Pretreatment, Waste Characteristics

Log Number: 2020-65428
Engineer: Shu-Mei Tsai
Unit: Industrial
Plans: Regular Plans and Specs
45/90 Day: 90-Day
L17 Number
ProjectManager

Location Description/Map Url	Preliminary Environmental Justice	Latitude DMS	Longitude DMS
Southern IL Power Coop - Marion - Emery Pond retrofit http://maps.google.com/maps?q=37.62172,-88.95463&z=20&t=k	No Environmental Justice	37.62172	-88.95463

Permit Number 2020-EA-65428
Hydraulic Loading _____ **gallons/day**
Organic Loading _____ **pounds/day**

Action

☐ Permit ☐ NPR ☐ Denial ☐ NOI ☐ Void ☐ Sludge Fee ☐ Fee Exempt

30-Day Review Period Ends	
DNR Letter Approval	
IHPA Letter Approval	
No Permit Required	
Denial Letter Date	
Notice of Incompleteness Date	
Permit Voided Date	
Approved by Engineer	SMT 9-21-2020
Approved by Unit Manager	DEL 10/15/2020
Approved by Section Manager	
Date Permit Mailed	
Issue Date	LJ 10-16-20
Permit Expiration	

IEPA-DIVISION OF RECORDS MANAGEMENT
RELEASABLE

FEB 16 2021

REVIEWER: EMI

Electronic Filing: Received, Clerk's Office 01/13/2023

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

LOG NUMBERS: 2020-65428 **PERMIT NO.:** 2020-EA-65428
Bureau ID# W1998600002

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS **DATE ISSUED:** **October 16, 2020**
PREPARED BY: Hanson Professional Services, Inc.

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE – Storm Water Basin – Tributary to the Lake of Egypt (IL0004316)

IEPA-DIVISION OF RECORDS MANAGEMENT
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FEB 16 2021
REVIEWER: EMI

PERMITTEE TO CONSTRUCT

Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, Illinois 62959-8500

Permit is hereby granted to the above designated permittee(s) to construct and/or operate water pollution control facilities described as follows:

The closure of Emery Pond located at 11543 Lake of Egypt Road, Marion, Illinois will occur in two parts. The historical portion of Emery Pond located beneath the FGD Loadout Area will be closed by removal. The new Storm Water Basin will be constructed with six (6) inches of gravel, a 2-foot thick, recompacted soil liner with a hydraulic conductivity of 1×10^{-7} cm/s will be placed on the floor and sidewalls, with a maximum slope of 2.5:1. Above the recompacted soil be placed a 60-mil HDPE liner. The reconstructed Storm Water Basin will have all associated pipes, valves, pumps, and appurtenances necessary to discharge a design average flow of 209,100 gpd of plant waters, perimeter drain groundwater, and stormwater runoff tributary to the Lake Egypt in accordance with NPDES Permit No. IL0004316.

This Permit is issued subject to the following Special Condition(s). If such Special Condition(s) require(s) additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for issuance of a Supplemental Permit.

SPECIAL CONDITION 1: The discharge of treated effluent from New Storm Water Basin shall be governed by NPDES Permit No. IL0004316.

SPECIAL CONDITION 2: Issuance of this permit does not release the Permittees from any liability for prior violations of the Act or Rules and Regulations promulgated thereunder.

SPECIAL CONDITION 3: The operation of the treatment facilities must be under the direct and active field supervision of a certified industrial treatment plant operator in accordance with the State of Illinois Rules and Regulations, Title 35, Subtitle C, Chapter 1, Part 312.

SPECIAL CONDITION 4: At a minimum, groundwater monitoring, analysis and reporting shall be carried out as required in

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

DEL:SMT:2020-65428.docx

DIVISION OF WATER POLLUTION CONTROL

cc: EPA - Marion FOS
Hanson Professional Services, Inc.
Records
IEPA Legal - Gabriel Neibergall
Schiff Hardin LLP

Darin E. LeCrone, P.E.
Manager, Industrial Unit, Permit Section

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes Chapter 111-12. Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless the construction for which this permit is issued has been completed, this permit will expire (1) two years after the date of issuance for permits to construct sewers or wastewater sources or (2) three years after the date of issuance for permits to construct treatment works or pretreatment works.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentations of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit;

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants;

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rules or Regulation effective thereunder as a result of the construction or development authorized by this permit.

Electronic Filing: Received, Clerk's Office 01/13/2023

LOG NUMBERS: 2020-65428 **PERMIT NO.:** 2020-EA-65428
Bureau ID# W1998600002

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS **DATE ISSUED:** October 16, 2020
PREPARED BY: Hanson Professional Services, Inc.

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE – Storm Water Basin – Tributary to the Lake of Egypt (IL0004316)

the Agency approved closure and post closure care plans.

In the event that the hydraulic gradient is altered by rain events or is generally upward, the liner proposed in the design packet will fail according to the calculations provided by SIPC. Alternatives to resolve the hydraulic gradient data gap are as follows:

Consult a Professional Geotechnical Engineer (G.E.) in the State of Illinois and acquire certification from the G.E. that rainfall events that could occur at the Emery Pond area would not compromise the liner, both the geomembrane or the clay liner.

Within 30 days of permit issuance and prior to the initiation of construction, the applicant shall acquire and provide to the Agency, a certification from a Professional Geotechnical Engineer that the dewatering system as designed will prevent liner failure under reasonably expected hydrogeologic conditions at the site.

1. No portion of the storm water pond composite liner or alternative composite liner shall be constructed of CCR or CCB materials.

2. No portion of the structural fill, backfill, or drainage materials shall be composed of CCR or CCB materials.

3. The applicant shall monitor groundwater and report the results for the following constituents quarterly.

Antimony	Chloride	Molybdenum
Arsenic	Chromium	pH
Barium	Cobalt	Selenium
Beryllium	Fluoride	Sulfate
Boron	Lead	Thallium
Cadmium	Lithium	Total Dissolved Solids
Calcium	Mercury	Radium 226 and 228 combined
		Groundwater Elevation

4. The applicant shall, at a minimum, collect the quarterly samples of constituents listed in Condition 3 from wells EBG, EP-1, EP-3 and EP-4.

5. In addition to any other submissions required by the permit, the applicant shall submit two copies of all groundwater monitoring data including background calculations to the following:

   Illinois Environmental Protection Agency
   Division of Public Water Supplies
   Groundwater Section, Mail Code # 13
   1021 North Grand Avenue East
   Springfield, Illinois 62794-9276

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes Chapter 111-12. Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless the construction for which this permit is issued has been completed, this permit will expire (1) two years after the date of issuance for permits to construct sewers or wastewater sources or (2) three years after the date of issuance for permits to construct treatment works or pretreatment works.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentations of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit;

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants;

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rules or Regulation effective thereunder as a result of the construction or development authorized by this permit.

State of Illinois
Environmental Protection Agency

Permittee: Southern Illinois Power Cooperative
Log#: 2020-65428
Reviewed By: Shu-Mei Tsai **Date:** Monday, June 8, 2020

Names of Project

Permittee/Facility:
Southern Illinois Power Cooperative
11543 Lake of Egypt Road
Marion, Illinois 62959-8500
(Montgomery County)

Donald L.Gulley, President and CEO T: (618) 964-2202
dgulley@sipower.org

Engineer:
Hanson Professional Services, Inc.
1525 South Sixth Street
Springfield, Illinois 62703-6801

David B. Hoots T: (217) 747-9337
bhoots@hanson-inc.com

Intermediate Sewer Owner:

POTW:

Project:

The Agency received a construction permit request via email dated May 26, 2020 from Amy Antoniolli.

The closure of Emery Pond located at 11543 Lake of Egypt Road, Marion, Illinois will occur in two parts. The historical portion of Emery Pond located beneath the FGD Loadout Area will be closed by removal. The new Storm Water Basin will be constructed with six (6) inches of gravel, a 2-foot thick, recompacted soil liner with a hydraulic conductivity of 1×10^{-7} cm/s will be placed on the floor and sidewalls, with a maximum slope of 2.5:1. Above the recompacted soil be placed a 60-mil HDPE liner. The reconstructed Storm Water Basin will have all associated pipes, valves, pumps, and appurtenances necessary to discharge a design average flow of 209,100 gpd of plant waters, perimeter drain groundwater, and stormwater runoff tributary to the Lake Egypt in accordance with NPDES Permit No. IL0004316.

SIPC doesn't have data collected on hydraulic gradient and whether the vertical hydraulic gradient is downward or upward. No information to determine if the calculation the facility sent below is actually showing failure of the structure or that the dewatering design is sufficient.

Permittee: Southern Illinois Power Cooperative
Log#: 2020-65428
Reviewed By: Shu-Mei Tsai **Date:** Monday, June 8, 2020

According to phone call conference of IEPA (Lyn Dunaway, Lauren Martin, and Gabriel Neibergall) with SIPC, with bedrock so close to the surface, it is extremely likely that it is in direct connection with rainfall or other precipitation infiltration and could have periodic upward hydraulic gradient due to influx of water into the unit from rainfall.

The concern from the Groundwater Section is rainfall influx can reverse the flows dramatically if there is direct connection (and not just from nearby creeks and rivers) through outcrops (geologic or manmade through road cuts) or other infiltration points such as stormwater retention basins or other stormwater drainage cuts for roadways and other structures. The geologic and hydrogeologic descriptions do not assess surrounding geologic structures and potential for rainfall influx into the weathered bedrock or provide piezometer data showing that typical rainfalls or other precipitation events do not cause influx at the site. See the email dated August 26, 2020 from Lauren Martin.

The Permit Section received the memo dated September 3, 2020 from Lauren Martin. The Permit Section received the revised comments via email dated October 6, 2020 from Lynn Dunaway. The following conditions are included in the permit.

At a minimum, groundwater monitoring, analysis and reporting shall be carried out as required in the Agency approved closure and post closure care plans.
In the event that the hydraulic gradient is altered by rain events or is generally upward, the liner proposed in the design packet will fail according to the calculations provided by SIPC.
Alternatives to resolve the hydraulic gradient data gap are as follows:
Consult a Professional Geotechnical Engineer (G.E.) in the State of Illinois and acquire certification from the G.E. that rainfall events that could occur at the Emery Pond area would not compromise the liner, both the geomembrane or the clay liner.
Within 30 days of permit issuance and prior to the initiation of construction, the applicant shall acquire and provide to the Agency, a certification from a Professional Geotechnical Engineer that the dewatering system as designed will prevent liner failure under reasonably expected hydrogeologic conditions at the site.

1. No portion of the storm water pond composite liner or alternative composite liner shall be constructed of CCR or CCB materials.

2. No portion of the structural fill, backfill, or drainage materials shall be composed of CCR or CCB materials.

3. The applicant shall monitor groundwater and report the results for the following constituents quarterly.

Permittee: Southern Illinois Power Cooperative
Log#: 2020-65428
Reviewed By: Shu-Mei Tsai **Date:** Monday, June 8, 2020

Antimony	Chloride	Molybdenum
Arsenic	Chromium	pH
Barium	Cobalt	Selenium
Beryllium	Fluoride	Sulfate
Boron	Lead	Thallium
Cadmium	Lithium	Total Dissolved Solids
Calcium	Mercury	Radium 226 and 228 combined
		Groundwater Elevation

4. The applicant shall, at a minimum, collect the quarterly samples of constituents listed in Condition 3 from wells EBG, EP-1, EP-3 and EP-4.

5. In addition to any other submissions required by the permit, the applicant shall submit two copies of all groundwater monitoring data including background calculations to the following:

Illinois Environmental Protection Agency
Division of Public Water Supplies
Groundwater Section, Mail Code # 13
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Waste Characteristics and Effluent Limitations (mg/l unless noted)

Parameter	Raw	Treated	Downstream Samples
	Average (Maximum)	Average (Maximum)	Average (Maximum)
Ammonia Nitrogen (as N)	7.37 / 6.91	< 0.1	< 0.1
Arsenic (total)	0.0506 / < 0.025	< 0.025	< 0.025
Barium	0.360 / 0.299	0.186	0.112
Boron	6.58 / 1.49	34.4	37.6
BOD_5			
Cadmium	0.0069 / <0.001	0.0233	0.016
Chloride	388 / 1450	1840	1830
Chromium (total hexavalent)	< 0.005 / <0.025	0.005	0.005
Chromium (total trivalent)	0.0477 / 0.0053	0.0094	0.01
Copper	0.0699 / <0.005	0.0055	<0.005
Cyanide (total)	< 0.005 / 0.005	< 0.005	0.019
Cyanide (readily released @ 150°F & pH 4.5)			

State of Illinois
Environmental Protection Agency

Permittee: Southern Illinois Power Cooperative
Log#: 2020-65428
Reviewed By: Shu-Mei Tsai **Date:** Monday, June 8, 2020

Dissolved Oxygen			
Fecal Coliform			
Fluoride	0.61	5.55	5.33
Hardness (as $CaCO_3$)			
Iron (total)	58.9 / 0.782	< 0.015	0.19
Lead	0.24 / < 0.015	< 0.015	< 0.015
Manganese	3.53 / 0.0312	0.458	0.496
MBAS			
Mercury	< 8E7 / 2.2E-5	0.0122	0.00417
Nickel	0.0694 / 0.184	0.0717	0.075
Nitrates (as N)	< 0.1 / 1.29	13.8	5.89
Oil and Grease	< 6 / NTF	< 6	<6
Organic Nitrogen (as N)			
pH	7.63 / 12.4	7.92	7.15
Phenols	< 0.005 / NTF	< 0.005	<0.005
Phosphorous (as P)	1.97 / <0.1	< 0.1	<0.1
Selenium	0.0091 / 0.0881	0.334	0.179
Silver	< 0.001 / <0.001	<0.001	<0.001
Sulfate	1290 / 917	973	958
Suspended Solids	2070 / NTF	10	<6
Total Dissolved Solids	2910 / 5840	5530	5016.7
Zinc	0.741 / 0.0138	0.153	0.105
TKN (as N)	33 / NTF	<1	<1
Nitrogen, total			
Calcium			
Magnesium			

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Illinois Environmental Protection Agency

1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276 • (217) 782-3397

2020-65429

Application for Permit or Construction Approval
WPC-PS-1

For IEPA Use Only
Rcvd. 05/26/20

This form must be typewritten or printed legibly. This form may be completed manually or online using Adobe Reader, a copy of it saved locally, printed, and signed before it is submitted to:

Illinois Environmental Protection Agency
Permit Section, Division of Water Pollution Control
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Reset All Fields

1. Owner Name: Southern Illinois Power Cooperative

Name of Project: Emery Pond retrofit

Project Location Address (include nearest street and city address): 11543 Lake of Egypt Road

City: Marion Zip Code: 62959-8500

Township: Southern County: Williamson

2. Brief Description of the Project:

Install a composite liner system (compacted soil with geomembrane).

3. Documents being Submitted: If the Project involves any of the items listed below, submit the corresponding schedule, and check the appropriate boxes

	Schedule			Schedule	
Private Sewer Connection/Extensions	A/B	☐	Spray Irrigation	H	☐
Sewer Extension Construction Only	C	☐	Septic Tanks	I	☐
Sewage Treatment Works	D	☐	Industrial Treatment/Pretreatment	J	☒
Excess Flow Treatment	E	☐	Waste Characteristics	N	☒
Lift Station/force Main	F	☐	Erosion Control	P	☐
Fast Track Service Connection	FTP	☐	Trust Disclosure	T	☐
Sludge Disposal	G	☐			

Plans:

Title: Emery Pond Retrofit Plan No. of Pages: 13

Specifications:

Title: Bidding Specifications and Project Manual for Emery Pond Retrofit No. of Books/Pages: 186

Other Documents:
(Please specify)

3.1 Illinois Historic Preservation Agency approval letter ○ Yes ◉ No

(If you have a copy of the IHPA approval letter, please send in with the Permit Application Package)

4. Land Trust: Is the project identified in item Number 1 therein, for which a permit is requested, to be constructed on land which is the subject of a trust? ○ Yes ◉ No

If yes, Schedule T (Trust Disclosure) must be completed and item 7.1.1 must be signed by a beneficiary trustee or trust officer.

5. This is an application for (Check appropriate box):

◉ A. Joint Construction and Operating Permit

○ B. Authorization to Construct (See Instructions) NPDES Permit No. IL00: _____ Issuance Date: _____

○ C. Construction Only Permit (Does Not Include Operations)

○ D. Operate Only Permit (Does Not Include Construction)

○ E. Supplemental Permit Request to Existing State Construction or Operating Permit No.: _____

Issuance Date: _____

6. Certifications and Approval

6.1 Certificate by Design Engineer (When required: refer to instructions)

I hereby certify that I am familiar with the information contained in this application, including the attached schedules indicated above, and that to the best of my knowledge and belief such information is true, complete and accurate. The plans and specifications (specifications other than Standard Specifications or local specifications on file with this Agency) as described above were prepared by me or under my direction.

Licensed Professional Engineer's Name: David B. Hoots

Licensed Professional Engineer's Title: Civil Engineer

Registration Number: 062-055737 License Expiration Date: 11/30/2021

Company: Hanson Professional Services Inc.

Street Address: 1525 S. Sixth Street PO Box: _____

City: Springfield State: IL Zip + 4: 62703-6801

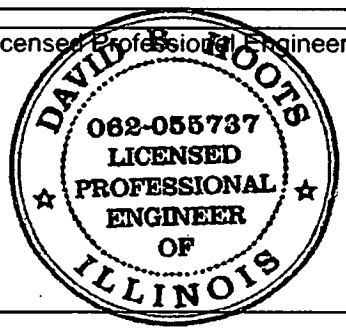
Email Address: bhoots@hanson-inc.com Phone: 217-747-9337

Printed Name: DAVID B. HOOTS

David B. Hoots
Original Signature

5-19-2020
Date

Licensed Professional Engineer's Seal



7. Certifications and Approvals for Permits:

7.1 Certificate by Applicant(s):

I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application, and am/are authorized to sign this application in accordance with the Rules and Regulations of the Illinois Pollution Control Board. I/we hereby agree to conform with the Standard conditions and with any other Special Conditions made part of this Permit.

7.1.1 Name of Applicant for Permit to Construct: Donald Gulley

Title: President and CEO Organization: Southern Illinois Power Cooperative

Street Address: 11543 Lake of Egypt Road PO Box: _____

City: Marion State: IL Zip + 4: 62959-8500

Email Address: ~~gallenbach~~dgulley@sipower.org Phone: 618-964-2202

Printed Name: DONALD L. GULLEY

Original Signature

5/20/2020
Date

7.1.2 Name of Applicant for Permit to Own and Operate: Donald Gulley

Title: President and CEO Organization: Southern Illinois Power Cooperative

Street Address: 11543 Lake of Egypt Road PO Box:

City: Marion State: IL Zip + 4: 62959-8500

Email Address: dgulley gallenbach@sipower.org Phone: 618-964-2202

Printed Name: DONALD L GULLEY

Donald L Gulley 5/20/2020

Original Signature Date

7.2 Attested (Required When Applicant is a Unit of Government)

Title: n/a

City clerk, Village Clerk, Sanitary District Clerk, etc.)

Original Signature Date

7.3 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or a duly authorized representative.

7.4 Certificate by Intermediate Sewer Owner

I hereby certify that (Please check one):

○ 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Illinois Environmental Protection Act or Subtitle C. Chapter I, or

○ 2. The Illinois Pollution Control Board, in PCB _____ dated _____ granted a variance from Subtitle C, Chapter I to allow construction of facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

n/a

Sewer System Owner:

Address:

City: State: Zip + 4:

Email Address: Phone:

Printed Name:

Original Signature Date

7.4.1 Additional Certificate by Intermediate Sewer Owner

I hereby certify that (Please check one):

○ 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Illinois Environmental Protection Act or Subtitle C. Chapter I, or

○ 2. The Illinois Pollution Control Board, in PCB _____ dated _____ granted a variance from Subtitle C, Chapter I to allow construction of facilities that are the subject of this application.

○ 3. Not applicable.

Name and location of sewer system to which this project will be tributary:

n/a

Sewer System Owner: _____

Address: _____

City: _____ State: ____ Zip + 4: _____

Email Address: _____ Phone: _____

Printed Name: _____

_____ _____

Original Signature Date

7.5 Certificate by Waste Treatment Works Owner

I hereby certify that (Please check one):

○ 1. The wastewater treatment plant to which this project will be tributary has adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Illinois Environmental Protection Act or Subtitle C. Chapter I, or

○ 2. The Illinois Pollution Control Board, in PCB _____ dated _____ granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.

○ 3. I also certify that, if applicable, the industrial waste discharges described in the application are capable of being treated by treatment works.

○ 4. Not applicable.

Name of Waste Treatment Works: n/a

Waste Treatment Works Owner: _____

Address: _____

City: _____ State: ____ Zip + 4: _____

Email Address: _____ Phone: _____

Printed Name: _____

_____ _____

Original Signature Date

Save Form with New Name

Print Form

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FOR IEPA USE:
LOG #
DATE RECEIVED: 05/26/20

2020-65428

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION

Springfield, Illinois 62706

SCHEDULE J INDUSTRIAL TREATMENT WORKS CONSTRUCTION OR PRETREATMENT WORKS

1. NAME AND LOCATION:
   1.1 Name of project Emery Pond retrofit
   1.2 Plant Location
   1.2.1 NE¼ (Quarter Section) 26 (Section) 2E. (Township) 10S. (Range) 3rd (P.M.)
   1.2.2 Latitude 37 deg. 37 min. 6.7 sec. "NORTH
   1.2.3 Longitude 88 deg. 57 min. 13. sec. "WEST
   1.2.3 Name of USGS Quadrangle Map (7.5 or 15 minute) Goreville 7½' series
2. NARRATIVE DESCRIPTION AND SCHEMATIC WASTE FLOW DIAGRAM: (see instructions)

Emery Pond manages primarily storm water, with additional amounts of plant waters and groundwater. Water is pumped from Emery Pond to the South Fly Ash Pond for discharge through NPDES Outfall 002.

   2.1 PRINCIPAL PRODUCTS:

Electricity

   2.2 PRINCIPAL RAW MATERIALS:

Coal

3. DESCRIPTION OF TREATMENT FACILITIES:
   3.1 Submit a flow diagram through all treatment units showing size, volumes, detention times, organic loadings, surface settling rate, weir overflow rate, and other pertinent design data. Include hydraulic profiles and description of monitoring systems.
   3.2 Waste Treatment Works is: Batch ☐ , Continuous ☒ , No. of Batches/day _____ , No. of Shifts/day _____
   3.3 Submit plans and specifications for proposed construction.
   3.4 Discharge is: Existing ☒ ; Will begin on _____ .
4. DIRECT DISCHARGE IS TO: Receiving Stream ☒ Municipal Sanitary Sewer ☐ Municipal storm or municipal combined sewer ☐
   If receiving stream or storm sewer are indicated complete the following:
   Name of receiving stream Little Saline Creek ; tributary to South Fork Saline River ;
   tributary to Saline River ; tributary to Ohio River ;
5. Is the treatment works subject to flooding? Yes ☐ No ☒ If so, what is the maximum flood elevation of record (in reference to the treatment works datum) and what provisions have been made to eliminate the flooding hazard?

n/a

6. APPROXIMATE TIME SCHEDULE: Estimated construction schedule:
   Start of Construction 08/17/20 ; Date of Completion 12/01/20
   Operation Schedule 12/01/20 ; Date Operation Begins 12/01/20
   100% design load to be reached by year 2021 .
7. DESIGN LOADINGS
   7.1 Design population equivalent (one population equivalent is 100 gallons of wastewater per day, containing 0.17 pounds of BOD_5 and 0.20 pounds of suspended solids;
   BOD n/a ; Suspended Solids unknown ; Flow unknown .
   7.2 Design Average Flow Rate 0.053 MGD.

7.3 Design Maximum Flow Rate 1.15 MGD.

7.4 Design Minimum Flow Rate 0.0 MGD.

7.5 Minimum 7-day, 10-year low flow 4.2 cfs 2.7 MGD.

Minimum 7-day, 10-year flow obtained from 7-Day, 10-Year Low Flow Maps, Map 10, Southern Region

7.6 Dilution Ratio 51.6 : 1.

8. FLOW TO TREATMENT WORKS (if existing):

8.1 Flow (last 12 months)

8.1.1 Average Flow unknown MGD

8.1.2 Maximum Flow unknown MGD

8.2 Equipment used in determining above flows

9. Has a preliminary engineering report for this project been submitted to this Agency for Approval?

Yes ☐ No ☒ . If so, when was it submitted and approved. Date Submitted n/a

Certification # _____

Dated _____

10. List Permits previously issued for the facility:

NPDES Permit No. IL0004316

11. Describe provisions for operation during contingencies such as power failures, flooding, peak loads, equipment failure, maintenance shut downs and other emergencies.

Emery Pond is designed to retain a 25-year, 6-hour storm event without need to pump or divert storm water. Flooding is not an issue.

12. Complete and submit Schedule G if sludge disposal will be required by this facility.

13. WASTE CHARACTERISTICS: Schedule N must be submitted.

14. TREATMENT WORKS OPERATOR CERTIFICATION: List names and certification numbers of certified operators:

Jason A. McLaurin, Class K Industrial, Operator ID: 241172063

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This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required under that section. Failure to do so may prevent this form from being processed and could result in your application being denied.

For IEPA Use:
LOG #
DATE RECEIVED: 05/26/20

2020-65428

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62794-9276

SCHEDULE N WASTE CHARACTERISTICS

1. Name of Project Emery Pond retrofit

2. FLOW DATA

	EXISTING	PROPOSED-DESIGN
2.1 Average Flow (gpd)	unknown	variable
2.2 Maximum Daily Flow (gpd)	unknown	variable

2.3 TEMPERATURE

Time of Year	Avg. Intake Temp. F	Avg. Effluent Temp. F	Max. Intake Temp F.	Max. Effluent Temp F.	Max. Temp. Outside Mixing Zone F
SUMMER					
WINTER					

2.4 Minimum 7-day, 10-year flow: 4.2 cfs 2.7 MGD.

2.5 Dilution Ratio: 51.6 : 1

2.6 Stream flow rate at time of sampling n/a cfs _____ MGD.

3. CHEMICAL CONSTITUENT Existing Permitted Conditions ☐ ; Existing conditions ☐ ; Proposed Permitted Conditions ☒

Type of sample: ☒ grab (time of collection 25 Feb); ☐ composite (Number of samples per day _____)

(see instructions for analyses required) *RAW WASTE = groundwater / sediment pore waters, TREATED EFFLUENT = Emery Pond waters, and DOWNSTREAM = South Fly Ash Pond (avg. 3 samples).*

CONSTITUENT	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l) Max.	UPSTREAM (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Ammonia Nitrogen (as N)	7.37 / 6.91	<0.1		<0.1
Arsenic (total)	0.0506 /<0.025	<0.025		<0.025
Barium	0.360 / 0.299	0.186		0.112
Boron	6.58 / 1.49	34.4		37.6
BOD_5	NTF	NTF		NTF
Cadmium	0.0069 / <0.001	0.0233		0.016
Carbon Chloroform Extract	NTF	NTF		NTF
Chloride	388 / 1450	1840		1830
Chromium (total hexavalent)	<0.005 / <0.025	0.005		0.005
Chromium (total trivalent)	0.0477 / 0.0053	0.0094		0.01

CONSTITUENT	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l) Max.	UPSTREAM (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Copper	0.0699 / <0.005	0.0055		<0.005
Cyanide (total)	<0.005 / 0.005	<0.005		0.019
Cyanide (readily released @ 150° F & pH 4.5)	NTF	NTF		NTF
Dissolved Oxygen	NTF	NTF		NTF
Fecal Coliform	NTF	NTF		NTF
Fluoride	0.61	5.55		5.33
Hardness (as Ca CO_3)	NTF	NTF		NTF
Iron (total)	58.9 / 0.782	<0.015		0.19
Lead	0.24 / <0.015	<0.015		<0.015
Manganese	3.53 / 0.0312	0.458		0.496
MBAS	NTF	NTF		NTF
Mercury	<8E7 / 2.2E-5	0.0122		0.00417
Nickel	0.0694 / 0.184	0.0717		0.075
Nitrates (as N)	<0.1 / 1.29	13.8		5.89
Oil & Grease (hexane solubles or equivalent)	<6 / NTF	<6		<6
Organic Nitrogen (as N)	NTF	NTF		NTF
pH	7.63 / 12.4(lab)	7.92		7.15
Phenols	<0.005 / NTF	<0.005		<0.005
Phosphorous (as P)	1.97 / <0.1	<0.1		<0.1
Radioactivity	NTF	NTF		NTF
Selenium	0.0091 / 0.0881	0.334		0.179
Silver	<0.001 / <0.001	<0.001		<0.001
Sulfate	1290 / 917	973		958
Suspended Solids	2070 / NTF	10		<6
Total Dissolved Solids	2910 / 5840	5530		5016.7
Zinc	0.741 / 0.0138	0.153		0.105
Others				
Total Kjeldahl Nitrogen	33 / NTF	<1		<1

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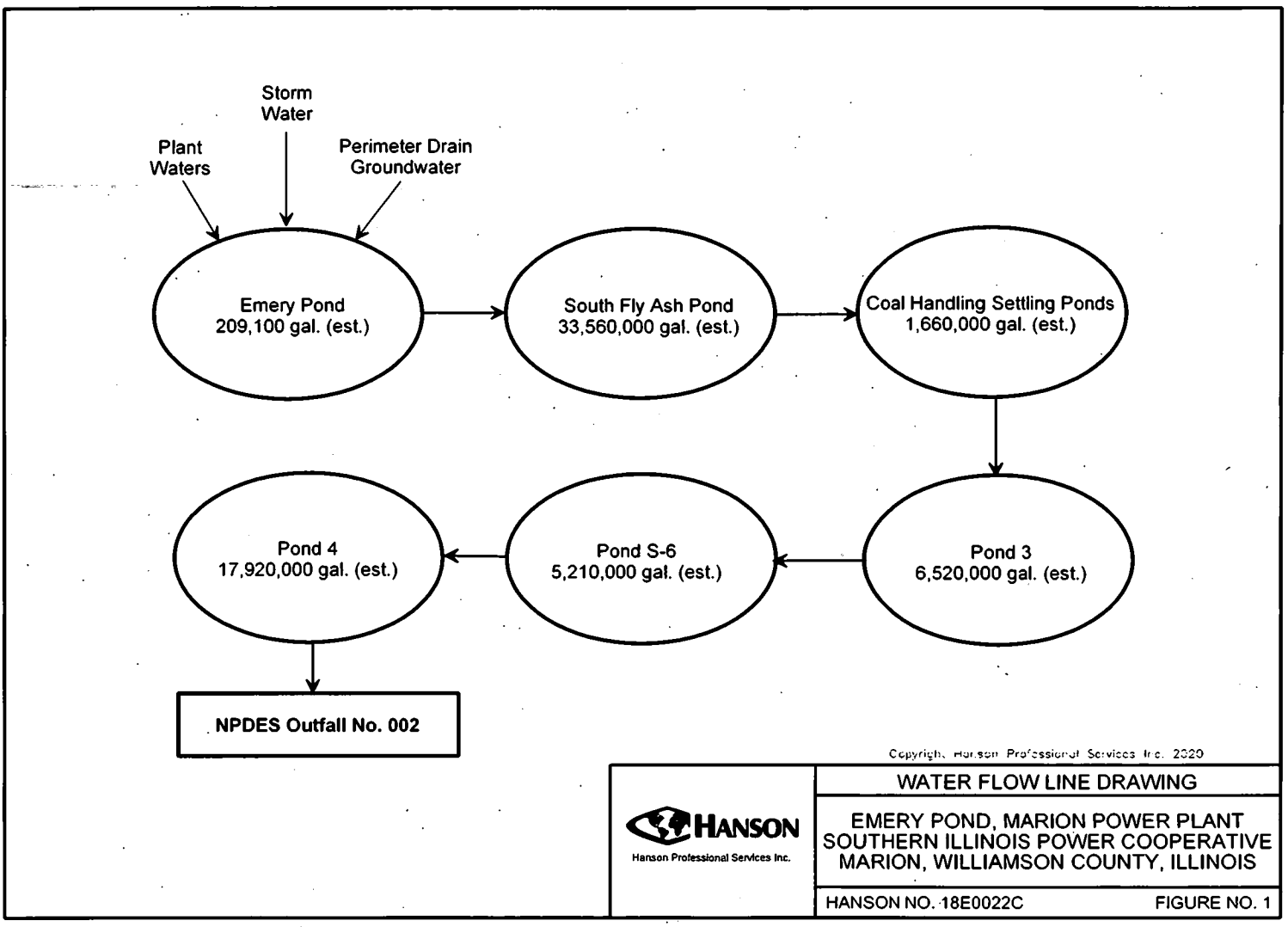
2020-65428



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HANSON
Hanson Professional Services Inc.

WATER FLOW LINE DRAWING

EMERY POND, MARION POWER PLANT
SOUTHERN ILLINOIS POWER COOPERATIVE
MARION, WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022C FIGURE NO. 1

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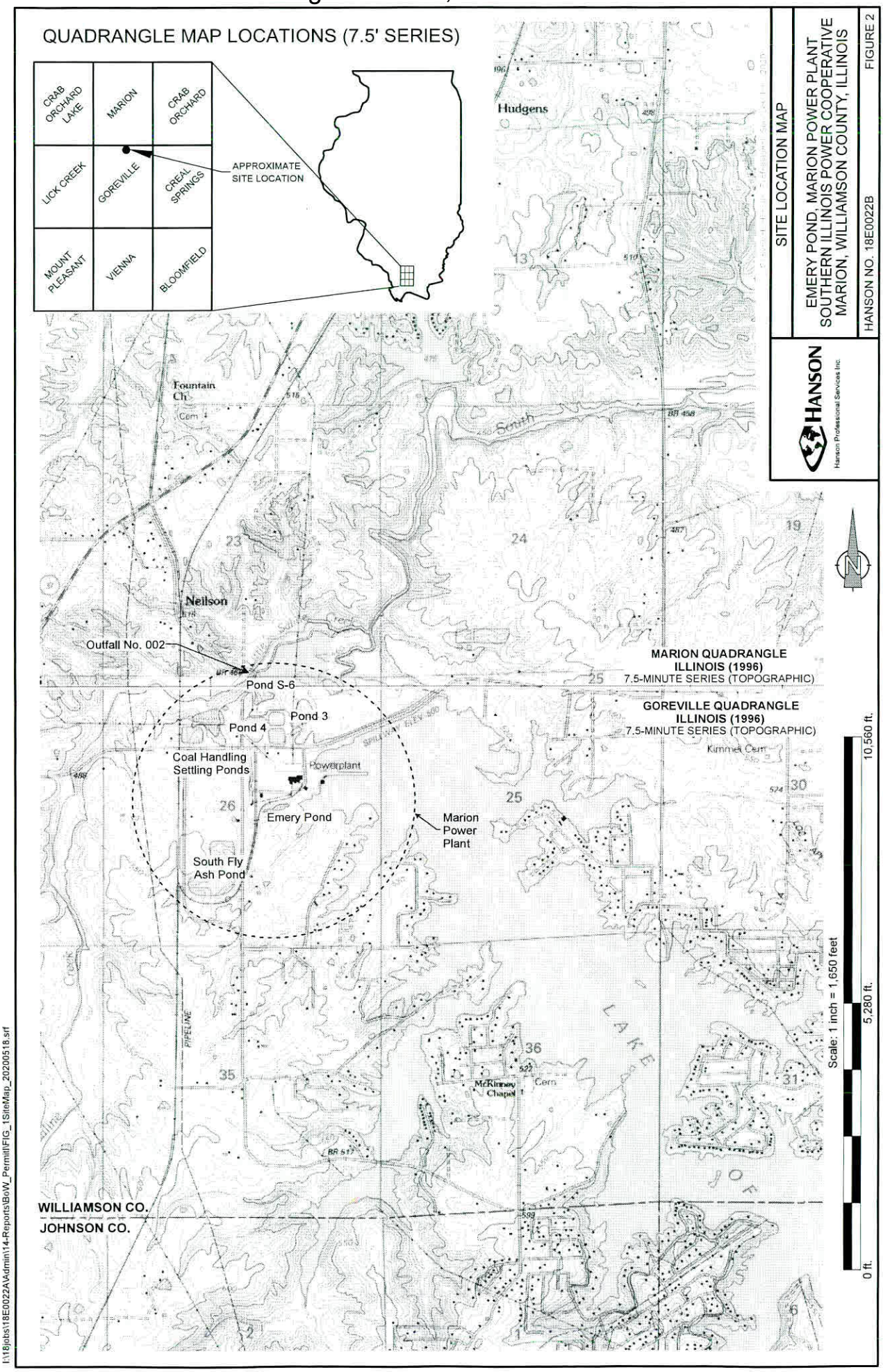

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Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois EPA FOIA Exemption Reference Sheet

SID: 42

Agency ID: 170001457199 Media File Type: WATER
Bureau ID: W1998600002
Site Name: Southern Ill Power-marion
Site Address1: 11543 Lake Of Egypt Rd
Site Address2:
Site City: Marion State: IL Zip: 62959-

This record has been determined to be partially or wholly exempt from public disclosure

Exemption Type:

Portion Removed

Exempt Doc #: 4 **Document Date:** 10/16/2020 **Staff:** EMI

Document Description: DRAINAGE AREA MAP

Category ID: 03F **Category Description:** WATER STATE CONSTRUCTION PERMIT **Exempt Type:** Portion Removed
Permit ID: 2020-EA-65428 **Date of Determination:** 2 /17/2021

Electronic Filing: Received, Clerk's Office 01/13/2023

MEMORANDUM

Date: September 3, 2020

To: Shu-Mei Tsai

From: Lauren Martin

Subject: Review and Comment on the Southern Illinois Power Cooperative, Log# 2020-65428, Dated XXXXXX, Williamson County

The Groundwater Section has completed review of the information provided for the above referenced site. The Groundwater Section identified the following item as a deficient data issue with respect to the submitted permit. Additionally, the Groundwater Section has identified 5 conditions for the Permit.

The Groundwater Section notes that the site groundwater modeling evaluations, site plans and calculations provided do not exhibit hydraulic gradient data for the weathered bedrock hydrogeologic unit has been collected. Additionally, in a call with SIPC on August 19, 2020, SIPC Contractor(s) admitted that they were assuming that hydraulic gradient in the weathered bedrock was downward.

The above-mentioned data gap is insufficient. In the event that the hydraulic gradient is altered by rain events or is generally upward (or artesian, meaning that the hydraulic head elevation is greater than the elevation of the top of the unit referenced), the liner proposed in the design packet will fail according to the calculations provided by SIPC. Alternatives to resolve the hydraulic gradient data gap are as follows:

Alternative 1:
Install 3 or more piezometers into the weathered bedrock unit at the Emery Pond area of the Site. Collect water levels in the weathered bedrock unit during the spring months or months of the year containing the greatest precipitation according to the National Weather Service at a rate of at least once per week for 3 months or within 24 hours of each precipitation event at the site for a month and a half. Create and produce potentiometric surface maps of the Emery Pond area including static water levels and precipitation event rises. Determine if there are instances in which precipitation events occur that will cause failure in the liner, both the geomembrane and the clay liner. Provide locations of outfalls or seeps from the weathered bedrock unit to Lake of Egypt. Provide documentation of each step to the IEPA.

Alternative 2:

Install 3 or more piezometers into the weathered bedrock unit at the Emery Pond area at the Site. Collect 2 rounds of static water levels at least 4 weeks apart. Create and produce potentiometric surface maps for the water level collection events. Collect data on precipitation events, including storm events, over the course of the preceding 5 years at the site from the National Weather Service. Precipitation data should include but not be limited to Lake of Egypt water surface elevations, precipitation quantities per 24-hour period, etc. Determine where the storm water is infiltrating into the weathered bedrock at or within 1 mile of the site, assessment should include an evaluation of road cuts, existing onsite and offsite storm water retention and management systems, and any other potential avenue for infiltration into the weathered bedrock from precipitation events (or rather, identify any potential aquifer recharge locations near the site). Calculate the storage capacity of the proposed dewatering system. Then determine if there is any potential for a precipitation event to overwhelm the storage capacity of the proposed dewatering system and provide a Professional Engineer (PE) certification that the proposed dewatering system is sufficient to eliminate the potential for failure of the proposed liner system.

Alternative 3:
Consult a Professional Geotechnical Engineer (G.E.) in the State of Illinois and acquire certification from the G.E. that rainfall events that could occur at the Emery Pond area would not compromise the liner, both the geomembrane or the clay liner.
Alternative 3 has one Condition as follows:
Within 30 days of permit issuance and prior to the initiation of construction, the applicant shall acquire and provide to the Agency, a certification from a Professional Geotechnical Engineer that the dewatering system as designed will prevent liner failure under reasonably expected hydrogeologic conditions at the site.

The following Conditions apply to the Permit:

Condition 1
No portion of the storm water pond composite liner or alternative composite liner shall be constructed of CCR or CCB materials.

Condition 2
No portion of the structural fill, backfill, or drainage materials shall be composed of CCR or CCB materials.

Condition 3
The applicant shall monitor groundwater and report the results for the following constituents quarterly.
Antimony
Arsenic
Barium
Beryllium
Boron

Cadmium
Calcium
Chloride
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
pH
Selenium
Sulfate
Thallium
Total Dissolved Solids
Radium 226 and 228 combined
Groundwater Elevation

Condition 4
The applicant shall, at a minimum, collect the quarterly samples of constituents listed in Condition 3 from wells EBG, EP-1, EP-3 and EP-4.

In addition to any other submissions required by the permit, the applicant shall submit two copies of all groundwater monitoring data including background calculations to the following:

Groundwater Section
Illinois Environmental Protection Agency
Division of Public Water Supplies
Mail Code 13
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

LOG NUMBERS: 2020-65428 **PERMIT NO.:** 20
Bureau ID# W1998600002

FINAL PLANS, SPECIFICATIONS, APPLICATION
AND SUPPORTING DOCUMENTS **DATE ISSUED:**
PREPARED BY: Hanson Professional Services, Inc.

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE – Storm Water Basin – Tributary 1 (IL0004316)

a certified industrial treatment plant operator in accordance with the State of Illinois Rules and Subtitle C, Chapter 1, Part 312.

SPECIAL CONDITION 4: Fly ash shall be handled, stored and disposed of on site in a manner contribute to violations of the Act. No additional fly ash may be disposed of or placed in any unline except during construction or closure activities in accordance with any enforcement settlement, site action taken by the Illinois Pollution Control Board.

SPECIAL CONDITION 5: At a minimum, groundwater monitoring, analysis and reporting shall be in the Agency approved closure and post closure care plans.

check with Bill Buscher or Lynn Dunaway to find how they want the permit language to read

In the event that the hydraulic gradient is altered by rain events or is generally upward ~~(or arte hydraulic head elevation is greater than the elevation of the top of the unit referenced)~~, the liner packet will fail according to the calculations provided by SIPC. Alternatives to resolve the hydraulic as follows:

~~ALTERNATIVE 1:~~

~~Install 3 or more~~ piezometers into the weathered bedrock unit at the Emery Pond area of the Site. ~~the weathered bedrock unit during the spring months or months of the year containing the greatest~~ to the National Weather Service ~~at a rate of at least once per week for 3 months or within 24 hou~~ event at the site for a month and a half. Create ~~and produce potentiometric surface~~ maps of including static water levels ~~and precipitation event rises~~. Determine if ~~there are instances in whi~~ occur that will cause failure in the liner, both the geomembrane and the clay liner. Provide locatic ~~from the weathered~~ bedrock unit to Lake of Egypt. Provide documentation of each step to the IEPA

~~ALTERNATIVE 2:~~

~~Install~~ 3 or more piezometers into the weathered bedrock unit at the Emery Pond area at the Si static water levels ~~at least~~ 4 weeks apart. Create and produce potentiometric surface maps for th events. Collect data on precipitation events, including storm events, over the course of the prece from the National Weather Service. Precipitation data should include but not be limited to Lake elevations, precipitation quantities per 24-hour period, etc. Determine where the storm water weathered bedrock at or within 1 mile of the site, assessment should include an evaluation of ro and offsite storm water retention and management systems, and any other potential avenue weathered bedrock from precipitation events (or rather, identify any potential aquifer recharge l Calculate the storage capacity of the proposed dewatering system. Then determine ~~if there~~ precipitation event to overwhelm the storage capacity of the proposed dewatering system and Engineer (PE) certification that the proposed dewatering system is sufficient to eliminate the po proposed liner system.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

LOG NUMBERS: 2020-65428 **PERMIT NO.:** 20
Bureau ID# W1998600002

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS **DATE ISSUED:**
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SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE – Storm Water Basin – Tributary t (IL0004316)

~~ALTERNATIVE 3:~~

Consult a Professional Geotechnical Engineer (G.E.) in the State of Illinois and acquire certificat rainfall events that could occur at the Emery Pond area would not compromise the liner, both the clay liner.

~~Alternative 3 has one Condition as follows:~~

Within 30 days of permit issuance and prior to the initiation of construction, the applicant shall acq Agency, a certification from a Professional Geotechnical Engineer that the dewatering system as liner failure under reasonably expected hydrogeologic conditions at the site.

The following Conditions apply to the Permit:

SPECIAL CONDITION 6: No portion of the storm water pond composite liner or alternative co constructed of CCR or CCB materials.

SPECIAL CONDITION 7: No portion of the structural fill, backfill, or drainage materials shall be con materials.

SPECIAL CONDITION 8: The applicant shall monitor groundwater and report the results for the quarterly.

Antimony	Chloride	Molybdenum
Arsenic	Chromium	pH
Barium	Cobalt	Selenium
Beryllium	Fluoride	Sulfate
Boron	Lead	Thallium
Cadmium	Lithium	Total Dissolved Solids
Calcium	Mercury	Radium 226 and 228 comb
		Groundwater Elevation

SPECIAL CONDITION 9: The applicant shall, at a minimum, collect the quarterly samples o Condition 3 from wells EBG, EP-1, EP-3 and EP-4.

In addition to any other submissions required by the permit, the applicant shall submit two cop monitoring data including background calculations to the following:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

LOG NUMBERS: 2020-65428 **PERMIT NO.:** 20
Bureau ID# W1998600002

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS **DATE ISSUED:**
PREPARED BY: Hanson Professional Services, Inc.

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE – Storm Water Basin – Tributary t (IL0004316)

Illinois Environmental Protection Agency
Division of Public Water Supplies
Groundwater Section, Mail Code # 13
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

From: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Sent: Monday, October 5, 2020 11:04 AM
To: Buscher, Bill <BILL.BUSCHER@Illinois.gov>; Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Cc: LeCrone, Darin <Darin.LeCrone@Illinois.gov>
Subject: RE: SIPC GW Data Gap Log 2020-65428.docx

Good morning,

Please see the Special Condition 5 and verify if this is how you want the permit language to read? Thanks

Shu-Mei

From: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Sent: Friday, September 18, 2020 1:26 PM
To: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Subject: RE: SIPC GW Data Gap Log 2020-65428.docx

Yes

From: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Sent: Friday, September 18, 2020 1:02 PM

To: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Subject: FW: SIPC GW Data Gap Log 2020-65428.docx

Lynn:

Just want to confirm that I can use the conditions for the State Construction Permit? Thanks

Shu-Mei

From: Martin, Lauren <Lauren.Martin2@Illinois.gov>
Sent: Thursday, September 3, 2020 10:11 AM
To: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Subject: FW: SIPC GW Data Gap Log 2020-65428.docx

FYI. I sent this back to Lynn. I incorporated his comments.

Lauren Martin, MS
Environmental Protection Geologist
Illinois Environmental Protection Agency
Bureau of Water
Division of Public Water Supplies
Groundwater Section
1021 N. Grand Avenue
Springfield, IL 62702
D: 217-524-9048
Lauren.martin2@illinois.gov

From: Martin, Lauren
Sent: Thursday, September 3, 2020 10:10 AM
To: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Cc: Buscher, Bill <BILL.BUSCHER@Illinois.gov>
Subject: RE: SIPC GW Data Gap Log 2020-65428.docx

Hi Lynn,
I implemented your changes to the Permit memo.
Please take a look.
I think this makes me current on the items we needed for the call today.
Thanks,
Lauren

Lauren Martin, MS
Environmental Protection Geologist
Illinois Environmental Protection Agency
Bureau of Water
Division of Public Water Supplies
Groundwater Section
1021 N. Grand Avenue
Springfield, IL 62702
D: 217-524-9048
Lauren.martin2@illinois.gov

From: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Sent: Thursday, August 27, 2020 8:42 AM
To: Martin, Lauren <Lauren.Martin2@Illinois.gov>

Cc: Buscher, Bill <BILL.BUSCHER@Illinois.gov>
Subject: RE: SIPC GW Data Gap Log 2020-65428.docx

Lauren,
For your geotechnical Permit Condition I would boil it way down and not give them options, but do give them a time limit.
For example:
Condition
Within 30 days of permit issuance and prior to the initiation of construction, the applicant shall acquire and provide to the Agency, a certification from a Professional Geotechnical Engineer that the dewatering system as designed will prevent liner failure under reasonably expected hydrogeologic conditions at the site.

The 30 days is an example, if you think more time is reasonable (45, 60 etc.) that's ok too.

I would also like to add the following recommendations to your memo, after your Geotech condition, but before your final condition.

Condition
No portion of the storm water pond composite liner or alternative composite liner shall be constructed of CCR or CCB materials.

Condition
No portion of the structural fill, backfill, or drainage materials shall be composed of CCR or CCB materials.

Condition
The applicant shall monitor groundwater and report the results for the following constituents quarterly.
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Calcium
Chloride
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
pH
Selenium
Sulfate
Thallium
Total Dissolved Solids
Radium 226 and 228 combined
Groundwater Elevation

Condition

The applicant shall, at a minimum, collect the quarterly samples from wells EBG, EP-1, EP-3 and EP-4.

This last condition may seem odd since they are going to be required to monitor these wells plus more under the corrective action for (as predicted) 25 years. However, if the storm water pond is operating in 30 years, this condition should be in here to pick up the monitoring around the storm water pond.

Let me know if you have questions.
Lynn

From: Martin, Lauren <Lauren.Martin2@Illinois.gov>
Sent: Wednesday, August 26, 2020 3:42 PM
To: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Cc: Buscher, Bill <BILL.BUSCHER@Illinois.gov>
Subject: SIPC GW Data Gap Log 2020-65428.docx

Hi Lynn and Shu-Mei.
Please take a look and provide any necessary feedback before we finalize this.
Bill—if you have time to chime in, feel free.
Thanks,
Lauren

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Schiff Hardin

Schiff Hardin LLP
233 South Wacker Drive
Suite 7100
Chicago, IL 60606

T 312.258.5500
F 312.258.5600

schiffhardin.com

June 18, 2020

Amy C. Antoniolli
(312) 258.5550
aantoniolli@schiffhardin.com

VIA EMAIL TO SHU-MEI.TSAI@ILLINOIS.GOV

Re: Responses to IEPA Comments Dated June 2, 2020 on Southern Illinois Power Cooperative (SIPC), W1998600002, Non-CCR Wastewater Impoundment to Replace Emery Pond# 2020-6528, Williamson County

Dear Ms. Tsai:

In response to the Illinois Environmental Protection Agency Groundwater Section's June 2, 2020 comments on SIPC's application for a construction permit to replace Emery Pond with a stormwater basin, SIPC responds as follows:

Comment 1
This project must not be named Emery Pond. Emery Pond is an existing coal combustion residuals (CCR) surface impoundment at SIPC. The proposed pond will not receive CCR. Because there will be no CCR permitted, this project is also not a retrofit nor a lining of Emery Pond. Emery Pond will be doing remediation for a number of years after the physical removal of existing CCR has been completed. Therefore, Emery Pond will remain a regulated CCR surface impoundment, while the proposed wastewater pond will not be subject to federal Part 257 or proposed Part 845.

The new unit will be named Storm Water Basin. Please see a revised page 1 of the construction permit application and revised Figure 1, both attached as **Attachment A**.

Comment 2
The proposed pond must have a monitoring well system. SIPC may designate some of the existing wells as the groundwater monitoring system for the proposed pond. Once SIPC has completed remediation and is in compliance with the CCR regulations, the designated monitoring wells will remain active as the monitoring system for the proposed pond. Alternatively, SIPC may install monitoring wells specifically for groundwater monitoring for the proposed pond.

Comment 3
The proposed pond must have a groundwater monitoring program. SIPC may propose to monitor the same constituents as are required by the CCR regulations or a set of Part 620 constituents. However, it should be noted that the groundwater quality standards of Part 620 apply to the proposed wastewater pond, not the groundwater protection standards of the CCR regulations.

In response to Comments 2 and 3 together, SIPC proposes that the existing groundwater monitoring well system, comprised of wells EBG and EP-1 through 4, be used as the groundwater monitoring system for

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the Storm Water Basin. SIPC proposes to sample these five wells for compliance with the groundwater quality standards pursuant to the plan set forth in the previously submitted groundwater monitoring plan dated March 29, 2019 and attached hereto as **Attachment B**. Note that some changes to the anticipated groundwater management zone and the related groundwater monitoring plan may be necessary in light of ongoing discussions between SIPC and Illinois EPA. SIPC proposes to sample for the constituents listed in **Attachment B**, Table 5, the remaining 35 Ill. Adm. Code 620.230 parameters, which are listed in **Attachment B**, Table 6.

Comment 4
The project description must include the installation of the perimeter drain system. The perimeter drain will be needed to allow the proper installation and operation of the composite liner in the proposed wastewater pond due to the existence of a shallow groundwater table.

Please see a revised page 1 of the construction permit application (**Attachment A**). The perimeter drain system, sometimes referred to as the "toe drain" or "subsurface drain," is illustrated on pages C303 and C304 of SIPC's construction permit application (**Attachment C**). The perimeter drain will be installed to assist the operation of the planned Storm Water Basin's composite liner.

Comment 5
Figure 1 indicates that the "South Fly Ash Pond" sends water to the "Coal Handling Settling Ponds", then to "Pond 3". The applicant should confirm whether the flow through depicted is accurate or if the "South Fly Ash Pond" and the "Coal Handling Settling Ponds" are separate sources flowing to "POND 3".

Yes, the Figure 1 drawing is correct. Water from the "South Fly Ash Pond" flows to the "Coal Handling Settling Ponds," then to "Pond 3."

Comment 6
Figure 3 indicates that the Thickener Drain discharges to "Emery Pond" however, the Note indicates that the Thickener Drain will no longer discharge to "Emery Pond." The applicant must correct this apparent discrepancy.

The Thickener Drain discharge depicted in Figure 3 consists of Unit 4 scrubber decant water, which has been discharged only intermittently and infrequently. That water is not regulated CCR as defined by the federal CCR rule, as we have discussed with Illinois EPA. SIPC further notes that Thickener Drain discharges will terminate with the anticipated shutdown of Unit 4 and its scrubber, which is currently expected to occur in the fall, 2020. Therefore, there is no Thickener Drain discrepancy to correct.

Comment 7
Figure 3 indicates that two Scrubber Drains are discharges to "Emery Pond", however, the Note indicates that the Scrubber Drains will no longer contribute CCR to "Emery Pond." Neither the Scrubber Drains nor any other source may discharge CCR to the proposed wastewater pond.

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The drains depicted in Figure 3 that are labeled "Scrubber Drains" are so named because they are located in the area of the scrubber, not because they collect discharge from the scrubber. In fact, the "Scrubber Drains" collect stormwater, and they do not collect scrubber discharge and do not contribute CCR to Emery Pond.

As SIPC previously discussed with Illinois EPA, Emery Pond receives only the following discharges:

- Stormwater runoff from the gypsum load out area
- Storm water from the plant area yard drains & partial coal yard, including the scrubber drains
- Air heater wash (only during Unit 4 outages)
- Fly ash load out area wash water (very intermittent)
- Scrubber process decant excess (very intermittent)

CCR is defined under the federal CCR rule to include only "fly ash, bottom ash, boiler slag and flue gas desulfurization materials." This does not include storm water, coal pile runoff, effluents from yard drains, and air heater wash. This conclusion is confirmed in part by 40 CFR §261.4(b)(i) and (ii), which clearly identifies "coal pile run off," "boiler cleaning solutions," "air heater precipitator washes" and "effluent from floor and yard drains and sumps" as streams separate and distinct from "fly ash waste, bottom ash waste, slag waste and flue gas emission control waste . . . ." Accordingly, the waste streams referenced in the second and third bullets are not CCR waste streams.

As previously discussed with Illinois EPA, the runoff from the gypsum load out area, fly ash load out area wash water and scrubber process decant excess water contain at most only *de minimis* CCR, and also do not constitute regulated CCR waste streams.

Following the anticipated Unit 4 shut down in the fall of 2020, only the discharges identified in the second (stormwater) and fourth (fly ash load out area wash water) will continue. The perimeter drain will also discharge groundwater to the Storm Water Basin. Thus, only those three will be discharges to the new Storm Water Basin. Accordingly, the proposed Storm Water Basin will not receive regulated CCR and it will not be a regulated CCR surface impoundment.

Comment 8
A permit condition should be added clarifying that using the proposed wastewater pond as a CCR surface impoundment, whether or not that is the intended design, is a violation of the permit.

SIPC does not object to a permit condition stating that treating, storing, or disposing of regulated CCR, as defined by the federal CCR rule (or Illinois' implementing rule), in the Storm Water Basin constitutes a violation of the permit. However, for clarity and to avoid any future dispute, the permit should specify that the anticipated discharges to the Storm Water Basin described in the last paragraph of the above response to Comment 7 are not regulated CCR and are permitted.

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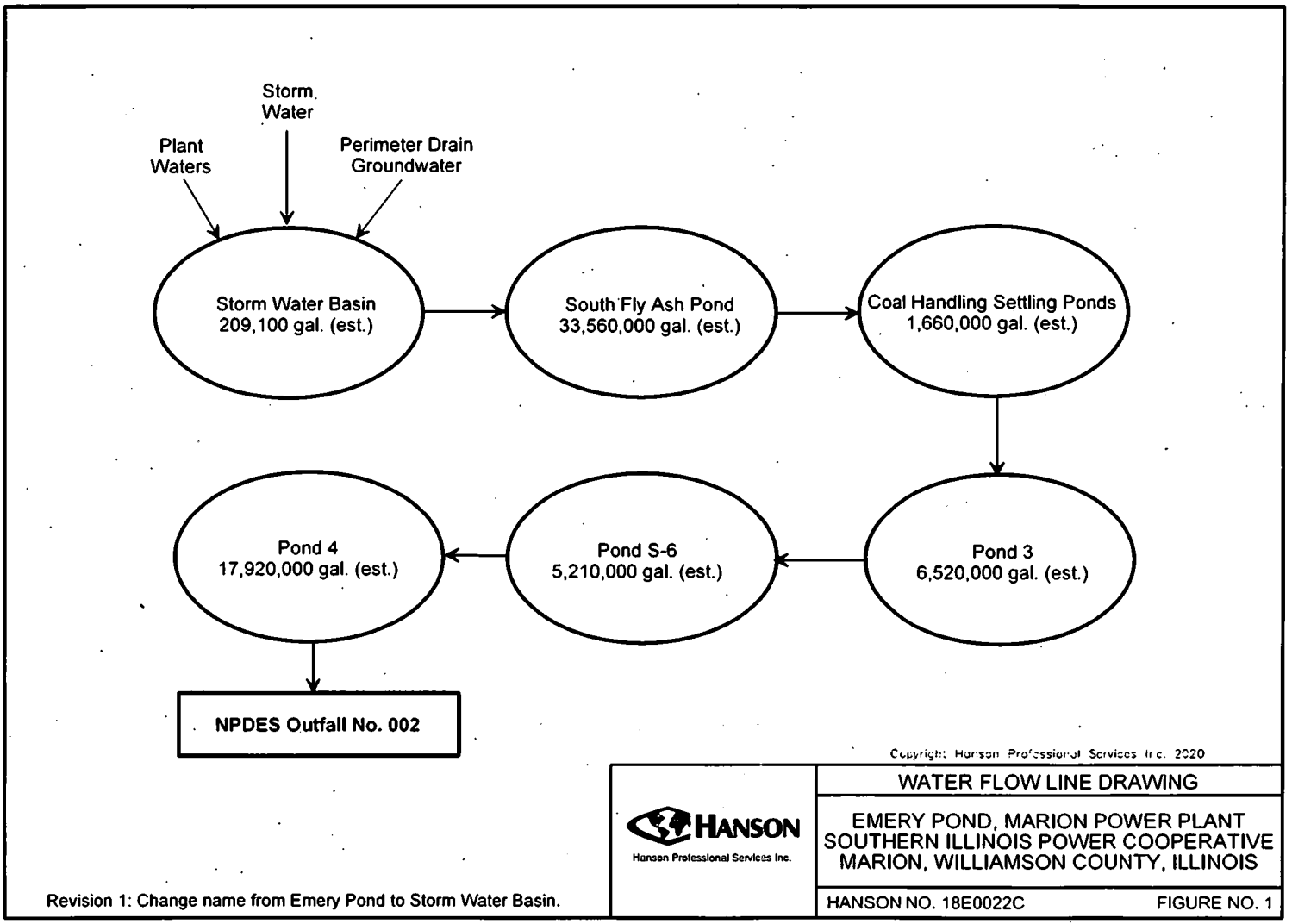

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HANSON
Hanson Professional Services Inc.

WATER FLOW LINE DRAWING

EMERY POND, MARION POWER PLANT
SOUTHERN ILLINOIS POWER COOPERATIVE
MARION, WILLIAMSON COUNTY, ILLINOIS

HANSON NO. 18E0022C FIGURE NO. 1

Revision 1: Change name from Emery Pond to Storm Water Basin.

I:\18\jobs\18E0022\Admin\14-Reports\BoW_Permit\LineDrawingRev1.srf

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Schiff Hardin

Sincerely,

Amy Antoniolli

Amy C. Antoniolli

Illinois Environmental Protection Agency

1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276 • (217) 782-3397

For IEPA Use Only

Application for Permit or Construction Approval
WPC-PS-1

This form must be typewritten or printed legibly. This form may be completed manually or online using Adobe Reader, a copy of it saved locally, printed, and signed before it is submitted to:

Illinois Environmental Protection Agency
Permit Section, Division of Water Pollution Control
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Reset All Fields

1. Owner Name: Southern Illinois Power Cooperative

Name of Project: Storm Water Basin

Project Location Address (include nearest street and city address): 11543 Lake of Egypt Road

City: Marion Zip Code: 62959-8500

Township: Southern County: Williamson

2. Brief Description of the Project:

Install a composite liner system (compacted soil with geomembrane) with perimeter drain system.

3. Documents being Submitted: If the Project involves any of the items listed below, submit the corresponding schedule, and check the appropriate boxes

	Schedule		Schedule
Private Sewer Connection/Extensions	A/B ☐	Spray Irrigation	H ☐
Sewer Extension Construction Only	C ☐	Septic Tanks	I ☐
Sewage Treatment Works	D ☐	Industrial Treatment/Pretreatment	J ☒
Excess Flow Treatment	E ☐	Waste Characteristics	N ☒
Lift Station/force Main	F ☐	Erosion Control	P ☐
Fast Track Service Connection	FTP ☐	Trust Disclosure	T ☐
Sludge Disposal	G ☐		

Plans:

Title: Emery Pond Retrofit Plan No. of Pages: 13

Specifications:

Title: Bidding Specifications and Project Manual for Emery Pond Retrofit No. of Books/Pages: 186

Other Documents: (Please specify)

3.1 Illinois Historic Preservation Agency approval letter ○ Yes ◉ No

(If you have a copy of the IHPA approval letter, please send in with the Permit Application Package)

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SECTION 02203 - TRENCH EXCAVATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. This Section includes the following:

1. Utility and Anchor Trench excavation and protection, including unwatering, as required.

B. Related Sections include the following:

1. Division 2 02204 "Trench Foundation, Bedding, Haunching, and Backfill."

1.3 REFERENCES

A. OSHA Excavation Standards.

1.4 SUBMITTALS

A. The Contractor shall submit an excavation plan for review and approval by the Owner's Representative, including open cut slopes and depths, shoring types and specifications (trench boxes or other), depths, configurations and materials. This information shall be submitted at least two (2) weeks before start of construction.

1.5 GENERAL REQUIREMENTS

A. Open-cut trenches shall be protected in accordance with applicable rules, laws and regulations of Federal, State and municipal ordinances.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Specifications for trench boxes, sheeting or other, shall be submitted at least one (1) week prior to the work.

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PART 3 - EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

A. The trench excavation shall be made to a minimum depth of 1 ft below the design bottom of pipe for the placement of foundation and bedding materials.

3.2 PILING EXCAVATED MATERIAL

A. All excavated material shall be piled in a manner that will not endanger the work. Excavated material suitable for backfilling shall be stockpiled separately on the site. Natural watercourses shall not be obstructed or polluted. Surplus material and excavated material unsuitable for backfilling shall be transported and disposed of in disposal areas directed by the Owner's Representative. Temporary erosion control shall be established around excavated material stockpiles.

3.3 REMOVAL OF WATER

A. The Contractor shall at all times during construction provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering the excavation until all work to be performed therein has been completed. The proposed method for the control of groundwater shall be submitted to the Owner's Representative for approval prior to implementation.

3.4 BARRICADES, GUARDS AND SAFETY PROVISIONS

A. To protect persons from injury and to avoid property damage, adequate barricades, construction signs, lights and guards as required shall be placed and maintained by the Contractor at his expense during the progress of the construction work. The rules and regulations of OSHA and appropriate authorities respecting safety provisions shall be observed.

END OF SECTION 02203

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SECTION 02204 - TRENCH FOUNDATION, BEDDING, HAUNCHING, AND BACKFILL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. This Section includes the following:

1. Installation of the trench foundation and bedding for piping installations, as well as the haunching around the pipe and the backfill over the pipe.

B. Related Sections include the following:

1. Division 2 02203 "Trench Excavation."

1.3 REFERENCES

A. IDOT Standard Specifications for Road and Bridge Construction, April 1, 2016 and Supplemental Specifications adopted January 1, 2017.

1.4 SUBMITTALS

A. Submit 25 lb. sample of foundation, bedding and haunching material to testing laboratory.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Foundation, Bedding and Haunching Material shall be supplied in accordance with Article 1003.04 of the Illinois Standard Specifications for Road and Bridge Construction with gradation CA-6.

PART 3 - EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

A. The trench shall be excavated to an elevation so that the pipe will be at the depth and grade specified after the foundation and bedding are installed. Well compacted, aggregate foundation and bedding material at least 12 in. in depth below the pipe, shall be placed the entire width of the trench and for the length of the pipe. The foundation and bedding shall be placed in 8 in. loose layers. The aggregate shall meet the material requirements and each layer shall be thoroughly

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compacted by ramming or tamping.

B. When pipe having bells or hubs is used, cross trenches, not more than 2 in. wider than the bell or hub, shall be excavated to provide uniform bearing along the length of the pipe.

C. If the excavation has been made deeper than necessary, the foundation shall be brought to the proper grade by the addition of well compacted bedding material.

D. As soon as the condition of the pipe will permit and testing of the pipe joints completed, the entire width of the trench shall be backfilled with haunching material specified in the material requirements to a height of at least 12 in. above the top of the pipe. The aggregate shall be placed longitudinally along the pipe. The elevation of the haunching material on each side of the pipe shall be the same. Special care shall be taken to completely fill the space under the pipe haunches. The aggregate material shall be placed in maximum 8 in. layers, loose measurement and compacted by ramming or tamping. The aggregate used for haunching shall meet the material requirements.

E. Final backfill shall consist of backfilling from 12 in. over the top of the pipe to the surrounding existing ground surface line. The remainder of the trench and excavation shall be backfilled to the finished surface as rapidly as the conditions will permit. The backfill material shall consist of trench excavated material, compacted to 92 percent of the maximum dry density as obtained by the Standard Proctor Compaction Test (ASTM D698). The CQA Officer shall be responsible for obtaining the Standard Proctor and Field Density testing.

END OF SECTION 02204

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SECTION 02220 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. This Section includes the following:

1. This section pertains to excavation, fill, cushion dirt placement and backfill required for foundation preparation, construction of Compacted Clay Liners, anchor trench construction and miscellaneous site grading, including base construction.

B. Related Sections include the following:

1. Section 01356 - Storm Water Pollution Prevention Measures.
2. Section 02936 - Seeding and Mulching.

1.3 REFERENCES

A. The following references, or cited portions thereof, govern the work:

1. Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction, adopted April 1, 2016 and Supplemental Specifications adopted January 1, 2017.
2. ASTM D2487-11 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

1.4 MEASUREMENT AND PAYMENT

A. The Contractor shall be responsible for estimating the extent of excavation and fill required to complete the work, including, but not limited to, excavation to required elevations; loading, transporting, placing, and compacting the Compacted Clay Liners and Cushion Dirt Layer; excavation and backfill of anchor trench; and miscellaneous site grading, including berm construction and roadway embankment. The Contractor shall include the dollar amount associated with all earthwork in his Lump Sum Bid amount.

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1.5 REGULATORY REQUIREMENTS

A. Codes and Standards:

1. Perform earthwork in compliance with applicable requirements of governing authorities having jurisdiction.

1.6 COORDINATION

A. Existing utilities or other plant facilities shall not be interrupted, except when permitted in writing by the Owner's Representative and then only after acceptable temporary services have been provided. A minimum forty-eight (48) hour notice shall be provided prior to proceeding with an approved temporary interruption.

1.7 SURFACE WATER MANAGEMENT

A. Control of surface water caused by precipitation as necessary for completion of the work under this contract is the responsibility of the Contractor and shall be included in the contract lump sum price.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Soil Materials:

1. Earth Fill Material

a. Compacted Earth Fill Material to be used for Structural and General Fill shall consist of a mixture of clay, silt, sand, and gravel-sized particles obtained from on-site excavations. These materials can be used separately or mixed, as required for best results. When placed, Compacted Subsoil Stockpile Material shall have a USCS classification of SM, ML, or CL and shall be uniform. This material shall be free of ice, snow, organic matter, rubbish, and debris. Coarse-grained particles shall be well dispersed to prevent the development of segregated pockets or zones with insufficient fine material to fill the interstices.

2. Compacted Clay Liners

a. The Compacted Clay Liner shall be soil materials obtained from on-site excavations. The material shall be free of ice, snow, organic matter, rubbish,

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and debris, and shall have a maximum clod size no greater than the length of the compactor foot for the compaction equipment proposed by the Contractor. When compacted, the material shall have a vertical hydraulic conductivity of less than 1 x 10-7 cm/sec.

3. Satisfactory Soils: ASTM D 2487 Soil Classification Groups CL, GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 0.75 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

4. Unsatisfactory Soils: Soil Classification Groups GC, SC, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups:

5. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

B. Soil Stabilizers and Moisture Conditioning Agents:

1. Additives to accelerate drying or to improve stability and workability of soil shall not be permitted unless approved in writing by the Owner's Representative.

2.2 EQUIPMENT

A. Compaction Equipment:

1. Tamping foot rollers:

a. Compaction equipment shall consist of tamping foot rollers which have a minimum weight of 40,000 lbs. At least one (1) tamping foot shall be provided for each 110 sq. in. of drum surface. The length of each tamping foot, measured from the outside surface of the drum, shall be at least 1 in. longer than the loose lift thickness.

2. Steel-Wheeled Rollers:

a. Equipment used to produce a smooth compacted surface shall be a smooth, non-vibratory steel wheeled roller weighing not less than 1,000 lb. per lin. ft.

B. Scarification Equipment:

1. Discs, rotor tillers, or other equipment used to scarify the surface shall be capable of uniformly disturbing at least the upper 6 in. of surface to provide good bonding between lifts.

C. Mixing and Spreading Equipment:

1. Discs, harrows, and motor graders or other similar equipment shall be available at the site for use in spreading, mixing, and drying Soil Materials.

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PART 3 - EXECUTION

3.1 PREPARATION

A. Control of Work:

1. Benchmarks, monuments, and other reference points shall be maintained throughout the work area.

B. Utility Location:

1. Before starting excavation, the location and extent of underground utilities in the work area shall be established.

3.2 EXCAVATION

A. General:

1. Excavation consists of removal and redistribution of material encountered when establishing required grade and subgrade elevations. The Contractor shall be responsible for dewatering, protection, shoring, and disposal of excavated materials as necessary to complete the excavation.

2. **No CCR Sediment shall be removed from the project site unless it has been dewatered as necessary to remove free liquids and passes the EPA Test Method 9095B Paint Filter Liquids Test.**

3. **Each load of CCR sediment must be weighed prior to disposal off site. All loads shall be weighed at the plant's scale prior to exiting the plant.**

4. **The Contractor removing CCR must responsibly handle and transport the CCR in accordance with draft rule 35 Ill. Adm. Code 745.740 as follows:**

   a. **When transporting CCR by motor vehicle, manifests must be carried as specified in 35 Ill. Adm. Code 809.**

   b. **The Contractor transporting CCR off-site shall develop, and submit a CCR transportation plan for Owner approval, which shall include:**

      i. **the frequency, time of day, and routes of CCR transportation;**

      ii. **measures to minimize noise, traffic, and safety concerns caused by the transportation of the CCR;**

      iii. **measures to limit fugitive dust from any transportation of CCR;**

      iv. **installation and use of a vehicle washing station;**

      v. **a means of covering the CCR for any mode of CCR transportation, including conveyor belts; and**

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vi. a requirement that, for transport by motor vehicle, the CCR is transported by a permitted special waste hauler pursuant to 35 Ill. Adm. Code 809.201.

c. The Contractor must develop and implement on site dust controls, which must include:

i. A water spray or other commercial dust suppressant to suppress dust in CCR handling areas and haul roads; and

ii. CCR must be handled to minimize airborne particulates and offsite particulate movement during any weather event or condition.

d. The Contractor must provide the following public notices:

i. signage must be posted at the property entrance warning of the hazards of CCR dust inhalation; and

ii. when CCR is transported off-site, a written notice explaining the hazards of CCR dust inhalation, the transportation plan and tentative transportation schedule must be provided to units of local government through which the CCR will be transported.

e. The Contractor must take measures to prevent contamination of surface water, groundwater, soil and sediments from the removal of CCR, including but not limited to the following:

i. CCR removed from the surface impoundment must be stored in a CCR storage pile.

ii. CCR storage piles shall:

1. be tarped or constructed with wind barriers to suppress dust and to limit stormwater contact with storage piles;

2. be periodically wetted or have periodic application of dust suppressants;

3. have an impervious storage pad or geomembrane liner that is properly sloped to allow appropriate drainage;

4. be tarped over the edge of the storage pad where possible;

5. be constructed with fixed and mobile berms where appropriate to reduce run-on and run-off of stormwater to and from the storage pile, and minimize stormwater-CCR contact.

iii. The Contractor shall incorporate general housekeeping procedures such as daily cleanup of CCR, tarping of trucks, maintaining the pad and equipment, and good practices during unloading and loading.

iv. The Contractor must minimize the amount of time the CCR is exposed to precipitation and wind.

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B. Procedures:

1. Excavation may be accomplished by any method and by use of any equipment that is suitable to the work, except that blasting will not be permitted.

2. The purpose of the excavation is to remove riprap and CCB sediment from the Emery Pond and regrade the area to the lines and grades shown on the plans.

3. CCR sediment and riprap removed from the pond shall be transported to a permitted disposal facility.

4. The Contractor shall be responsible for dewatering, protection, shoring, and disposal of excavated materials as necessary to complete this work.

3.3 BASE GRADE / STRUCTURAL FILL

A. The Base Grade shall be prepared by placing, compacting, and grading fill soils from an existing on-site borrow location to the lines and grades shown on the Plans. Fill shall be spread in approximately flat layers in such a manner as to obtain lifts of relatively uniform thickness without spaces between successively deposited loads. Segregation shall be prevented during placing and spreading. Hauling equipment shall be routed across the fill in such a way as to promote uniform compaction and to prevent the formation of ruts.

B. The maximum compacted thickness of each lift shall not exceed 8 in. where heavy compaction equipment will be used. The maximum compacted thickness shall not exceed 3 in. where power tampers or similar smaller equipment will be used. It may be necessary to reduce the thickness of lifts in order to obtain the required minimum density.

C. Where compacted Fill is to be placed against existing slopes, each lift shall be keyed into the existing slope by removing existing slope material in steps as each new lift is placed.

D. The surface of the fill shall be kept reasonably smooth. The fill surface shall be sloped transverse to the axis of the embankments to allow drainage. If the compacted surface is, in the opinion of the Owner's Representative, too smooth or too dry to bond properly with the succeeding lift, it shall be roughened by scarifying, light discing, or other acceptable means, and it shall be sprinkled with water before the succeeding lift is placed thereon. If the surface becomes rutted or uneven after compaction, it shall be flattened and leveled before placing the next lift. This extra work shall be at the Contractor's expense.

E. Fill operations shall be suspended during periods of extended wet weather. Upon resuming operations, all fill materials that are excessively wet or soft shall be reprocessed in place or removed and stockpiled for reprocessing. The removal of soft material shall be carried to such depth as is necessary to expose firm materials. Fill shall not be placed on frozen surfaces.

F. When filling operations at any section will be suspended for any period in excess of 12 hours or in wet weather, the surface of the fill shall be rolled smooth to seal it against excessive absorption of moisture and to facilitate runoff. Prior to resuming fill placement and compaction, the fill surface shall be scarified and/or disced and moisture conditioned as required.

G. The Contractor will receive no additional compensation for any removal, reprocessing, stockpiling, recompaction, wasting, or similar operation related to suspensions or conditions due to weather or other causes unless caused by the Owner.

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H. Soil materials used to create the base grade shall be compacted to at least 95 PERCENT of the maximum dry density as determined by the Standard Proctor Test (ASTM D698). The Owner's Representative will be responsible for obtaining the Standard Proctor Test and field density testing.

I. In order to ensure uniform coverage and to facilitate construction inspection and control, the compaction of each layer shall proceed in a systematic, orderly, and continuous manner. Rolling shall be parallel to the embankment axis, except where there is insufficient working room for such operations. The moisture content of all earth fill materials shall be as uniform as practicable throughout each lift. Fill shall be compacted at a moisture content that is no more than 2 percent below and no more than 2 percent above optimum moisture content.

J. Moisture conditioning of fill materials shall be performed by discing, harrowing, plowing, blading, or other suitable means prior to excavation where appropriate. Moisture conditioning where the fill is placed shall be limited to minor adjustments prior to compaction. Addition of moisture shall be by using a pressure spray bar mounted in front of or to one side of a water tanker so that water will not collect in the tracks of the truck.

K. Any materials that are placed but not compacted prior to drying out or becoming too wet shall be removed and replaced or reprocessed at the Contractor's expense.

L. Final graded areas shall be proof rolled under the observation of the Owner's Representative. Soft, loose, weak, or wet materials shall be removed and replaced with compacted fill as directed by the Owner's Representative and paid on a time and materials basis.

M. Following the Base Grading Earthwork, the Construction Quality Assurance (CQA) Officer shall direct the Owner's Field Surveyor to verify that actual Base Grades are in accordance with the plans and specifications. Elevations shall be surveyed on a 50 ft. grid pattern or at locations shown on the Plans. In addition, all breaks in grade will be surveyed. The measured depths and grades shall be documented on "as built" drawings furnished to the CQA Officer by the surveyor agency. Final grade locations and elevations may be adjusted in the field by the CQA Officer in areas where grading does not meet the design intent of the Plans. The CQA Officer shall review the final survey data for conformance to requirements and, if found in agreement with requirements, provide certification for the work in accordance with CQA Plan Procedures.

N. The Contractor shall not install geomembrane until the surface of the Compacted Soil Liner has been examined jointly with the Owner's Representative and a certificate of surface approval has been submitted and approved by the Owner's Representative.

3.4 FINISH GRADING

A. All excavated and filled areas shall be fine graded and leveled to provide a smooth finish free of debris, foreign matter, objectionable stones, clods, lumps, pockets, or high spots, properly drained and true to indicated elevations. Finish grading shall be conducted only near completion of work or when requested.

3.5 COMPACTED CLAY LINER

A. The Compacted Clay Liner shall be constructed from Compacted Clay Liner material as described in paragraph 2.1(A)(2) above.

B. The liner shall be constructed according to the placement and compaction requirements for structural fill, except the material shall be compacted to a density of no less than 95 percent of

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maximum dry density as determined by the Standard Proctor Test (ASTM D 698) at moisture contents between optimum and 5 percent above optimum.

C. Moisture/density, hydraulic conductivity, and strength testing of the Compacted Clay Liner shall be conducted by the soil testing firm under the requirements and frequencies specified in the project CQA Plan to verify that ongoing liner placement meets regulatory criteria for thickness and hydraulic conductivity.

D. The completed liner shall be smooth rolled to limit moisture loss and promote run-off of surface water. Moisture content shall be maintained within the specified range and erosion or other damage that occurs in the soil liner shall be repaired as directed by the Owner's Representative until the geosynthetic liner is placed.

E. Voids created in the Compacted Clay Liner during construction (including, but not limited to, penetrations for test samples, and other penetrations necessary for construction) shall be repaired by removing material that does not meet the requirements for Compacted Clay Liner material, backfill with Compacted Clay Liner material, granular or pelletized bentonite, or a mixture of bentonite and Compacted Clay Liner material in lifts no thicker than 2 in. and tamping each lift with a steel rod. Each lift shall be tamped a minimum of 25 times altering the location of the rod within the void for each blow. Other ruts and depressions in the surface of the lifts shall be scarified, filled, and then compacted to grade.

3.5 CONSTRUCTION TOLERANCES

A. Elevations will be surveyed at breaks in slopes and on a 50 ft grid pattern on the Base Grade and repeated after Vegetative Cover construction to verify material thickness and to verify that proper drainage slopes are maintained. To verify material thickness, all horizontal survey coordinates will be the same for the bottom and the top of the material that is placed. A test will be considered failed if it does not meet the minimum design requirements. To obtain the specified design thickness, additional soil material will be placed and compacted in failing areas where the as-built thickness is less than the design thickness. Surveying required for verification of final construction tolerances will be performed by the Owner's Land Surveyor.

END OF SECTION 02200

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SECTION 02400 - HDPE GEOMEMBRANE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 RELATED SECTIONS

A. This Section includes the following:

1. Manufacturing, furnishing, and installing High-Density Polyethylene (HDPE) Geomembranes.
2. The work includes furnishing all equipment and materials and providing all labor, supervision, administration and management necessary to perform the work as shown on the plans.

B. Related Sections include the following:

1. Division 02 02200 "Earthwork."

1.3 REFERENCES

A. The following references, or cited portions thereof, govern the work:

1. American Society for Testing and Materials (ASTM):

a. D 638, Standard Test Method for Tensile Properties of Plastics.
b. D 751, Standard Test Methods for Coated Fabrics.
c. D 792, Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
d. D 1004, Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
e. D 1204, Standard Test Method for Linear Dimensional Changes of Non Rigid Thermoplastic Sheeting or Film at Elevated Temperature.
f. D 1238, Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
g. D 1505, Standard Test Method for Density of Plastics by Density-Gradient Technique.
h. D 1603, Standard Test Method for Carbon Black in Olefin Plastics.
i. D 3895, Test Method for Oxidative Induction Time of Polyolefins by Thermal Analysis.
j. D 4218, Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.
k. D 4437, Standard Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes.
l. D 4833, Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.

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m. D 5199, Standard Test Method for Measuring Nominal Thickness of Smooth Geomembranes.
n. D 5397, Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefins using Notched Constant Tensile Load Test.
o. D 5596, Standard Practice for Microscopical Examination of Pigment Dispersion in Plastic Compounds.
p. D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.
q. D 5721, Practice for Air-Oven Aging of Polyolefin Geomembranes.
r. D 5820, Test Method for Air Testing.
s. D 5885, Test Method for Oxidative Induction Time of Polyolefin Geosynthetics by High Pressure Differential Scanning Calorimetry.
t. D 5994, Standard Test Method for Measuring Nominal Thickness of Textured Geomembranes
u. D 6365, Standard Practice for the Nondestructive Testing of Geomembrane Seams using The Spark Test

2. Geosynthetic Research Institute (GRI), the most current edition of the following specifications shall be used:

a. GRI Test Method GM6: Pressurized Air Channel Test for Dual Seamed Geomembranes.
b. GRI Test Method GM9: Cold Weather Seaming of Geomembranes.
c. GRI Test Method GM13: "Test Methods, Test Properties and Testing Frequency for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes"
d. GRI Test Method GM19: Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes.
e. GRI Test Method GM29: Field Integrity Evaluation of Geomembrane Seams (and Sheet) Using Destructive and/or Nondestructive Testing.

1.4 SUBMITTALS

A. Submit the following to the Engineer or Owner, for review and approval, prior to shipment or installation of the Geomembrane:

1. Documentation of manufacturer's qualifications as specified in subsection 1.5A of this Section.
2. Manufacturer's Quality Control program manual or descriptive documentation.
3. A material properties sheet and manufacturer's prequalification testing, including at a minimum all properties specified in GRI GM 13, including test methods used.
4. Prequalification samples of the material.
5. Documentation of Installer's qualifications, as specified below and in subsection 1.5B of this Section:

a. Submit a list of at least ten (10) completed facilities. For each facility: provide name and type of facility; its location; the date of installation; phone number of contact at the facility; type and thickness of geomembrane and; surface area of the installed geomembrane.
b. Submit resumes or qualifications of the Installation Supervisor, Master Seamer and Technicians to be assigned to this project.
c. Quality Control Program.

6. Example Material Warranty and Liner Installation Warranty complying with subsections 1.8 and 1.9 of this Section.

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7. Resin Supplier's name, resin production plant identification, resin brand name and number, production date of the resin, resin Manufacturer's quality control certificates, and certification that the properties of the resin meet the requirements of these specifications.

B. Shop Drawings:

1. Submit copies of shop drawings for engineer's approval within a reasonable time so as not to delay the start of geomembrane installation. Shop drawings shall show the proposed panel layout identifying seams and details. Seams should generally follow direction of the slope. Butt seams or roll-end seams should not occur on a slope unless approved by the Owner's Representative. Butt seams on a slope, if allowed, should be staggered.
2. Placement of geomembrane will not be allowed to proceed until Owner's Representative has received and approved the shop drawings.

C. Additional Submittals (In-Progress and at Completion):

1. Manufacturer's warranty (refer to subsection 1.8).
2. Geomembrane installation warranty (refer to subsection 1.9).
3. Daily written acceptance of subgrade surface (refer to subsection 3.1.B).
4. Low-temperature seaming procedures if applicable (refer to subsection 3.3.A).
5. Prequalification test seam samples (refer to subsection 3.5.A.1.f).
6. Field seam non-destructive test results (refer to subsection 3.5.B.1).
7. Field seam destructive test results (refer to subsection 3.5.C.6).
8. Daily field installation reports (refer to subsection 3.5.G).
9. Installation record drawings.

1.5 QUALITY CONTOL

A. Manufacturer's Qualifications:

1. The manufacturer of geomembrane of the type specified or similar product shall have at least five (5) years experience in the manufacture of such geomembrane. In addition, the geomembrane manufacturer shall have manufactured at least 10,000,000 sq. ft of the specified type of geomembrane or similar product during the last five (5) years.

B. Installer's Qualifications:

1 The Geomembrane Installer shall be the Manufacturer, approved Manufacturer's Installer or a contractor approved by the Owner's Representative to install the geomembrane.

2 The Geomembrane Installer shall have at least three (3) years experience in the installation of the specified geomembrane or similar. The Geomembrane Installer shall have installed at least ten (10) projects involving a total of 5,000,000 sq. ft of the specified type of geomembrane or similar during the last three (3) years.

3 Installation shall be performed under the direction of a Field Installation Supervisor who shall be responsible throughout the geomembrane installation for geomembrane panel layout, seaming, patching, testing, repairs, and all other activities of the Geomembrane Installer. The Field Installation Supervisor shall have installed or supervised the installation and seaming of a minimum of ten (10) projects involving a total of 5,000,000 sq. ft of geomembrane of the type specified or similar product.

4 Seaming shall be performed under the direction of a Master Seamer (who may also be the Field Installation Supervisor or Crew Foreman) who has seamed a minimum of 3,000,000 sq. ft of geomembrane of the type specified or similar product, using the same type of seaming apparatus to be used in the current project. The Field Installation Supervisor and/or Master Seamer shall be present whenever seaming, patching, other

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welding operations, and testing are performed.

5 All seaming, patching, other welding operations, and testing shall be performed by qualified technicians employed by the Geomembrane Installer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Each roll of geomembrane delivered to the site shall be labeled by the manufacturer. The label shall be firmly affixed and shall clearly state the manufacturer's name, product identification, material thickness, roll number, roll dimensions and roll weight.

B. Geomembrane shall be protected from mud, dirt, dust, puncture, cutting or any other damaging or deleterious conditions.

C. Rolls shall be stored away from high traffic areas. Continuously and uniformly support rolls on a smooth, level prepared surface.

D. Rolls shall not be stacked more than three (3) high.

1.7 PROJECT CONDITIONS

A. Geomembrane shall not be installed in the presence of standing water, while precipitation is occurring, during excessive winds, or when material temperatures are outside the limits specified in Section 3.3.

1.8 MATERIAL WARRANTY

A. Material shall be warranted, on a pro-rata basis against Manufacturer's defects for a period of five (5) years from the date of Geomembrane installation.

1.9 GEOMEMBRANE INSTALLATION WARRANTY

A. The Geomembrane Installer shall guarantee the Geomembrane installation against defects in the installation and workmanship for one (1) year commencing with the date of final acceptance.

1.10 GEOMEMBRANE PRE-CONSTRUCTION MEETING

A. Geomembrane Pre-Construction Meeting shall be held at the site prior to installation of the geomembrane. At a minimum, the meeting shall be attended by the Geomembrane Installer, Owner, Owner's representative (Engineer and/or CQA Firm), and the General Contractor.

B. Topics for this meeting shall include:

1. Responsibilities of each party.
2. Lines of authority and communication. Resolution of any project document ambiguity.
3. Methods for documenting, reporting and distributing documents and reports.
4. Procedures for packaging and storing archive samples.
5. Review of time schedule for all installation and testing.
6. Review of panel layout and numbering systems for panels and seams including details for marking on geomembrane.

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7. Procedures and responsibilities for preparation and submission of as-built panel and seam drawings.
8. Temperature and weather limitations. Installation procedures for adverse weather conditions. Defining acceptable subgrade, geomembrane, or ambient moisture and temperature conditions for working during liner installation.
9. Subgrade conditions, dewatering responsibilities, and subgrade maintenance plan.
10. Deployment techniques including allowable subgrade for the geomembrane.
11. Plan for controlling expansion/contraction and wrinkling of the geomembrane.
12. Covering of the geomembrane and cover soil placement.
13. Measurement and payment schedules.
14. Health and safety.

C. The meeting shall be documented by the Owner's Representative and minutes shall be transmitted to all parties.

PART 2 - PRODUCTS

2.1 SOURCE QUALITY CONTROL

A. Manufacturing Quality Control:

1. The test methods and frequencies used by the manufacturer for quality control/quality assurance of the above geomembrane prior to delivery, shall be in accordance with GRI GM13, or modified as required for project specific conditions.
2. The manufacturer's geomembrane quality control certifications, including results of quality control testing of the products must be supplied to the Owner's Representative within a reasonable time prior to installation. The certification shall be signed by a responsible party employed by the manufacturer, such as the QA/QC Manager, Production Manager, or Technical Services Manager. Certifications shall include lot and roll numbers and corresponding shipping information.
3. The Manufacturer will provide Certification that the geomembrane and welding rod supplied for the project have the same base resin and material properties.

2.2 GEOMEMBRANE

A. The geomembrane shall consist of new, first quality products designed and manufactured specifically for the purpose of this work which shall have been satisfactorily demonstrated by prior testing to be suitable and durable for such purposes. The geomembrane rolls shall be seamless, high-density polyethylene (HDPE- Density <0.94g/cm) containing no plasticizers, fillers or extenders and shall be free of holes, blisters or contaminants, and leak free verified by 100 percent in line spark or equivalent testing. The geomembrane shall be supplied as a continuous sheet with no factory seams in rolls. HDPE Geomembranes shall meet the property requirements shown in Table 2(a) of the GRI GM13 Specifications included at the end of this Section.

B. Material shall be reviewed for conformance to the project specifications by the Owner's Representative.

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PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION

A. The area to be covered with geomembrane shall be prepared in accordance with the Section 02200 – Earthwork. The surface shall be smooth and free of ruts and holes, rocks, stones, sticks, sharp objects and debris of any kind.

B. The Geomembrane installer shall provide daily, a certificate of acceptance for the surface to be covered by the geomembrane in that day's operations. The surface shall be maintained in a manner, during geomembrane installation, to ensure subgrade suitability.

C. All subgrade damaged by construction equipment and deemed unsuitable by the Owner's Representative for geomembrane deployment shall be repaired prior to placement of the geomembrane. All repairs shall be reviewed by the Owner's Representative and approved by the Geomembrane Installer. This damage, repair, and the responsibilities of the contractor and Geomembrane Installer shall be defined in the preconstruction meeting.

3.2 GEOMEMBRANE PLACEMENT

A. No geomembrane shall be deployed until the applicable certifications and quality control certificates listed in subsection 1.04 of this Section are submitted to and approved by the Owner's Representative. Should geomembrane material be deployed prior to approval by the Owner's Representative it will be at the sole risk of the Geomembrane Installer and/or Contractor. If the material does not meet project specifications it shall be removed from the work area at no cost to the owner.

B. The geomembrane shall be installed to the limits shown on the project drawings and essentially as shown on approved panel layout drawings.

C. No geomembrane material shall be unrolled and deployed if the material temperatures are lower than 0°C. Temperature limitations should be defined in the preconstruction meeting. Typically, only the quantity of geomembrane that will be anchored and seamed together in one (1) day should be deployed.

D. No vehicular traffic shall travel on the geomembrane other than an approved low ground pressure All Terrain Vehicle or equivalent.

E. Sand bags or equivalent ballast shall be used as necessary to temporarily hold the geomembrane material in position under the foreseeable and reasonably - expected wind conditions. Sand bag material shall be sufficiently close- knit to prevent soil fines from working through the bags and discharging on the geomembrane.

F. Geomembrane placement shall not be done if moisture prevents proper subgrade preparation, panel placement, or panel seaming. Moisture limitations will be defined in the preconstruction meeting.

G. Damaged panels or portions of the damaged panels which have been rejected shall be marked and their removal from the work area recorded.

H. The geomembrane shall not be allowed to "bridge over" voids or low areas in the subgrade. In these areas, the subgrade shall be prepared to allow the geomembrane to rest in intimate contact with the subgrade.

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I. Wrinkles caused by panel placement or thermal expansion should be minimized.

J. Considerations on Site Geometry: In general, seams shall be oriented parallel to the line of the maximum slope. In corners and odd shaped geometric locations, the total length of field seams shall be minimized. Seams shall not be located at low points in the subgrade.

K. Overlapping: The panels shall be overlapped prior to seaming to whatever extent is necessary to affect a good weld and allow for proper testing. In no case shall this overlap be less than 3 in.

3.3 SEAMING PROCEDURES

A. No geomembrane material shall be seamed when liner temperatures are less than 0°C.

B. No geomembrane material shall be seamed when the sheet temperature is above 75°C as measured by an infrared thermometer or surface thermocouple.

C. Seaming shall primarily be performed using automatic fusion welding equipment and techniques. Extrusion welding shall be used where fusion welding is not possible such as at pipe penetrations, patches, repairs and short (less than a roll width) runs of seams.

D. Fishmouths or excessive wrinkles at the seam overlaps, shall be minimized and when necessary cut along the ridge of the wrinkles back into the panel so as to effect a flat overlap. The cut shall be terminated with a keyhole cut (nominal 1/2 in.- diameter hole) so as to minimize crack/tear propagation. The overlay shall subsequently be seamed. The keyhole cut shall be patched with an oval or round patch of the same base geomembrane material extending a minimum of 6 in. beyond the cut in all directions.

3.4 PIPE AND STRUCTURE PENETRATION SEALING SYSTEM

A. Provide penetration sealing system as shown in the Project Drawings.

B. Penetrations shall be constructed from the base geomembrane material, flat stock, prefabricated boots and accessories as shown on the Project Drawings. The pre-fabricated or field fabricated assembly shall be field welded to the geomembrane as shown on the Project Drawings so as to prevent leakage. This assembly shall be tested as outlined in section 3.5.B. Alternatively, where field non destructive testing cannot be performed, attachments will be field spark tested by standard holiday leak detectors in accordance with ASTM 6365. Spark testing should be done in areas where both air pressure testing and vacuum testing are not possible:

1. Equipment for Spark testing shall be comprised of but not limited to: A hand held holiday spark tester and conductive wand that generates a high voltage.
2. The testing activities shall be performed by the Geomembrane Installer by placing an electrically conductive tape or wire beneath the seam prior to welding. A trial seam containing a non welded segment shall be subject to a calibration test to ensure that such a defect (non welded segment) will be identified under the planned machine settings and procedures. Upon completion of the weld, enable the spark tester and hold approximately 1 in. above the weld moving slowly over the entire length of the weld in accordance with ASTM 6365. If there is no spark the weld is considered to be leak free.
3. A spark indicates a hole in the seam. The faulty area shall be located, repaired and retested by the Geomembrane Installer.
4. Care should be taken if flammable gases are present in the area to be tested.

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3.5 FIELD QUALITY CONTROL

A. The Owner's Representative shall be notified prior to all pre qualification and production welding and testing, or as agreed upon in the pre construction meeting:

1. Prequalification Test Seams:

   a. Test seams shall be prepared and tested by the Geomembrane Installer to verify that seaming parameters (speed, temperature and pressure of welding equipment) are adequate.
   b. Test seams shall be made by each welding technician and tested in accordance with ASTM D 4437 at the beginning of each seaming period. Test seaming shall be performed under the same conditions and with the same equipment and operator combination as production seaming. The test seam shall be approximately 10 ft- long for fusion welding and 3 ft- long for extrusion welding with the seam centered lengthwise. At a minimum, tests seams should be made by each technician one (1) time every four to six (4–6) hours; additional tests may be required with changes in environmental conditions.
   c. Two (2) 1 in. wide specimens shall be die-cut by the Geomembrane Installer from each end of the test seam. These specimens shall be tested by the Geomembrane Installer using a field tensiometer testing both tracks for peel strength and also for shear strength. Each specimen shall fail in the parent material and not in the weld, "Film Tear Bond" (F.T.D. failure). Seam separation equal to or greater than 10 percent of the track width shall be considered a failing test.
   d. The minimum acceptable seam strength values to be obtained for all specimens tested are listed in Subsection 3.5.C.4 of this Section. All four (4) specimens shall pass for the test seam to be a passing seam.
   e. If a test seam fails, an additional test seam shall be immediately conducted. If the additional test seam fails, the seaming apparatus shall be rejected and not used for production seaming until the deficiencies are corrected and a successful test seam can be produced.
   f. A sample from each test seam shall be labeled. The label shall indicate the date, geomembrane temperature, number of the seaming unit, technician performing the test seam and pass or fail description. The sample shall then be given to the Owner's Representative for archiving.

B. Field Seam Non-destructive Testing:

1. All field seams shall be non-destructively tested by the Geomembrane Installer over the full seam length before the seams are covered. Each seam shall be numbered or otherwise designated. The location, date, test unit, name of tester and outcome of all non-destructive testing shall be recorded and submitted to the Owner's Representative.
2. Testing should be done as the seaming work progresses, not at the completion of all field seaming. All defects found during testing shall be numbered and marked immediately after detection. All defects found should be repaired, retested and remarked to indicate acceptable completion of the repair.
3. Non-destructive testing shall be performed using vacuum box, air pressure or spark testing equipment.
4. Non-destructive tests shall be performed by experienced technicians familiar with the specified test methods. The Geomembrane Installer shall demonstrate to the Owner's Representative all test methods to verify the test procedures are valid.
5. Extrusion seams shall be vacuum box tested by the Geomembrane Installer in accordance with ASTM D 4437 and ASTM D 5641 with the following equipment and procedures:

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a. Equipment for testing extrusion seams shall be comprised of but not limited to: a vacuum box assembly consisting of a rigid housing, a transparent viewing window, a soft rubber gasket attached to the base, port hole or valve assembly and a vacuum gauge; a vacuum pump assembly equipped with a pressure controller and pipe connections; a rubber pressure/vacuum hose with fittings and connections; a plastic bucket; wide paint brush or mop; and a soapy solution.
b. The vacuum pump shall be charged and the tank pressure adjusted to approximately 5 psig.
c. The Geomembrane Installer shall create a leak tight seal between the gasket and geomembrane interface by wetting a strip of geomembrane approximately 12 in. by 48 in. (length and width of box) with a soapy solution, placing the box over the wetted area, and then compressing the box against the geomembrane. The Geomembrane Installer shall then close the bleed valve, open the vacuum valve, maintain initial pressure of approximately 5 psig for approximately ten (10) seconds. The geomembrane should be continuously examined through the viewing window for the presence of soap bubbles, indicating a leak. If no bubbles appear after ten (10) seconds, the area shall be considered leak free. The box shall be depressurized and moved over the next adjoining area with an appropriate overlap and the process repeated.
d. All areas where soap bubbles appear shall be marked, repaired and then retested.
e. At locations where seams cannot be non-destructively tested, such as pipe penetrations, alternate nondestructive spark testing (as outlined in section 3.4.B) or equivalent should be substituted.
f. All seams that are vacuum tested shall be marked with the date tested, the name of the technician performing the test and the results of the test.

6. Double Fusion seams with an enclosed channel shall be air pressure tested by the Geomembrane Installer in accordance with ASTM D 5820 and ASTM D 4437 and the following equipment and procedures:

a. Equipment for testing double fusion seams shall be comprised of but not limited to: an air pump equipped with a pressure gauge capable of generating and sustaining a pressure of 30 psig, mounted on a cushion to protect the geomembrane; and a manometer equipped with a sharp hollow needle or other approved pressure feed device.
b. The Testing activities shall be performed by the Geomembrane Installer. Both ends of the seam to be tested shall be sealed and a needle or other approved pressure feed device inserted into the tunnel created by the double wedge fusion weld. The air pump shall be adjusted to a pressure of 30 psig, and the valve closed. Allow two (2) minutes for the injected air to come to equilibrium in the channel, and sustain pressure for five (5) minutes. If pressure loss does not exceed 3 psig after this five (5) minute period the seam shall be considered leak tight. Release pressure from the opposite end verifying pressure drop on needle to ensure testing of the entire seam. The needle or other approved pressure feed device shall be removed and the feed hole sealed.
c. If loss of pressure exceeds 3 psig during the testing period or pressure does not stabilize, the faulty area shall be located, repaired and retested by the Geomembrane Installer.
d. Results of the pressure testing shall be recorded on the liner at the seam tested and on a pressure testing record.

C. Destructive Field Seam Testing:

1. One (1) destructive test sample per 500 lin. ft seam length shall be taken by the Geomembrane Installer from a location specified by the Owner's Representative. The Geomembrane Installer shall not be informed in advance of the sample location. In order

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to obtain test results prior to completion of geomembrane installation, samples shall be cut by the Geomembrane Installer as directed by the Owner's Representative as seaming progresses.

2. All field samples shall be marked with their sample number and seam number. The sample number, date, time, location, and seam number shall be recorded. The Geomembrane Installer shall repair all holes in the geomembrane resulting from obtaining the seam samples. All patches shall be vacuum box tested or spark tested. If a patch cannot be permanently installed over the test location the same day of sample collection, a temporary patch shall be tack welded or hot air welded over the opening until a permanent patch can be affixed.
3. The destructive sample size shall be 12 in. wide by 36 in.long with the seam centered lengthwise. The sample shall be cut into three (3) equal sections and distributed as follows: one (1) section given to the Owner's Representative as an archive sample; one (1) section given to the Owner's Representative for laboratory testing as specified in paragraph 5 below; and one (1) section retained by the Geomembrane Installer for field testing as specified in paragraph 4 below.
4. For field testing, the Geomembrane Installer shall cut ten (10) identical 1 in. wide replicate specimens from his sample. The Geomembrane Installer shall test five (5) specimens for seam shear strength and five (5) for peel strength. Test results shall be assessed in accordance with Section 6.2 of GRI GM19 to the values shown in Table 2(a) of GRI GM19.
5. If independent seam testing, where required by the specifications, shall be conducted in accordance with ASTM 5820 or ASTM D4437 or GRI GM 6.
6. Reports of the results of examinations and testing shall be prepared and submitted to the Owner's Representative.
7. For field seams, if a laboratory test fails, that shall be considered as an indicator of the possible inadequacy of the entire seamed length corresponding to the test sample. Additional destructive test portions shall then be taken by the Geomembrane Installer at locations indicated by the Engineer, typically 10 ft on either side of the failed sample and laboratory seam tests shall be performed. Passing tests shall be an indicator of adequate seams. Failing tests shall be an indicator of non-adequate seams and all seams represented by the destructive test location shall be repaired with a cap-strip extrusion welded to all sides of the capped area. All cap-strip seams shall be non-destructively vacuum box tested until adequacy of the seams is achieved. Cap strip seams exceeding 150 ft in shall be destructively tested.

D. Identification of Defects:

1. Panels and seams shall be inspected by the Installer and Owner's Representative during and after panel deployment to identify all defects, including holes, blisters, undispersed raw materials and signs of contamination by foreign matter.

E. Evaluation of Defects: Each suspect location on the liner (both in geomembrane seam and non-seam areas) shall be non-destructively tested using one (1) of the methods described in Section 3.5.B. Each location which fails non-destructive testing shall be marked, numbered, measured and posted on the daily "installation" drawings and subsequently repaired:

1. If a destructive sample fails the field or laboratory test, the Geomembrane Installer shall repair the seam between the two (2) nearest passed locations on both sides of the failed destructive sample location.
2. Defective seams, tears or holes shall be repaired by reseaming or applying an extrusion welded cap strip.
3. Reseaming may consist of either:

   a. Removing the defective weld area and rewelding the parent material using the original welding equipment; or

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b. Reseaming by extrusion welding along the overlap at the outside seam edge left by the fusion welding process.

4. Blisters, larger holes, and contamination by foreign matter shall be repaired by patches and/or extrusion weld beads as required. Each patch shall extend a minimum of 6 in. beyond all edges of the defects.
5. All repairs shall be measured, located and recorded.

F. Verification of Repairs on Seams: Each repair shall be non-destructively tested using either vacuum box or spark testing methods. Tests which pass the non-destructive test shall be taken as an indication of a successful repair. Failed tests shall be reseamed and retested until a passing test results. The number, date, location, technician and test outcome of each patch shall be recorded.

G. Daily Field Installation Reports: At the beginning of each day's work, the Installer shall provide the Engineer with daily reports for all work accomplished on the previous work day. Reports shall include the following:

1. Total amount and location of geomembrane placed;
2. Total length and location of seams completed, name of technicians doing seaming and welding unit numbers;
3. Drawings of the previous day's installed geomembrane showing panel numbers, seam numbers and locations of non-destructive and destructive testing;
4. Results of pre-qualification test seams;
5. Results of non-destructive testing; and
6. Results of vacuum testing of repairs.

H. Destructive test results shall be reported prior to covering of liner and within forty-eight (48) hours.

3.6 LINER ACCEPTANCE

A. Geomembrane liner will be accepted by the Owner's Representative when:

1. The entire installation is finished or an agreed upon subsection of the installation is finished;
2. All Installer's QC documentation is completed and submitted to the owner; and
3. Verification of the adequacy of all field seams and repairs and associated geomembrane testing is complete.

3.7 GEOMEMBRANE ANCHOR

A. Construct as specified on the project drawings.

3.8 DISPOSAL OF SCRAP MATERIALS

A. On completion of installation, the Geomembrane Installer shall dispose of all trash and scrap material in a location designated by the Owner's Representative, remove equipment used in connection with the work herein, and shall leave the premises in a neat acceptable manner.

END OF SECTION 02400

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Revision 15: September 9, 2019
Revision schedule on pg. 11

GRI - GM13 Standard Specification*

Standard Specification for

"Test Methods, Test Properties and Testing Frequency for
High Density Polyethylene (HDPE) Smooth and Textured Geomembranes" SM

This specification was developed by the Geosynthetic Research Institute (GRI), with the cooperation of the member organizations for general use by the public. It is completely optional in this regard and can be superseded by other existing or new specifications on the subject matter in whole or in part. Neither GRI, the Geosynthetic Institute, nor any of its related institutes, warrant or indemnifies any materials produced according to this specification either at this time or in the future.

1. Scope

1.1 This specification covers high density polyethylene (HDPE) geomembranes with a formulated sheet density of 0.940 g/ml, or higher, in the thickness range of 0.75 mm (30 mils) to 3.0 mm (120 mils). Both smooth and textured geomembrane surfaces are included.

1.2 This specification sets forth a set of minimum, physical, mechanical and chemical properties that must be met, or exceeded by the geomembrane being manufactured. In a few cases a range is specified.

1.3 In the context of quality systems and management, this specification represents manufacturing quality control (MQC).

Note 1: Manufacturing quality control represents those actions taken by a manufacturer to ensure that the product represents the stated objective and properties set forth in this specification.

1.4 This standard specification is intended to ensure good quality and performance of HDPE geomembranes in general applications, but is possibly not adequate for the complete specification in a specific situation. Additional tests, or more restrictive

*This GRI standard specification is developed by the Geosynthetic Research Institute through consultation and review by the member organizations. This specification will be reviewed at least every 2-years, or on an as-required basis. In this regard it is subject to change at any time. The most recent revision date is the effective version and it is kept current on the Institute's Website <<geosynthetic-institute.org>>.

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values for test indicated, may be necessary under conditions of a particular application.

Note 2: For information on installation techniques, users of this standard are referred to the geosynthetics literature, which is abundant on the subject.

2. Referenced Documents

2.1 ASTM Standards

D 792 Specific Gravity (Relative Density) and Density of Plastics by Displacement
D 1004 Test Method for Initial Tear Resistance of Plastics Film and Sheeting
D 1238 Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
D 1505 Test Method for Density of Plastics by the Density-Gradient Technique
D 1603 Test Method for Carbon Black in Olefin Plastics
D 3895 Test Method for Oxidative Induction Time of Polyolefins by Thermal Analysis
D 4218 Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique
D 4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
D 5199 Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
D 5397 Procedure to Perform a Single Point Notched Constant Tensile Load – (SP-NCTL) Test: Appendix
D 5596 Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
D 5721 Practice for Air-Oven Aging of Polyolefin Geomembranes
D 5885 Test method for Oxidative Induction Time of Polyolefin Geosynthetics by High Pressure Differential Scanning Calorimetry
D 5994 Test Method for Measuring the Core Thickness of Textured Geomembranes
D 6370 Standard Test Method for Rubber-Compositional Analysis by Thermogravimetry (TGA)
D 6693 Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
D 7238 Test Method for Effect of Exposure of Unreinforced Polyolefin Geomembrane Using Fluorescent UV Condensation Apparatus
D 7466 Test Method for Measuring the Asperity Height of Textured Geomembranes

2.2 GRI Standards

GM10 Specification for the Stress Crack Resistance of Geomembrane Sheet

2.3 U. S. Environmental Protection Agency Technical Guidance Document "Quality Control Assurance and Quality Control for Waste Containment Facilities," EPA/600/R-93/182, September 1993, 305 pgs.

3. Definitions

Manufacturing Quality Control (MQC) - A planned system of inspections that is used to directly monitor and control the manufacture of a material which is factory originated. MQC is normally performed by the manufacturer of geosynthetic materials and is necessary to ensure minimum (or maximum) specified values in the manufactured product. MQC refers to measures taken by the manufacturer to determine compliance with the requirements for materials and workmanship as stated in certification documents and contract specifications.
ref. EPA/600/R-93/182

Manufacturing Quality Assurance (MQA) - A planned system of activities that provides assurance that the materials were constructed as specified in the certification documents and contract specifications. MQA includes manufacturing facility inspections, verifications, audits and evaluation of the raw materials (resins and additives) and geosynthetic products to assess the quality of the manufactured materials. MQA refers to measures taken by the MQA organization to determine if the manufacturer is in compliance with the product certification and contract specifications for the project.
ref. EPA/600/R-93/182

Formulation - The mixture of a unique combination of ingredients identified by type, properties and quantity. For HDPE polyethylene geomembranes, a formulation is defined as the exact percentages and types of resin(s), additives and carbon black.

Nominal - Representative value of a measurable property determined under a set of conditions, by which a product may be described. Abbreviated as nom. in Tables 1 and 2.

4. Material Classification and Formulation

4.1 This specification covers high density polyethylene geomembranes with a formulated sheet density of 0.940 g/ml, or higher. Density can be measured by ASTM D1505 or ASTM D792. If the latter, Method B is recommended.

4.2 The polyethylene resin from which the geomembrane is made will generally be in the density range of 0.932 g/ml or higher, and have a melt index value per ASTM D1238 of less than 1.0 g/10 min.

4.3 The resin shall be virgin material with no more than 10% rework. If rework is used, it must be a similar HDPE as the parent material.

4.4 No post consumer resin (PCR) of any type shall be added to the formulation.

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5. Physical, Mechanical and Chemical Property Requirements

5.1 The geomembrane shall conform to the test property requirements prescribed in Tables 1 and 2. Table 1 is for smooth HDPE geomembranes and Table 2 is for single and double sided textured HDPE geomembranes. Each of the tables are given in English and SI (metric) units. The conversion from English to SI (metric) is soft.

Note 3: The tensile strength properties in this specification were originally based on ASTM D 638 which uses a laboratory testing temperature of 23°C ± 2°C. Since ASTM Committee D35 on Geosynthetics adopted ASTM D 6693 (in place of D 638), this GRI Specification followed accordingly. The difference is that D 6693 uses a testing temperature of 21°C ± 2°C. The numeric values of strength and elongation were not changed in this specification. If a dispute arises in this regard, the original temperature of 23°C ± 2°C should be utilized for testing purposes.

Note 4: There are several tests often included in other HDPE specifications which are omitted from this standard because they are outdated, irrelevant or generate information that is not necessary to evaluate on a routine MQC basis. The following tests have been purposely omitted:

- Volatile Loss
- Dimensional Stability
- Coeff. of Linear Expansion
- Resistance to Soil Burial
- Low Temperature Impact
- ESCR Test (D 1693)
- Wide Width Tensile
- Water Vapor Transmission
- Water Absorption
- Ozone Resistance
- Modulus of Elasticity
- Hydrostatic Resistance
- Tensile Impact
- Field Seam Strength
- Multi-Axial Burst
- Various Toxicity Tests

Note 5: There are several tests which are included in this standard (that are not customarily required in other HDPE specifications) because they are relevant and important in the context of current manufacturing processes. The following tests have been purposely added:

- Oxidative Induction Time
- Oven Aging
- Ultraviolet Resistance
- Asperity Height of Textured Sheet (see Note 6)

Note 6: The minimum average value of asperity height does not represent an expected value of interface shear strength. Shear strength associated with geomembranes is both site-specific and product-specific and should be determined by direct shear testing using ASTM D5321/ASTM D6243 as prescribed. This testing should be included in the particular site's CQA conformance testing protocol for the geosynthetic materials involved, or formally waived by the Design Engineer, with concurrence from the Owner prior to the deployment of the geosynthetic materials.

Note 7: There are other tests in this standard, focused on a particular property, which are updated to current standards. The following are in this category:

- Thickness of Textured Sheet
- Puncture Resistance
- Stress Crack Resistance
- Carbon Black Dispersion (In the viewing and subsequent quantitative interpretation of ASTM D 5596 only near spherical agglomerates shall be included in the assessment).

5.2 The values listed in the tables of this specification are to be interpreted according to the designated test method. In this respect they are neither minimum average roll values (MARV) nor maximum average roll values (MaxARV).

5.3 The properties of the HDPE geomembrane shall be tested at the minimum frequencies shown in Tables 1 and 2. If the specific manufacturer's quality control guide is more stringent and is certified accordingly, it must be followed in like manner.

Note 8: This specification is focused on manufacturing quality control (MQC). Conformance testing and manufacturing quality assurance (MQA) testing are at the discretion of the purchaser and/or quality assurance engineer, respectively.

6. Workmanship and Appearance

6.1 Smooth geomembrane shall have good appearance qualities. It shall be free from such defects that would affect the specified properties of the geomembrane.

6.2 Textured geomembrane shall generally have uniform texturing appearance. It shall be free from agglomerated texturing material and such defects that would affect the specified properties of the geomembrane.

6.3 General manufacturing procedures shall be performed in accordance with the manufacturer's internal quality control guide and/or documents.

7. MQC Sampling

7.1 Sampling shall be in accordance with the specific test methods listed in Tables 1 and 2. If no sampling protocol is stipulated in the particular test method, then test specimens shall be taken evenly spaced across the entire roll width.

7.2 The number of tests shall be in accordance with the appropriate test methods listed in Tables 1 and 2.

7.3 The average of the test results should be calculated per the particular standard cited and compared to the minimum value listed in these tables, hence the values listed are the minimum average values and are designated as "min. ave."

8. MQC Retest and Rejection

8.1 If the results of any test do not conform to the requirements of this specification, retesting to determine conformance or rejection should be done in accordance with the manufacturing protocol as set forth in the manufacturer's quality manual.

9. Packaging and Marketing

9.1 The geomembrane shall be rolled onto a substantial core or core segments and held firm by dedicated straps/slings, or other suitable means. The rolls must be adequate for safe transportation to the point of delivery, unless otherwise specified in the contract or order.

10. Certification

10.1 Upon request of the purchaser in the contract or order, a manufacturer's certification that the material was manufactured and tested in accordance with this specification, together with a report of the test results, shall be furnished at the time of shipment.

ENGLISH UNITS

Table 1(a) – High Density Polyethylene (HDPE) Geomembrane -Smooth

Properties	Test Method	Test Value							Testing Frequency (minimum)
		30 mils	40 mils	50 mils	60 mils	80 mils	100 mils	120 mils	
Thickness (min. ave.) - mils • lowest individual of 10 values - %	D5199	nom. -10	nom. -10	nom. -10	nom. -10	nom. -10	nom. -10	nom. -10	per roll
Formulated Density (min. ave.) - g/cc	D 1505/D 792	0.940	0.940	0.940	0.940	0.940	0.940	0.940	200,000 lb
Tensile Properties *(1)* (min. ave.) • yield strength - lb/in. • break strength - lb/in. • yield elongation - % • break elongation - %	D 6693 Type IV	 63 114 12 700	 84 152 12 700	 105 190 12 700	 126 228 12 700	 168 304 12 700	 210 380 12 700	 252 456 12 700	20,000 lb
Tear Resistance (min. ave.) - lb	D 1004	21	28	35	42	56	70	84	45,000 lb
Puncture Resistance (min. ave.) - lb	D 4833	54	72	90	108	144	180	216	45,000 lb
Stress Crack Resistance *(2)* - hr.	D5397 (App.)	500	500	500	500	500	500	500	per GRI-GM10
Carbon Black Content (range) - %	D 4218 *(3)*	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	20,000 lb
Carbon Black Dispersion	D 5596	note *(4)*	note *(4)*	note *(4)*	note *(4)*	note *(4)*	note *(4)*	note *(4)*	45,000 lb
Oxidative Induction Time (OIT) (min. ave.) *(5)* (a) Standard OIT - min. — or — (b) High Pressure OIT - min.	 D 3895 D 5885	 100 400	 100 400	 100 400	 100 400	 100 400	 100 400	 100 400	200,000 lb
Oven Aging at 85°C *(5), (6)* (a) Standard OIT (min. ave.) - % retained after 90 days — or — (b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5721 D 3895 D 5885	 55 80	 55 80	 55 80	 55 80	 55 80	 55 80	 55 80	per each formulation
UV Resistance *(7)* (a) Standard OIT (min. ave.) — or — (b) High Pressure OIT (min. ave.) - % retained after 1600 hrs *(9)*	D 7238 D 3895 D 5885	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	per each formulation

(1) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
Yield elongation is calculated using a gage length of 1.3 inches
Break elongation is calculated using a gage length of 2.0 in.

(2) The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.

(3) Other methods such as D 1603 (tube furnace) or D 6370 (TGA) are acceptable if an appropriate correlation to D 4218 (muffle furnace) can be established.

(4) Carbon black dispersion (only near spherical agglomerates) for 10 different views:
9 in Categories 1 or 2 and 1 in Category 3

(5) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.

(6) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.

(7) The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.

(8) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.

(9) UV resistance is based on percent retained value regardless of the original HP-OIT value.

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Table 1(b) – High Density Polyethylene (HPDE) Geomembrane - Smooth

Properties	Test Method	Test Value							Testing Frequency (minimum)
		0.75 mm	1.00 mm	1.25 mm	1.50 mm	2.00 mm	2.50 mm	3.00 mm	
Thickness - (min. ave.) - mm • lowest individual of 10 values - %	D5199	nom. -10	nom. -10	nom. -10	nom. -10	nom. -10	nom. -10	nom. -10	per roll
Formulated Density (min. ave.) - g/cc	D 1505/D 792	0.940	0.940	0.940	0.940	0.940	0.940	0.940	90,000 kg
Tensile Properties *(1)* (min. ave.) • yield strength - kN/m • break strength - kN/m • yield elongation - % • break elongation - %	D 6693 Type IV	 11 20 12 700	 15 27 12 700	 18 33 12 700	 22 40 12 700	 29 53 12 700	 37 67 12 700	 44 80 12 700	9,000 kg
Tear Resistance (min. ave.) - N	D 1004	93	125	156	187	249	311	374	20,000 kg
Puncture Resistance (min. ave.) - N	D 4833	240	320	400	480	640	800	960	20,000 kg
Stress Crack Resistance *(2)* - hr.	D 5397 (App.)	500	500	500	500	500	500	500	per GRI GM-10
Carbon Black Content (range) - %	D 4218 *(3)*	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	9,000 kg
Carbon Black Dispersion	D 5596	note *(4)*	note *(4)*	note *(4)*	note *(4)*	note *(4)*	note *(4)*	note *(4)*	20,000 kg
Oxidative Induction Time (OIT) (min. ave.) *(5)* (a) Standard OIT - min. — or — (b) High Pressure OIT - min.	 D 3895 D 5885	 100 400	 100 400	 100 400	 100 400	 100 400	 100 400	 100 400	90,000 kg
Oven Aging at 85°C *(5), (6)* (a) Standard OIT (min. ave.) - % retained after 90 days — or — (b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5721 D 3895 D 5885	 55 80	 55 80	 55 80	 55 80	 55 80	 55 80	 55 80	per each formulation
UV Resistance *(7)* (a) Standard OIT (min. ave.) — or — (b) High Pressure OIT (min. ave.) - % retained after 1600 hrs *(9)*	D 7238 D 3895 D 5885	 N. R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	 N.R. *(8)* 50	per each formulation

(1) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction
Yield elongation is calculated using a gage length of 33 mm
Break elongation is calculated using a gage length of 50 mm

(2) The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.

(3) Other methods such as D 1603 (tube furnace) or D 6370 (TGA) are acceptable if an appropriate correlation to D 4218 (muffle furnace) can be established.

(4) Carbon black dispersion (only near spherical agglomerates) for 10 different views:
9 in Categories 1 or 2 and 1 in Category 3

(5) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.

(6) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.

(7) The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.

(8) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.

(9) UV resistance is based on percent retained value regardless of the original HP-OIT value.

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Table 2(a) – High Density Polyethylene (HDPE) Geomembrane - Textured

Properties	Test Method	Test Value							Testing Frequency (minimum)
		30 mils	40 mils	50 mils	60 mils	80 mils	100 mils	120 mils	
Thickness mils (min. ave.) - mils • lowest individual for 8 out of 10 values - % • lowest individual for any of the 10 values - %	D 5994	nom. -5% -10 -15	nom. -5% -10 -15	nom. -5% -10 -15	nom. -5% -10 -15	nom. -5% -10 -15	nom. -5% -10 -15	nom. -5% -10 -15	per roll
Asperity Height mils (min. ave.) - mils	D 7466	16	16	16	16	16	16	16	every 2nd roll *(1)*
Formulated Density (min. ave.) - g/cc	D 1505/D 792	0.940	0.940	0.940	0.940	0.940	0.940	0.940	200,000 lb
Tensile Properties (min. ave.) *(2)* • yield strength - lb/in. • break strength - lb/in. • yield elongation - % • break elongation - %	D 6693 Type IV	 63 45 12 100	 84 60 12 100	 105 75 12 100	 126 90 12 100	 168 120 12 100	 210 150 12 100	 252 180 12 100	20,000 lb
Tear Resistance (min. ave.) - lb	D 1004	21	28	35	42	56	70	84	45,000 lb
Puncture Resistance (min. ave.) - lb	D 4833	45	60	75	90	120	150	180	45,000 lb
Stress Crack Resistance *(3)* - hr.	D 5397 (App.)	500	500	500	500	500	500	500	per GRI GM10
Carbon Black Content (range) - %	D 4218 *(4)*	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	20,000 lb
Carbon Black Dispersion	D 5596	note *(5)*	note *(5)*	note *(5)*	note *(5)*	note *(5)*	note *(5)*	note *(5)*	45,000 lb
Oxidative Induction Time (OIT) (min. ave.) *(6)* (a) Standard OIT - min. — or — (b) High Pressure OIT - min.	D 3895 D 5885	100 400	100 400	100 400	100 400	100 400	100 400	100 400	200,000 lb
Oven Aging at 85°C *(6), (7)* (a) Standard OIT (min. ave.) - % retained after 90 days — or — (b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5721 D 3895 D 5885	55 80	55 80	55 80	55 80	55 80	55 80	55 80	per each formulation
UV Resistance *(8)* (a) Standard OIT (min. ave.) — or — (b) High Pressure OIT (min. ave.) - % retained after 1600 hrs *(10)*	D 7238 D 3895 D 5885	N.R. *(9)* 50	N.R. *(9)* 50	N.R. *(9)* 50	N.R. *(9)* 50	N.R. *(9)* 50	N.R. *(9)* 50	N.R. *(9)* 50	per each formulation

(1) Alternate the measurement side for double sided textured sheet

(2) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
Yield elongation is calculated using a gage length of 1.3 inches
Break elongation is calculated using a gage length of 2.0 inches

(3) SP-NCTL per ASTM D5397 Appendix, is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials.
The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.

(4) Other methods such as D 1603 (tube furnace) or D 6370 (TGA) are acceptable if an appropriate correlation to D 4218 (muffle furnace) can be established.

(5) Carbon black dispersion (only near spherical agglomerates) for 10 different views:
9 in Categories 1 or 2 and 1 in Category 3

(6) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.

(7) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.

(8) The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.

(9) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.

(10) UV resistance is based on percent retained value regardless of the original HP-OIT value.

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Table 2(b) – High Density Polyethylene (HDPE) Geomembrane - Textured

Properties	Test Method	Test Value							Testing Frequency (minimum)
		0.75 mm	1.00 mm	1.25 mm	1.50 mm	2.00 mm	2.50 mm	3.00 mm	
Thickness (min. ave.) - mm	D 5994	nom. -5%	nom. -5%	nom. -5%	nom. -5%	nom. -5%	nom. -5%	nom. -5%	per roll
• lowest individual for 8 out of 10 values - %		-10	-10	-10	-10	-10	-10	-10	
• lowest individual for any of the 10 values - %		-15	-15	-15	-15	-15	-15	-15	
Asperity Height mils (min. ave.) - mm	D 7466	0.40	0.40	0.40	0.40	0.40	0.40	0.40	every 2nd roll *(1)*
Formulated Density (min. ave.) - g/cc	D 1505/D 792	0.940	0.940	0.940	0.940	0.940	0.940	0.940	90,000 kg
Tensile Properties (min. ave.) *(2)*	D 6693 Type IV								9,000 kg
• yield strength - kN/m		11	15	18	22	29	37	44	
• break strength - kN/m		8	10	13	16	21	26	32	
• yield elongation - %		12	12	12	12	12	12	12	
• break elongation - %		100	100	100	100	100	100	100	
Tear Resistance (min. ave.) - N	D 1004	93	125	156	187	249	311	374	20,000 kg
Puncture Resistance (min. ave.) - N	D 4833	200	267	333	400	534	667	800	20,000 kg
Stress Crack Resistance *(3)* - hr.	D 5397 (App.)	500	500	500	500	500	500	500	per GRI GM10
Carbon Black Content (range) - %	D 4218 *(4)*	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	9,000 kg
Carbon Black Dispersion	D 5596	note *(5)*	note *(5)*	note *(5)*	note *(5)*	note *(5)*	note *(5)*	note *(5)*	20,000 kg
Oxidative Induction Time (OIT) (min. ave.) *(6)*									90,000 kg
(a) Standard OIT - min.	D 3895	100	100	100	100	100	100	100	
— or —									
(b) High Pressure OIT - min.	D 5885	400	400	400	400	400	400	400	
Oven Aging at 85°C *(6), (7)*	D 5721								
(a) Standard OIT (min. ave.) - % retained after 90 days	D 3895	55	55	55	55	55	55	55	per each formulation
— or —									
(b) High Pressure OIT (min. ave.) - % retained after 90 days	D 5885	80	80	80	80	80	80	80	
UV Resistance *(8)*	D 7238								
(a) Standard OIT (min. ave.)	D 3895	N.R. *(9)*	N.R. *(9)*	N.R. *(9)*	N.R. *(9)*	N.R. *(9)*	N.R. *(9)*	N.R. *(9)*	per each formulation
— or —									
(b) High Pressure OIT (min. ave.) - % retained after 1600 hrs *(10)*	D 5885	50	50	50	50	50	50	50	

(1) Alternate the measurement side for double sided textured sheet

(2) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
Yield elongation is calculated using a gage length of 33 mm
Break elongation is calculated using a gage length of 50 mm

(3) The SP-NCTL test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials.
The yield stress used to calculate the applied load for the SP-NCTL test should be the manufacturer's mean value via MQC testing.

(4) Other methods such as D 1603 (tube furnace) or D 6370 (TGA) are acceptable if an appropriate correlation to D 4218 (muffle furnace) can be established.

(5) Carbon black dispersion (only near spherical agglomerates) for 10 different views:
9 in Categories 1 or 2 and 1 in Category 3

(6) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.

(7) It is also recommended to evaluate samples at 30 and 60 days to compare with the 90 day response.

(8) The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C.

(9) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.

(10) UV resistance is based on percent retained value regardless of the original HP-OIT value.

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Adoption and Revision Schedule
for
HDPE Specification per GRI-GM13

"Test Methods, Test Properties, Testing Frequency for
High Density Polyethylene (HDPE) Smooth and Textured Geomembranes"

Adopted:	June 17, 1997
Revision 1:	November 20, 1998; changed CB dispersion from allowing 2 views to be in Category 3 to requiring all 10 views to be in Category 1 or 2. Also reduced UV percent retained from 60% to 50%.
Revision 2:	April 29, 1999: added to Note 5 after the listing of Carbon Black Dispersion the following: "(In the viewing and subsequent quantitative interpretation of ASTM D5596 only near spherical agglomerates shall be included in the assessment)" and to Note (4) in the property tables.
Revision 3:	June 28, 2000: added a new Section 5.2 that the numeric table values are neither MARV or MaxARV. They are to be interpreted per the the designated test method.
Revision 4:	December 13, 2000: added one Category 3 is allowed for carbon black dispersion. Also, unified terminology to "strength" and "elongation".
Revision 5:	May 15, 2003: Increased minimum acceptable stress crack resistance time from 200 hrs to 300 hrs.
Revision 6:	June 23, 2003: Adopted ASTM D 6693, in place of ASTM D 638, for tensile strength testing. Also, added Note 2.
Revision 7:	February 20, 2006: Added Note 6 on Asperity Height clarification with respect to shear strength.
Revision 8:	Removed recommended warranty from specification.
Revision 9:	June 1, 2009: Replaced GRI-GM12 test for asperity height of textured geomembranes with ASTM D 7466.
Revision 10	April 11, 2011: Added alternative carbon black content test methods
Revision 11	December 13, 2012: Replaced GRI-GM11 with the equivalent ASTM D 7238.
Revision 12	November 14, 2014: Increased minimum acceptable stress crack resistance time from 300 to 500 hours. Also, increased asperity height of textured sheet from 10 to 16 mils (0.25 to 0.40 mm).
Revision 13	November 4, 2015: Removed Footnote (1) on asperity height from tables.
Revision 14	January 6, 2016: Removed Trouser Tear from Note 5.
Revision 15:	September 9, 2019: Editorial update to harmonize tables.

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Original: February 28, 2002
Revision 9: July 28, 2017
Revision schedule is on pg. 13

GRI -GM19a Standard Specification*

Standard Specification for

"Seam Strength and Related Properties of Thermally Bonded Homogeneous Polyolefin Geomembranes/Barriers" SM

This specification was developed by the Geosynthetic Research Institute (GRI), with the cooperation of the member organizations for general use by the public. It is completely optional in this regard and can be superseded by other existing or new specifications on the subject matter in whole or in part. Neither GRI, the Geosynthetic Institute, nor any of its related institutes, warrant or indemnifies any materials produced according to this specification either at this time or in the future.

1. Scope

1.1 This specification addresses the required seam strength and related properties of thermally bonded homogeneous, i.e., nonreinforced, polyolefin geomembranes. Included herein are high density polyethylene (HDPE), linear low density polyethylene (LLDPE) and flexible polypropylene (fPP).

Note 1: See GRI Standard GM19b for reinforced geomembrane seams of all types including scrim reinforced LLDPE-R and fPP-R.

1.2 Numeric values of seam strength and related properties are specified in both shear and peel modes.

Note 2: This specification does not address the test method details or specific testing procedures. It refers to the relevant ASTM test methods where applicable.

*This GRI standard specification is developed by the Geosynthetic Research Institute through consultation and review by the member organizations. This specification will be reviewed at least every 5-years, or on an as-required basis. In this regard it is subject to change at any time. The most recent revision date is the effective version and it is kept current on the Institute's Website <<geosynthetic-institute.org>>.

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1.3 The thermal bonding methods focused upon are hot wedge (single and dual track) and extrusion fillet.

Note 3: Other acceptable, but less frequently used, methods of seaming are hot air and ultrasonic methods. They are inferred as being a subcategory of hot wedge seaming.

1.4 This specification does not suggest a specific distance between destructive seam samples to be taken in the field, i.e., the sampling interval. Two separate GRI Standard Practices are focused on this issue, see GRI-GM14 and GRI-GM20.

1.5 This specification is only applicable to laboratory testing.

1.6 This specification does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards

D6392 Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods

D7747 Standard Test Method for Determining Integrity of Seams Produced Using Thermo-Fusion Methods for Reinforced Geomembranes by the Strip Tensile Method

2.2 EPA Standards

EPA 600/2.88/052 (NTIS PB-89-129670)
Lining of Waste Containment and Other Containment Facilities

2.3 GRI Standards

GM13 Test Properties and Testing Frequency for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes

GM14 Guide for Selecting Variable Intervals for Taking Geomembrane Destructive Seam Samples Using the Method of Attributes

GM17 Test Properties and Testing Frequency for Linear Low Density Polyethylene (LLDPE) Smooth and Textured Geomembranes

GM18 Test Properties and Testing Frequency for Flexible Polypropylene (fPP and fPP-R) Geomembranes

GM20 Guide for Selecting Variable Intervals for Taking Geomembrane Destructive Seam Samples Using Control Charts

GM25 Test Property and Testing Frequency for Scrim Reinforced Linear Low Density Polyethylene Geomembranes

3. Definition

3.1 Geomembrane, n – An essentially impermeable geosynthetic composed of one or more synthetic sheets used for the purpose of liquid, gas or solid containment.

Note 4: This specification addresses homogeneous, or nonreinforced, geomembranes. GRI-GM19b addresses scrim, or fabric, reinforced geomembranes.

3.2 Hot Wedge Seaming – A thermal technique which melts the two opposing geomembrane surfaces to be seamed by running a hot metal wedge or knife between them. Pressure is applied to the top or bottom geomembrane, or both, to form a continuous bond. Seams of this type can be made with dual bond tracks separated by a nonbonded gap. These seams are referred to as dual hot wedge seams or double-track seams.

3.3 Hot Air Seaming – This seaming technique introduces high-temperature air or gas between two geomembrane surfaces to facilitate localized surface melting. Pressure is applied to the top or bottom geomembrane, forcing together the two surfaces to form a continuous bond.

3.4 Ultrasonic Seaming - A thermal technique which melts the two opposing geomembrane surfaces to be seamed by running a ultrasonically vibrated metal wedge or knife between them. Pressure is applied to the top or bottom geomembrane, or both, to form a continuous bond. Some seams of this type are made with dual bond tracks separated by a nonbonded gap. These seams are referred to as dual-track seams or double-track seams.

3.5 Extrusion Fillet Seaming – This seaming technique involves extruding molten resin at the edge of an overlapped geomembrane on another to form a continuous bond. A depreciated method called "extrusion flat" seaming extrudes the molten resin between the two overlapped sheets. In all types of extrusion seaming the surfaces upon which the molten resin is applied must be suitably prepared, usually by a slight grinding or buffing.

4. Significance and Use

4.1 The various methods of field fabrication of seams in homogeneous, or nonreinforced, polyolefin geomembranes are covered in existing ASTM standards mentioned in the referenced document section. What is not covered in those documents is the numeric values of strength and related properties that the completed seam must meet, or exceed. This specification provides this information insofar as minimum, or maximum, property values are concerned when the field

fabricated seams are sampled and laboratory tested in shear and peel. Separate GRI standards, GM14 and GM20, provide guidance as to the spacing that destructive samples should be taken in typical field installation projects.

5. Sample and Specimen Preparation

5.1 The spacings for taking field seam samples for destructive testing can be a fixed, or variable, interval or can be statistically related as provided in GRI-GM14 and GRI-GM20. These statistical processes describe a progression from the most restrictive interval of 1 per 500 feet (1 per 150 m) to the complete use and reliance of the electrical leak location survey (ELLS) method. Intermediate between these extremes are variations depending upon the installers experience and performance.

Note 5: The job-specific spacing is decided upon the design engineer or CQA organization.

5.2 The size of field seam samples is to be according to the referenced test method, e.g., ASTM D6392 or site-specific CQA plan.

5.3 The individual test specimens taken from the field seam samples are to be tested according to the referenced test method, i.e., ASTM D6392 for HDPE, LLDPE and fPP. The specimens are to be conditioned prior to testing according to these same test methods and evaluated accordingly.

6. Assessment of Seam Test Results

6.1 HDPE seams – For HDPE seams (both smooth and textured), the strength of all five out of five 1.0 inch (25 mm) wide strip specimens in shear should meet or exceed the values given in Tables 1(a) and 1(b). In addition, all five specimens should meet the shear percent elongation, calculated as follows, and exceed the values given in Tables 1(a) and 1(b):

$$E = \frac{L}{L_o}(100) \qquad (1)$$

where

E = elongation (%)
L = extension at end of test (in. or mm)
L_o = original average length (usually 1.0 in. or 25 mm)

Note 6: The assumed gage length is considered to be the unseamed sheet material on either side of the welded area. It generally will be 1.0 in. (25 mm) from the edge of the seam to the grip face.

For HDPE seams (both smooth and textured), the strength of all five out of five 1.0 in. (25 mm) wide strip specimens tested in peel should meet or exceed the values given in Tables 1(a) and 1(b).

In addition, the peel separation (or incursion) should not exceed the values given in Tables 1(a) and 1(b) for all five out of five specimens. The value shall be based on the proportion of area of separated bond to the area of the original bonding as follows:

$$S = \frac{A}{A_o}(100) \qquad (2)$$

where

S = separation (%)
A = average area of separation, or incursion (in^2 or mm^2)
A_0 = original bonding area (in^2 or mm^2)

Note 7: The area of peel separation can occur in a number of nonuniform patterns across the seam width. The estimated dimensions of this separated area is visual and must be done with care and concern. The area must not include squeeze-out which is part of the welding process.

Regarding the locus-of-break patterns of the different seaming methods in shear and peel, the following are unacceptable break codes per their description in ASTM D6392 (in this regard, SIP is an acceptable break code);

Hot Wedge: AD and AD-Brk > 25%
Extrusion Fillet: AD1, AD2
Exception: AD-WLD (unless strength is achieved)

Note 8: Separation-in-plane (SIP) is a locus-of-break where the failure surface propagates within one of the seamed sheets during destructive testing (usually in the peel mode). It is not merely a surface skin effect producing a few ductile fibrils (sometimes called ductile drawdown). SIP is acceptable if the required strength, shear elongation and peel separation criteria are met.

In this regard, five out of five specimens shall result in acceptable break patterns.

6.2 LLDPE seams – For LLDPE seams (both smooth and textured), the strength all five out of five 1.0 in. (25 mm) wide strip specimens in shear should meet or exceed the values given in Tables 2(a) through 2(d). Note that the unreinforced specimens are 1.0 in. (25 mm) wide strips. In addition, the shear percent elongation, calculated as follows, should exceed the values given in Tables 2(a) through 2(d). All five specimens should meet the shear elongation requirement.

$$E = \frac{L}{L_o}(100) \quad (1)$$

where

E = elongation (%)
L = extension at end of test (in. or mm)
L_o = original average length (usually 1.0 in. or 25 mm)

Note 6 (Repeated): The assumed gage length is considered to be the unseamed sheet material on either side of the welded area. It generally will be 1.0 in. (25 mm) from the edge of the seam to the grip face.

For LLDPE seams (smooth, textured and scrim reinforced), the strength of all five 1.0 in. (25 mm) wide strip specimens tested in peel should meet or exceed the values given in Tables 2(a) through 2(d).

In addition, the peel separation (or incursion) should not exceed the values given in Tables 2(a) through 2(d). All five out of five specimens shall meet the peel separation value. The value shall be based on the proportion of area of separated bond to the area of the original bonding as follows:

$$S = \frac{A}{A_o}(100) \quad (2)$$

where

S = separation (%)
A = average depth of separation, or incursion ($in.^2$ or mm^2)
A_0 = original bonding distance ($in.^2$ or mm^2)

Note 6 (Repeated): The area of peel separation can occur in a number of nonuniform patterns across the seam width. The estimated dimensions of this separated area is visual and must be done with care and concern. The area must not include squeeze-out which is part of the welding process.

Regarding the locus-of-break patterns of the different seaming methods in shear and peel, the following are unacceptable break codes per their description in ASTM D6392 (in this regard, SIP is an acceptable break code);

Hot Wedge: AD and AD-Brk > 25%
Extrusion Fillet: AD1, AD2
Exception: AD-WLD (unless strength is achieved)

Note 8 (Repeated): Separation-in-plane (SIP) is a locus-of-break where the failure surface propagates within one of the seamed sheets during destructive testing (usually in the peel mode). It is not merely a surface skin effect producing a few ductile fibrils (sometimes called ductile drawdown). SIP is acceptable if the required strength, shear elongation and peel separation criteria are met.

In this regard, all five specimens shall result in acceptable break patterns.

6.3 fPP Seams – For fPP seams, the strength all five out of five specimens in shear should meet or exceed the values given in Tables 3(a) and 3(b). Note that the specimens are 1.0 in. (25 mm) wide strips. In addition, the shear percent elongation on the specimens, calculated as follows, should exceed the values given in Tables 3(a) and 3(b). All five out of five specimens should meet the shear elongation requirement.

$$E = \frac{L}{L_o}(100) \quad (1)$$

where
E = elongation (%)
L = extension at end of test (in. or mm)
L_o = original gauge length (usually 1.0 in. or 25 mm)

Note 4 (Repeated): The assumed gage length is considered to be the unseamed sheet material on either side of the welded area. It generally will be 1.0 in. (25 mm) from the edge of the seam to the grip face.

For fPP seams, the strength of all five out of five specimens in peel should meet or exceed the values given in Tables 3(a) and 3(b). Note that the unreinforced specimens are 1.0 in. (25 mm) wide strips. In addition, the peel percent separation (or incursion) should not exceed the values given in Tables 3(a) and 3(b). All five out of five specimens should meet the peel separation value. The values should be based on the proportion of area of separated bond to the area of the original bonding as follows.

$$S = \frac{A}{A_o}(100) \quad (2)$$

where

S = separation in (%)
A = average depth of separation, or incursion ($in.^2$ or mm^2)
A_o = original bonding distance ($in.^2$ or mm^2)

Note 7 (Repeated): The area of peel separation can occur in a number of nonuniform patterns across the seam width. The estimated dimensions of this separated area is visual and must be done with care and concern. The area must not include squeeze-out which is part of the welding process.

Regarding the locus-of-break patterns of the different seaming methods in shear and peel, the following are unacceptable break codes per their description in ASTM D6392 (in this regard, SIP is an acceptable break code);

Hot Wedge: AD and AD-Brk > 25%
Extrusion Fillet: AD1, AD2
Exception: AD-WLD (unless strength is achieved)

Note 8 (Repeated): Separation-in-plane (SIP) is a locus-of-break where the failure surface propagates within one of the seamed sheets during destructive testing (usually in the peel mode). It is not merely a surface skin effect producing a few ductile fibrils (sometimes called ductile drawdown). SIP is acceptable if the required strength, shear elongation and peel separation criteria are met.

In this regard, five out of five specimens shall result in acceptable break patterns.

7. Retest and Rejection

7.1 If the results of the testing of a sample do not conform to the requirements of this specification, retesting to determine conformance or rejection should be done in accordance with the construction quality control or construction quality assurance plan for the particular site under construction.

8. Certification

8.1 Upon request of the construction quality assurance officer or certification engineer, an installer's certification that the geomembrane was installed and tested in accordance with this specification, together with a report of the test results, shall be furnished at the completion of the installation.

Table 1(a) – Seam Strength and Related Properties of Thermally Bonded **Smooth and Textured** High Density Polyethylene (HDPE) Geomembranes **(English Units)**

Geomembrane Nominal Thickness	30 mils	40 mils	50 mils	60 mils	80 mils	100 mils	120 mils
Hot Wedge Seams[1]							
shear strength, lb/in.	57	80	100	120	160	200	240
shear elongation at break[2], %	50	50	50	50	50	50	50
peel strength, lb/in.	45	60	76	91	121	151	181
peel separation, %	25	25	25	25	25	25	25
Extrusion Fillet Seams							
shear strength, lb/in.	57	80	100	120	160	200	240
shear elongation at break[2], %	50	50	50	50	50	50	50
peel strength, lb/in.	39	52	65	78	104	130	156
peel separation, %	25	25	25	25	25	25	25

Notes for Tables 1(a) and 1(b):
1. Also for hot air and ultrasonic seaming methods
2. Elongation measurements should be omitted for field testing

Table 1(b) – Seam Strength and Related Properties of Thermally Bonded **Smooth and Textured** High Density Polyethylene (HDPE) Geomembranes **(S.I. Units)**

Geomembrane Nominal Thickness	0.75 mm	1.0 mm	1.25 mm	1.5 mm	2.0 mm	2.5 mm	3.0 mm
Hot Wedge Seams[1]							
shear strength, N/25 mm.	250	350	438	525	701	876	1050
shear elongation at break[2], %	50	50	50	50	50	50	50
peel strength, N/25 mm	197	263	333	398	530	661	793
peel separation, %	25	25	25	25	25	25	25
Extrusion Fillet Seams							
shear strength, N/25 mm	250	350	438	525	701	876	1050
shear elongation at break[2], %	50	50	50	50	50	50	50
peel strength, N/25 mm	170	225	285	340	455	570	680
peel separation, %	25	25	25	25	25	25	25

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Table 2(a) – Seam Strength and Related Properties of Thermally Bonded **Smooth and Textured** Linear Low Density Polyethylene (LLDPE) Geomembranes (English Units)

Geomembrane Nominal Thickness	20 mils	30 mils	40 mils	50 mils	60 mils	80 mils	100 mils	120 mils
Hot Wedge Seams[1]								
shear strength, lb/in.	30	45	60	75	90	120	150	180
shear elongation[2], %	50	50	50	50	50	50	50	50
peel strength, lb/in.	25	38	50	63	75	100	125	150
peel separation, %	25	25	25	25	25	25	25	25
Extrusion Fillet Seams								
shear strength, lb/in.	30	45	60	75	90	120	150	180
shear elongation[2], %	50	50	50	50	50	50	50	50
peel strength, lb/in.	22	34	44	57	66	88	114	136
peel separation, %	25	25	25	25	25	25	25	25

Notes for Tables 2(a) and 2(b):
1. Also for hot air and ultrasonic seaming methods
2. Elongation measurements should be omitted for field testing

Table 2(b) – Seam Strength and Related Properties of Thermally Bonded **Smooth and Textured** Linear Low Density Polyethylene (LLDPE) Geomembranes (S.I. Units)

Geomembrane Nominal Thickness	0.50 mm	0.75 mm	1.0 mm	1.25 mm	1.5 mm	2.0 mm	2.5 mm	3.0 mm
Hot Wedge Seams[1]								
shear strength, N/25 mm	131	197	263	328	394	525	657	788
shear elongation[2], %	50	50	50	50	50	50	50	50
peel strength, N/25 mm	109	166	219	276	328	438	547	657
peel separation, %	25	25	25	25	25	25	25	25
Extrusion Fillet Seams								
shear strength, N/25 mm	131	197	263	328	394	525	657	788
shear elongation[2], %	50	50	50	50	50	50	50	50
peel strength, N/25 mm	95	150	190	250	290	385	500	595
peel separation, %	25	25	25	25	25	25	25	25

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Table 3(a) – Seam Strength and Related Properties of Thermally Bonded Homogeneous Flexible Polypropylene (fPP) Geomembranes (English Units)

Geomembrane Nominal Thickness	30 mil	40 mil
Hot Wedge Seams[1]		
shear strength, lb/in.	25	30
shear elongation[2], %	50	50
peel strength, lb/in.	20	25
peel separation, %	25	25
Extrusion Fillet Seams		
shear strength, lb/in.	25	30
shear elongation[2], %	50	50
peel strength, lb/in.	20	25
peel separation, %	25	25

1. Also for hot air and ultrasonic seaming methods
2. Elongation measurements should be omitted for field testing

Table 3(b) – Seam Strength and Related Properties of Thermally Bonded Homogeneous Flexible Polypropylene (fPP) Geomembranes (S.I. Units)

Geomembrane Nominal Thickness	0.75 mm	1.0 mm
Hot Wedge Seams[1]		
shear strength, N/25 mm	110	130
shear elongation[2], %	50	50
peel strength, N/25 mm	85	110
peel separation, %	25	25
Extrusion Fillet Seams		
shear strength, N/25 mm	110	130
shear elongation[2], %	50	50
peel strength, N/25 mm	85	110
peel separation, %	25	25

1. Also for hot air and ultrasonic seaming methods
2. Elongation measurements should be omitted for field testing

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Adoption and Revision Schedule
for
Seam Specification per GRI-GM19

"Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes"

Adopted: February 18, 2002

Revision 1: May 15, 2003; Increased selected shear and peel test requirements, per the following:

Material	Test	Seam Type	Current GM19	Proposed GM19	Difference
HDPE	Shear	Hot Wedge	95% yield	95% yield	no change
		Extrusion	95% yield	95% yield	no change
	Peel	Hot Wedge	62% yield	72% yield	16% increase
		Extrusion	62% yield	62% yield	no change
LLDPE	Shear	Hot Wedge	1300 psi break	1500 psi break	15% increase
		Extrusion	1300 psi break	1500 psi break	15% increase
	Peel	Hot Wedge	1100 psi break	1250 psi break	14% increase
		Extrusion	1100 psi break	1100 psi break	no change

Revision 2: January 28, 2005; added Note 6 (in three locations) stating that incursion is measured on an area basis and not depth as in ASTM D6392.

Revision 3: June 4, 2010; Removed Note 6 on peel incursion since ASTM D6392 (2008) now uses area of incursion whereas previously they used linear length of incursion. Thus ASTM is now in agreement with GM19 in this regard.

Revision 4: November 15, 2010; Added Note 6 (in three locations) stating what separation-in-plane (SIP) is, and is not, and that it is acceptable if the required strength, shear elongation and peel separation criteria are met.

Revision 5: July 12, 2011; AD1 and AD2 breaks are now unacceptable even if strength is achieved.

Revision 6: October 3, 2011; Added LLDPE-R to the various geomembrane types, in particular, Tables 2(c) and 2(d) and made editorial changes.

Revision 7: November 3, 2013; clarified issues of 4 out of 5 passing strength and 5 out of 5 passing locus-of-break, shear elongation and peel separation.

Revision 8: February 12, 2015; upgraded standards and terminology

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Revision 9: July 28, 2017: eliminated reinforced LLDPE-R and fPP-R geomembranes in deference to GRI-GM19b which includes them and other scrim-reinforced geomembranes and barriers. Also now required are 5 out of 5 passing strength tests for all materials.

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Geosynthetic Institute
475 Kedron Avenue
Folsom, PA 19033-1208 USA
TEL (610) 522-8440
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Original: December 16, 2013

GRI Test Method GM29*

Standard Practice for

"Field Integrity Evaluation of Geomembrane Seams (and Sheet) Using Destructive and/or Nondestructive Testing"

This practice was developed by the Geosynthetic Research Institute (GRI) with the cooperation of the member organizations for general use by the public. It is completely optional in this regard and can be superseded by other existing or new practices on the subject matter in whole or in part. Neither GRI, the Geosynthetic Institute, nor any of its related institutes, warrant or indemnifies any materials produced according to this practice either at this time or in the future.

1. Scope

1.1 This standard practice provides guidelines to assess the integrity of geomembrane field seams (and sheet) in a progression ranging from fixed interval destructive seam testing eventually to electrical leak location nondestructive testing of both seams and sheet.

1.2 The need for the practice is to acknowledge that the fixed interval destructive seam testing concept of one sample in 150 m (500 ft.) is now over 30-years old and antiquated. Significant improvement in concepts, equipment, personnel, training, and technology have occurred in the interval.

1.3 The practice describes three separate tracks that may be considered when developing a construction quality assurance (CQA) plan.

1.4 This practice is field oriented toward both construction quality control (CQC) and construction quality assurance (CQA) of geomembranes for all applications.

1.5 This standard may involve hazardous operations, equipment and climates. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

*This GRI standard is developed by the Geosynthetic Research Institute through consultation and review by the member organizations. This practice will be reviewed at least every 5-years, or on an as-required basis. In this regard it is subject to change at any time. The most recent revision date is the effective version.

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2. Reference Documents

2.1 ASTM Standards:

D4439 Terminology for Geosynthetics

D5820 Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes

D6392 Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods

D6747 Guide for Selection of Leaks in Geomembranes (see also D7703, D7230, D7852, D7002, and D7007 for specific practices in this regard)

2.2 GRI Standards:

GM1 Practice for Seam Evaluation by the Ultrasonic Shadow Method

GM6 Practice for Pressurized Air Channel Test for Dual Seamed Geomembranes

GM14 Practice for Selecting Variable Intervals for Taking Geomembrane Destructive Seam Samples Using the Method of Attribute

GM19 Specification for Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes

GM20 Practice for Selecting Variable Intervals for Taking Geomembrane Destructive Seam Samples Using Control Charts

2.3 EPA Documents:

EPA/530/SW-91/051, "Inspection Techniques for Fabrication of Geomembrane Field Seams"

EPA/600/R-93/182, "Quality Assurance and Quality Control for Waste Containment Facilities"

EPA/530/SW-91/051, "Inspection Techniques for the Fabrication of Geomembrane Field Seams"

EPA/600/R-93/112, "Proceedings of the Workshop on Geomembrane Seaming, Data Acquisition and Welders," June, 1993, 64 pgs.

2.4 References:

Koerner, R. M. (2012), "Designing With Geosynthetics," 6th Edition, Xlibris Publ. Co., 914 pgs.

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GSI White Paper #3, (2003), "Providing Flexibility in Destructive Seam Sampling/Testing," Geosynthetic Institute, Folsom, PA, 14 pgs.

GSI White Paper #26 (2012), "Need For and Justification Of Quality Management Systems for Successful Geosynthetic Performance," Geosynthetic Institute, Folsom, PA, 20 pgs.

Lord, A. E., Koerner, R. M. and Crawford, R. B. (1986), "Nondestructive Testing Techniques to Assess Geomembrane Seam Quality," Proceedings 7th Natl. Conf. on Management of Uncontrolled Hazardous Waste Sites, Washington, DC, pp. 272-276.

Noski, V. and Touze-Foltz, N. (2000), "Geomembrane Liner Failures," Proceedings 2nd European Geosynthetic Conference (GeoEuro 2), Italy, pp. 557-560.

Peggs, I.D., Micelli, G. F., McLearn, M.E., (1994), "Infrared Thermographic Nondestructive Testing of HDPE Geomembranes Seams: A Feasibility Study," 5th International Conference on Geotextiles, Geomembranes and Related Products, Singapore, September 1994, pp. 941-944.

3. Terminology

3.1 Definitions of Generic Terms

3.1.1 *field seams* - The seaming of rolls or panels together in the field thereby making a continuous liner system; also sometimes called *production seams.*

3.1.2 *trial seams* - Trial seams are spare scraps of geomembrane that are field seamed and tested to establish welding machine settings of temperature, pressure and travel rate for a specific device under a specific set of atmospheric conditions as well as establishing procedures to be correctly used by the installation personnel.

3.1.3 *thermal fusion seams* - A seam which involves the temporary, thermally-induced reorganization in the polymer structure at the surface of two opposing geomembranes which, after the application of pressure and the passage of a certain amount of time, results in the two being joined together.

Note 1: The dual track hot wedge seam is considered to be the premier technique for making geomembrane seams. It is always accompanied by using air pressure in the opening between the welded inner and outer tracks, thereby allowing for an air pressure test on both tracks as a nondestructive test method.

3.1.4 *nondestructive test* - Test performed on geomembranes in the field to verify integrity and completeness without taking physical samples and testing them to failure.

3.1.5 *destructive test* - Test performed on geomembrane samples cut from a field installation or test strip to verify specification performance requirements, e.g., shear and peel tests of geomembrane seams are destructive tests in which the specimens are tested to failure.

3.1.6 *seam shear test* - A destructive test in which two seamed sheets or panels on opposite sides of the seam specimen are pulled in tension such that the seam is placed in a shear mode of stress.

3.1.7 *seam peel test* - A destructive test in which two seamed sheets or panels on opposite sides of the seam specimen are pulled in tension such that the seam is placed in a peel mode of stress.

3.1.8 *Construction Quality Control (CQC)* - A planned system of inspections that is used to directly monitor and control the quality of a construction project. Construction quality control is normally performed by the geosynthetics installer and is necessary to achieve quality in the constructed or installed system. Construction quality control (CQC) refers to measures taken by the installer or contractor to determine compliance with the requirements for materials and workmanship as stated in the plans and specifications for the project. (See GSI White Papers #3 and #26)

3.1.9 *Construction Quality Assurance (CQA)* - A planned system of activities that provides the owner and permitting agency assurance that the facility was constructed as specified in the design. Construction quality assurance includes inspections, verifications, audits, and evaluations of materials and workmanship necessary to determine and document the quality of the constructed facility. Construction quality assurance (CQA) refers to measures taken by the CQA organization to determine if the installer or contractor is in compliance with the plans and specifications of the project. (See GSI White Papers #3 and #26)

4. Summary of Practice

The benchmark destructive seam test interval for geomembrane was established pre-1980 at one sample per 150 m (500 ft.) length of seam irrespective of the type of seam and the quality of the seaming crew. This is unfortunate since good seaming results should allow for greater intervals and poor results vice versa. The methods of attributes and control charts allows for these variations. Furthermore, entirely new concepts (certified installers, taped edges, automatic welders and ultrasonic or infrared (US/IR) testing) should allow for the initial interval to be increased, e.g., to one sample per 225 m (750 ft.). Even further, the electrical leak location (ELL) method which evaluates both seams and sheet can be used to investigate and approve a completed geomembrane system. This standard practice explains each of these value-added advances insofar as current practice of developing construction quality assurance (CQA) plans is concerned. Of course, if site-specific regulations call for a particular strategy with no options, it must be followed accordingly.

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This entire practice is embodied in the flow chart of Figure 1 which will be described throughout the discussion. In viewing it, one will observe that three separate tracks are possible. All three concepts are mature and can, and should, be implemented immediately.

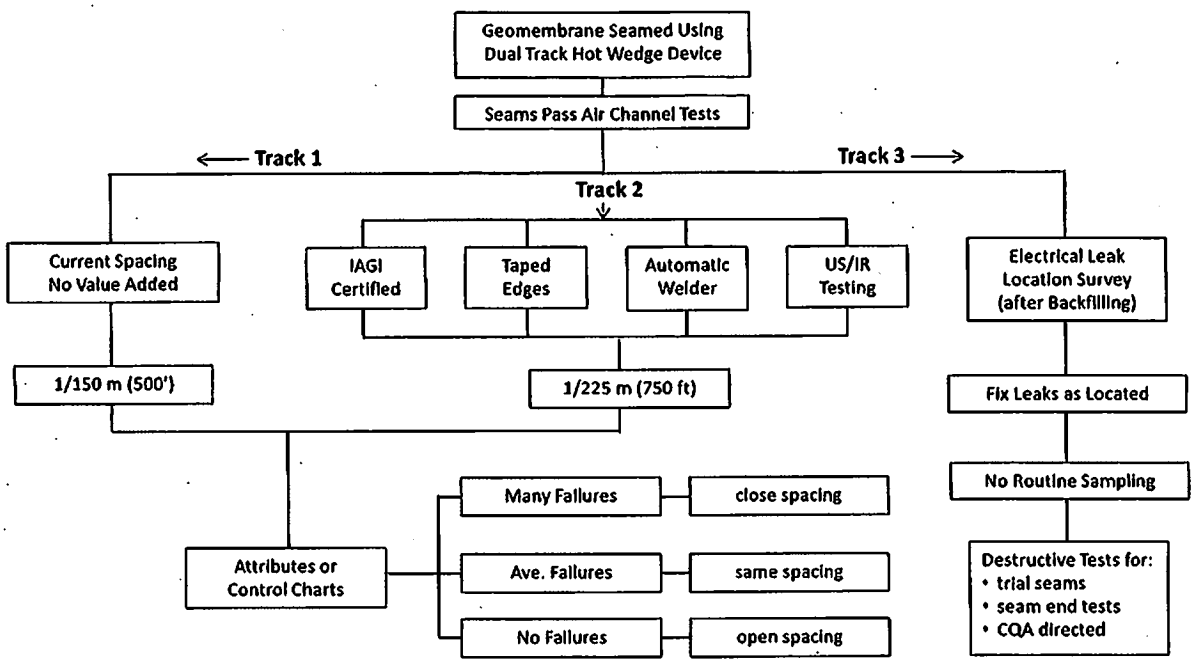

Figure 1. Flow chart of methods and techniques to be described herein in assessing the field integrity of geomembrane seams and sheets.

5. Significance and Use

5.1 Geomembranes are used as liquid and/or gas barriers and, as such, should be leak-free. While field seaming of the edges and ends of the panels has received almost all of the past attention, the sheet itself should also be evaluated. This standard addresses each aspect of the recommended practice so as to have the best possible quality field completed liner system.

Note 2: In this context this standard represents current "best practice" with respect to CQC and CQA.

5.2 Seaming equipment and personnel have improved considerably since pre-1980 when the one destructive seam sample in 150 m (500 ft.) distance was established. This standard practice is focused on increasing this interval (as described) and optimally using the electric leak location (ELL) method which replaces the need for designated destructive tests, but nevertheless provides safeguards as considered necessary.

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system

FIELD STAFF: Driller: C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:60
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	0/60 0%	BD					0	Dark gray (10YR4/1) with 30% yellowish brown (10YR5/8) mottles, moist, medium, CLAY with some silt and trace sand.		510	
							2				
							4	Yellowish brown (10YR5/8) with 20% gray (10YR5/1) mottles, moist, medium, CLAY with some silt and trace sand.		508	
							6			506	
	0/60 0%	BD					8			504	
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		502	
							10			500	
	0/55 0%	BD					12	Yellowish brown (10YR5/8), moist, hard, weathered SHALE		498	
							14			496	
								Brownish yellow (10YR6/8), weathered SANDSTONE.			
							16	Gray (10YR6/1), weathered SANDSTONE.		494	
	62/67 93%	RC					18	Gray (10YR6/1), LIMESTONE with sandstone partings.		492	
							20				

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FIELD BORING LOG

HANSON

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804,807.42E

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Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								Gray (10YR6/1), LIMESTONE with sandstone partings. *(Continued from previous page)*		490	
								Gray (10YR6/1) SHALE.			
								Grey (10YR6/1) LIMESTONE.			
							22			488	
							24	Yellowish brown (10YR5/8), vuggy, SANDSTONE.		486	
	120/120 100%	RC					26			484	
							28	Yellowish brown (10YR5/8) with 35% dark yellowish brown (10YR4/4) mottles, massive, SANDSTONE.		482	
							30			480	
							32	Yellowish brown (10YR5/8) with 35% dark yellowish brown (10YR4/4) mottles, massive, SANDSTONE.		478	
								Yellowish brown (10YR5/8) with 35% dark yellowish brown (10YR4/4) mottles, vuggy, SANDSTONE.			
							34			476	
	120/120 100%	RC					36	Dark yellowish brown (10YR5/8), massive with some cross-beds, SANDSTONE.		474	
							38			472	
							40				

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FIELD BORING LOG

HANSON

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DATES: Start: 2/11/2019
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Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system

FIELD STAFF: Driller: C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
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Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf)	Qp (tsf)	Failure Type	Depth ft. BGS	Lithologic Description
	120/120 100%	RC							42	Dark yellowish brown (10YR5/8), massive with some cross-beds, SANDSTONE. *(Continued from previous page)*
									44	Red (10R4/8), massive, SANDSTONE.
									46	
									48	Dark yellowish brown (10YR4/4), massive, SANDSTONE.
									50	
									52	Yellowish brown (10YR5/8), weathered (soft), SHALE.
										Red (10R4/8), massive, SANDSTONE.
	116/120 97%	RC							54	
									56	
									58	Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.
									60	

Borehole Detail: 470, 468, 466, 464, 462, 460, 458, 456, 454, 452

Elevation ft. MSL

Remarks

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FIELD BORING LOG

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▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf)	Qp (tsf)	Failure Type	Depth ft. BGS	Lithologic Description
									60	
									62	Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings. *[Continued from previous page]*
	116/120 97%	RC							64	
									66	
									68	
									70	
									72	Gray (10YR5/1), massive, micaceous, SANDSTONE with minor black (10YR2/1) shale partings.
									74	
	116/120 98%	RC							76	
									78	
									80	

Borehole Detail | Elevation ft. MSL | Remarks

450
448
446
444
442
440
438
436
434
432

NOTE(S):

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system

FIELD STAFF: Driller: C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	118/120 98%	RC					82	Gray (10YR6/1), massive, micaceous, SANDSTONE with minor black (10YR2/1) shale partings. *(Continued from previous page)*		430	
							84			428	
							86			426	
							88			424	
							90			422	
							92			420	
	119/120 99%	RC					94	Gray (10YR6/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.		418	
							96			416	
							98			414	
							100			412	

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system

FIELD STAFF: Driller: C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	120/120 100%	RC					102	Gray (10YR6/1), massive, SANDSTONE with minor black (10YR2/1) shale partings. *[Continued from previous page]*		410	
							104			408	
							106			406	
							108	Gray (10YR5/1), massive, micaceous, SANDSTONE with minor black (10YR2/1) shale partings.		404	
							110			402	
							112	Gray (10YR5/1) SHALE.		400	
	120/120 100%	RC					114	Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.		398	
							116			396	
							118			394	
							120	Gray (10YR5/1), cross-bedded, SANDSTONE.		392	

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (to 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system

FIELD STAFF: Driller: C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							120	Gray (10YR6/1), cross-bedded, SANDSTONE. *(Continued from previous page)*		390	
	120/120 100%	RC					122			388	
							124			386	
							126	Gray (10YR5/1), massive, SANDSTONE.		384	
							128			382	
							130			380	
							132	Gray (10YR5/1), cross-bedded, SANDSTONE.		378	
							134			376	
	120/120 100%	RC					136	Gray (10YR5/1), massive, SANDSTONE with minor black (10YR2/1) shale partings.		374	
							138	Gray (10YR6/1), massive, SANDSTONE with more black (10YR2/1) shale partings.		372	
							140	Black (10YR2/1) SHALE.			

NOTE(S):

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-760 ATV Drill
Drilling Method: NX wireline coring system

FIELD STAFF: Driller: C Clines
Helper: M Hill
Eng/Geo: R. Hasenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▽ =

SAMPLE				TESTING									
Number	Recov / Total (in) % Recovery	Type	Depth ft. BGS	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	120/120 100%	RC	142					Black (10YR2/1) SHALE. *[Continued from previous page]*		370	
			144					Laminated gray (10YR5/1) SANDSTONE and black (10YR2/1) SHALE.		368	
			146					Gray (10YR5/1), massive, SANDSTONE.		366	
			148							364	
			150					Black (10YR2/1) SHALE.		362	
			152					Gray (10YR5/1), massive, SANDSTONE.		360	
			154							358	
	118/120 98%	RC	156					Black (10YR2/1) SHALE.		356	
			158							354	
			160							352	

NOTE(S):

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FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/11/2019
Finish: 2/14/2019
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: CME-750 ATV Drill
Drilling Method: NX wireline coring system

FIELD STAFF: Driller: C Clines
Helper: M Hill
Eng/Geo: R. Hesenyager

BOREHOLE ID: EBR
Well ID: n/a
Surface Elev: 510.3 ft. MSL
Completion: 170.0 ft. BGS
Station: 347,111.43N
804,807.42E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - boring flooded for coring
▼ = Dry - 2/28/2019 @ 7:50
▼ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	120/120 100%	RC					162	Black (10YR2/1) SHALE. *[Continued from previous page]*		350	
							164			348	
							166			346	
							168	Gray (10YR6/1), massive, SANDSTONE.		344	
							168	Black (10YR2/1) SHALE.			
							168	Laminated gray (10YR6/1) SANDSTONE and black (10YR2/1) SHALE.		342	
							170	Gray (10YR5/1), massive, SANDSTONE.			

NOTE(S):

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1a
Well ID: DP-1a
Surface Elev: 516.52 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,214.45N
804,768.52E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = Dry - 3/1/2019 @ 8:30
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	44/60 73%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
							4	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		514	
	28/48 58%	DP					6			512	
							8	Dark yellowish brown (10YR4/4), moist, soft, CLAY with some silt and trace sand. (FILL)		510	
	32/48 67%	DP					10			508	
							12	Brownish yellow (10YR6/6), weathered SHALE.		506	
	40/48 83%	DP					14			504	
							16			502	
										500	

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1b
Well ID: DP-1b
Surface Elev: 517.05 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,220.35N
804,792.89E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 15.95 - 3/1/2019 @ 8:25
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	48/60 80%	DP					0	Black (10YR2/1) ASPHALTIC (FILL)			
							1	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)			
							4	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		514	
	42/48 88%	DP					6	Yellowish brown (10YR5/6) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		512	
							8	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		510	
	27/48 56%	DP					10	Gray (10YR5/1) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		508	
							12			506	
	32/48 67%	DP					14	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand.		504	
							▼ 16	Yellowish brown (10YR5/8), weathered SHALE.		502	
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1c
Well ID: DP-1c
Surface Elev: 514.27 ft. MSL
Completion: 18.00 ft. BGS
Station: 347,228.27N
804,817.11E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.37 - 3/1/2019 @ 8:10
▼ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	38/60 63%	DP					0	Dark grayish brown (10YR4/2), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		514	
							1	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand. (FILL)			
							2	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, few bottom ash, and trace sand. (FILL)		512	
							3	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand. (FILL)			
							4	Light yellowish brown (10YR6/4), moist, hard, weathered SHALE. (FILL)		510	
	38/48 79%	DP					5				
							6	Black (10YR2/1) mottled yellowish brown (10YR5/6) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		508	
							7				
							8	Dark yellowish brown (10YR4/4) RANDOM FILL (clay, silt, and gravel in 4 to 6 inch lifts).		506	
							9				
	40/48 83%	DP					10 ▼	Black (10YR2/1) RANDOM FILL (clay, silt, gravel, and some bottom ash in 4 to 6 inch lifts).		504	
							11				
							12			502	
							13				
	42/48 88%	DP					14	Yellowish brown (10YR5/8), moist, soft, CLAY with some silt and trace sand.		500	
							15				
							16	Yellowish brown (10YR5/8), weathered SANDSTONE.		498	
	24/24 100%	DP					17				
							18	Brownish yellow (10YR6/8), weathered SHALE.		496	

End of Boring = 18.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1d
Well ID: DP-1d
Surface Elev: 513.11 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,232.30N
804,841.00E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.60 - 2/28/2019 @ 15.45
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
							2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
							4	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
	48/48 100%	DP					6			506	
							8	Black (10YR2/1), moist, medium, CLAY with some silt, little sand, few bottom ash, and trace gravel.		504	
	37/48 77%	DP					10 ▼	Yellowish brown (10YR5/8), wet, soft, CLAY with some silt and trace sand.		502	
							12	Black (10YR2/1), wet, soft, CLAY with some silt and trace sand.		500	
	40/48 83%	DP					14	Yellowish brown (10YR6/6), moist, soft, CLAY with some silt and trace sand.		498	
							16	Yellowish brown (10YR5/8), SANDSTONE. End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emory Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/28/2019
Finish: 2/28/2019
WEATHER: Rainy, cold (lo 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-1e
Well ID: DP-1e
Surface Elev: 512.80 ft. MSL
Completion: 8.00 ft. BGS
Station: 347,238.19N
804,865.50E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 0.00 - 2/28/2019 @ 15:25
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf)	Qp (tsf)	Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP							0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
									2	Dark yellowish brown (10YR4/4), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
									4	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		508	
	36/36 100%	DP							6			506	
									8	Yellowish brown (10YR6/8), SANDSTONE. End of Boring = 8.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Ply cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2a
Well ID: DP-2a
Surface Elev: 516.53 ft. MSL
Completion: 13.50 ft. BGS
Station: 347,133.62N
804,760.03E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 14.26 - 2/27/2019 @ 8:15
▼ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Black (10YR2/1), moist, loose, medium- to very coarse-grained SAND, with some silt and trace gravel. (FILL)		516	
							1	Black (10YR2/1), moist, stiff, CLAY with some silt, little sand, and trace gravel.			
							2	Brownish yellow (10YR6/6), moist, stiff, CLAY with some silt and trace sand.		514	
							4	Brownish yellow (10YR6/6) with 30% gray (10YR6/1) mottles, moist, medium, CLAY with some silt and trace sand.		512	
	35/48 73%	DP					6				
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		510	
							10			508	
	31/48 65%	DP					12	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
								Yellowish brown (10YR5/6), weathered SHALE.		504	
	6/6 100%	DP						Yellowish brown (10YR5/8), SANDSTONE.			
								End of Boring = 13.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Pity cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2b
Well ID: DP-2b
Surface Elev: 518.65 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,117.86N
804,780.56E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 9.38 - 2/27/2019 @ 8:35
▼ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	31/60 52%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
								Yellowish brown (10YR5/8) with 40% Black (10YR2/1) mottles, moist, medium CLAY with some silt and trace sand. (FILL)		514	
							4				
								Dark gray (10YR4/1), moist, medium, CLAY with some silt and trace sand.		512	
	34/48 71%	DP					6				
										510	
							8				
							▼			508	
							10	Yellowish brown (10YR6/6), moist, medium, CLAY with some silt, little sand, and trace gravel.			
	35/48 73%	DP								506	
							12				
								Yellowish brown (10YR6/6), wet, soft, SILT with few clay and little very fine-grained sand.		504	
							14				
	36/36 100%	DP						Yellowish brown (10YR5/8), weathered SHALE.		502	
							16	End of Boring = 16.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Pity cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2c
Well ID: DP-2c
Surface Elev: 510.46 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,106.55N
804,802.49E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 7.34 - 2/27/2019 @ 8:55
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	40/60 67%	DP					2	Dark gray (10YR4/1) with 30% yellowish brown (10YR5/6) mottles, moist, medium, CLAY with some silt and trace sand.		510	
							4	Yellowish brown (10YR5/6) with 20% gray (10YR5/1) mottles, moist, medium, CLAY with some silt and trace sand.		508	
	43/48 90%	DP					6			506	
							8	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		504	
	41/48 85%	DP					10			502	
							12	Yellowish brown (10YR5/8), moist, hard, weathered SHALE		500	
	36/36 100%	DP					14			498	
							16	Yellowish brown (10YR5/8) SANDSTONE. End of Boring = 16.0 ft.		496	

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2d
Well ID: DP-2d
Surface Elev: 508.64 ft. MSL
Completion: 15.60 ft. BGS
Station: 347,095.26N
804,823.89E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = 13.00 - during drilling
▼ = 1.35 - 2/26/2019 @ 17:10
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Failure	Qp (tsf) Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	53/60 88%	SS						0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		508	
								2				
								4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		504	
	42/48 88%	DP						6			502	
								8			500	
								10	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		498	
	44/48 92%	DP						12	Yellowish brown (10YR5/8), weathered SHALE.		496	
	29/30 97%	DP						14	Yellowish brown (10YR5/8) SANDSTONE.		494	
									End of Boring = 15.6 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2e
Well ID: DP-2e
Surface Elev: 507.37 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,083.66N
804,647.08E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 2.31 - 2/27/2019 @ 9:10
▽ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		508	
							2				
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		504	
							4				
										502	
	39/48 81%	DP					6				
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		500	
							8				
										498	
							10				
	48/48 100%	DP								496	
							12	Yellowish brown (10YR6/6), wet, soft, SILT with few clay and little very fine-grained sand.		494	
							14	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
	27/36 75%	DP						Yellowish brown (10YR6/8), weathered SHALE.		492	
							16	End of Boring = 16.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Engr/Geo: R. Hasenyager

BOREHOLE ID: DP-2f
Well ID: DP-2f
Surface Elev: 506.32 ft. MSL
Completion: 16.50 ft. BGS
Station: 347,071.83N
804,869.56E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = 3.55 - 2/27/2019 @ 9:26
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Very dark gray (10YR3/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		506	
							2				
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		504	
							6	Yellowish brown (10YR5/6) with 20% gray (10YR5/1) mottles, moist, medium CLAY with some silt and trace sand.		502	
	44/48 92%	DP					8	Dark yellowish brown (10YR4/6), wet, medium dense, very fine- to medium-grained SAND with few clay and silt.		500	
							10	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		498	
	45/48 94%	DP					12			496	
							14	Light yellowish brown (10YR6/4) SANDSTONE.		494	
	28/30 93%	DP						End of Boring = 16.6 ft.		492	

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Engr/Geo: R. Hasenyager

BOREHOLE ID: DP-2g
Well ID: DP-2g
Surface Elev: 505.12 ft. MSL
Completion: 15.40 ft. BGS
Station: 347,060.68N
804,891.97E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = 9.00 - during drilling
▼ = 11.60 - 2/26/2019 @ 17:30
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							0	Gray (10YR5/1), moist, loose, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		504	
	46/60 77%	DP					2	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		502	
							4	Yellowish brown (10YR5/6), medium CLAY with some silt and trace sand.		500	
							6	Gray (10YR5/1), moist, medium, CLAY with some silt, little sand, and trace gravel.		498	
	34/48 71%	DP					8			496	
							10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		494	
	35/48 73%	DP					12			492	
	20/30 97%	DP					14	Yyellowish brown (10YR5/8) SANDSTONE. End of Boring = 15.4 ft.		490	

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/26/2019
WEATHER: Ptly cloudy, mild (hi 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-2h
Well ID: DP-2h
Surface Elev: 503.54 ft. MSL
Completion: 15.00 ft. BGS
Station: 347,048.55N
804,916.15E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = 7.00 - during drilling
▼ = -0.30 - 2/26/2019 @ 17:40
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	46/60 75%	DP					0	Gray (10YR5/1), moist, loose, small- to coarse-grained GRAVEL with little sand and few silt. (FILL) .			
							2			502	
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.		500	
							6			498	
	33/48 69%	DP					8	Gray (10YR6/1) with 20% yellowish brown (10YR5/6) mottles, wet, medium SILT with few clay and little very fine-grained sand.		496	
							10			494	
	42/48 88%	DP					12	Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt and trace sand.		492	
								Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt, little sand, and trace gravel.			
	24/24 100%	DP					14	Brownish yellow (10YR6/8) SANDSTONE.		490	
								End of Boring = 15.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3a
Well ID: DP-3a
Surface Elev: 518.30 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,076.80N
804,653.12E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 11.68 - 2/26/2019 @ 8:55
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf)	Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	49/60 82%	DP						0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		518	
								2			516	
								4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		514	
	30/48 63%	DP						6			512	
								8			510	
	32/48 67%	DP						10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
								12 ▼			506	
	36/48 75%	DP						14	Yellowish brown (10YR5/8), weathered SHALE.		504	
								16			502	
									Yellowish brown (10YR5/8), SANDSTONE. End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3b
Well ID: DP-3b
Surface Elev: 518.15 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,052.87N
804,655.84E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 10.63 - 2/26/2019 @ 9:15
▽ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qp (tsf)	Qu (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP						0	Black (10YR2/1), moist, soft, CLAY with some silt and trace sand.		518	
								2	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		516	
	48/48 100%	DP						4			514	
								6	Yellowish brown (10YR5/6), moist, medium, SILT with few clay, and trace very fine-grained sand.		512	
								8			510	
	39/48 81%	DP						10	▼ Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		508	
								12	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
								14	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		504	
	42/48 88%	DP						16	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		502	
									Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and few very fine-grained sand.			
	23/24 96%	DP						18	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.		500	
									Light yellowish brown (10YR6/4) SANDSTONE.			
									Yellowish brown (10YR5/8), weathered SHALE.			
									End of Boring = 19.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/26/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-3c
Well ID: DP-3c
Surface Elev: 516.55 ft. MSL
Completion: 16.00 ft. BGS
Station: 347,027.84N
804,658.41E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = 6.44 - 2/26/2019 @ 9:30
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Very dark grayish brown (10YR3/2), moist, soft, CLAY with some silt and trace sand.		516	
							2				
							4	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		512	
	41/48 85%	DP					6 ▽			510	
							8			508	
	40/48 83%	DP					10	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		506	
							12			504	
	38/48 79%	DP					14			502	
							16	Brownish yellow (10YR6/8), weathered SANDSTONE. End of Boring = 16.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/26/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP3d
Well ID: DP3d
Surface Elev: 516.62 ft. MSL
Completion: 10.30 ft. BGS
Station: 347,002.83N
804,660.29E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = 5.08 - 2/26/2019 @ 9:45
▽ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	53/60 88%	DP					0	Very dark grayish brown (10YR3/2), moist, soft, CLAY with some silt and trace sand.		516	
							2	Yellowish brown (10YR5/8), moist, soft, CLAY with some silt and trace sand.		514	
							4	Yellowish brown (10YR5/6), moist, medium, SILT with few clay, and trace very fine-grained sand.		512	
	36/48 75%	DP					6	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		510	
							8	Yellowish brown (10YR5/8), weathered SHALE.		508	
	16/18 89%	DP					10	Yellowish brown (10YR5/8), weathered SANDSTONE. End of Boring = 10.3 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/26/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4a
Well ID: DP-4a
Surface Elev: 520.39 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,065.72N
804,472.12E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 14.26 - 2/27/2019 @ 8:15
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	42/60 70%	DP					0	Brown (10YR5/3), moist, medium, CLAY with some silt, little sand, and trace gravel. (FILL)		520	
							1	Light gray (10YR7/1), moist, dense, medium- to coarse-grained GRAVEL with little sand and few silt. (FILL)			
							2			518	
							4			516	
	48/48 100%	DP					6	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		514	
							8			512	
	48/48 100%	DP					10			510	
							12	Yellowish brown (10YR5/8), weathered SANDSTONE.		508	
	48/48 100%	DP					14 ▼	Yellowish brown (10YR5/8), weathered SHALE.		508	
							16	Yellowish brown (10YR5/8), weathered SILTSTONE.		504	
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4b
Well ID: DP-4b
Surface Elev: 520.64 ft. MSL
Completion: 14.50 ft. BGS
Station: 347,040.46N
804,473.43E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 13.55 - 2/27/2019 @ 8:15
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf)	Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP						0			520	
								2	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.			
								4			518	
								6			516	
	46/48 96%	DP						8			514	
								8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		512	
								10			510	
	37/48 77%	DP						12				
								12	Yellowish brown (10YR5/8), weathered SHALE.		508	
								▼ 14				
	18/18 100%	DP						14	Brownish yellow (10YR6/6) SANDSTONE.			
									End of Boring = 14.6 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4c
Well ID: DP-4c
Surface Elev: 523.14 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,016.05N
804,473.64E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 13.81 - 2/27/2019 @ 8:15
▼ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Brown (10YR4/3), moist, soft, CLAY with some silt and trace sand.		522	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		518	
	46/48 96%	DP					6				
							8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		516	
	35/48 73%	DP					10			514	
							12			512	
▼							14	Yellowish brown (10YR5/8), weathered SHALE.		510	
	28/48 58%	DP					16			508	
								End of Boring = 17.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-4d
Well ID: DP-4d
Surface Elev: 524.09 ft. MSL
Completion: 17.00 ft. BGS
Station: 346,999.74N
804,474.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 2.10 - 2/26/2019 @ 8:25
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	60/60 100%	DP					0	Dark yellowish brown (10YR4/4), moist, soft, CLAY with some silt, little sand, and trace gravel.		524	
							2 ▼				
							4	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.		522	
							6			520	
	46/48 96%	DP					8			518	
							10	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		516	
	37/48 77%	DP					12	Yellowish brown (10YR5/8), weathered SHALE.		514	
							14	Yellowish brown (10YR5/6), weathered SANDSTONE.		512	
	28/48 58%	DP					16	Yellowish brown (10YR5/8), weathered SHALE.		510	
										508	

End of Boring = 17.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/25/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-5a
Well ID: DP-5a
Surface Elev: 518.48 ft. MSL
Completion: 17.00 ft. BGS
Station: 347,096.77N
804,316.45E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = 15.00 - during drilling
▽ = 6.62 - 2/26/2019 @ 7:50
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	40/60 67%	DP					0–8	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		518–512	
	48/48 100%	DP					8–12	Light brownish gray (10YR6/2), moist, dense, very fine-grained SAND with some silt. (FILL)		510–506	
	48/48 100%	DP					12–14	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		506–504	
	26/48 54%	DP					14–16	Very dark brown (10YR2/2), wet, dense, bottom ASH. (FILL)		504–502	
							16–17	Very pale brown (10YR7/4), weathered SANDSTONE End of Boring = 17.0 ft.		502	

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2019
Finish: 2/26/2019
WEATHER: Sunny, cool (hi 30's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-5b
Well ID: DP-5b
Surface Elev: 519.57 ft. MSL
Completion: 9.80 ft. BGS
Station: 347,081.40N
804,234.84E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tior 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 7.02 - 2/26/2019 @ 8:05
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	49/60 82%	DP					0	Yellow, (10YR7/6) wet, soft, GYPSUM (FILL)		518	
							2				
							4	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)		516	
							6			514	
	48/48 100%	DP					▼				
							8			512	
	6/8 100%	DP						Yellowish brown (10YR5/8), weathered SANDSTONE		510	
								End of Boring = 9.8 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6a
Well ID: DP-6a
Surface Elev: 516.69 ft. MSL
Completion: 9.50 ft. BGS
Station: 347,227.38N
804,483.91E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = Dry - during drilling
▼ = 6.32 - 2/28/2019 @ 9:10
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	51/60 85%	OP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)			
							4	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		512	
								Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.			
							6	Gray (10YR5/1), moist, soft, SILT with few clay and little very fine-grained sand.		510	
	34/48 71%	OP						Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand.			
							8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.		508	
	6/6 100%	OP						Yellowish brown (10YR5/8), SANDSTONE.			
								End of Boring = 9.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6b
Well ID: DP-6b
Surface Elev: 517.23 ft. MSL
Completion: 11.50 ft. BGS
Station: 347,252.51N
804,483.13E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = 10.83 - 2/29/2019 @ 7:55
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	59/60 98%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Black (10YR2/1), moist, dense, BOTTOM ASH. (FILL)			
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand. (FILL)		514	
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
							6	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace sand.			
	31/48 65%	DP								510	
							8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
								Dark gray (10YR4/1), moist, soft, SILT with few clay and little very fine-grained sand.		508	
	28/30 93%	DP					10	Yellowish brown (10YR5/8), weathered SHALE.			
							▽	Yellowish brown (10YR5/8), SANDSTONE.		506	
								End of Boring = 11.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-6c
Well ID: DP-6c
Surface Elev: 516.49 ft. MSL
Completion: 8.00 ft. BGS
Station: 347,277.30N
804,482.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = 1.00 - during drilling
▼ = 1.00 - 2/28/2019 @ 9:30
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	64/80 90%	SP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							4	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
	26/36 72%	SP					6	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		510	
							8	Yellowish brown (10YR5/8), SANDSTONE. End of Boring = 8.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7a
Well ID: DP-7a
Surface Elev: 517.42 ft. MSL
Completion: 15.00 ft. BGS
Station: 347,250.66N
804,677.61E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = 13.50 - during drilling
▼ = 8.49 - 2/28/2019 @ 6:00
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	43/60 72%	DP					0	Black (10YR2/1), moist, loose, SILT and very fine- to coarse-grained SAND with few clay and trace gravel. (FILL)			
							1	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)			
							2	Black (10YR2/1), wet, soft SILT with few clay and trace very fine-grained sand. (FILL)		516	
							3	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand and gravel. (FILL)			
							4			514	
							5	Gray (10YR5/1), moist, medium, CLAY with some silt and trace sand. (FILL)		512	
	31/48 65%	DP					6	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.			
							7			510	
							8	▼			
							9			508	
							10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
	38/48 79%	DP					11			506	
							12				
							13	▼		504	
	22/24 92%	DP					14	Black (10YR2/1), wet, medium loose, very fine- to medium-grained SAND with few silt and little clay.			
							15	Yellowish brown (10YR5/8), SANDSTONE.			

End of Boring = 15.0 ft.

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7b
Well ID: DP-7b
Surface Elev: 617.68 ft. MSL
Completion: 15.50 ft. BGS
Station: 347,272.79N
804,688.58E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▼ = 13.00 - during drilling
▼ = 7.59 - 2/28/2019 @ 7:50
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	58/60 97%	DP					2	Light grey (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		616	
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		614	
	26/48 54%	DP					6			612	
							8	Yellowish brown (10YR6/8), moist, stiff, CLAY with some silt, little sand, and trace gravel. (FILL)		610	
	31/48 65%	DP					10			608	
							12	Light grey (10YR7/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)		606	
								Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel.			
								Black (10YR2/1), wet, medium dense, weathered SANDSTONE.		604	
	30/30 100%	DP					14	Yellowish brown (10YR5/4), weathered SHALE.			
								Yellowish brown (10YR6/8) SANDSTONE.			
								End of Boring = 16.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7c
Well ID: DP-7c
Surface Elev: 516.65 ft. MSL
Completion: 19.00 ft. BGS
Station: 347,294.97N
804,701.22E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S., Range 2E.

WATER LEVEL INFORMATION:
▼ = 11.60 - during drilling
▼ = 14.47 - 2/28/2019 @ 14:55
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	46/60 77%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
								Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							4				
								Light gray (10YR7/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)		512	
							6				
	35/48 73%	DP						Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		510	
							8				
										508	
							10				
	27/48 56%	DP						Gray (10YR6/1), moist, soft, CLAY with some silt, little sand, and trace gravel. (FILL)		506	
							▼ 12	Black (10YR2/1), wet, soft, SILT with few clay and trace very fine-grained sand.		504	
							▼ 14	Dark gray (10YR4/1), moist, soft, CLAY with some silt and trace sand.		502	
	26/48 52%	DP									
							16			500	
								Light yellowish brown (10YR6/4), moist, medium, CLAY with some silt, little sand, and trace gravel.			
	20/24 83%	DP					18	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.			
								White (10YR8/1), weathered SHALE.		498	
								End of Boring = 19.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/27/2019
Finish: 2/27/2019
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Bulldog Drilling, Inc.
Rig mfg/model: AMS Power Probe 9500-VTR
Drilling Method: Direct Push

FIELD STAFF: Driller: J Edwards
Helper: S Guy
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-7d
Well ID: DP-7d
Surface Elev: 518.91 ft. MSL
Completion: 20.00 ft. BGS
Station: 347,317.15N
804,712.63E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = 10.59 - 2/28/2019 @ 8:45
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	66/60 93%	DP					0	Light gray (10YR7/1), moist, dense, small- to coarse-grained GRAVEL with little sand and few silt. (FILL)		516	
							2				
							4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand. (FILL)		514	
							6	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand. (FILL)		512	
	30/48 63%	DP					8	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand. (FILL)		510	
							10			508	
	48/48 100%	DP					12	Gray (10YR5/1), moist, soft, CLAY with some silt and trace sand. (FILL)		506	
								Gray (10YR5/1), moist, soft, SILT with few clay and trace very fine-grained sand. (FILL)		504	
							14	Gray (10YR5/1), moist, dense, very fine- to very coarse-grained SAND with few silt and trace gravel. (FILL)			
	33/48 69%	DP						Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		502	
							16	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt, little sand, and trace gravel.		500	
	29/36 81%	DP					18	Yellowish brown (10YR5/8), weathered SANDSTONE.		498	
							20	End of Boring = 20.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 6/14/2019
Finish: 6/14/2019
WEATHER: Sunny, cool (mid 40's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB01
Well ID: n/a
Surface Elev: ft. MSL
Completion: 11.4 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = 9.00 - during drilling
▽ = Dry - completion
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
5A							0	Yellow (10YR8/6), moist, soft, GYPSUM.			
2A	18/18 100%	SS	8-12 14 N=26				2				
3A	18/18 100%	SS	7-5 10 N=15				4	Very dark brown (10YR2/2), moist, dense, bottom ASH. (FILL)			
4A	18/18 100%	SS	6-4 4 N=8				6				
	15/16 94%	SS	4-42 60/4"				8				
							▽				
							10	Gray (10YR5/1), weathered SANDSTONE			
								End of Boring = 11.4 ft.			

NOTE(S): Borehole sealed after sampling with auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 5/13/2019
Finish: 5/13/2019
WEATHER: Ptly. Sunny, cool (hi 40's)

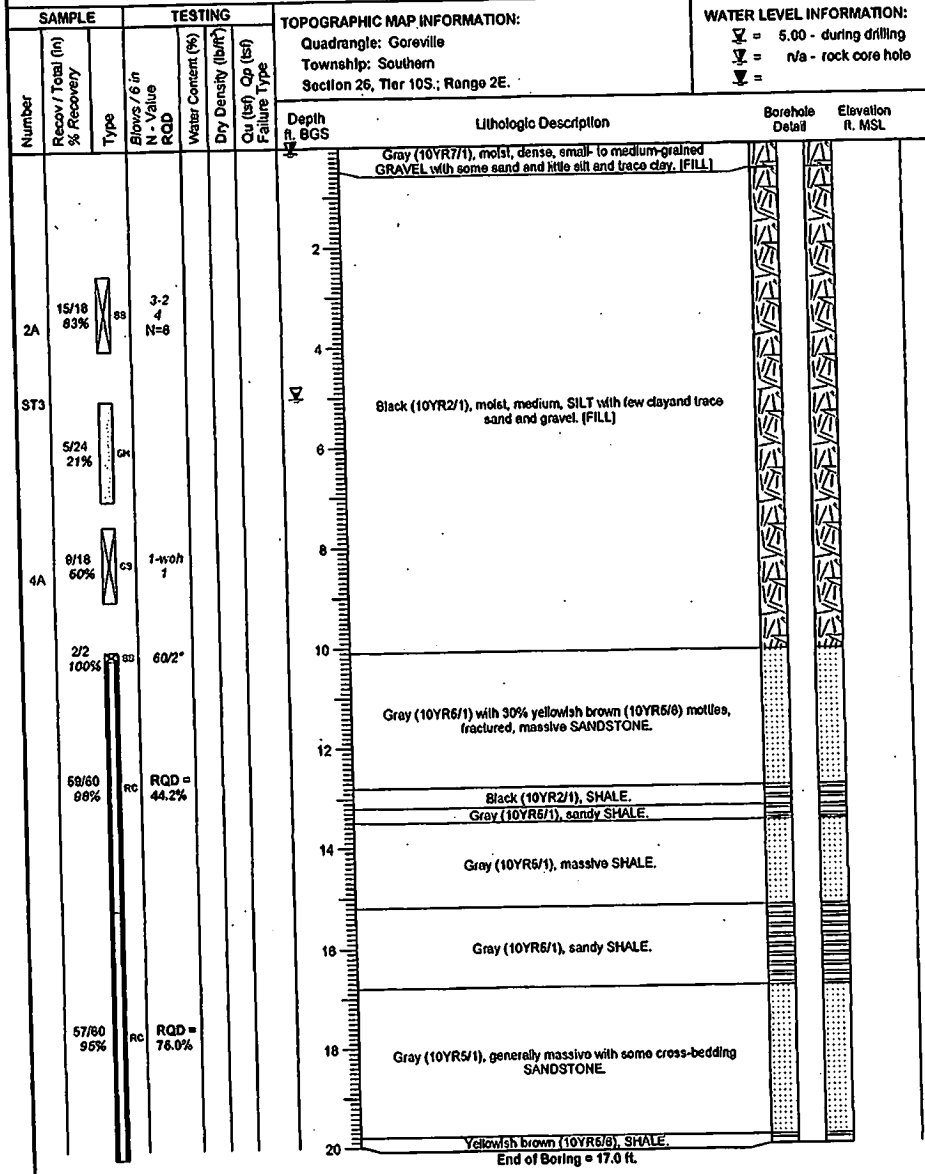
CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT and NQ core

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB02
Well ID: n/a
Surface Elev: ft. MSL
Completion: 20.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = 5.00 - during drilling
▽ = n/a - rock core hole
▽ =



NOTE(S): Borehole sealed after sampling with bentonite chips and auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 5/13/2019
Finish: 5/13/2019
WEATHER: Ptly. Sunny, cool (mid 60's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB03
Well ID: n/a
Surface Elev: ft. MSL
Completion: 14.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = 12.00 - during drilling
▽ = Dry - completion
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
							0	Gray (10YR7/1), moist, dense, small- to medium-grained GRAVEL with some sand and little silt and trace clay. [FILL]			
								Black (10YR2/1), ASPHALT [FILL]			
							2	Gray (10YR7/1), moist, dense, small- to medium-grained GRAVEL with some sand and little silt and trace clay. [FILL]			
2A	5/18 28%	SS	7-7 5 N=12								
							4	Yellowish brown (10YR5/6) with 20% Gray (10YR6/1) mottles, moist, medium, CLAY with some silt and trace sand. [FILL]			
3A	12/18 67%	SS	2-5 6 N=10				6				
4A	16/15 107%	SS	2-4 5 N=9				8	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel and sandstone fragments. [FILL]			
5A	18/18 100%	SS	2-3 2 N=5				10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel, sandstone fragments, and bottom ash . [FILL]			
							▽ 12	Black (10YR2/1), wet, soft, bottom ASH. [FILL]			
6A	13/17 76%	SS	1-4 60/5"					Yellowish brown (10YR5/6), massive SANDSTONE.			
							14	End of Boring = 14.0 ft.			

NOTE(S): Borehole sealed after sampling with auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 5/13/2019
Finish: 5/13/2019
WEATHER: Ptly. Sunny, cool (mid 60's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT and NQ core

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB04
Well ID: n/a
Surface Elev: ft. MSL
Completion: 31.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = n/a - rock core hole
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
2A	18/18 100%	SS	22-9 6 N=16				2	Gray (10YR7/1), moist, dense, small- to medium-grained GRAVEL with some sand and little silt and trace clay. [FILL]			
3A	15/18 83%	SS	4-11 6 N=19				4	Dark yellowish brown (10YR4/4) with 20% black (10YR2/1) mottles, moist, stiff, CLAY with some silt and trace sand and gravel. [FILL]			
ST4	24/24 100%	SH					6	Yellowish brown (10YR5.6), moist, stiff, CLAY with some silt, little sand, and trace gravel with sandstone and shale fragments. [FILL]			
5A	18/18 100%	SS	2-1 2 N=3				8	Dark yellowish brown (10YR4/4), moist, stiff, CLAY with some silt, little sand, and trace gravel and bottom ash. [FILL]			
ST6	22/24 92%	SH					10	Yellowish brown (10YR5/4), moist, soft, SILT with few clay and trave sand and bottom ash. [FILL]			
7A	11/18 61%	SS	3-6 8 N=14				12				
8A	18/18 100%	SS	1-3 3 N=6				14				
							16	Gray (10YR5/1), moist, stiff, SILT with few clay, and little sand. [FILL]			
							18	Yellowish brown (10YR5/6), moist, soft, CLAY with some silt and trace sand.			
							20				

NOTE(S): Borehole sealed after sampling with bentonite chips and augur cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 5/13/2019
Finish: 5/13/2019
WEATHER: Ply. Sunny, cool (mid 60's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT and NQ core

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB04
Well ID: n/a
Surface Elev: ft. MSL
Completion: 31.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = n/a - rock core hole
▽ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qp (tsf) Qu (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
9A	9/9 100%	SS	18-60/3"				22	Yellowish brown (10YR5/8) with 35% gray (10YR6/1) mottles, interbedded SANDSTONE and SHALE.			
	49/60 82%	RC	RQD = 63.3%				24	Gray (10YR6/1) with 25% yellowish brown (10YR5/8) mottles, SANDSTONE with yellowish brown (10YR5/8) shale interbeds.			
							26	Gray (10YR5/1), massive SANDSTONE.			
								Gray (10YR5/1) interbedded SANDSTONE and SHALE.			
							28	Gray (10YR5/1), massive SANDSTONE.			
	54/60 90%	RC	RQD = 65.0%					Gray (10YR5/1), SHALE.			
							30	Gray (10YR5/1), cross-bedded, fractured SANDSTONE.			
								Yellowish brown (10YR5.8) SHALE.			
								End of Boring = 31.0 ft.			

NOTE(S): Borehole sealed after sampling with bentonite chips and auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 5/14/2019
Finish: 5/14/2019
WEATHER: Sunny, cool (mid 40's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT and NQ core

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB05
Well ID: n/a
Surface Elev: ft. MSL
Completion: 26.5 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = n/a - rock core hole
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
2A	9/18 50%	SS	4-4 5 N=9			1.0	2	Gray (10YR7/1), moist, dense, small- to medium-grained GRAVEL with some sand and little silt and trace clay. [FILL]			
3A	15/18 83%	SS	6-5 6 N=11				4	Grayish brown (10YR5/2), moist, medium, CLAY with some silt, little sand, and trace gravel. [FILL]			
4A	18/18 100%	SS	4-3 4 N=7				6				
6A	18/18 100%	SS	4-3 4 N=7				8				
ST6	21/24 88%	ST					10	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, little sand, and trace gravel and sandstone fragments. [FILL]			
7a	18/18 100%	SS	5-6 7 N=13				12				
8A	18/18 100%	SS	3-9 8 N=17				14				
							16				
							18	Yellowish brown (10YR5/8), weathered SANDSTONE.			
							20	Yellowish brown (10YR5/8), weathered SHALE.			

NOTE(S): Borehole sealed after sampling with bentonite chips and auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emory Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 6/14/2019
Finish: 6/14/2019
WEATHER: Sunny, cool (mid 40's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT and NQ core

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB05
Well ID: n/a
Surface Elev: ft. MSL
Completion: 26.6 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = n/a - rock core hole
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
9A	15/16 94%	SS	4-20 60/4"					Yellowish brown (10YR6/8), weathered SHALE. *[Continued from previous page]*			
								Light yellowish brown (10YR6/4), weathered, sandy SHALE.			
							22	Gray (10YR6/1), fractured, massive SANDSTONE.			
	60/60 100%	RC	RQD = 80.0%				24	Gray (10YR6/1), interbeddeded SANDSTONE and SHALE (0.1' to 0.25' interbed thicknesses).			
							26				

End of Boring = 26.6 ft.

NOTE(S): Borehole sealed after sampling with bentonite chips and auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 5/13/2019
Finish: 5/13/2019
WEATHER: Ptly. Sunny, cool (hi 50's)

CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB06
Well ID: n/a
Surface Elev: ft. MSL
Completion: 15.8 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = Dry - completion
▽ =

SAMPLE				TESTING								
Number	Recov / Total (in) % Recovery	Type		Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
2A	17/18 94%	SS		2-4 4 N=8				0	Gray (10YR7/1), moist, dense, small- to medium-grained GRAVEL with some sand and little silt and trace clay. (FILL)			
3A	18/18 100%	SS		4-3 5 N=8				2				
4A	18/18 100%	SS		3-4 6 N=10				4				
5A	18/18 100%	SS		3-4 6 N=10				6	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, and trace sand and gravel.			
6A	18/18 100%	SS		3-4 9 N=13				8				
7A	9/9 100%	SS		45-50/3"				10				
								12	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt, and trace sand, gravel, and sandstone fragments.			
								14	Light yellowish brown (10YR6/4), weathered,SANDSTONE.			
									End of Boring = 15.8 ft.			

NOTE(S): Borehole sealed after sampling with auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 5/13/2019
Finish: 5/13/2019
WEATHER: Ptly. Sunny, cool (mid 50's)

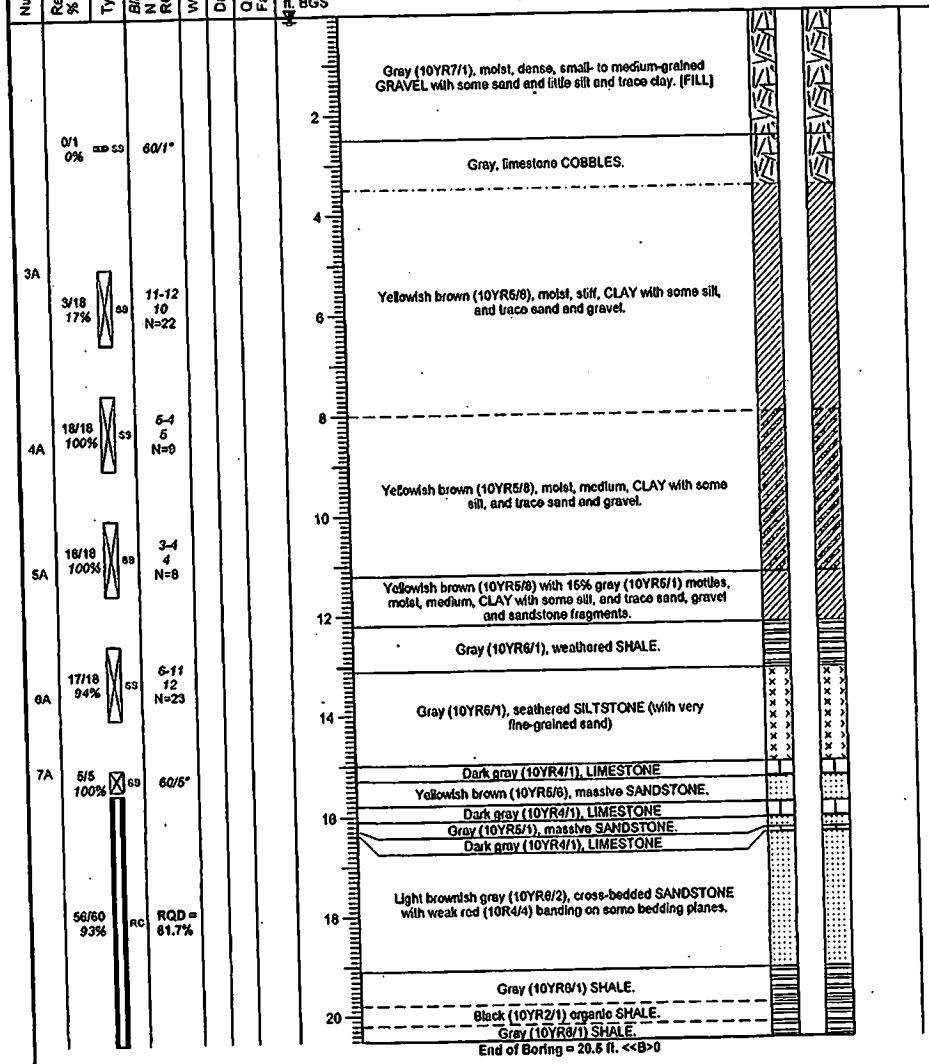
CONTRACTOR: Holcomb Foundation Engineering Co.
Rig mfg/model: CME 750X ATV Drill
Drilling Method: 3¼" HSA with SPT and NQ core

FIELD STAFF: Driller: J. Carter
Helper: D. Plucker
Eng/Geo: R. Hasenyager

BOREHOLE ID: GB07
Well ID: n/a
Surface Elev: ft. MSL
Completion: 20.5 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - during drilling
▽ = n/a - rock core hole
▽ =



NOTE(S): Borehole sealed after sampling with bentonite chips and auger cuttings.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbo 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-10a
Well ID: DP-10a
Surface Elev: 519.56 ft. MSL
Completion: 8.60 ft. BGS
Station: 347,013.03N
804,210.52E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tlor 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	34/48 71%	DP					0	Very pale brown (10YR8/4), moist, soft, GYPSUM. (FILL)			
							2	Black (10YR2/1), moist, stiff, bed ASH. (FILL)		518	
							4	Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt, trace sand.		516	
	48/48 100%	DP					6			514	
							8	Brownish yellow (10YR6/8), moist, hard, SILTSTONE.		512	
	6/6 100%	DP						End of Boring = 8.6 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (to 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-10b
Well ID: DP-10b
Surface Elev: 519.07 ft. MSL
Completion: 7.00 ft. BGS
Station: 347,059.81N
804,203.95E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	46/48 100%	DP					0	Very pale brown (10YR8/4), moist, soft, GYPSUM. (FILL)		519	
							2	Black (10YR2/1), moist, stiff, bed ASH, silt with some sand to gravel. (FILL)		518	
							4			516	
	23/36 64%	DP					6	Yellowish brown, moist, stiff, SILT with few clay, trace sand.		514	
								End of Boring = 7.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-10c
Well ID: DP-10c
Surface Elev: 518.86 ft. MSL
Completion: 9.50 ft. BGS
Station: 347,109.52N
804,199.07E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	32/48 67%	DP					0	Very pale brown (10YR8/4), moist, soft, GYPSUM. (FILL)		518	
							2	Black (10YR2/1), moist, stiff, bed ASH. (FILL)		516	
							4	Dark yellowish brown (10YR3/4), moist, stiff, CLAY with some silt, trace sand with interbeded shale.		514	
	48/48 100%	DP					6	Yellowish brown (10YR5/8), moist, stiff, SHALE.		512	
								Yellowish brown (10YR5/6), moist, hard, SILTSTONE.			
	18/18 100%	DP					8	Light gray (10YR7/1), moist, hard, SILTSTONE.		510	
								End of Boring = 9.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-10d
Well ID: DP-10d
Surface Elev: 519.35 ft. MSL
Completion: 8.50 ft. BGS
Station: 347,160.54N
804,193.94E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▼ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	29/48 60%	SP					2	Black (10YR2/1), moist, stiff, bed ASH. (FILL)		518	
	48/48 100%	SP					4	Very dark grayish brown (10YR3/2), moist, stiff, CLAY with some silt, trace sand.		516	
	8/8 100%	SP					6			514	
							8	Yellowish brown (10YR5/6), moist, hard, SILTSTONE.		512	
								End of Boring = 8.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (to 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-10e
Well ID: DP-10e
Surface Elev: 519.42 ft. MSL
Completion: 8.50 ft. BGS
Station: 347,209.39N
804,192.29E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	28/48 54%	DP					0	Light gray (10YR7/1), moist, dense, small- to medium GRAVEL, little sand and silt. (FILL)		518	
							2	Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt, trace sand.		516	
	48/48 100%	DP					4			514	
							6	Yellowish brown (10YR6/8), moist, hard, SILTSTONE.		512	
	6/6 100%	DP					8	Light gray (10YR7/1), moist, hard, SANDSTONE.			
								End of Boring = 8.5ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2020
Finish: 2/25/2020
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-11a
Well ID: DP-11a
Surface Elev: 518.29 ft. MSL
Completion: 7.50 ft. BGS
Station: 347,026.20N
804,120.40E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tior 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	33/48 69%	DP					0	Very dark greyish brown (10YR3/2), moist, dense, small- to medium GRAVEL with little sand and silt. (FILL)		518	
							1	Pale red (10R6/3), moist, soft, SILT with few clay, trace sand. (FILL)			
							2	Black (10YR2/1), moist, hard, bed ASH. (FILL)			
							3	Yellowish brown (10YR5/4), moist, stiff, CLAY with some silt, trace sand.		516	
							4				
	42/42 100%	DP					5	Yellowish brown (10YR5/6), moist, hard, SILT with few clay, trace sand.		514	
							6				
							7			512	
								End of Boring = 7.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 16E0022A
DATES: Start: 2/26/2020
Finish: 2/26/2020
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-11b
Well ID: DP-11b
Surface Elev: 519.41 ft. MSL
Completion: 9.00 ft. BGS
Station: 347,076.64N
804,117.86E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▼ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	33/48 69%	DP					0	Light gray (10YR7/1), moist, dense, small- to medium GRAVEL with trace sand and silt. (FILL)		518	
							2	Black (10YR2/1), moist, hard, bed ASH. (FILL)			
								Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt- to sand. (FILL)		516	
							4				
	48/48 100%	DP								514	
							6	Yellowish brown (10YR5/6), moist, hard, SILT with few clay, trace sand.			
	12/12 100%	DP								512	
							8				
								End of Boring = 9.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2020
Finish: 2/25/2020
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-11c
Well ID: DP-11c
Surface Elev: 519.07 ft. MSL
Completion: 7.00 ft. BGS
Station: 347,126.95N
804,113.41E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	36/48 75%	DP				0	0	Light gray (10YR7/1), moist, dense, small- to medium GRAVEL, trace sand and silt. (FILL)		518	
							2	Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt, trace sand.		516	
	36/36 100%	DP					4			514	
							6	Yellowish brown (10YR5/8), moist, hard, SILT with few clay, trace sand.			
								End of Boring = 7.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/25/2020
Finish: 2/26/2020
WEATHER: Overcast, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-11d
Well ID: DP-11d
Surface Elev: 516.94 ft. MSL
Completion: 7.50 ft. BGS
Station: 347,187.33N
804,110.47E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	41/48 85%	CP					0	Light gray (10YR7/1), moist, dense, small- to medium GRAVEL, trace sand and silt. (FILL)		518	
							2	Black (10YR2/1), moist, hard, bod ASH. (FILL)		516	
							4	Yellowish brown (10YR5/8), moist, stiff, CLAY with some silt- to sand.		514	
	42/42 100%	CP					6	Yellowish brown (10YR5/8), moist, hard, SILT with few clay, trace sand.			
								Light gray (10YR7/1), moist, hard, SILT with few clay, trace sand.		512	
								End of Boring = 7.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyeger

BOREHOLE ID: DP-8a
Well ID: DP-8a
Surface Elev: 518.41 ft. MSL
Completion: 14.00 ft. BGS
Station: 347,101.06N
804,298.37E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = 10.63 - 02/24/2020 @ 11:35
▽ =
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	48/48 100%	OP					2			518	
							4	Black (10YR2/1), moist, wet, bed ASH. (FILL)		516	
	47/48 98%	OP					6			514	
							8			512	
	48/48 100%	OP					10	Light grey (10YR7/2), moist, stiff weathered SHALE.		510	
							12	Very pale brown (10YR7/3), moist, hard SANDSTONE.		508	
	17/24 71%	OP					14	Black (10YR2/1) moist, soft, CLAY with some silt and sand.		506	
								End of Boring = 14.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-8b
Well ID: DP-8b
Surface Elev: 518.76 ft. MSL
Completion: 12.00 ft. BGS
Station: 347,090.51N
804,281.74E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = 7.20 - 02/24/2020 @ 15.45
▽ =
▽ =

SAMPLE			TESTING								
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qp (tsf) Qu (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	48/48 96%	DP					0			518	
							2	Black (10YR2/1), moist, hard, bed ASH. (FILL)		516	
							4			514	
	45/48 94%	DP					6			512	
							▽	Pale brown (10YR6/3), moist, hard, weathered SANDSTONE. (FILL)			
							8			510	
	28/48 58%	DP					10	Black (10YR2/1), moist, hard, bed ASH. (FILL)		508	
							12	Yellowish brown (10YR5/6), moist, hard ,weathered SILTSTONE. End of Boring = 12.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-8c
Well ID: DP-8c
Surface Elev: ft. MSL
Completion: 8.00 ft. BGS
Station: 347,081.75N
804,233.81E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf)	Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	34/48 71%	DP						0	Very pale brown (10YR8/4), moist, soft, GYPSUM. (FILL)			
								2				
								4	Black (10YR2/1), moist, hard, bed ASH. (FILL)			
	33/48 69%	DP						6				
								8	Greenish gray (10GY5/1), moist, medium, CLAY with some silt and trace sand.			
									Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.			
									End of Boring = 8.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-8d
Well ID: DP-8d
Surface Elev: 518.81 ft. MSL
Completion: 7.50 ft. BGS
Station: 347,068.88N
804,192.69E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▼ =
▼ =

SAMPLE			TESTING							
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	47/48 98%	DP					0	Very pale brown (10YR8/4), moist, soft, GYPSUM. (FILL)		518	
							2				
							4	Black (10YR2/1), moist, hard, bed ASH. (FILL)		516	
	20/42 46%	DP					6			514	
								Yellowish brown (10YR5/6), moist, hard, weathered SILTSTONE.		512	
								End of Boring = 7.5 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-8e
Well ID: DP-8e
Surface Elev: 519.27 ft. MSL
Completion: 9.00 ft. BGS
Station: 347,050.35N
804,150.65E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 28, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = 6.42 - Upon Completion
▽ =
▽ =

Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	48/48 100%	DP					0	Very pale brown (10YR8/4), moist, soft, GYPSUM. (FILL)		518	
							2				
							4	Black (10YR2/1), moist, hard, bed ASH. (FILL)		516	
	36/48 75%	DP					6			514	
							8	Yellowish brown (10YR5/8), moist, hard, SILTSTONE.		512	
	12/12 100%	DP						End of Boring = 9.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-9a
Well ID: DP-9a
Surface Elev: 518.33 ft. MSL
Completion: 12.00 ft. BGS
Station: 347,054.60N
804,312.34E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE Number	SAMPLE Recov / Total (in) % Recovery	SAMPLE Type	TESTING Blows / 6 in N - Value RQD	TESTING Water Content (%)	TESTING Dry Density (lb/ft³)	TESTING Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	43/48 90%	DP					0	Dark yellowish brown (10YR4/4), moist, medium, SILT with few clay, trace sand and gravel.		518	
							2	Yellowish brown (10YR5/8), moist, medium, CLAY with some silt and trace sand.		516	
	40/48 83%	DP					4	Yellowish brown (10YR5/6), moist, medium, CLAY with some silt and trace sand.		514	
							6			512	
							8	Yellowish brown (10YR5/8), moist, friable, weathered SANDSTONE.		510	
	39/48 79%	DP					10	Yellowish brown (10YR5/8), moist, medium, weathered SHALE with sandstone interbeds.		508	
							12	End of Boring = 12.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-9c
Well ID: DP-9c
Surface Elev: 517.98 ft. MSL
Completion: 8.00 ft. BGS
Station: 347,142.98N
804,286.85E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	35/48 73%	DP					0	Very pale brown (10YR8/4), moist, soft, GYPSUM. (FILL)			
							1	Drak gray (10YR4/1), moist, dense, small GAVEL with little sand and silt. (FILL)			
							2			516	
							3				
							4	Brown (10YR4/3), moist, stiff, SILT with few clay and trace sand.		514	
							5				
	30/36 83%	DP					6			512	
							7				
	12/12 100%	DP					8	Yellowish brown (10YR5/6), moist, dense, weathered SANDSTONE.		510	
								End of Boring = 8.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

FIELD BORING LOG

HANSON

CLIENT: Southern Illinois Power Cooperative
Site: Emery Pond
Location: SIPC Marion Power Plant
Project: 18E0022A
DATES: Start: 2/24/2020
Finish: 2/24/2020
WEATHER: Rainy, cool (lo 40's)

CONTRACTOR: Roberts Env. Drilling Inc.
Rig mfg/model: GeoProbe 7822DP
Drilling Method: Direct Push

FIELD STAFF: Driller: C Harter
Helper: B Potts
Eng/Geo: R. Hasenyager

BOREHOLE ID: DP-9d
Well ID: DP-9d
Surface Elev: 517.61 ft. MSL
Completion: 9.00 ft. BGS
Station: 347,197.22N
604,277.30E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Goreville
Township: Southern
Section 26, Tier 10S.; Range 2E.

WATER LEVEL INFORMATION:
▽ = Dry - Upon Completion
▽ =
▽ =

SAMPLE			TESTING						
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
	24/48 50%	DP					0	Very dark grayish brown (10YR3/2), moist, dense, small- to medium GRAVEL with sand and silt. (FILL)		516	
							2				
							4	Yellowish brown (10YR5/8), moist, soft, SILT with clay, little sand.		514	
	36/48 75%	DP					6			512	
								Light gray (10YR7/1), moist, dense, SHALE, with sand.		510	
	12/12 100%	DP					8	Yellowish brown (10YR5/8), moist, hard, silty SANDSTONE.			
								End of Boring = 9.0 ft.			

NOTE(S): Borehole sealed after sampling with granular bentonite.

Electronic Filing: Received, Clerk's Office 01/13/2023

4.0 DRAWINGS

Hard-copies will not be provided by the Owner or the Owner's Representative. The drawings listed below are intended to indicate the scope of the work to be done and details necessary for the installation of items set forth in this specification, and are part of this specification. These drawings are to scale when the paper source matches the PDF page size unless otherwise noted, but dimensions shall always be followed and drawings are not to be scaled. In case of errors or discrepancies, the Owner's Representative shall be consulted for the adjustment of all complications arising therefrom. The Owner's Representative's decisions shall be final.

CONSTRUCTION PLANS FOR – EMERY POND RETROFIT PLAN	
DRAWING NUMBER	**SHEET TITLE**
G001	COVER SHEET AND INDEX OF SHEETS
C001	GENERAL CIVIL NOTES
C101	EXCAVATION PLAN
C102	RETROFIT PLAN
C103	RETROFIT GRADING LAYOUT PLAN
C104	FGD AREA GRADING LAYOUT PLAN
C105	GRADING CONTROL POINTS
C301	EXCAVATION CROSS SECTIONS
C302	EXCAVATION CROSS SECTIONS
C303	RETROFIT CROSS SECTIONS
C304	RETROFIT CROSS SECTIONS
C305	TYPICAL SECTIONS AND DETAILS
C306	PUMP STATION INTAKE EXTENSION

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Electronic Filing: Received, Clerk's Office 01/13/2023

Illinois EPA FOIA Exemption Reference Sheet

SID: 42

Agency ID: 170001457199 Media File Type: WATER
Bureau ID: W1998600002
Site Name: Southern Ill Power-marion
Site Address1: 11543 Lake Of Egypt Rd
Site Address2:
Site City: Marion State: IL Zip: 62959-

This record has been determined to be partially or wholly exempt from public disclosure

Exemption Type:

Portion Removed

Exempt Doc #: 5 **Document Date:** 10/16/2020 **Staff:** EMI

Document Description: EMERY POND CLOSURE & STORMWATER BASIN CONSTRUCTION PLAN SET

Category ID: 03F **Category Description:** WATER STATE CONSTRUCTION PERMIT **Exempt Type:** Portion Removed
Permit ID: 2020-EA-65428 **Date of Determination:** 2 /17/2021

Tsai, Shu-Mei

From: Rhonald Hasenyager <RHasenyager@hanson-inc.com>
Sent: Wednesday, July 29, 2020 10:22 AM
To: Tsai, Shu-Mei
Cc: Wendell Watson; Antoniolli, Amy (AAntoniolli@schiffhardin.com); Bonebrake, Steve J.; LeCrone, Darin
Subject: [External] FW: Log#2020-65428 SIPC
Attachments: Storm Water Basin Construction Plans Rev20200714.pdf; Proposed Storm Water Basin Project Language_20200729.docx

Shu-Mei,

I was asked to look over your project language below. I have taken the liberty of preparing some suggested language for a description (attached). The proposed language is based on a design change driven by the closure of Unit 4 at Marion Power Plant and retirement of its scrubber and FGD Loadout. I am attaching a set of revised plans that remove the liner beneath the FGD Loadout (the Storm Water Basin liner remains) and replaces it with clean soil backfill and a gravel cover. Because of this my project description is broken into two parts, the loadout and the basin.

You also wanted to know the slope of the perimeter drain for your description. The design of the drain parallels the bedrock surface. A bedrock high is located roughly in the middle of the Storm Water Basin and falls to the east and the west. Collection sumps will be placed at both ends of the basin. Since the slope of the drain is variable, my suggestion is to simply say the drain has positive slope.

I will be glad to discuss the proposed project language or any questions you have about the design changes. If you wish to talk, my direct line here at Hanson is 217-747-9235.

Thanks, Rhon

HANSON **Rhonald Hasenyager** I *Senior Geologist*
Hanson Professional Services Inc. I 1525 S. Sixth St. I Springfield, IL 62703-6801
w 217-747-9235 I c 217-638-6042 I Facebook I Twitter I LinkedIn

---

From: Wendell Watson <wwatson@sipower.org>
Sent: Thursday, July 23, 2020 10:31 AM
To: Antoniolli, Amy (AAntoniolli@schiffhardin.com) <AAntoniolli@schiffhardin.com>; Bonebrake, Steve J. <sbonebrake@schiffhardin.com>; Rhonald Hasenyager <RHasenyager@hanson-inc.com>
Subject: FW: Log#2020-65428 SIPC

Here is a more substantial reply from Shu-Mei. She has a question about the slope of the toe drain.

From: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Sent: Thursday, July 23, 2020 10:26 AM
To: Wendell Watson <wwatson@sipower.org>
Subject: Log#2020-65428 SIPC

Hello, Wendell:

Please check the description to ensure you are fine with the language. Thanks

The closure of Storm Water Basin located at 11543 Lake of Egypt Road, Marion, Illinois with a cover consisting of from bottom to top, a 60-mil HDPE geomembrane, 16 oz/S.Y. cushion geotextile, 6-inch gravel surfacing, 24 inch compacted clay linear on maximum 2.5:1 slope, and minimum 6-inch protective covert soil layer. The drainage channels have a minimum slope of ? % and all associated pipes, valves, pumps, and appurtenances necessary to discharging a design average flow of 209, 100 gpd of plant waters, perimeter drain groundwater, and stormwater runoff tributary to the Lake Egypt in accordance with NPDES Permit No. IL0004316

Please keep in mind, this is NOT the final description.
Thanks

Shu-Mei

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Mail delivered by Hanson Professional Services Inc. mail system.

Proposed Project Language

The closure of Emery Pond located at 11543 Lake of Egypt Road, Marion, Illinois will occur in two parts. The historical portion of Emery Pond located beneath the FGD Loadout Area will be closed by removal. Once determined to be free of CCR, the area will be backfilled with clean fill materials, sloped to drain to the new Storm Water Basin, and covered with six (6) inches of gravel. The working portion of Emery Pond will also be closed by removal. Once determined to be free of CCR, a 2-foot thick, recompacted soil liner with a hydraulic conductivity of 1×10^{-7} cm/s will be placed on the floor and sidewalls. The sidewalls have a maximum slope of 2.5:1. Above the recompacted soil will be placed a 60-mil HDPE liner. Current drainage penetrations will be repaired as needed, and the piping will be booted to the HDPE liner to reduce leaks. A drainage channel will be placed outside the liner system paralleling the bedrock surface. Positive drainage will be maintained in the drainage channels. The reconstructed Storm Water Basin will have all associated pipes, valves, pumps, and appurtenances necessary to discharging a design average flow of 209,100 gpd of plant waters, perimeter drain groundwater, and stormwater runoff tributary to the Lake Egypt in accordance with NPDES Permit No. IL0004316.

Tsai, Shu-Mei

From: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Sent: Thursday, June 18, 2020 11:03 AM
To: Tsai, Shu-Mei
Cc: Dunaway, Lynn; LeCrone, Darin; Bonebrake, Steve J.
Subject: [External] RE: Groundwater Section Comments.
Attachments: SIPC Responses to Comments 6-18-20.PDF; Response to Comments Attachment A.PDF; Response to Comments Attachment B - RPT_GWMonPlan_20190329.PDF; Response to Comments Attachment C - C303 and C304.PDF

Good morning Shu-Mei,
Attached please find SIPC's responses to the groundwater section comments and relevant attachments. Please let us know if you have any questions as you are reviewing.

Best,
Amy

From: Tsai, Shu-Mei [mailto:Shu-Mei.Tsai@Illinois.gov]
Sent: Wednesday, June 10, 2020 8:24 AM
To: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>
Subject: [EXT] RE: Groundwater Section Comments.

Good morning,

Let's say Thursday, 6/18 first?

Shu-Mei

From: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Sent: Tuesday, June 9, 2020 3:51 PM
To: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>
Subject: [External] RE: Groundwater Section Comments.

Received. Thank you, Shu-Mei. I just wanted to confirm that we need a few days to review and answer the groundwater section comments. Please let us know if that timing is acceptable.

From: Tsai, Shu-Mei [mailto:Shu-Mei.Tsai@Illinois.gov]
Sent: Tuesday, June 9, 2020 2:10 PM
To: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>
Subject: [EXT] Groundwater Section Comments.

CAUTION: External email.

Hello, Amy

Enclose the memo from the Groundwater Section. Please send us the responses as soon as you can. Thank you

Shu-Mei Tsai,
Environmental Protection Engineer, Industrial Unit
Permit Section
Division of Water Pollution Control
Illinois Environmental Protection Agency

ph: 217-782-0610
fax: 217-782-9891
Shu-Mei.Tsai@Illinois.gov

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If you believe that it has been sent to you in error,
please reply to the sender that you received the message in
error. Then delete it. Thank you.

Tsai, Shu-Mei

From: Dunaway, Lynn
Sent: Tuesday, June 2, 2020 12:01 PM
To: Tsai, Shu-Mei
Cc: Buscher, Bill; LeCrone, Darin; Neibergall, Gabriel
Subject: Comments SIPC Wastewater Pond Permit App
Attachments: Non-CCR Waste Water Pond Permit App Comments.pdf

Shu-Mei,
Attached please find a pdf of my comments regarding the new non-CCR surface impoundment being proposed by SIPC to replace Emery Pond.
Let me know if you have questions.
Thanks,
Lynn

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Electronic Filing: Received, Clerk's Office 01/13/2023

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

MEMORANDUM

Date: June 2, 2020

To: Shu-Mei Tsai

From: Lynn Dunaway

Subject: Southern Illinois Power Cooperative (SIPC), W1998600002, Non-CCR Wastewater Impoundment to Replace Emery Pond, Log# 2020-65428, Williamson County

The Groundwater Section has reviewed the information provided in the above referenced document and provides the following comments.

Comment 1
This project must not be named Emery Pond. Emery Pond is an existing coal combustion residuals (CCR) surface impoundment at SIPC. The proposed pond will not receive CCR. Because there will be no CCR permitted, this project is also not a retrofit nor a lining of Emery Pond. Emery Pond will be doing remediation for a number of years after the physical removal of existing CCR has been completed. Therefore, Emery Pond will remain a regulated CCR surface impoundment, while the proposed wastewater pond will not be subject to federal Part 257 or proposed Part 845.

Comment 2
The proposed pond must have a monitoring well system. SIPC may designate some of the existing wells as the groundwater monitoring system for the proposed pond. Once SIPC has completed remediation and is in compliance with the CCR regulations, the designated monitoring wells will remain active as the monitoring system for the proposed pond. Alternatively, SIPC may install monitoring wells specifically for groundwater monitoring for the proposed pond.

Comment 3
The proposed pond must have a groundwater monitoring program. SIPC may propose to monitor the same constituents as are required by the CCR regulations or a set of Part 620 constituents. However, it should be noted that the groundwater quality standards of Part 620 apply to the proposed wastewater pond, not the groundwater protection standards of the CCR regulations.

Comment 4
The project description must include the installation of the perimeter drain system. The perimeter drain will be needed to allow the proper installation and operation of the composite liner in the proposed wastewater pond due to the existence of a shallow groundwater table.

Comment 5
Figure 1 indicates that the "South Fly Ash Pond" sends water to the "Coal Handling Settling Ponds", then to "Pond 3". The applicant should confirm whether the flow through depicted is accurate or if the "South Fly Ash Pond" and the "Coal Handling Settling Ponds" are separate sources flowing to "POND 3".

Comment 6
Figure 3 indicates that the Thickener Drain discharges to "Emery Pond" however, the Note indicates that the Thickener Drain will no longer discharge to "Emery Pond". The applicant must correct this apparent discrepancy.

Comment 7
Figure 3 indicates that two Scrubber Drains are discharges to "Emery Pond", however, the Note indicates that the Scrubber Drains will no longer contribute CCR to "Emery Pond". Neither the Scrubber Drains nor any other source may discharge CCR to the proposed wastewater pond.

Comment 8
A permit condition should be added clarifying that using the proposed wastewater pond as a CCR surface impoundment, whether or not that is the intended design, is a violation of the permit.

Tsai, Shu-Mei

From: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Sent: Tuesday, May 26, 2020 4:18 PM
To: LeCrone, Darin
Cc: Bonin, Kevin; Tsai, Shu-Mei; Bonebrake, Steve J.
Subject: [External] SIPC - Construction Permit application
Attachments: 2020 05 20 Construction Permit Emery Pond Signed Application.PDF

Dear Darin,
On behalf of SIPC, please find attached a copy of the signed joint construction and operating permit application for Emery Pond at Marion Power Plant in accordance with 35 Ill. Adm. Code, Part 309 Subpart B. The application consists of the following items:

- Form WPC-PS-1
- Schedule J
- Schedule N
- Bidding Specifications and Project Manual for Emery Pond

SIPC has mailed a separate hard copy of the application, including the application fee. I've also send you (all three) the bid specifications via ShareSite. I have received your confirmation that your received the transmittal.

Please let us know if you have any questions.

Best,
Amy

Amy Antoniolli
Counsel
aantoniolli@schiffhardin.com
d +1.312.258.5550 | f +1.312.258.5600

Schiff Hardin LLP
233 South Wacker Drive | Suite 7100 | Chicago, IL 60606
schiffhardin.com | v-card | view bio

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Illinois EPA FOIA Exemption Reference Sheet

SID: 42

Agency ID: 170001457199 Media File Type: WATER
Bureau ID: W1998600002
Site Name: Southern Ill Power-marion
Site Address1: 11543 Lake Of Egypt Rd
Site Address2:
Site City: Marion State: IL Zip: 62959-

This record has been determined to be partially or wholly exempt from public disclosure

Exemption Type:

Portion Removed

Exempt Doc #: 6 **Document Date:** 10/16/2020 **Staff:** EMI

Document Description: EMAILS: EMAILS/THREADS (DATED 8/26/20, 10/6/20, AND 7/23/20) ALL RELATED TO SAME PERMIT

Category ID: 03F **Category Description:** WATER STATE CONSTRUCTION PERMIT **Exempt Type:** Portion Removed
Permit ID: 2020-EA-65428 **Date of Determination:** 2 /17/2021

I was asked to look over your project language below. I have taken the liberty of preparing some suggested language for a description (attached). The proposed language is based on a design change driven by the closure of Unit 4 at Marion Power Plant and retirement of its scrubber and FGD Loadout. I am attaching a set of revised plans that remove the liner beneath the FGD Loadout (the Storm Water Basin liner remains) and replaces it with clean soil backfill and a gravel cover. Because of this my project description is broken into two parts, the loadout and the basin.

You also wanted to know the slope of the perimeter drain for your description. The design of the drain parallels the bedrock surface. A bedrock high is located roughly in the middle of the Storm Water Basin and falls to the east and the west. Collection sumps will be placed at both ends of the basin. Since the slope of the drain is variable, my suggestion is to simply say the drain has positive slope.

I will be glad to discuss the proposed project language or any questions you have about the design changes. If you wish to talk, my direct line here at Hanson is 217-747-9235.

Thanks, Rhon

HANSON **Rhonald Hasenyager** I *Senior Geologist*
Hanson Professional Services Inc. I 1525 S. Sixth St. I Springfield, IL 62703-6801
w 217-747-9235 I c 217-638-6042 I Facebook I Twitter I LinkedIn

---

From: Wendell Watson <wwatson@sipower.org>
Sent: Thursday, July 23, 2020 10:31 AM
To: Antoniolli, Amy (AAntoniolli@schiffhardin.com) <AAntoniolli@schiffhardin.com>; Bonebrake, Steve J. <sbonebrake@schiffhardin.com>; Rhonald Hasenyager <RHasenyager@hanson-inc.com>
Subject: FW: Log#2020-65428 SIPC

Here is a more substantial reply from Shu-Mei. She has a question about the slope of the toe drain.

From: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Sent: Thursday, July 23, 2020 10:26 AM
To: Wendell Watson <wwatson@sipower.org>
Subject: Log#2020-65428 SIPC

Hello, Wendell:

Please check the description to ensure you are fine with the language. Thanks

The closure of Storm Water Basin located at 11543 Lake of Egypt Road, Marion, Illinois with a cover consisting of from bottom to top, a 60-mil HDPE geomembrane, 16 oz/S.Y. cushion geotextile, 6-inch gravel surfacing, 24 inch compacted clay linear on maximum 2.5:1 slope, and minimum 6-inch protective covert soil layer. The drainage channels have a minimum slope of ? % and all associated pipes, valves, pumps, and appurtenances necessary to discharging a design average flow of 209, 100 gpd of plant waters, perimeter drain groundwater, and stormwater runoff tributary to the Lake Egypt in accordance with NPDES Permit No. IL0004316

Please keep in mind, this is NOT the final description.
Thanks

Shu-Mei

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Tsai, Shu-Mei

From: Dunaway, Lynn
Sent: Friday, September 18, 2020 1:26 PM
To: Tsai, Shu-Mei
Subject: RE: SIPC GW Data Gap Log 2020-65428.docx

Yes

From: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Sent: Friday, September 18, 2020 1:02 PM
To: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Subject: FW: SIPC GW Data Gap Log 2020-65428.docx

Lynn:

Just want to confirm that I can use the conditions for the State Construction Permit? Thanks

Shu-Mei

From: Martin, Lauren <Lauren.Martin2@Illinois.gov>
Sent: Thursday, September 3, 2020 10:11 AM
To: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Subject: FW: SIPC GW Data Gap Log 2020-65428.docx

FYI. I sent this back to Lynn. I incorporated his comments.

Lauren Martin, MS
Environmental Protection Geologist
Illinois Environmental Protection Agency
Bureau of Water
Division of Public Water Supplies
Groundwater Section
1021 N. Grand Avenue
Springfield, IL 62702
D: 217-524-9048
Lauren.martin2@illinois.gov

From: Martin, Lauren
Sent: Thursday, September 3, 2020 10:10 AM
To: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Cc: Buscher, Bill <BILL.BUSCHER@Illinois.gov>
Subject: RE: SIPC GW Data Gap Log 2020-65428.docx

Hi Lynn,
I implemented your changes to the Permit memo.
Please take a look.
I think this makes me current on the items we needed for the call today.
Thanks,
Lauren

Lauren Martin, MS
Environmental Protection Geologist
Illinois Environmental Protection Agency
Bureau of Water
Division of Public Water Supplies
Groundwater Section
1021 N. Grand Avenue
Springfield, IL 62702
D: 217-524-9048
Lauren.martin2@illinois.gov

From: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Sent: Thursday, August 27, 2020 8:42 AM
To: Martin, Lauren <Lauren.Martin2@Illinois.gov>
Cc: Buscher, Bill <BILL.BUSCHER@Illinois.gov>
Subject: RE: SIPC GW Data Gap Log 2020-65428.docx

Lauren,
For your geotechnical Permit Condition I would boil it way down and not give them options, but do give them a time limit.
For example:
Condition
Within 30 days of permit issuance and prior to the initiation of construction, the applicant shall acquire and provide to the Agency, a certification from a Professional Geotechnical Engineer that the dewatering system as designed will prevent liner failure under reasonably expected hydrogeologic conditions at the site.

The 30 days is an example, if you think more time is reasonable (45, 60 etc.) that's ok too.

I would also like to add the following recommendations to your memo, after your Geotech condition, but before your final condition.

Condition
No portion of the storm water pond composite liner or alternative composite liner shall be constructed of CCR or CCB materials.

Condition
No portion of the structural fill, backfill, or drainage materials shall be composed of CCR or CCB materials.

Condition
The applicant shall monitor groundwater and report the results for the following constituents quarterly.
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Calcium
Chloride
Chromium
Cobalt
Fluoride
Lead

Lithium
Mercury
Molybdenum
pH
Selenium
Sulfate
Thallium
Total Dissolved Solids
Radium 226 and 228 combined
Groundwater Elevation

Condition
The applicant shall, at a minimum, collect the quarterly samples from wells EBG, EP-1, EP-3 and EP-4.

This last condition may seem odd since they are going to be required to monitor these wells plus more under the corrective action for (as predicted) 25 years. However, if the storm water pond is operating in 30 years, this condition should be in here to pick up the monitoring around the storm water pond.

Let me know if you have questions.
Lynn

From: Martin, Lauren <Lauren.Martin2@Illinois.gov>
Sent: Wednesday, August 26, 2020 3:42 PM
To: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Cc: Buscher, Bill <BILL.BUSCHER@Illinois.gov>
Subject: SIPC GW Data Gap Log 2020-65428.docx

Hi Lynn and Shu-Mei.
Please take a look and provide any necessary feedback before we finalize this.
Bill—if you have time to chime in, feel free.
Thanks,
Lauren

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To: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Subject: FW: Groundwater Section Comments.

Lynn:

Just want to check with you that if you have a chance to check their response. Please let me know. Thanks

Shu-Mei

From: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Sent: Thursday, June 18, 2020 11:03 AM
To: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>; Bonebrake, Steve J. <sbonebrake@schiffhardin.com>
Subject: [External] RE: Groundwater Section Comments.

Good morning Shu-Mei,
Attached please find SIPC's responses to the groundwater section comments and relevant attachments. Please let us know if you have any questions as you are reviewing.

Best,
Amy

From: Tsai, Shu-Mei [mailto:Shu-Mei.Tsai@Illinois.gov]
Sent: Wednesday, June 10, 2020 8:24 AM
To: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>
Subject: [EXT] RE: Groundwater Section Comments.

Good morning,

Let's say Thursday, 6/18 first?

Shu-Mei

From: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Sent: Tuesday, June 9, 2020 3:51 PM
To: Tsai, Shu-Mei <Shu-Mei.Tsai@Illinois.gov>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>
Subject: [External] RE: Groundwater Section Comments.

Received. Thank you, Shu-Mei. I just wanted to confirm that we need a few days to review and answer the groundwater section comments. Please let us know if that timing is acceptable.

From: Tsai, Shu-Mei [mailto:Shu-Mei.Tsai@Illinois.gov]
Sent: Tuesday, June 9, 2020 2:10 PM
To: Antoniolli, Amy <AAntoniolli@schiffhardin.com>
Cc: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>
Subject: [EXT] Groundwater Section Comments.

CAUTION: External email.

Hello, Amy

Enclose the memo from the Groundwater Section. Please send us the responses as soon as you can. Thank you

Shu-Mei Tsai,
Environmental Protection Engineer, Industrial Unit
Permit Section
Division of Water Pollution Control
Illinois Environmental Protection Agency

ph: 217-782-0610
fax: 217-782-9891
Shu-Mei.Tsai@Illinois.gov

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This message and any attachments may contain confidential
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If you believe that it has been sent to you in error,
please reply to the sender that you received the message in
error. Then delete it. Thank you.

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EXHIBIT

NN

12/08/2009 0:13AM W W1998600002 SOUTHERN ILL POWER-MRN GEN STA 03F 05/17/1989 1989EN3064 09
1,487,056 W003006 B:77468 F:50497 I:00000106 EPA4247 08/20/2009 EPA4247 12/08/2009 4700014571 99
W-16-00620 END
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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

LOG NUMBERS: 3064-89

PERMIT NO.: 1989-EN-3064

DATE ISSUED: May 17, 1989

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS
PREPARED BY: Clarida Engineering Company

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE, INC. - Marion Generating Station - South Fly Ash Pond

PERMITTEE TO CONSTRUCT
Southern Illinois Power Co-Operative, Inc.
Rural Route 4
Marion, Illinois 62959

Permit is hereby granted to the above designated permittee to construct water pollution control facilities described as follows:

Construction of three earthen dams on an existing drainage way to impound 15.3 surface acres with a capacity of 117 acre-feet to form a new south fly ash pond. The dams will be constructed of compacted earthen fill to elevation 543.0, and riprapped at elevations 539.0 - 542.0. The water level will be at elevation 540.0, with discharge via a 48 inch CMP riser and 230 linear feet of 42 inch CMP and one effluent manhole. A flap gate will be provided at the effluent manhole to enable complete shut off of the pond discharge. There will be an emergency spillway to protect the dam structures.

Additional items include one upgradient and two downgradient performance monitoring wells as shown on the plan drawings for the project.

Design flows are 1.0 MGD design average flow, 1.0 MGD design maximum flow.

This Permit is issued subject to the following Special Condition(s). If such Special Condition(s) require(s) additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for issuance of a Supplement Permit.

SPECIAL CONDITION 1: The operational portion of this permit shall be governed by NPDES Permit No. IL0004316.

Continued on Page 2

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:dls/1789k,40-41
cc: EPA - Marion Region
Clarida Engineering Company
Record
Binds

DIVISION OF WATER POLLUTION CONTROL

Thomas G. McSwiggin, P.E.
Manager, Permit Section

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

LOG NUMBERS: 3064-89 PERMIT NO.: 1989-EN-3064

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS
PREPARED BY: Clarida Engineering Company

DATE ISSUED: May 17, 1989

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE, INC. - Marion Generating Station - South Fly Ash Pond

SPECIAL CONDITION 2: The permittee shall provide a pond seal for the entire pond area both bottom and side slopes consisting of a minimum of 3 feet of compacted clay or in situ clay soils exhibiting a maximum permeability of 1×10^{-7} cm/sec. All unsuitable material shall be excavated and removed and replaced with compacted clay seal. Clay soils shall be placed in maximum nine inch lifts and compacted to at least 95% of maximum dry density in accordance with ASTM D698.

SPECIAL CONDITION 3: The areas of pond shoreline not provided with riprap shall be seeded and covered with a soil erosion control fabric.

SPECIAL CONDITION 4: The upgradient performance monitoring well No. 3 shall be relocated if necessary to ensure that the well will not be contaminated by the permitted facilities.

SPECIAL CONDITION 5: This permit does not take into consideration the structural stability of any part of the project.

SPECIAL CONDITION 6: The permittee shall sample the performance monitoring wells on a semi-annual basis during the months of June and December for the following parameters using analytical test methods promulgated in 40 CFR 136 or other approved methods.

PARAMETER

Iron
Boron
Cadmium
Zinc
pH

Sample results shall be reported in units of mg/l down to analytical detection limits which shall be comparable with the method detection limits in the 40 CFR 136 regulations. The results shall be submitted to the Agency on an annual basis by March 31, to the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control, Permit Section
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless the construction for which this permit is issued has been completed, this permit will expire (1) two years after the date of issuance for permits to construct sewers or wastewater sources or (2) three years after the date of issuance for permits to construct treatment works or pretreatment works.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentation of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit.

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit.

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit.

   d. to obtain and remove at reasonable times samples of any discharge or omission of pollutants.

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the Agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rule or Regulation effective thereunder as a result of the construction or development authorized by this permit.

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This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required under that Section. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center

FOR IEPA USE:
LOG NO. 2378-88
DATE RECEIVED:

RECEIVED
NOV 30 1988
Environmental Protection Agency
WPC—Permit Log In

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

APPLICATION FOR PERMIT OR CONSTRUCTION APPROVAL

WPC-PS-1

1. NAME AND LOCATION:

Name of project: Southern Illinois Power Co-operative - South Fly-ash Pond
SOUTHERN PREC.
Municipality or Township: R.R. 4, Marion, IL. County: Williamson

2. BRIEF DESCRIPTION OF PROJECT: Construction of Fly-ash settling pond for an electrical generator

3. DOCUMENTS BEING SUBMITTED: If the project involves any of the items listed below, submit the corresponding schedule, and check the appropriate spaces.

PROJECT

Private Sewer Connection	A	Spray Irrigation	H
Public Sewer Extension	B	Septic Tanks	I
Sewer Extension Construct Only	C	Industrial Treatment or Pretreatment	J X
Sewage Treatment Works	D		
Excess Flow Treatment	E	Cyanide Acceptance	L
Lift Station/Force Main	F	Updating Cyanide Acceptance Form	M
Sludge Disposal	G	Waste Characteristics	N

LAND TRUST: Is the project identified in item number 1 herein, for which a permit is requested, to be constructed on land which is the subject of a trust? ☐ Yes ☒ No
If yes, item number 6.1.1 herein must be signed by a beneficiary, trustee or trust officer, and a trust disclosure must be submitted (see instructions, item 3).

Plans: Title Southern Illinois Power Co-Op, South Flyash Pond Number of Pages: 17

Specifications: Title Number of Books/Pages: 6

Other Documents (Please Specify)

4. THIS IS AN APPLICATION FOR (CHECK):

X A. Joint Construction And Operating Permit
B. Authorization To Construct (See Instructions) NPDES Permit No. IL00 Issue Date
C. Construct Only Permit (Does Not Include Operations)
D. Operate Only Permit (Does Not Include Construction)

5. CERTIFICATIONS AND APPROVAL:

5.1 Certificate by Design Engineer
I hereby certify that I am familiar with the information contained in this application, including the attached schedules indicated above, and that to the best of my knowledge and belief such information is true, complete and accurate. The plans and specifications (and specifications other than Standard Specifications or local specifications on file with this Agency) as described above were prepared by me or under my direction.

ENGINEER Eugene F. Eisenhauer (NAME) 024491 (REGISTRATION NUMBER) SEAL
FIRM: Clarida Engineering Co.
ADDRESS: 308 S. Court St. Marion, IL. PHONE NUMBER 618-993-6411
SIGNATURE Gene Eisenhauer

EUGENE F. EISENHAUER 24491 REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

6. CERTIFICATIONS AND APPROVALS FOR PERMITS:

6.1 Certificate by Applicant(s)
I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application, and am/are authorized to sign this application in accordance with the Rules and Regulations of the Illinois Pollution Control Board.
I/We hereby agree to conform with the Standard Conditions and with any other Special Conditions made part of this Permit.

6.1.1 NAME OF APPLICANT FOR PERMIT OR AUTHORIZATION TO CONSTRUCT Southern Illinois Power Co-Op
R.R. #4 (STREET) Marion (CITY) Illinois (STATE) 62959 (ZIP CODE)
SIGNATURE Richard D Wyatt
TITLE Support Systems Department Manager ORGANIZATION S.I.P.C.

IL 532-0010
WPC 150 Rev. 2/83

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6.1.2 NAME OF APPLICANT FOR PERMIT TO OWN AND OPERATE Southern Illinois Power Co-Operative

R.R. #4 | Marion | Illinois | 62959

STREET | CITY | STATE | ZIP CODE

SIGNATURE Richard D Mystt

TITLE Support Systems Department Manager

6.2 Attested (Units of Government) N/A

DATE _____ SIGNATURE _____ TITLE _____
(CITY CLERK, VILLAGE CLERK, SANITARY DISTRICT CLERK, ETC.)

6.3 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or his duly authorized representative.

6.4 CERTIFICATE BY INTERMEDIATE SEWER OWNER

I hereby certify that (Please check one): N/A

_____ 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Subtitle C, Chapter I, or

_____ 2. The Illinois Pollution Control Board, in PCB _____ dated _____ granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

6.4.1 ADDITIONAL CERTIFICATE BY INTERMEDIATE SEWER OWNER N/A

I hereby certify that (Please check one):

_____ 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Subtitle C, Chapter I, or

_____ 2. The Illinois Pollution Control Board, in PCB _____ dated _____ granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

6.5 CERTIFICATE BY WASTE TREATMENT WORKS OWNER N/A

I hereby certify that (Please check one):

_____ 1. The waste treatment plant to which this project will be tributary has adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Subtitle C, Chapter I, or

_____ 2. The Illinois Pollution Control Board, in PCB _____ dated _____ granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.

I also certify that the industrial waste discharges described in the application is capable of being treated by the treatment works, and such waste discharges will be in compliance with all currently applicable local, state or federal pretreatment requirements.

Name and location of waste treatment works to which this project will be tributary:

TREATMENT WORKS OWNER Southern Illinois Power Co-Op

R.R. #4 | Marion | Illinois | 62959

STREET | CITY | STATE | ZIP CODE

SIGNATURE Richard D Mystt DATE 11/15/88 TITLE Support Systems Department Manager

JG:6453C
WPC 150
(Rev 2/83)

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

SCHEDULE J INDUSTRIAL TREATMENT WORKS CONSTRUCTION OR PRETREATMENT WORKS

1. NAME AND LOCATION:

1.1 Name of project Southern Illinois Power Co-Operative - South Flyash Pond

1.2 Plant Location

SW¼	26	10S	2E	3rd
Quarter Section	Section	Township	Range	P.M.

1.2.2 Latitude 37 ° 36 ' 43 "North
Longitude 88 ° 57 ' 30 "West

1.2.3 Name of USGS Quadrangle Map (7.5 ~~or 15 minutes~~) Goreville

2. NARRATIVE DESCRIPTION AND SCHEMATIC WASTE FLOW DIAGRAM: (see instructions)

This project consists of the construction of an additional flyash settling pond at the above electrical generating plant. The flow will be thru this pond and then thru several other ponds. A flow schematic has been attached.

2.1 PRINCIPAL PRODUCTS: Fly-ash from electrical generating plant.

2.2 PRINCIPAL RAW MATERIALS:

3. DESCRIPTION OF TREATMENT FACILITIES:

3.1 Submit a flow diagram through all treatment units showing size, volumes, detention times, organic loadings, surface settling rate, weir overflow rate, and other pertinent design data. Include hydraulic profiles and description of monitoring systems.

3.2 Waste Treatment Works is: Batch ____, Continuous X; No. of Batches/day ____, No. of Shifts/day ____

3.3 Submit plans and specifications for proposed construction.

3.4 Discharge is: Existing (1) ; Will begin on (1) .

4. DIRECT DISCHARGE IS TO: Receiving Stream X Municipal Sanitary Sewer ____, Municipal storm or municipal combined sewer ____. If receiving stream or storm sewer indicated complete the following:
Name of receiving stream Little Saline Creek ; tributary to South Fork Saline River ;
tributary to ____; tributary to ____.

5. Is the treatment works subject to flooding? If so, what is the maximum flood elevation of record (in reference to the treatment works datum) and what provisions have been made to eliminate the flooding hazard? No

6. APPROXIMATE TIME SCHEDULE: Estimated construction schedule:
Start of Construction Mar. 1, 1989 ; Date of Completion September 1, 1989
Operation Schedule Nov. 1, 1989 ; Date Operation Begins ____
100% design load to be reached by year Nov. 1, 1995 .

(1) Present discharge is from another pond but will be switched to this pond when other pond is filled with settled flyash. Discharge point into Little Saline Creek will remain the same.

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7. DESIGN LOADINGS

7.1 Design population equivalent (one population equivalent is 100 gallons of wastewater per day, containing 0.17 pounds of BOD_5 and 0.20 pounds of suspended solids; N/A

BOD_____; Suspended Solids_____; Flow_____.

7.2 Design Average Flow Rate_____ MGD.

7.3 Design Maximum Flow Rate 1.0(2) MGD.

7.4 Design Minimum Flow Rate_____ MGD.

7.5 Minimum 7-day, 10-year low flow_____ cfs_____ MGD.

Minimum 7-day, 10-year flow obtained from_____.

7.6 Dilution Ratio_____;_____.

(2) Flow from generating plant will not vary to a great extent.

8. FLOW TO TREATMENT WORKS (if existing):

8.1 Flow (last 12 months)

8.1.1 Average Flow 1.0 MGD

8.1.2 Maximum Flow 1.0 MGD

8.2 Equipment used in determing above flows Electronic flow meters.

9. Has a preliminary engineering report for this project been submitted to this Agency for Approval?

YES X NO__. If so, when was it submitted and approved. Date Submitted July 20, 1988

Certification#_____

Dated_____

10. List Permits previously issued for the facility: N.P.D.E.S. Permit #0004316

11. Describe provisions for operation during contingencies such as power failures, flooding, peak loads, equipment failure, maintenances shut-downs and other emergencies. N/A

12. Complete and submit Schedule G if sludge disposal will be required by this facility. N/A

13. WASTE CHARACTERISTICS: Schedule N must be submitted.

14. TREATMENT WORKS OPERATOR CERTIFICATION: List names and certification numbers of certified operators:

Richard G. Myott - (certificate attached)

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Permeability Data Sheets

Proposed Flyash Pond

Southern Illinois Power Co-Op

Test No.	1	2
Boring	4A	6A
Depth (ft)	1.0-4.0	4.27-4.73
Sample Diameter(cm)	7.29	6.53
Sample Height (cm)	13.54	14.10
Moisture Content (%)	13.9	20.8
Dry Unit Weight (PCF)	108.8	104.7
Soil Classification	Silty Clay	Silty Clay
Backsaturation Pressure (cm)	95	95
Cell Pressure (cm)	98	98
Driving Pressure (cm)	80	80
Tailwater Pressure (cm)	0	0
Hydraulic Gradient	5.91	5.67
Permeant Liquid	Tap Water	Tap Water
Test Length (Hrs)	12.52	9.53
Permeability (cm/sec)	6.19×10^{-8}	3.54×10^{-8}

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2. Pond Elevation Capacity Data

Elevation	Area(SF)	Incremental Vol. (Acre-Feet)	Total Vol. (Acre-Feet)
519	0	0	0
520	2270	0.03	0.03
525	58628	3.5	3.53
530	207,487	15.27	18.80
535	417,002	35.84	54.64
540	667,218=15.3A.	62.23	116.87
543	732,861	48.21	165.08

The information was calculated by myself during preparation of the HEC-1 Program. Should you have any questions, please feel free to contact us at your convenience.

Sincerely,

HOLCOMB FOUNDATION ENGINEERING

Timothy J. Holcomb, P.E.

TJH/jg

ATTACHMENT #1

Environmental Protection Agency
State of Illinois

RICHARD G. MYOTT

having fulfilled the requirements therefore, is hereby awarded this

Certificate of Competency
as an

Industrial
Wastewater Treatment Works Operator

Southern Illinois Power Co-Op

Issued this 6th day of September A.D. 1988

Bernard P. Killian
Director

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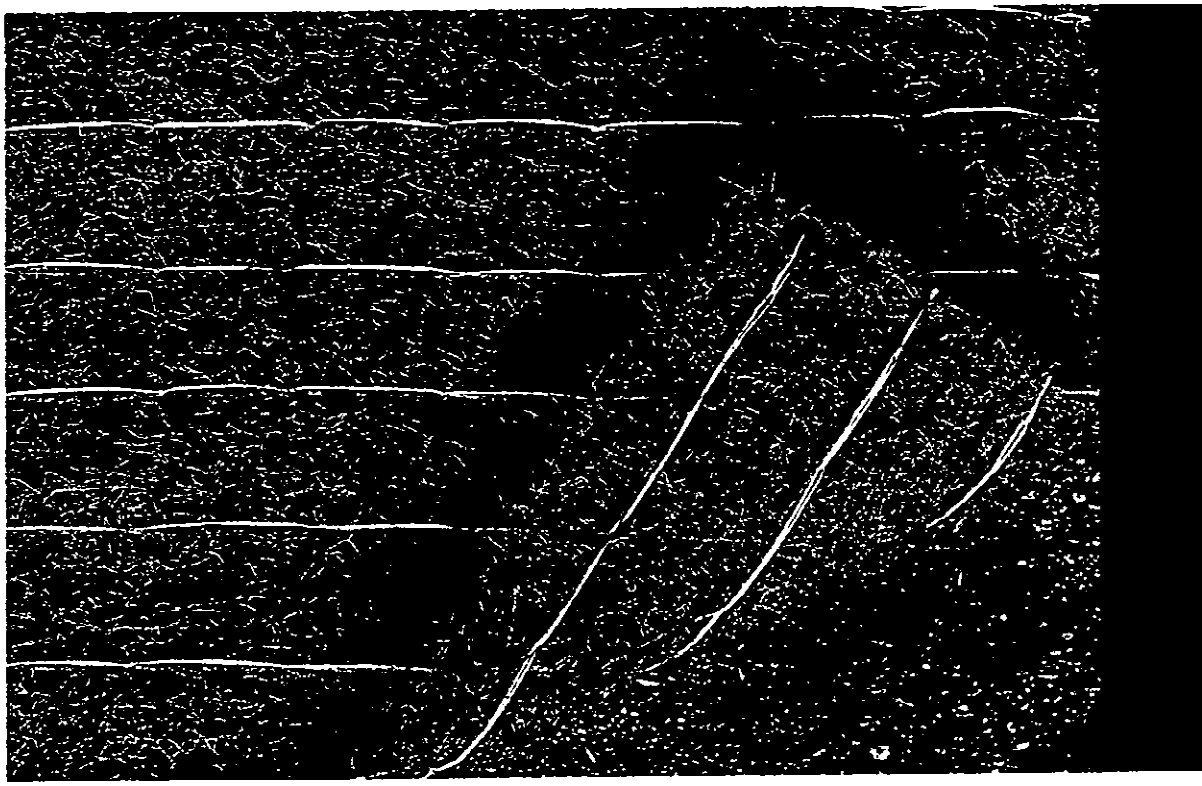
Erosion Control Blankets

P300

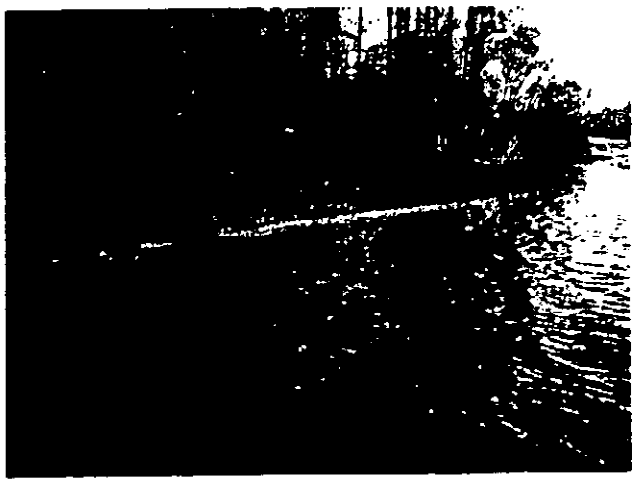
P300 consists of 100% man-made synthetic fibers, heavy netting and is sewn together for added stability. This blanket is a cost-effective non-degradable alternative to rip-rap along shorelines. It is also an excellent ditch liner where attempts to establish vegetation have failed.

Bank cutting from wave action-Lake Barkley, Kentucky

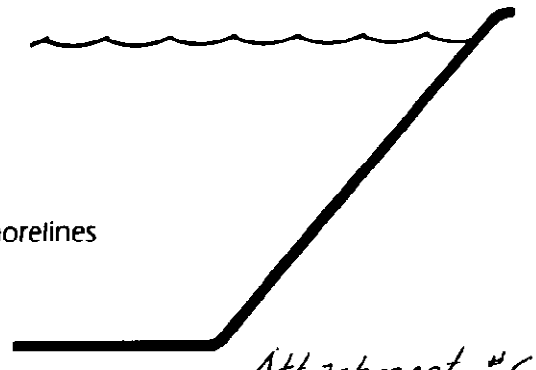
Shoreline graded and seeded. North American Green P300 installed above and below projected high water line.



P300



The combination of North American Green P300 and selected vegetation has stabilized the shoreline.



Attachment #6

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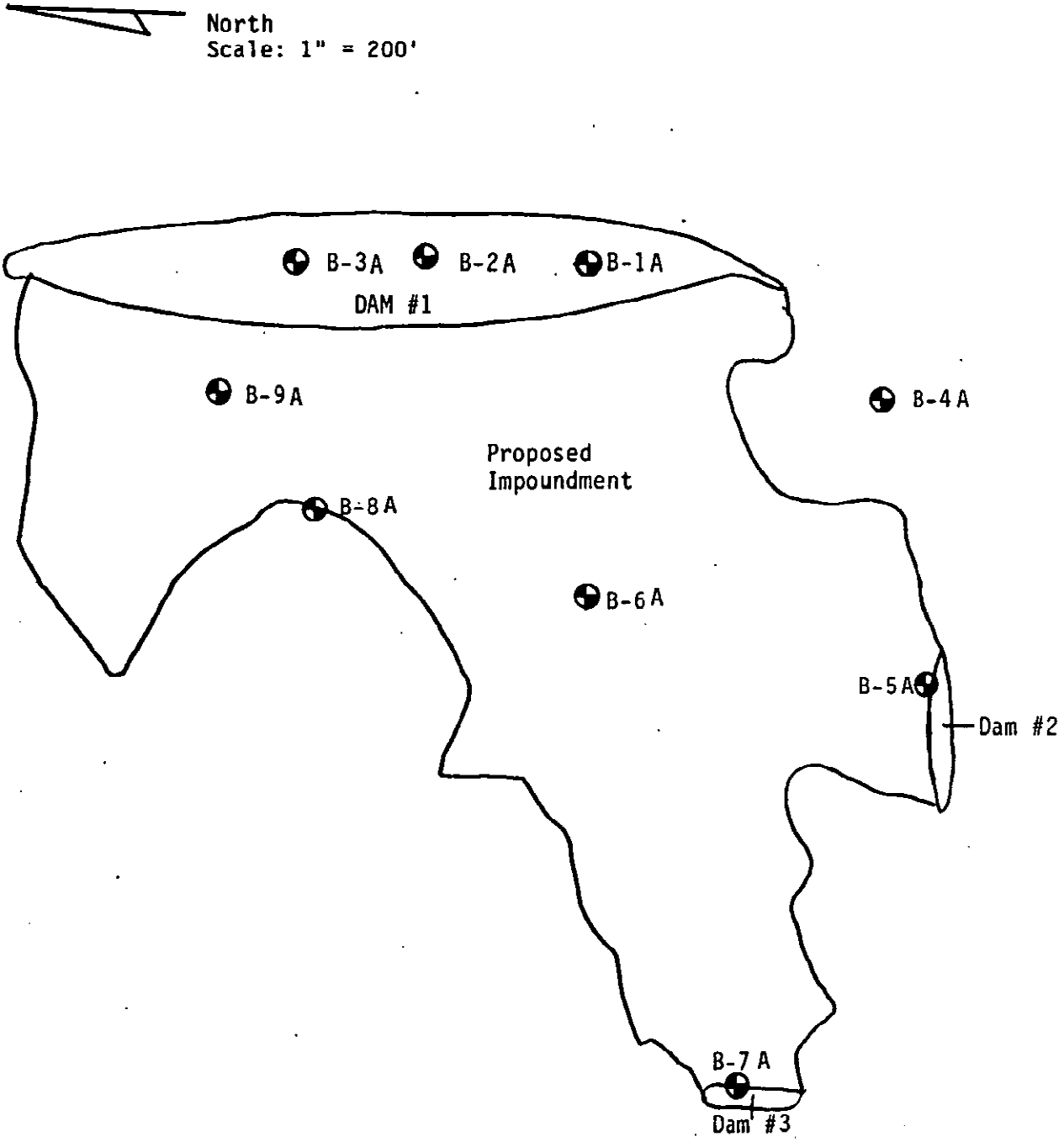

Boring Location Diagram

Attachment #2

Project:	Client:	Date:
Proposed S Flyash Pond Southern IL Power Co-op	Clarida Engineering Marion, Illinois	05-02-88
		Project No: H-88040

LOG OF BORING 1A

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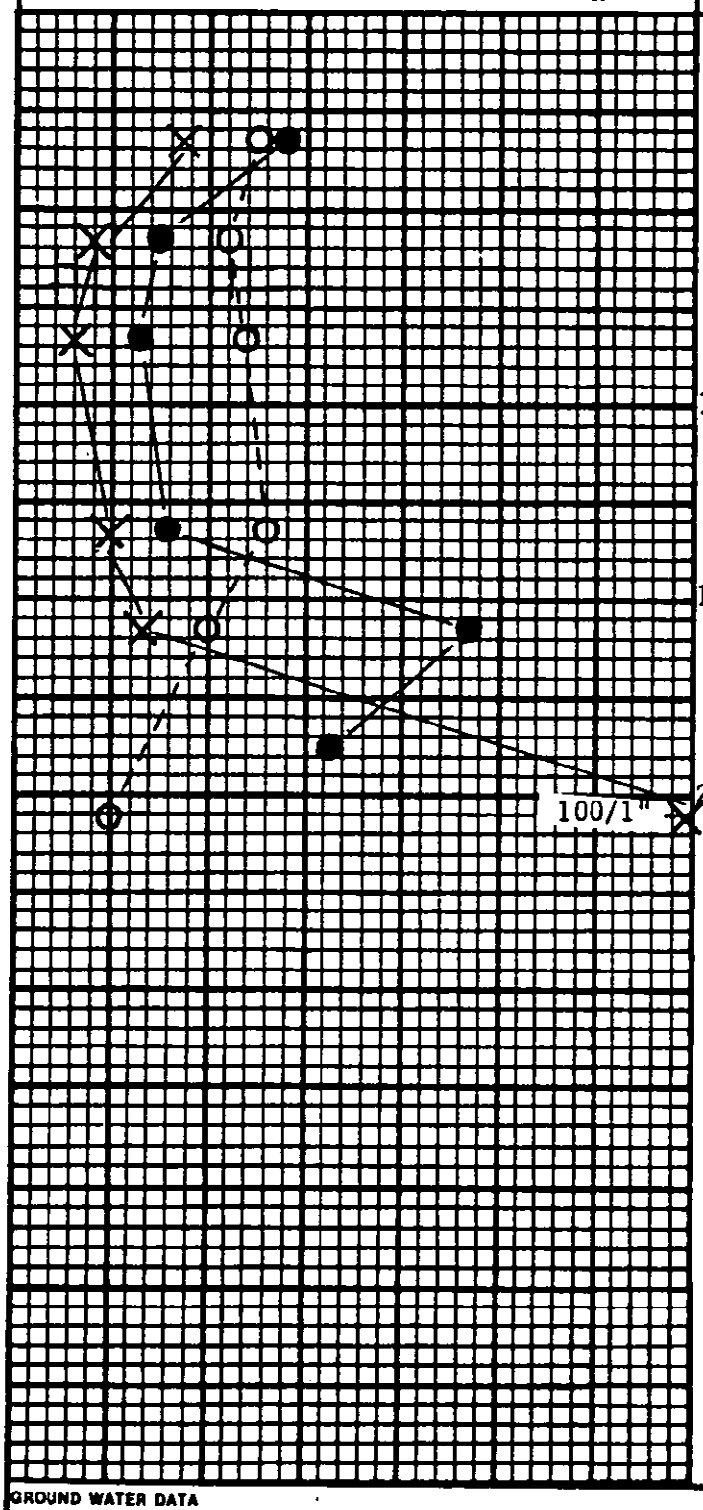

DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION 529.5
				Dark Brown TOPSOIL
				Brown Silty Clay (CL) Glacial Till
	1	ss		
5	2	ss		
	3	ss		
10	4	st		
	5	ss		
15	6	ss		
	7	st		Weathered SANDSTONE
20	8	ss		
				End of Boring @ -21'

GROUND WATER DATA No ground water encountered during drilling.	Water @ -17' after 6.5 hours.
PROJECT Proposed South Flyash Pond Southern Illinois Power Co-op	DATE OF BORING 04-15-88
CLIENT Clarida Engineering Marion, Illinois	PROJECT NO. H-88040

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LOG OF BORING 2 A

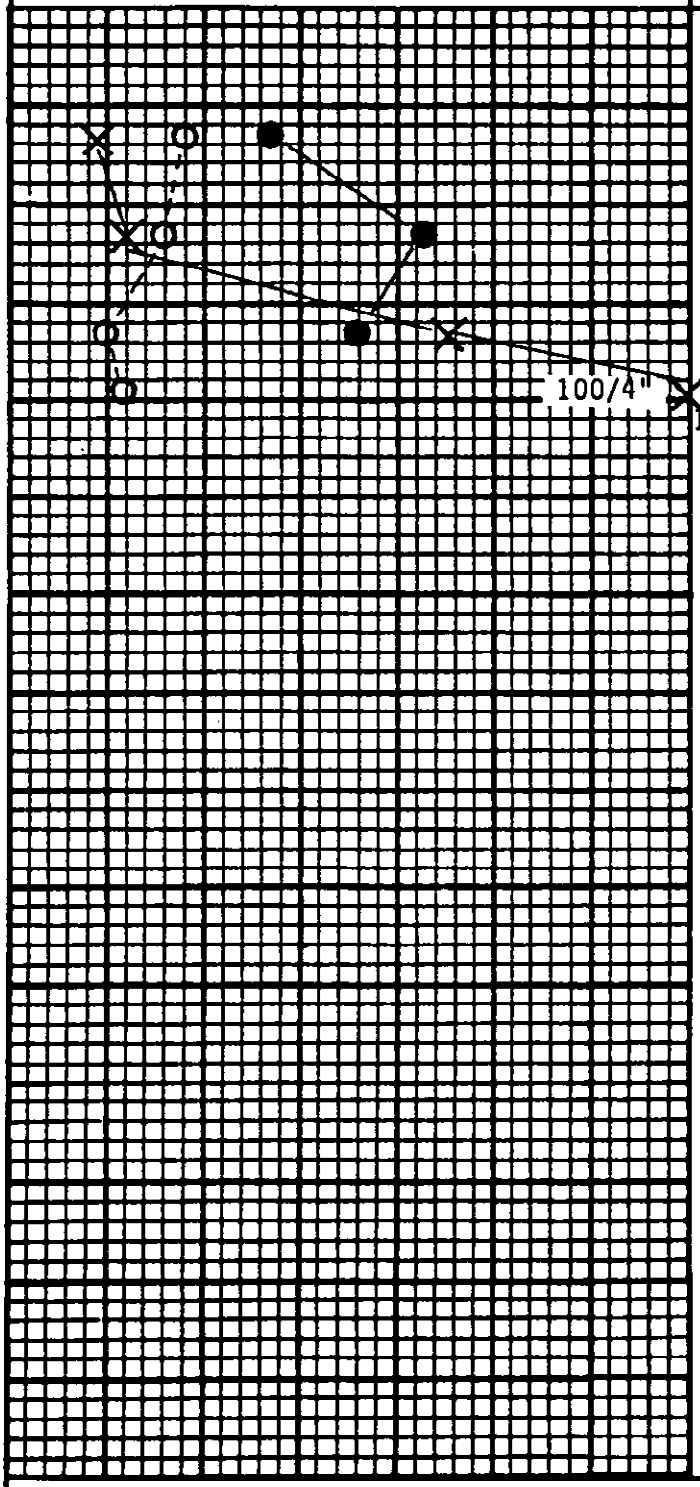
UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²

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 519.7
				TOPSOIL
				Brown Mottled Gray Clayey SILT (ML) Alluvium
	1	ss		Brown Mottled Gray Silty CLAY (CL) with Sandstone Fragments
5	2	ss		
	3	ss		Highly Weathered SHALE
	4	ss		
10				End of Boring @ -10½'

GROUND WATER DATA
Ground water encountered @ -7' during drilling.

Water @ -4.5' after 5 hours. Plugged @ -8'.

PROJECT
Proposed South Flyash Pond
Southern Illinois Power Co-op

DATE OF BORING
04-15-88

CLIENT
Clarida Engineering
Marion, Illinois

PROJECT NO.
H-88040

Electronic Filing: Received, Clerk's Office 01/13/2023

LOG OF BORING 3 A

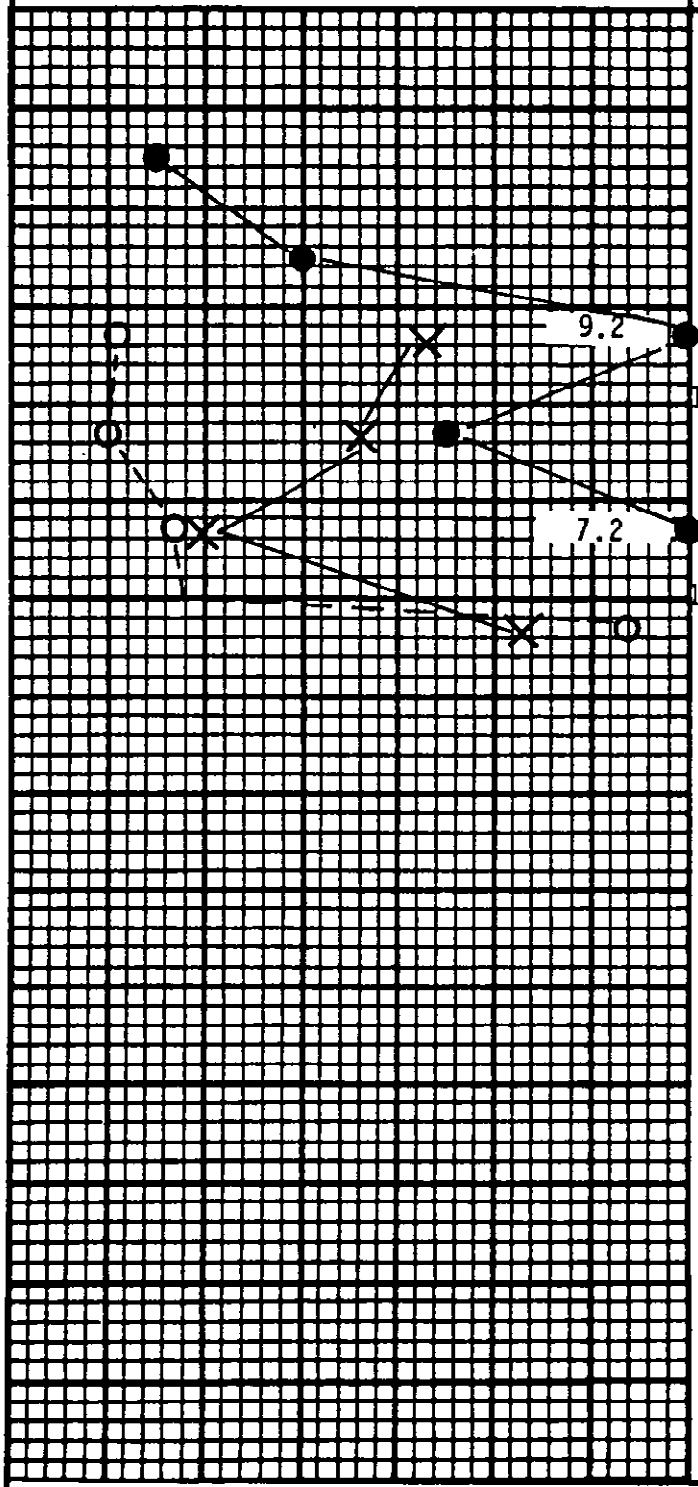
UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²

1 2 3 4 5 6

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

STANDARD "N" PENETRATION, BLOWS/FT

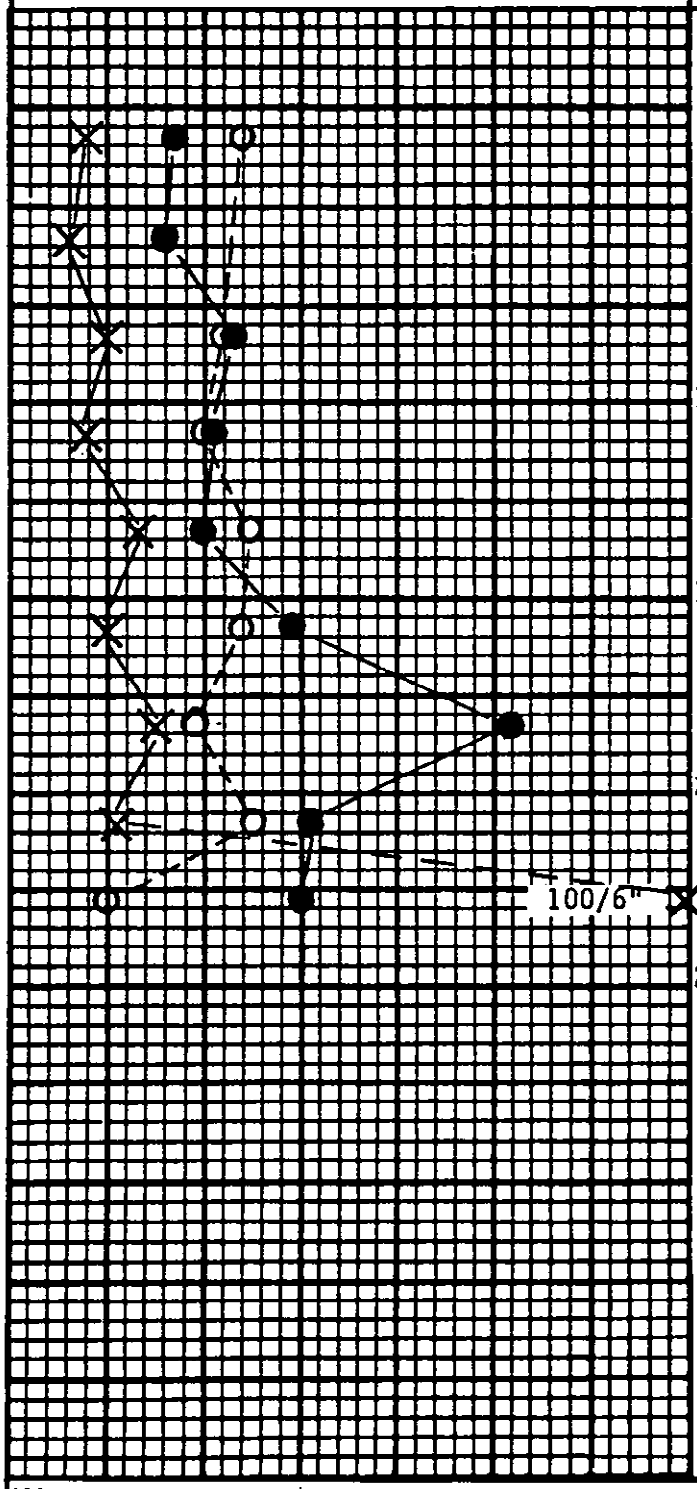
10 20 30 40 50 60



DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION 521.3
				TOPSOIL
				Brown Mottled Gray Sandy CLAY (CL)
	1	st		
5	2	st		
	3	ss		Highly Weathered SANDSTONE
10	4	ss		
	5	ss		
15	6	ss		
				Black COAL
				End of Boring @ -16½'

GROUND WATER DATA Ground water encountered @ -15' during drilling.	Water @ -11' after 3.5 hours. Plugged @ -12½'
PROJECT Proposed South Flyash Pond Southern Illinois Power Co-op	DATE OF BORING 04-15-88
CLIENT Clarida Engineering Marion, Illinois	PROJECT NO. H-88040

Electronic Filing: Received, Clerk's Office 01/13/2023

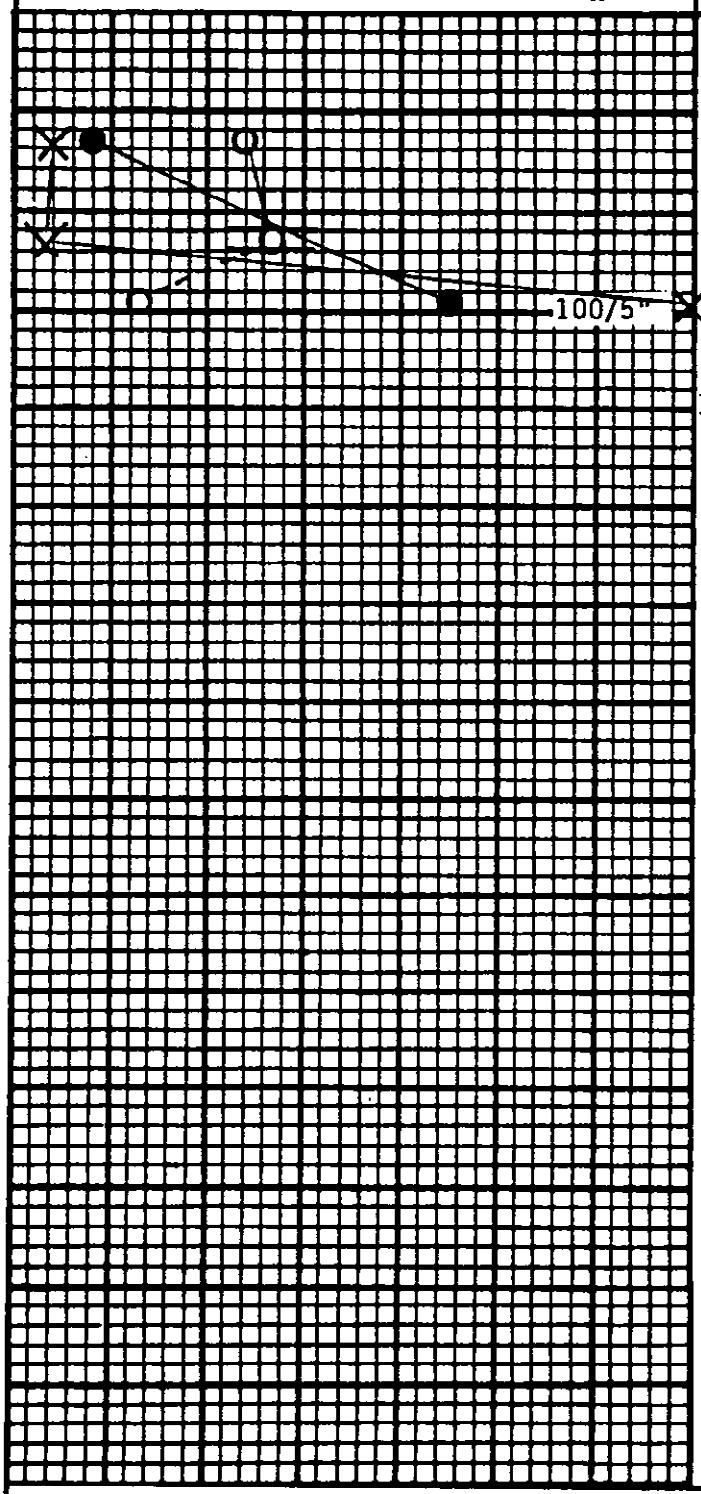


DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION 547.4
				TOPSOIL
				Brown Mottled Gray Silty CLAY (CL)
	1	ss		
5	2	ss		
	3	ss		
10	4	ss		
				Brown Mottled Gray Silty CLAY (CL) with Pebbles
	5	ss		
15	6	ss		
	7	ss		
20	8	ss		
				Weathered SANDSTONE
	9	ss		Hard SANDSTONE
25				End of Boring @ -23'

GROUND WATER DATA
No ground water encountered during drilling.

PROJECT Proposed South Flyash Pond Southern Illinois Power Co-op	**DATE OF BORING** 04-15-88
CLIENT Clarida Engineering Marion, Illinois	**PROJECT NO.** H-88040

Electronic Filing: Received, Clerk's Office 01/13/2023



DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION 537.7
				TOPSOIL
	1	SS		Gray Mottled Brown Silty CLAY (CL) Alluvium
5	2	SS		
	3	SS		Highly Weathered SANDSTONE
				Hard SANDSTONE
10				End of Boring @ -7½' Auger Refusal

GROUND WATER DATA
Ground water encountered @ -4' during drilling

Plugged @ -3½' upon completion. Water @ -3' after 5.5 hours.

PROJECT
Proposed South Flyash Pond
Southern Illinois Power Co-op

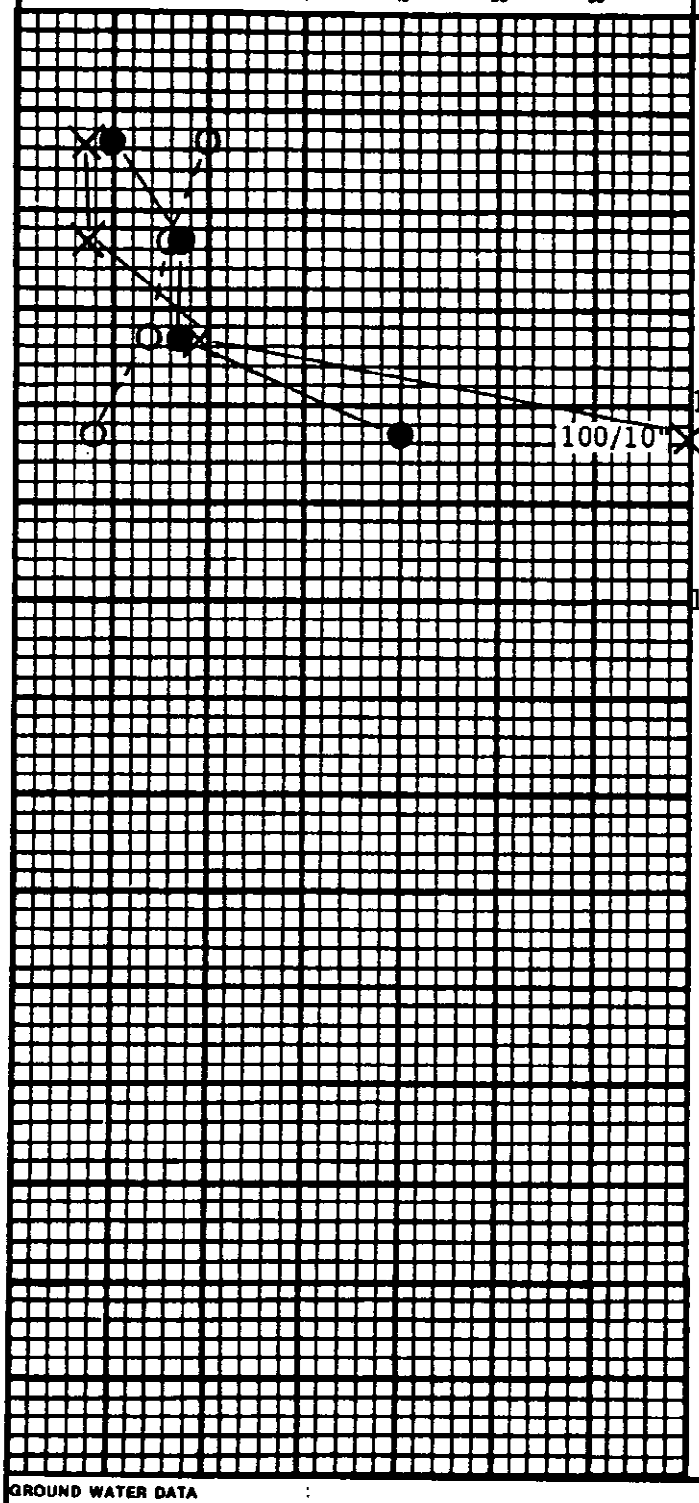
DATE OF BORING
04-15-88

CLIENT
Clarida Engineering
Marion, Illinois

PROJECT NO.
H-88040

Electronic Filing: Received, Clerk's Office 01/13/2023

LOG OF BORING 6A



DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION 527.2
				TOPSOIL
				Brown Mottled Gray Silty CLAY (CL)
	1	ss		
5				
	2	ss		Weathered SANDSTONE
	3	ss		
10				
	4	ss		Hard SANDSTONE
				End of Boring @ -11½'
15				

GROUND WATER DATA
No ground water encountered during drilling.

Plugged @ -8½'

PROJECT
Proposed South Flyash Pond
Southern Illinois Power Co-op

DATE OF BORING
04-15-88

CLIENT
Clarida Engineering
Marion, Illinois

PROJECT NO.
H-88040

LOG OF BORING 7 A

Electronic Filing, Received, Clerk's Office 01/13/2023

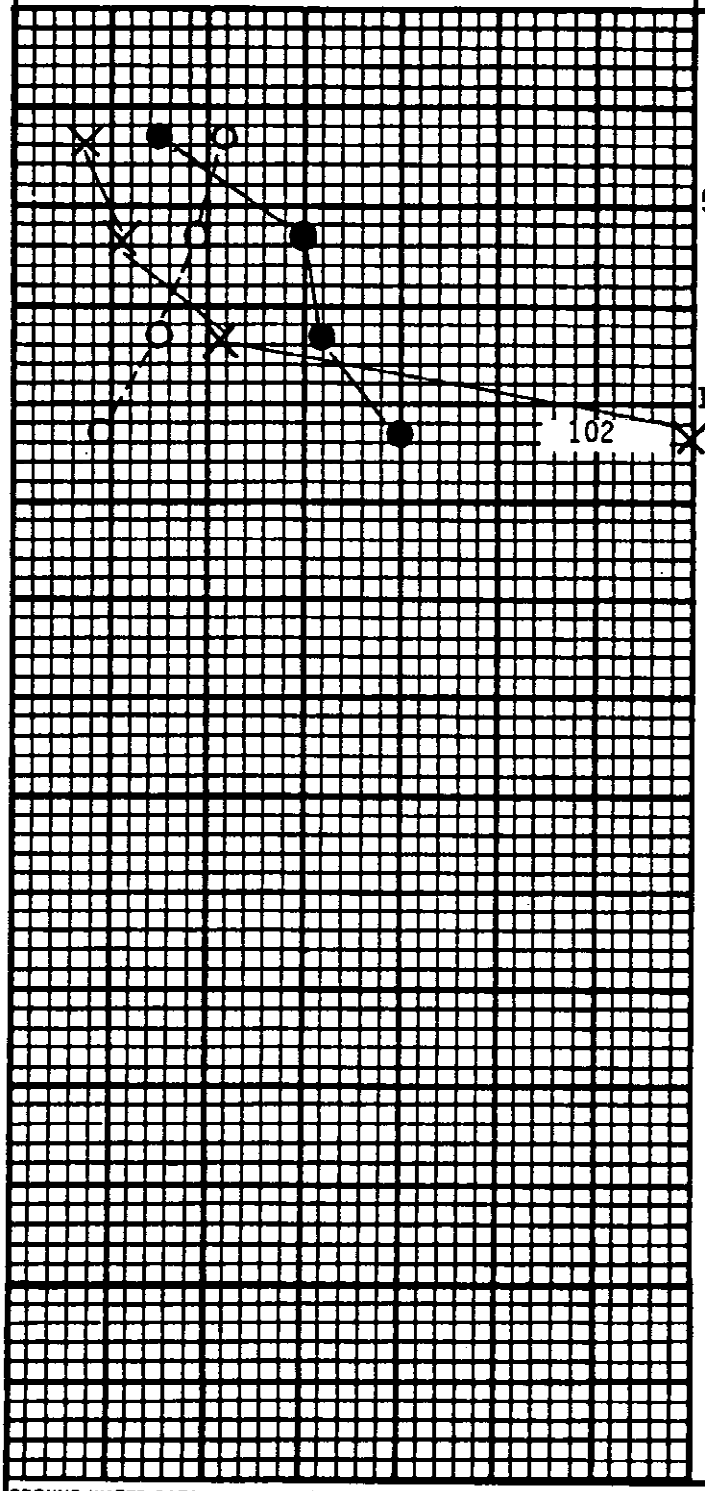
UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²

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 534.0
				TOPSOIL
				Brown Mottled Gray Silty CLAY (CL)
	1	ss		
5				
	2	ss		Weathered SANDSTONE
	3	ss		
10				
	4	ss		Hard SANDSTONE
				End of Boring @ -11½'

GROUND WATER DATA
No ground water encountered during drilling.

PROJECT
Proposed South Flyash Pond
Southern Illinois Power Co-op

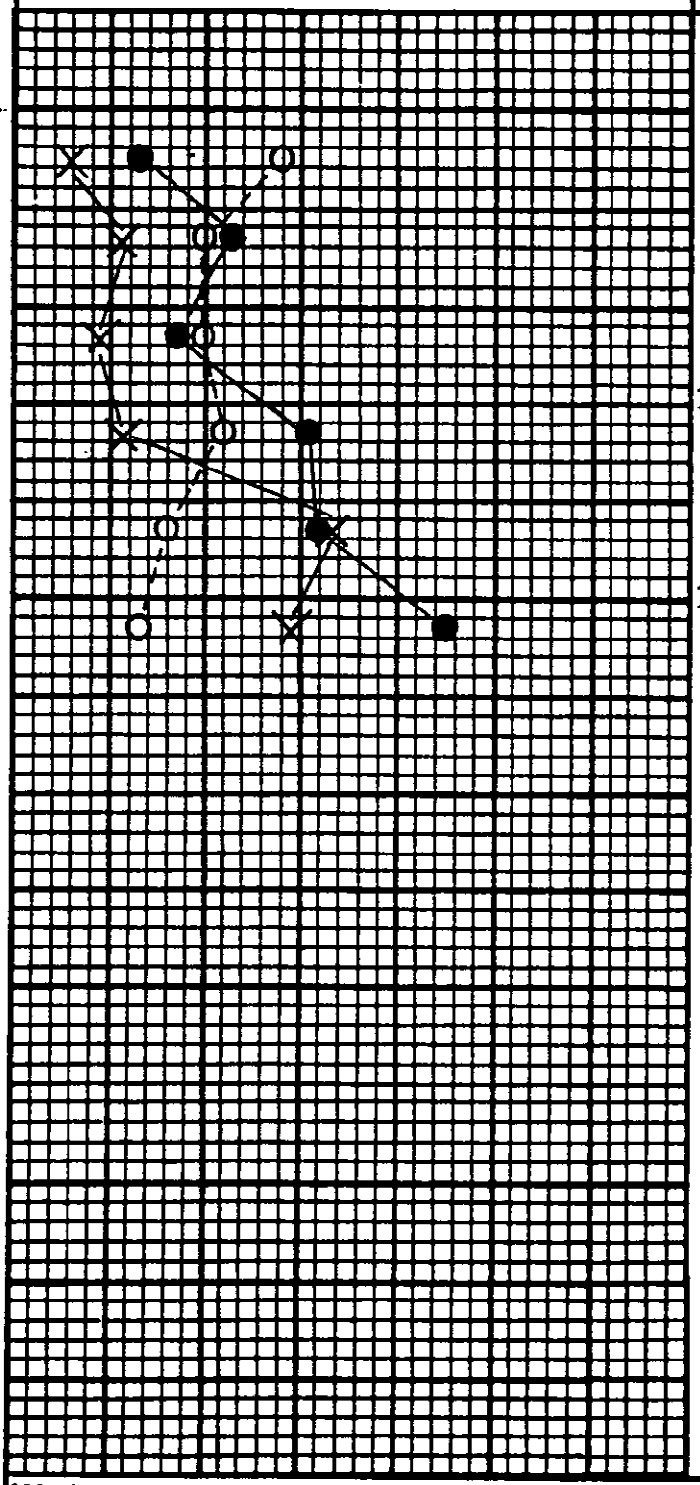
DATE OF BORING
04-15-88

CLIENT
Clarida Engineering
Marion, Illinois

PROJECT NO.
H-88040

Electronic Filing: Received, Clerk's Office 01/13/2023

LOG OF BORING 8A



DEPTH IN FEET	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	DESCRIPTION OF MATERIAL
				SURFACE ELEVATION 537.8
				TOPSOIL
				Brown Mottled Gray Silty CLAY (CL)
	1	ss		
5				
	2	ss		
	3	ss		
10				
	4	ss		
	5	ss		Weathered SANDSTONE
15				
	6	ss		
				Hard SANDSTONE
				End of Boring @ -16½'

GROUND WATER DATA
No ground water encountered during drilling.

Plugged @ -11'

PROJECT
Proposed South Flyash Pond
Southern Illinois Power Co-op

DATE OF BORING
04-15-88

CLIENT
Clarida Engineering
Marion, Illinois

PROJECT NO.
H-88040

LOG OF BORING 9 A

Electronic Filing: Received, Clerk's Office 01/13/2023

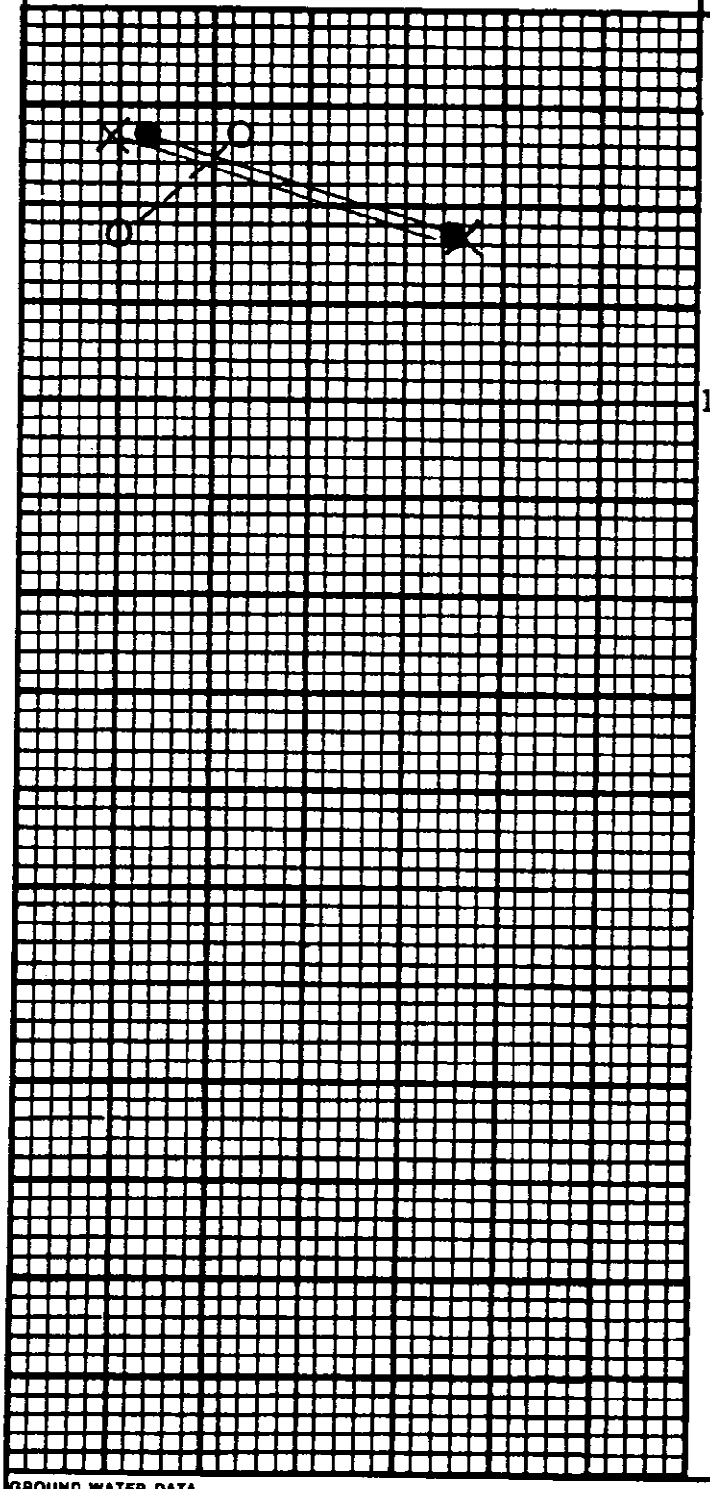
UNCONFINED COMPRESSIVE STRENGTH, TONS/FT²

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 526.0
				TOPSOIL
				Brown Mottled Gray Silty CLAY (CL)
	1	ss		Gray Mottled Brown Weathered SANDSTONE
5				
	2	ss		Gray Mottled Brown Weathered SHALE/SANDSTONE
				End of Boring @ -6½'
10				

GROUND WATER DATA

No ground water encountered during drilling.

PROJECT Proposed South Flyash Pond
Southern Illinois Power Co-op

DATE OF BORING 04-15-88

CLIENT Clarida Engineering
Marion, Illinois

PROJECT NO. H-88040

Electronic Filing: Received, Clerk's Office 01/13/2023

HOLCOMB FOUNDATION ENGINEERING CO.

SOILS - BITUMINOUS - CONCRETE - INVESTIGATIONS AND TESTING

WOOD ROAD | P.O. BOX 3344, CARBONDALE, ILLINOIS 62902 | 618-457-8991, 618-529-5262

3064-89

RECEIVED

MAR 23 1989

Environmental Protection Agency
WPC—Permit Log In

March 10, 1989

Clarida Engineering Co.
PO Box 937
Marion IL 62959

Attn: Mr. Gene Eisenhauer, P.E.

Re: Permeability Tests
Proposed South Flyash Pond
Southern Illinois Power Co-Op
Marion, Illinois
File H - 88040

Dear Sir:

In response to your request, we have performed the permeability tests for the above referenced project.

On March 1, 1989 we sampled the subsoils in the vicinity of Borings 6A and 4A at the site which were drilled in April of 1988. Boring 4A soils were sampled to a depth of 4 feet using a hand auger. Boring 6A subsoils were sampled with a three inch diameter Shelby tube.

The subsoils sampled in Boring 4A were remolded in the laboratory at 92.5 percent of their maximum standard laboratory density (108.8 pounds per cubic foot at 13.9 percent moisture content). The moisture-density relationship test was submitted in our Soil Exploration and Recommendations report dated May 24, 1988. The remolded sample was then backsaturated in a triaxial chamber. The result of the permeability test is 6.19×10^{-8} centimeters per second, indicating an acceptably low permeability for the proposed liner borrow soils.

The in-situ soils sampled in the Shelby tube at the approximate bottom of pond elevation were subjected to the same permeability test. The result of this test is a permeability of 3.54×10^{-8} centimeters per second.

Attachment #1

Electronic Filing: Received, Clerk's Office 01/13/2023

These tests indicate that in order to properly seal the bottom of the pond, any areas which currently have three feet of in-situ clayey soils overlying the sandstone bedrock will suffice as a liner material with no modification or additional compaction necessary. Areas which have sand or sandstone present in the upper three feet will have to be filled with additional compacted borrow soils to achieve the required liner thickness.

Please find enclosed results of the permeability tests. Should you have any questions, feel free to contact us at your convenience.

Sincerely,

HOLCOMB FOUNDATION ENGINEERING

Timothy J. Holcomb

Timothy J. Holcomb, P.E.

TJH/jg

Enclosure

Electronic Filing: Received, Clerk's Office 01/13/2023

CLARIDA ENGINEERING CO.
308 South Court Street / P.O. Box 937 / Marion, Illinois 62959 / Telephone (618) 993-6411

March 21, 1989

3064-89

RECEIVED
MAR 23 1989
Environmental Protection Agency
WPC — Permit Log In

State of Illinois
Environmental Protection Agency
Division of Water Pollution Control
Permit Section
2200 Churchill Road
Springfield, IL. 62706

Attention: Sandra Bron

Re: Log No. 2378-88
Southern Illinois Power Co-Op

Dear Sandra:

In response to your letter dated February 17, 1989, we offer you the following on the above referenced project.

Item 1 - Surface area of the pond = 15.3 acres
Volumetric storage capacity = 117 acre-feet
(See Attachment #1)

Item 2 - Results of test borings and subsurface conditions are attached.
(See Attachment #2)

Item 3 - The effluent from the new south fly-ash pond will run in a northerly direction thru an I.E.P.A. permitted coal catch basin. It will then run from this basin under a road, which is commonly referred to as the dam road into the I.E.P.A. permitted workings known as Pond #4. The effluent then runs through a pipe and is discharged thru an I.E.P.A. permitted sampling point and flow monitor into South Fork of the Saline River. This has been shown in red on the attached drawing. (Attached #3)

Item 4 - Alternate #1 and Alternate #2 referred to different studies made on rerouting the surface water away from the proposed fly-ash pond. These desigations do not show up in the final plans.

Item 5 - a. Pond seal - Enclosed please find correspondence and results of permeability tests performed in the pond area by Holcomb Foundation Engineering. We have also revised the specifications to require a pond seal liner. The new specifications are attached. (Attachment #4)

b. See new specifications attached. (Attachment #5)

c. See new specifications attached. (Attachment #5)

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d. The areas of the shore line not rip-rapped will be seeded and covered with a soil erosion control fabric. Literature on this fabric is enclosed. (Attachment #6)

e. Performance monitoring wells - monitoring wells will be placed as shown on the plans. A detail of the wells is also shown. (Attachment #7)

f. A drainage gate will be installed inside the effluent manhole. This will be controlled from the top of the manhole. This gate will also be used for flow control of the effluent and also used to completely cut off the flow from the pond. Details of this have been shown on plan sheet #5 attached. (Attachment #8)

Hopefully this will be enough information to complete your review.

This project was originally submitted to your agency on July 20, 1988. We had heard nothing until I called your agency on November 17, 1988 and nothing had been done on the review. We submitted more material to your agency and did not hear again until we received a letter dated February 17, 1989. Since several months have elapsed since we first submitted this project to your Agency, we ask that you expedite your review.

Our permits for construction from IDOT, Division of Water Resources & Corps of Engineers were issued in 1988. It is our desire to construct this pond during this construction season.

If you have any questions, please contact me.

Very truly yours,

Gene Eisenhauer

GE:me
Enclosures
cc: Dick Myott, SIPC
Bryon Martindale, IDOT/DWR

Electronic Filing: Received, Clerk's Office 01/13/2023

EXHIBIT

OO

Electronic Filing: Received, Clerk's Office 07/16/2020

SWB Log #10A-69

THE BOARD
FRANK H. D. YODER, M.D., M.P.H., CHAIRMAN
DIRECTOR OF PUBLIC HEALTH
WM. L. RUTHERFORD
DIRECTOR OF CONSERVATION
JOHN W. LEWIS
DIRECTOR OF AGRICULTURE
WILLIAM F. CELLINI
DIRECTOR OF PUBLIC WORKS AND BUILDINGS
A. L. SARGENT
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C. S. BORUFF
INDUSTRY

STATE OF ILLINOIS
SANITARY WATER BOARD
SPRINGFIELD

TECHNICAL SECRETARY
CLARENCE W. KLASSEN
CHIEF SANITARY ENGINEER
DEPARTMENT OF PUBLIC HEALTH

ADDRESS LETTERS TO:
STATE SANITARY WATER BOARD
SPRINGFIELD, ILLINOIS
62706

October 6, 1969

SOUTHERN ILLINOIS POWER COOPERATIVE - Slag and Fly Ash Disposal
Permit #1969-EB-707

Southern Illinois Power Cooperative
Post Office Box 143
Marion, Illinois 62959

Permit is hereby granted to Southern Illinois Power Cooperative, Post Office Box 143, Marion, Williamson County, Illinois, to install and to operate a slag and fly ash disposal pond in Section 25; Township 10 South; Range 2 East of the Third Principal Meridian, with discharge to natural drainage tributary to the South Fork Saline River, thence to Saline River, all in accordance with plans and specifications submitted by W. E. Shaffer, General Engineer, acting as your agent, said plans consisting of two sheets and entitled "Southern Illinois Power Cooperative Slag Settling Pond" dated August 29, 1968, and revised November 19, 1968, and May 20, 1969, and received August 1, 1969, being made a part hereof.

P.S. TO REGION: Project consists of a 53,000 cu. yd. settling pond and surface water diversion, to treat 576,000 gpd containing 27 cu. yd./day slag and 9 cu. yd./day fly ash. This pond supplements two existing ponds. Stream Code = ATH.

This permit is granted in accordance with the provisions of an "Act to establish a Sanitary Water Board and to control, prevent and abate pollution of the streams, lakes, ponds and other surface and underground waters in the State", approved July [illegible] 1951, and is subject to the following conditions:

1. If any statement or representation in the application is found to be incorrect, this permit may be revoked and the permittee thereupon waives all rights thereunder.

2. There shall be no deviations from the approved plans and specifications unless revised plans and specifications shall first have been submitted to the Sanitary Water Board and a supplemental written permit issued therefor.

3. During or after the construction or the installation of the sewage works, any agent duly authorized by the Board shall have the right and authority to inspect such work and its operation.

4. This authority (a) shall not be considered as in any manner affecting the title to the premises upon which the sewage works are to be located, (b) does not release the permittee from any liability for damage to person or property caused by or resulting from the installation, maintenance or operation of the proposed sewage works, (c) does not take into consideration the structural stability of any units or parts of the project, and (d) does not release the permittee from compliance with stream channel requirements of the State Division of Waterways, with other applicable statutes of the State Division of Waterways, with other applicable statutes of the State of Illinois, or with applicable local laws, regulations or ordinances.

5. This permit is void one year from date of issue unless installation of this project has started prior to date of expiration.

6. Rain water from roofs, streets and [illegible] areas, and ground water from foundation drains shall be excluded from the sewer system.

7. The installation shall be made under the supervision of an inspector provided by or approved by the operating agency.

8. Treatment works will be operated and supervised by a duly qualified sewage works operator [illegible] under the Regulations of the Sanitary Water Board.

[illegible]
Technical Secretary

TGM/va

cc: -SRO w/plans, -Div. of Waterways, -Franklin-Williamson Bi-County Health Dept.

Subject Southern Illinois Power Coop
Date Fly Ash and Slag Disposal
Reviewed by TCM
(52702—30M—6-68)
Date October 3, 1969
Log # 10A-69
Sheet 1 of 1

Revised plans and proposal received August 1, 1969
1. A properly completed application for permit has been received.
2. Diversion of the cooling water around the third slag and slag setting pond has been provided.
The pond has been enlarged to the 33,000 cu. yd. capacity. This should be adequate.
3. Slag and flyash storage with drainage into pond #3 in an
4. The pond discharge pipe has been moved to the south side of the pond and is just a 2 foot freeboard is provided. (OK)

Action - Issue Permit for #3

Subject W. Williamson County - Southern Illinois Power Co-op (52702—30M—6-68)

Date Fly Ash & Slag Settling Facilities

Reviewed by TCM Date 3-6-69

Log # 10-69 Sheet 1 of 5

Plans and Design Data received December 23, 1969

No Application for Permit received ← Note

Application to Install: Southern Illinois Power Cooperative
P.O. Box 143
Marion, Illinois 62959

Permit to Operate: Southern Illinois Power Cooperative
P.O. Box 143
Marion, Illinois 62959

Engineer: Southern Illinois Power Cooperative
P.O. Box 143
Marion, Illinois 62959

Proposal: Construct a third fly-ash and slag settling lagoon to relieve the overloading on the two existing cells.

Receiving Stream: Natural drainage to Lusher Creek to the South Fork Saline River

Stream Code = A-Ohio River
I-Saline River
H-South Fork

The treatment provided is sufficient for the receiving waters

Location The settling pond is located in Section 25, Township 10 South, Range 2 East of the Third Principal Meridian, Williamson County, Illinois. The pond will be [illegible]

Electronic Filing: Received, Clerk's Office 01/13/2023

Subject: Williamson County - Southern Illinois Power Co.

Data: Fly Ash & Slag Settling Facilities

Reviewed by: TWH Date: 3-12-69

Log # 10-69 Sheet 2 of 5

Design: Solids Load — 15 gal/hr - Slag Average
5 gal/day - Fly Ash - Average
20 gal/day - Sludge Average

2 gal/day - Slag - Maximum
1 gal/day - Fly Ash - Maximum
3 gal/day - Maximum

Flow = 76,000 gal/hr for 6 hours = 456,000 gal

In addition to the slag, fly ash & sludge from the plant process, 15,000 gpd sanitary sewage and basement sump pump discharge

Also discharged to the pond is the effluent from the domestic sewage treatment plant and cooling tower blow down from 12 acres.

Storm water such as the run off from the 12 acres, or clean pumped sump discharge should be diverted around the pond ← Note

Blow down and effluent from domestic waste treatment plant to empty into pond to help control algae growth

Settling Volume Provided = 27,000 cu yards
or approx. 35,000 cu yards [illegible]

Life of the pond = 4 years = 100 tons of ash
5 yr

The life could possibly be longer

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Subject: Williamson County - Southern Illinois Power Co-op (152702—30M—6-68)
Date: Fly Ash & Bag Settling Facilities
Reviewed by: TKM Date: 3-7-69
Log # 10-67 Sheet 3 of 5

Design: The settling pond was placed under construction immediately after by Sangamo, Inc. and was built. When plans were in the mid-stage of construction, a conference in the office on February 26, [illegible] Southern Illinois Power Co-op decided that several factors caused this: ignorance of pond, poor quality coal and incomplete settling facilities. Southern Illinois Power Co-op knew that they can overcome the problem however a part of the lagoon will be sufficient.

(27,000 gpd)(7)(7.48) = 1,820,000 gal

(53,000 gpd)(7)(7.48) = 3,570,000 gal

Detention = $\frac{1,820,000}{76,500}$ = 19 hours during [illegible] gpm power plant [illegible]

Detention = $\frac{1,820,000}{[illegible]} - \frac{210,000}{71,560}$ = 3 days 2 full days in lagoon (OK)

Of the two compartments above the first will be [illegible] the second will be [illegible] the power plant [illegible] the [illegible] [illegible] [illegible]

Subject W. Lawson County – Southern Illinois Power Co.
Data Fly Ash & Slag Settling Facilities
Reviewed by TRM Date 3-7-69
Log # 10-69 Sheet 4 of 5

Solids Cleaning — Stockpiled adjacent to the lagoon. Run-off from the stockpile should be diverted to the settling pond. ← Note

Levee: Top Width – 12 feet (Ok)
Inner Slope – 3:1 riprapped (Ok)
Outer Slope – 3:1 riprapped (Ok)
Freeboard – 2 ft (Ok)

Outlet: The 30 inch pipe equipped with a riser on the inside end. Some form of protection against localized solids pinning should be provided. ← Note

Also included with the submission was a proposal to collect the acid drainage from the coal stockpile area. The proposal calls for the construction of a ditch to collect the acid for eventual treatment with lime. During the conference on February 26, 1969 the staff advised Southern Illinois Power Co. that the use of the acid flow with lime would be a satisfactory method for treating the acid drainage. Southern Illinois Power Co. indicated that they would reconsider the proposal based on the discussion.

Summary

1. [illegible]
2. [illegible] settling pond

Subject Williamson County - Southern Illinois Power Co. 2/052702—30M—6-68)

Date Fly Ash + Slag Settling Facilities

Reviewed by TCM Date 3-7-69

Log # 10-69 Sheet 5 of 5

Summary

3. Provide protection against localized scouring and subsequent solids discharge at the drainage pipe.

4. Drainage from slag stockpile should be diverted into the settling lagoon.

5. Recapsider the lime treatment of drainage from the coal stockpile. Dilution appears to be more desirable.

Electronic Filing: Received, Clerk's Office 01/15/2025

STATE OF ILLINOIS
SANITARY WATER BOARD
SPRINGFIELD, ILLINOIS

10A-68

APPLICATION FOR A SANITARY WATER BOARD PERMIT TO INSTALL OR MODIFY, AND TO OPERATE A WASTE TREATMENT FACILITY, AND/OR TO RELEASE PROCESS WASTE WATERS FROM AN INDUSTRY DIRECTLY INTO A LAKE, RIVER, STREAM, DRAINAGE DITCH, OR OTHER WATERS OF THE STATE IN COMPLIANCE WITH THE SANITARY WATER BOARD ACT AND THE RULES, REGULATIONS AND REQUIREMENTS OF THE SANITARY WATER BOARD FOR DISPOSAL OF INDUSTRIAL WASTES.

SOUTHERN ILLINOIS POWER COOPERATIVE
(Name of Industry)

Post Office Box 143, Marion, Illinois (Address) Williamson (County), Illinois

hereby makes application to the Sanitary Water Board for the issuance of a permit

to install and operate Slag Settling Pond #3

RECEIVED
AUG 1 1969
DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

with discharge to Little Saline South Fork
(Name &/or Location of Watercourse)

tributary to Saline River
(Name of Watercourse)

Attached are the following basic engineering plans and specifications, information and data: (Include such items as daily volumes, average and maximum flow rates of wastes; types and concentrations of wastes; specifications, details and flow diagrams of treatment units and operation schedule; specifications of monitoring systems and/or laboratory analytical test procedures, etc.)

1. Details of pond construction
2. General area for slag storage
3. Project summary
4.
5.

Engineering plan documents have been prepared by

William E. Shaffer (Name of Engineer) (Illinois Registration No.)

and are herewith submitted for review and approval, said plans, etc. consisting of

(no.) sheets and entitled, "Southern Illinois Power Cooperative Slag Settling Pond."

SIGNATURE OF RESPONSIBLE OFFICER

TITLE General Manager
(Typed Name and Title)

DATE July 30, 1969

SE-SWB-7

Electronic Filing: Received, Clerk's Office

SOUTHERN ILLINOIS POWER COOPERATIVE

SLAG SETTLING PONDS

RECEIVED
JAN 3 1969
DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

10-69

SCOPE

To expand the settling pond storage facilities for the coal residue (slag). An area with capacity greater than the existing settling ponds and capability of land fill storage was desirable. The hillside North of the Power Plant offered both of these requirements.

PROCEDURE

A plan was developed to build a larger settling pond in two stages:

(1) Land cut and fill has been accomplished to construct a levee that would trap and collect the slag from the plant. An overflow drain was included in this levee to divert the flow of other water discharged from the plant. The capacity of the pond up to the drain is estimated to be 27,000 cu. yards.

(2) The capacity of the pond can later be increased with an intake box constructed at the drain to raise the water elevation. The estimated capacity of the pond would then be 53,000 cu. yards.

RESULTS

The levee has been constructed as shown on the attached print and the following flows are being diverted to the pond.

(1) Plant water previously flowing directly across this property now passes thru the pond then into the adjacent stream. This flow has been tested by Illinois Department of Public Health at Carbondale and found to be within temperature and contamination requirements. It is made up of the following:

(A) Approximately 15,560 gallons per day of treated boiler blowdown water.

(B) Plant basement sump pump water from basement floor washings and earth seepage.

(C) Plant septic tank water (to be chlorinated in accordance with state health specifications.)

(D) Estimated twelve acres of natural area drainage from plant water shed.

(2) Three periods each day, two hours each, jet water flushes slag from the boiler slag tank and fly ash from the dust collector hopper. This flushing requires 96,000 gallons of treated water per hour or 576,000 gallons per day. Although the quantity of water used in this flushing process is consistent each day, the quantity of slag and fly ash will vary with power generation requirements.

(A) The resulting slag (about 82% silicon) will be 10 to 12% of the coal consumed. At average plant output 15 yds. of slag will be produced and maximum plant output produces an estimated 27 yards of slag per day.

(B) Fly ash from the dust collector will average 5 yds. per day with an estimated 9 yds. at maximum plant output.

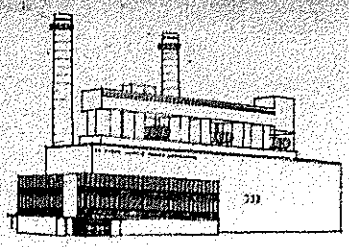
(3) A small amount of surface area drainage from the area between the pond and paved road also enters the pond.

COMMENTS

There are several commercial uses for the slag such as land fill, sand substitute in blacktop or concrete pavement, and highway ash for icy road conditions. Although we have no immediate large consummer for this slag, the new pond provides adequate means to collect the slag and remove it to storage for future use. The pond can hold two years supply; and continued use of the pond will be possible with routine slag removal to permanent storage areas.

W.E. Shaffer
General Engineer
SOUTHERN ILLINOIS POWER COOPERATIVE

ji-12-13-68



SOUTHERN ILLINOIS POWER CO-OP.

P.O. BOX 143 • MARION, ILLINOIS 62959 • AREA CODE 618 993-8123

10-69

December 20, 1968

RECEIVED
DEC 23 1968
DIVISION OF WATER POLLUTION CONTROL
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Mr. C.W. Klassen
State Sanitary Water Board
Springfield, Illinois 62708

Dear Mr. Klassen:

Find enclosed two reports: One is the plans and specifications of the wet boiler bottom ash settling additional pond and the other is a plan for taking care of the runoff from the coal storage plat.

Referring to the Ash Pond: This is the third pond. The Illinois Highway Department is now removing the ashes from number two pond. They use the ashes on the highway during snow and icy conditions. Their intentions are to remove as much from the ponds as they have time during the winter. The number one and two ponds each will hold approximately ten months operations under present loading conditions.

We are continually checking the new pond for efficiency of operation. As the slag builds up at the entrance to the pond we get better settling out.

The second report shows our explorations on preventing contaminating runoff from the coal storage. Your comments will be appreciated.

Sincerely yours,

Ora M. Snider

Ora M. Snider
Assistant Manager

OS/ji

Enclosures

APPROVED

Permit # 1969-EB-707

Dated October 6, 1969

By Thomas J. Kluyer

10A-69

RECEIVED

AUG 1 1969

DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

SOUTHERN ILLINOIS POWER COOPERATIVE

SLAG SETTLING POND #3

JULY 28, 1969

PURPOSE:

To expand the settling pond facilities for the coal residue and provide an area for storage as present use of the slag by others is not in proportion to the amount produced. The hillside North of the Power Plant offered both of these requirements.

OPERATION:

Three periods each day, two hours each, jet water flushes slag from the boiler slag tank and fly-ash from the dust collector hopper. This flushing requires 96,000 gallons of treated water per hour or 576,000 gallons per day. Although the quantity of water used in this flushing process is consistent each day, the quantity of slag and fly ash will vary with power generation requirements as follows:

(a) The resulting slag will be 10% to 12% of the coal consumed. At average plant output 15 yards of slag will be produced and maximum plant output produces an estimated 27 yards per day.

(b) Fly ash from the dust collector will average 5 yards per day with an estimated 9 yards at maximum plant output.

A new pond (#3) is recommended to rotate filling and cleanout with existing ponds #1 and #2. The location of pond #3 will provide a barrier to retain any slag washing down from the permanent storage area.

Capacity of the new pond is estimated to be 53,000 cubic yards. Cleanout of the three ponds will be scheduled to outside contractors with heavy earth moving equipment, and in the fall some slag is now removed by the highway department for winter storage along roads.

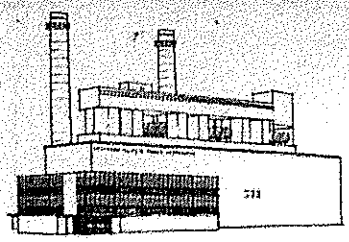
Pond #3 was initially proposed to trap the slag and permit continued flow of other water draining through the property. A revision is now added to divert all other water and restrict usage for slag only.

The hillside North of the Power Plant and East of the present two slag settling ponds will be adapted for slag storage and the addition of settling pond #3. An earth dam will be constructed, twelve feet wide on top, slope of 3 to 1, and reinforced with riprap at critical areas. The pond depth will vary but it will have a maximum of twelve feet in initial operation.

The existing flow of water across this property will be diverted around the new settling pond.

Construction details for this dam are indicated on the attached print.

APPROVED



SOUTHERN ILLINOIS POWER CO-OP.

P. O. BOX 143 • MARION, ILLINOIS 62959 • AREA CODE 618 993-8123

July 30, 1969

10A-69

RECEIVED
AUG 1 1969
DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

Mr. Clarence W. Klassen
Chief Sanitary Engineer
Department of Public Health
State Sanitary Water Board
Springfield, Illinois 62708

Dear Mr. Klassen:

We have attached hereto the revised proposal for slag settling pond #3.

You will note the plant water previously flowing across this property has been diverted as follows:

(A.) Treated boiler blowdown water has been channeled through the existing drainage to the outfall at the lake.

(B.) Plant basement sump pump, septic tank water, and natural area drainage from the plant water shed will be rerouted around the new pond.

Our proposal for #3 pond will function in similar manner as ponds #1 and #2 and also provide protection for any slag washing down from the proposed storage area.

I trust this will meet with approval. Please contact me if additional information is required.

Very truly yours,

W. E. Shaffer
General Engineer

WES/ecm

Enclosure

March 10, 1969

WILLIAMSON COUNTY - Southern Illinois Power Cooperative
(Power)

Southern Illinois Power Cooperative
P. O. Box 143
Marion, Illinois 62959

Gentlemen:

This letter will confirm the conference held in this office on February 26, 1969, and in addition will convey our comments regarding a review of your proposal submitted to this office under the date of December 20, 1968.

Review of the proposal raises the following items which we bring to your attention for comment and further action:

1. The proposal should have been accompanied by a completed application for a permit form. Blank forms are enclosed for your use. Only one completed copy need be submitted to this office; the other forms are for your convenience as file copies.

2. As discussed on February 26, 1969, as much clean water as possible should be diverted around the slag and fly ash settling pond so as not to interfere with the operation of the pond. The greater amount of clean water which can be by-passed around the pond, the greater efficiency of the pond. During the discussions in this office, the need to bypass was also emphasized by the proposed method of cleaning.

3. Our understanding of your method of operation will be to stock pile the slag and fly ash removed from the pond on an area adjacent but upgrade from the pond. Surface runoff from this area should be directed to the pond to prevent any possible stream pollution from this area.

4. 4. The riser pipe depicted in your plans is sufficient; however, we do feel some modification should be made to prevent localized solids pickup in the immediate vicinity of the pipe and thus carry over into the effluent stream. Perhaps the best approach to this problem would be to maintain a sufficient clean water depth over the settled materials to preclude such pickup.

5. As discussed in February, your proposal of lime treatment for drainage from your coal stock pile is not being reviewed in detail at this time as our discussions concluded with the understanding you would re-consider this particular problem. Because of the low volume of acid drainage involved, perhaps the most approach would be to provide dilution of this acid flow in an alkaline waste stream with the ultimate mixture meeting our water quality standards.

Basically, the proposal as submitted under the date of December 20, 1968, is satisfactory. A permit can be issued by this Board once the points outlined above have been satisfied.

If you should have any questions or comments regarding this item, please advise.

Very truly yours,

C. W. Klassen
Technical Secretary

cc: ~SRO

TCM/va
Enclosure

EXHIBIT

PP

Electronic Filing: Received, Clerk's Office 01/13/2023

REMAINDER

OF PERMIT BACKUP

CAN BE FOUND IN

BOW IMAGES

DOCUMENTS

FILE CABINET

W1998600002
Southern IL Power Coop-Marion
Cat: 16
IL 0004316
02/01/2007

Electronic Filing: Received, Clerk's Office 01/13/2023

LEGEND

COLOR	LAYER NAME	DESCRIPTION
	CONTOUR	
	GRID	
	FOOTING	
	CONVEYOR	
	REFERENCE	
	ABANDONED	
	AIR	
	DW	DOMESTIC WATER
	BW	BEARING WATER
	CM	CONDENSATE MAKEUP
	CW	RAW CIRCULATING WATER
	RW	RECLAIM WATER (SCRUBBER MAKE-UP)
	PD	PLANT DRAIN
	FM	PLANT FIRE PROTECTION
	SD	STORM DRAIN
	SS	SANITARY SEWER
	SL	SLURRY
	BA	BOTTOM ASH
	FA	FLYASH
	FO	FUEL OIL
	SP	SPARE PIPE
	DB	ELECTRICAL DUCTBANK
	EC	ELECTRICAL CONDUIT
		GROUNDING
	GT	GAI-TRONICS TELEPHONE
		TELEPHONE
	COMPUTER_NW	(CNW)

NOTE:
SEE DRAWING F-248 FOR P&ID.

002 DISCHARGE
INVERT EL. 462.0
CONTROL VALVE & WEIR
FOR DETAILS SEE DWG. E-98.8

005 DISCHARGE
INVERT EL. 490.0
30" CMP RISER W.L. EL 493
FOR DETAILS SEE DWG. G-455.5

B.M. EL. 468.72 □ CUT IN
N.E. CORNER CURB GUARD
OF BRIDGE

POND S-6
SLUDGE SETTLING OVERFLOW HOLDING
16 ACRE FEET
WATER EL.463.5

POND S-5
SLUDGE HOLDING
61 ACRE FEET
WATER
EL. 485.0

POND S-4
SLUDGE HOLDING
64 ACRE FEET
WATER
EL. 485.0

POND S-3
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-2
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-1
SLUDGE HOLDING
71 ACRE FEET
WATER
EL. 505.0

POND 3
SLUDGE SETTLING
20 ACRE FEET
WATER
EL. 470.8

POND 3A
CLARIFIED WATER
20 ACRE FEET
WATER
EL. 470.8

POND 2
BOTTOM ASH HOLDING
15 ACRE FEET
WATER
EL.502.0

POND 1
BOTTOM ASH HOLDING
9 ACRE FEET
WATER
EL.504.2

POND 4
DISPOSAL SETTLING
55 ACRE FEET
WATER
EL.502.0

POND B-3
FLY ASH SETTLING
45 ACRE FEET
W.L. EL. 495
WATER
EL.494.6

POND A-1
FLY ASH HOLDING
32 ACRE FEET
WATER
EL.515.2

PUMP STATION
PUMP PD-1
PUMP PD-2

PUMP STATION
PUMP RW-1WW

VALVE STATION 1
VALVE STATION 2
VALVE STATION 3

TO SIU BUILDING (1)1"EC (2)2"EC

TO PONDS 2" EC, 1" EC (5)2" EC
BUILDING (1)1½" EC, 1" EC
MANHOLE (8)2" EC (1)1" EC
TO PLANT

SL-SLURRY CONTRATE & WASTE SLURRY LINE

LAKE OF EGYPT ROAD

RELEASABLE

Southern Illinois Power Cooperative
MARION, ILLINOIS

NORTH POND DISPOSAL AREA SITE PLAN UNDERGROUND UTILITIES

SCALE 1"=80'	W.O.	REVISION	DATE 9-20-97
DRAWN SBS	REF. AS BUILT	A	SHEET OF H-100
APPROVED H.M.			
REV. DATE 03-17-03			

Electronic Filing: Received, Clerk's Office 01/13/2023

LEGEND

COLOR	LAYER NAME	DESCRIPTION
	CONTOUR	
	GRID	
	FOOTING	
	CONVEYOR	
	REFERENCE	
	ABANDONED	
	AIR	
	DW	DOMESTIC WATER
	BW	BEARING WATER
	CM	CONDENSATE MAKEUP
	CW	RAW CIRCULATING WATER
	RW	RECLAIM WATER (SCRUBBER MAKE-UP)
	PD	PLANT DRAIN
	FW	PLANT FIRE PROTECTION
	SD	STORM DRAIN
	SS	SANITARY SEWER
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	FA	FLYASH
	FO	FUEL OIL
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	DB	ELECTRICAL DUCTBANK
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	GT	GAI-TRONICS TELEPHONE
	TELEPHONE	
	COMPUTER_NW	(CNW)

NOTE:
SEE DRAWING F-248 FOR P&ID.

002 DISCHARGE
INVERT EL. 462.0
CONTROL VALVE & WEIR
FOR DETAILS SEE DWG. E-98.8

005 DISCHARGE
INVERT EL. 490.0
30" CMP RISER W.L. EL. 493
FOR DETAILS SEE DWG. G-455.5

B.M. EL. 468.72 □ CUT IN N.E. CORNER CURB GUARD OF BRIDGE

N 350,000

E 320,000

POND S-6
SLUDGE SETTLING OVERFLOW HOLDING
16 ACRE FEET
WATER EL.463.5

POND S-5
SLUDGE HOLDING
61 ACRE FEET
WATER
EL. 485.0

POND S-4
SLUDGE HOLDING
84 ACRE FEET
WATER
EL. 485.0

POND S-3
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-2
SLUDGE HOLDING
25 ACRE FEET
WATER
EL. 485.0

POND S-1
SLUDGE HOLDING
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EL. 505.0

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DISPOSAL SETTLING
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FLY ASH SETTLING
45 ACRE FEET
W.L. EL. 495
WATER
EL.494.6

POND A-1
FLY ASH HOLDING
32 ACRE FEET
WATER
EL.515.2

PUMP STATION
PUMP PD-1
PUMP PD-2

PUMP STATION
PUMP RW-1HW

VALVE STATION 1
VALVE STATION 2
VALVE STATION 3

TO SIU BUILDING

TO PONDS
TO PLANT
MANIFOLD
BUILDING

LAKE OF EGYPT ROAD

RECEIVED
MAR 25 2003
Environmental Protection Agency
WPC-Permit Log In

RELEASABLE

Southern Illinois Power Cooperative
MARION, ILLINOIS

NORTH POND DISPOSAL AREA SITE PLAN UNDERGROUND UTILITIES

SCALE 1"=80'	W.O.	REVISION	DATE 9-20-27
DRAWN SBS	REF.		SHEET OF
APPROVED TKM	AS BUILT		

Electronic Filing: Received, Clerk's Office 01/13/2023

EXHIBIT

QQ

Electronic Filing: Received, Clerk's Office

Log #1133-69

THE BOARD
FRANKLIN D. YODER, M.D., M.P.H., CHAIRMAN
DIRECTOR OF PUBLIC HEALTH
WM. L. RUTHERFORD
DIRECTOR OF CONSERVATION
JOHN W. LEWIS
DIRECTOR OF AGRICULTURE
WILLIAM E. CELLINI
DIRECTOR OF PUBLIC WORKS AND BUILDINGS
A. L. SANGENT
MUNICIPALITIES
C. S. BONURP
INDUSTRY

STATE OF ILLINOIS
SANITARY WATER BOARD
SPRINGFIELD

TECHNICAL SECRETARY
CLARENCE W. KLASSEN
CHIEF SANITARY ENGINEER
DEPARTMENT OF PUBLIC HEALTH

ADDRESS LETTERS TO
STATE SANITARY WATER BOARD
SPRINGFIELD, ILLINOIS
62706

June 1, 1970

SOUTHERN ILLINOIS POWER COOPERATIVE -
Holding Pond for Coal Storage and Yard Drainage
Permit #1970-EB-355

Southern Illinois Power Cooperative
P. O. Box 143
Marion, Illinois 62959

Permit is hereby granted to Southern Illinois Power Cooperative, Marion, Williamson County, Illinois, to install and to operate a holding and blending pond for yard drainage and coal storage area drainage, located in Section 46; Towaship 10 South; Range 2 East of the Third Principal Meridian, with discharge to natural drainage tributary to Little Saline Creek, thence to South Fork Saline River, all in accordance with plans and specifications submitted by William E. Shaffer acting as your agent, said plans consisting of two sheets and entitled "Southern Illinois Power Coop, Marion, Illinois, Holding Pond, Coal Storage and Plant Drainage" dated November 5, 1969, and received December 23, 1969, being made a part hereof.

Special Paragraph: Issuance of this permit does not relieve the Southern Illinois Power Cooperative from its responsibilities for maintaining an unfenced area containing several ponds.

P.S. TO REGION: Project consists of a settling pond of 18 million gallons to provide a month's detention of yard drainage, coal yard drainage, boiler blow down, and effluent from existing slag - fly-ash settling ponds. Stream Code = ATHJ

This permit is granted in accordance with the provisions of an "Act to establish a Sanitary Water Board and to control, prevent and abate pollution of the streams, lakes, ponds and other surface and underground waters in the State", approved July 17, 1951, and is subject to the following conditions

1. If any statement or representation in the application is found to be incorrect, this permit may be revoked and the permittee thereupon waives all rights thereunder.
2. There shall be no deviations from the approved plans and specifications unless revised plans and specifications shall first have been submitted to the Sanitary Water Board and a supplemental written permit issued therefor.
3. During or after the construction or the installation of the sewage works, any agent duly authorized by the Board shall have the right and authority to inspect such work and its operation.
4. This authority (a) shall not be considered as in any manner affecting the title to the premises upon which the sewage works are to be located, (b) does not release the permittee from any liability for damage to person or property caused by or resulting from the installation, maintenance or operation of the proposed sewage works, (c) does not take into consideration the structural stability of any units or parts of the project and (d) does not release the permittee from compliance with stream channel requirements of the State Division of Waterways, with other applicable statutes of the State Division of Waterways, with other applicable statutes of the State of Illinois, or with applicable local laws, regulations or ordinances.
5. This permit is void one year from date of issue unless installation of this project has started on or prior to date of expiration.
6. Rain water from roofs, streets and another areas, and ground water from foundation drains shall be excluded from the sewer system.
7. The installation shall be made under the supervision of an inspector provided by or approved by the operating agency.
8. Treatment works will be operated or supervised by a duly qualified sewage works operator Certificated under the Regulations of the Sanitary Water Board.

C. C. Klassen
Technical Secretary

CC: -SRO w/review notes, -Division of Waterways, -Attorney General, -Legal [illegible]

TGM/vba

Subject Southern Illinois Power Cooperative (14720—30M—1-70)70-0

Data Settling Pond #4

Reviewed by TBM Date May 28, 1970

Log # 1133-69 Sheet 1 of 4

Plans, Specifications, Design Data, and Application for Permit received December 23, 1970

Permit to Install: Southern Illinois Power Cooperative
P.O. Box 143
Marion, Illinois 62959

Permit to Operate: Southern Illinois Power Cooperative
P.O. Box 143
Marion, Illinois 62959

Engineer: W. A. Shafer
General Engineer
Southern Illinois Power Cooperative
P.O. Box 143
Marion, Illinois 62959

Location: The new settling pond will be located in the Northeast Quadrant of Section 26, Township 10 South, Range 2 East of the Third Principal Meridian, Williamson County, Illinois. In respect to the power plant the settling pond will be to the north across the road and to the east of the existing fly ash - slag ponds. IDNR Sec = 801

Receiving Stream: Natural drainage tributary to Little Saline Creek
Stream Code = H - Ohio River
J - Saline River
H - Long Fork above Mouth
J - Little Saline Creek

Proposed: Construct a settling pond to receive sluiced slag from the coal storage yard, boiler house basement, run-off from plant yard and power house sump. Discharge fly ash storage area to settling pond. Fly ash storage area to drain into the

Subject: Southern Illinois Power Cooperative (14729—30M—1-70) 70-0

Data: Setting Dam #4

Reviewed by: TCM Date: May 28, 1970

Log # 1133-69 Sheet 2 of 4

Design: Design is based on provided one month detention for the above sited. Flow is estimated using 40 units per year rainfall. Area to be served per provided site plan shown on the attached drawings.

Operation during Construction: The new and the existing drainage structures could be constructed without disruption to existing facilities.

By-Pass - The side by pass of the weir length should be by diversion of water flow down into the lake, as the existing discharge will remain

Drains - None provided

Operating Equipment - Available

Emergency Power - None needed.

Water Supply - None provided

Laboratory - The Power cooperative Engineer in correspondence to Setting Dam #4 stated that they have planned a complete laboratory setup which has been incorporated into the power house laboratory

Fencing - The power house site is already fenced. Noe of the outside limits of the roads are fenced, Note →

Drainage Structure

Needed outside the [illegible]

Subject: Southern Illinois Power Cooperative (1ST29—35M—1-70)70-0

Data: Settling Pond #4

Reviewed by: TRM Date: May 28, 1970

Log # 133-69 Sheet 3 of 4

Drainage Structures

Open ditch or 24 inch CMP in dairy section or 18 inch box concrete.

The control structure to divert water downstream to the system appears to be adequate. A control valve is provided.

Settling Lagoon

Design data submitted by the cooperative reveals a capacity of 18,000,000 gallons, providing a one month detention period.

The facility is designed to retain surface run-off

Embankment: Material - Native Soil

Top Width - 12 feet (OK)

Inner Slope - 3:1 (OK)

Outer Slope - 3:1 (OK)

Freeboard - 2 ft (OK)

Water Depth - 18 feet (OK)

Sealing - not required. ← Note

Pond Bottom: Low - lagoon

Influent: Surface ditch is left to approximately the edge of the pond.

Effluent: Final is a 90° weir with a valve

Electronic Filing: Received, Clerk's Office 01/13/2023

Subject Southern Illinois Power Cooperative

Date Settling Pond #4

Reviewed by TBM

Log #1133-69

Date May 28, 1970

Sheet 4 of 4

Conclusion

The design includes surface flow of: E.S.E. 880
S.W. 660
N.E. 990
2,494,640 gal/month

Assuming total runoff, the area served = $\frac{2,494,640 (12)(12)}{(7.48)(10)}$

= 528,000 sq. ft.

= 12.1 acres

The drawing submitted does not indicate a scale

Action:

Issue Permit

Issue Letter Advising to Apply

Electronic Filing: Received, Clerk's Office 01/13/2023

1133-69

STATE OF ILLINOIS
SANITARY WATER BOARD
SPRINGFIELD, ILLINOIS

RECEIVED
DEC 23 1969
DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

APPLICATION FOR A SANITARY WATER BOARD PERMIT TO INSTALL OR OPERATE A WASTE TREATMENT FACILITY, AND/OR TO RELEASE PROCESS WASTE WATERS FROM AN INDUSTRY DIRECTLY INTO A LAKE, RIVER, STREAM, DRAINAGE DITCH, OR OTHER WATERS OF THE STATE IN COMPLIANCE WITH THE SANITARY WATER BOARD ACT AND THE RULES, REGULATIONS AND REQUIREMENTS OF THE SANITARY WATER BOARD FOR DISPOSAL OF INDUSTRIAL WASTES.

SOUTHERN ILLINOIS POWER COOPERATIVE
(Name of Industry)

POST OFFICE BOX 143, MARION, ILLINOIS 62959 WILLIAMSON, Illinois
(Address) (County)

hereby makes application to the Sanitary Water Board for the issuance of a permit to install and operate BLENDING POND FOR COAL STORAGE AREA DRAINAGE

with discharge to LITTLE SALINE CREEK
(Name &/or Location of Watercourse)

tributary to SALINE RIVER
(Name of Watercourse)

Attached are the following basic engineering plans and specifications, information and data: (Include such items as daily volumes, average and maximum flow rates of wastes; types and concentrations of wastes; specifications, details and flow diagrams of treatment units and operation schedule; specifications of monitoring systems and/or laboratory analytical test procedures, etc.)

1. REPORT
2. CONSTRUCTION REQUIREMENTS
3. AREA PLAN
4.
5.

Engineering plan documents have been prepared by

WILLIAM E. SHAFFER (Name of Engineer) (Illinois Registration No.)

and are herewith submitted for review and approval, said plans, etc. consisting of

(no.) sheets and entitled, "SOUTHERN ILLINOIS POWER COOP. COAL STORAGE AREA DRAINAGE."

SIGNATURE OF RESPONSIBLE OFFICER Owen M. Snider

DATE 12/22/69

TITLE Asst Mgr
(Owner, President, Etc.)

SE-SWB-7

Electronic Filing: Received, Clerk's Office 01/13/2023

RECEIVED
DEC 23 1969
DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

SOUTHERN ILLINOIS POWER COOPERATIVE

COAL STORAGE AREA DRAINAGE

This report is a revision of a previous proposal of a water treatment method to neutralize the sulphur washings. It is resubmitted at this time for review by management and state agencies which may be involved.

Following a heavy rain a high sulphur content seepage from the coal storage area mixes with natural area runoff passing over fields and through wooded areas. It is now proposed to trap this seepage and blend with sufficient water from other sources and release only when a "ph" of 6 plus is maintained. At any time should the "ph" be found less than 6 then a hold action will be untaken until either sufficient blending water is available or treatment with lime will be initiated. The new pond capacity will be approximately 18,000,000 gallons. Blending water will be available from the following sources:

1. RAINFALL (Assume 40" average per year)

	AVERAGE MONTH	YEAR
New Pond Area	455,040 Gallons	5,536,320 Gallons
Substation Area	510,660 Gallons	6,213,030 Gallons
Field below coal storage	128,940 Gallons	1,568,770 Gallons
Slag Pond #1 or #2	252,750 Gallons	3,075,125 Gallons
	1,347,390 Gallons	16,393,245 Gallons
2. BOILER BLOW DOWN	466,800 Gallons	5,679,400 Gallons
3. SLAG LINE	17,280,000 Gallons	210,240,000 Gallons

The location of this pond will serve as a catch basin for any slag washing down hill from the storage pile west of settling pond #1 and #2. Also, the suspended solids in the boiler blow down water will settle in this pond.

The following construction will be required to complete this project:

1. Construct a small levee, drain and ditch in the coal storage area to deflect the water runoff.

2. Construct a concrete culvert with open grating in the Power Plant West drive.

(continued)

APPROVED
Permit # 1970-EE-355
Dated June 1, 1970
Illinois Sanitary Water Board
By Kenneth Kiassen, Tech. Secy.

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3. Reroute the boiler blow down drain through the field area north of the substation area. This will require a small manhole to offset the line. Buried culvert and some open ditch will be constructed as shown on the attached print. (The present route for boiler blow down to the lake will also be retained as an alternate route for emergency purposes.)

4. Construct an earth levee, 12 feet wide on top, 3 to 1 slope, with an elevated drain equipped with shutoff for holding purposes. Location of this pond is shown on the attached print.

ji
December 22, 1969

APPROVED

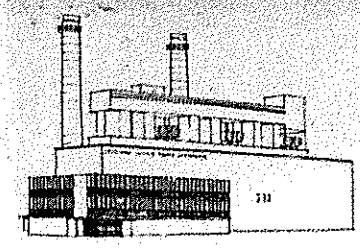
Permit # .....

Dated .....

Illinois Sanitary Water Board

C. W. Klassa Tech. Secy.

Electronic Filing: Received, Clerk's Office 01/16/2026



SOUTHERN ILLINOIS POWER CO-OP.

P.O. BOX 143 • MARION, ILLINOIS 62959 • AREA CODE 618 993-8123

December 22, 1969

1133-69

RECEIVED
DEC 23 1969
DIVISION OF SANITARY ENGINEERING
ILLINOIS DEPT. OF PUBLIC HEALTH

Mr. Clarence W. Klassen
Technical Secretary
State of Illinois
Sanitary Water Board
Springfield, Illinois 62706

Dear Mr. Klassen:

I have attached hereto the revised request for a holding pond to blend other sources of water with the coal storage seepage. Your review and approval would be appreciated.

Pond #3, slag settling has been completed. One minor change was made and the buried culvert shown on the original to direct the sewer eastward was left as an open ditch. Other underground utilities and the need to retain a drive area for cattle into grazing area created a need to move this ditch slightly north and an open ditch was developed.

Very truly yours,

W.E. Shaffer
General Engineer

WES/ji

Attachment

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EXHIBIT

RR

W1998601676A SOUTHERN ILL POWER-FLY ASH PND 03 1981EN2776-2 1

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PERMIT/PLAN/SPECIFICATION
MICROFILM JACKET INFORMATION

1.	DIVISION CODE	W
2.	FIPS COUNTY CODE	199
3.	CITY/TOWNSHIP CODE	860
4.	GOVERNING BODY CODE	1676A
5.	PERMITTEE NAME (FILE SUBJECT) SOUTHERN ILL POWER-FLY ASH PND	
6.	FILE DIVISION	03
7.	IEPA PERMIT NUMBER	1981EN27762

CROSS REFERANCE INFORMATION

8.	GOVERNING BODY NAME SOUTHERN ILLINOIS POWER COOP	
9.	F/S/P/ CODE	B1525A
10.	NPDES NUMBER	IL0004316

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R4

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NO.: 1981-EN-2776-2 DATE ISSUED: August 27, 1982

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS PREPARED BY: Southern Illinois Power Cooperative LOG NUMBERS: 0821-82

SUBJECT: SOUTHERN ILLINOIS POWER COOPERATIVE -- Marion Facility -- Supplemental Permit to the Fly Ash Storage Pond Extension

PERMITTEE TO CONSTRUCT OWN AND OPERATE
Southern Illinois Power Cooperative
Route 4 - Box 255
Marion, Illinois 62959

Supplemental permit is hereby granted to the above designated permittee(s) to construct and/or operate water pollution control facilities, which were previously approved under Permit #1981-EN-2276 dated September 29, 1981. These facilities have been revised as follows:

1. The addition of 950 linear feet of 8 inch diameter PVC pipe with a 1,000 gpm lift pump to transport flow from the fly ash storage pond extension to the existing fly ash holding pond.

2. The discharge pipe from bottom ash pond #4 has been revised to 1,080 linear feet of 18 inch diameter PVC pipe. The point of discharge remains the same.

3. The construction of a dike around the scrubber sludge/fly ash/bottom ash storage area to contain runoff. A 125 gpm pump and 800 linear feet of 4 inch diameter PVC pipe will be used to transport this flow to the fly ash storage pond extension.

All Special Conditions on the original permit issued are also applicable to this permit unless specifically deleted or revised in this permit.

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:RE:cb/5020c/17
cc: EPA - Region 7

DIVISION OF WATER POLLUTION CONTROL

Thomas G. McSwiggin, P.E.
Manager, Permit Section

IEPA 0360 0821 82

III.532-90009
WPC-146 (10/81)

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READ ALL CONDITIONS CAREFULLY.
STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year after date of issuance unless construction or development on this project has started on or prior to that date. In any event, construction must be completed in three years for treatment works and two years for sewers and wastewater sources, unless otherwise stated by special condition.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentation of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit,

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants,

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction/operation permit has been issued, a permit for operating shall be obtained from the Agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rule or Regulation effective thereunder as a result of the construction or development authorized by this permit.

2021090037

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39

Subject Southern Illinois Power Co-Op
Data Log # 0821-82
Reviewed by Ray Ehrhard Date 8/24/82

Application to modify permit # 1981-EA-2276 to allow for several changes, some of which have since been constructed. Applicant submitted letter dated July 27, 1982 and several plan sheets outlining the following modifications:

① Construct a new transport pipe from the new fly ash holding pond to the existing fly ash holding pond. As originally permitted, this water was planned to overflow a breached portion of the seperating dike but due to erosion problems a pipe will now be needed. The pipe will be 950' of 8" PVC above ground pipe. A lift pump rated @ 1000 gpm will be used. The discharge will be to the NE part of the existing holding pond protected with a synthetic cloth and rip rap.

② The discharge pipe from the bottom ash pond #4 has been changed from 850' of 14" CI pipe, to 1080' of 18" PVC pipe. The final discharge point has not changed.

③ A 7' dike has been constructed around the scrubber sludge/fly ash/bottom ash storage area to control runoff. 800' of 4" PVC pipe is proposed to transfer the runoff water to the new fly ash holding pond. A 125 gpm lift pump will be used to transfer this flow.

I talked with Richard Myott of SIPCO on 8/24/82 regarding these changes. No application form WPC-PS-1 has been submitted for these changes. Mr. Myott considered these minor changes, most of which has already been completed. He did not feel it was necessary to get a signature of a PE on an application. Since these changes are in-plant modifications that do not affect the treatment works, WPC-PS-1 is not reqd.

Action: Issue supplemental permit to correctly identify the project description

2160203

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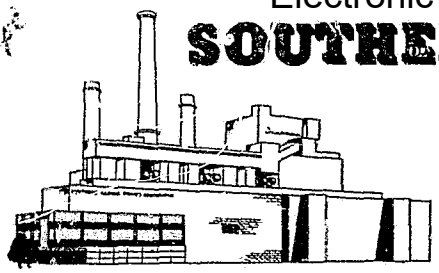

SOUTHERN ILLINOIS POWER CO-OP.

ROUTE 4 – BOX 255x 311 • MARION, ILLINOIS 62959
AREA CODE 618/964-1448

July 27, 1982

08 21 82

RECEIVED

JUL 30 1982

Environmental Protection Agency
WPC—Permit Log In

Illinois E.P.A.
Division of Water Pollution Control
Permit Section
2200 Churchill Road
Springfield, IL 62706

Re: Southern Illinois Power Cooperative
Disposal Site Modifications
Construction and Operation

Gentlemen:

We would like to modify our permit No. 1981-EN-2776-1 to allow construction of a 950 foot transport line from our new fly ash holding pond to our existing fly ash settling pond.

As originally designed, we planned for the fly ash transport water, less fly ash, to travel through our existing fly ash holding pond, down the overflow and into the fly ash settling pond. Unfortunately, soon after completion of the dike, we found that the planned flow resulted in wave damage to the new dike.

We, therefore, need to install a pump at the northwest corner of the new pond (see print E-100-1A) and a pipeline along the dike top to the fly ash settling pond. Documents are attached detailing that proposed line and pump system.

We, also, would like to have belated approval for a design modification that was made during construction of the new fly ash holding pond. We changed the pipeline material of construction to plastic and relocated it to the west bank of the pond above the 995' mark. In doing so we accomplished two objectives.

1. the pipeline can be maintained if necessary, and

2. no pipe was laid through the dike. (See Prints E98.1 & E98.6).

- continued -

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 July 27, 1982

Illinois E.P.A.
Division of Water Pollution Control
Springfield, Il. 62706

In an effort to contain any possible runoff from our scrubber sludge/flyash/bottomash storage area, we built a small seven foot dike around that area. (See Print F194). We would like to install a small 800 foot pipeline and pump from the low point to empty into the new fly ash holding pond. If this water contained any materials, they would be similar to the materials from either the scrubber emergency bypass line or the fly ash discharge line which now deliver to that holding pond.

We, also, plan to add a tight shut off valve to the discharge line from outfall 001. (See Print A85.3). This will allow containment of the water if necessary for treatment.

If you have any questions or comments, please contact us.

Very truly yours,

Richard Myott

Richard Myott
Assistant to Manager

RM/em

Enclosures

5190020040

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EXHIBIT

SS

W1990551676A SOUTHERN ILL POWER-NEW ASH POND 03 T977EN5732 1

Electronic Filing: Received, Clerk's Office 01/13/2023

PERMIT/PLAN/SPECIFICATION
MICROFILM "JACKET" INFORMATION

1. Division Code W
2. FIPS County Code 199
3. City/Township Code 055
4. Governing Body Code 1676A
5. PERMITTEE NAME (File Subject)

SOUTHERN ILL POWER-NEW ASH POND

6. File Division 03
7. IEPA Permit Number 1977-0732-

CROSS-REFERENCE INFORMATION

8. Governing Body Name

SOUTHERN ILLINOIS POWER COOP

9. ~~F/S/P Code~~ B1525
10. NPDES Number IL00

2020614

DWPC Records Unit

IL 532-0486
ADM 1081 8/78

Electronic Filing: Received, Clerk's Office 01/13/2023

file

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NO.: 1977-EN-5732

DATE ISSUED: November 14, 1977

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS PREPARED BY: Burns and McDonnell

LOG NUMBERS: 5732-77

SUBJECT: SOUTHERN ILLINOIS POWER CO-OP, INC. - New Ash Pond (Marion)

PERMITTEE TO CONSTRUCT AND OWN
Southern Illinois Power Cooperative, Inc.
Route 4
Box 255
Marion, Illinois 62959

Permit is hereby granted to the above designated permittee(s) to construct and/or operate water pollution control facilities described as follows:

Installation of a 5 million cu. ft. fly ash holding pond and all necessary appurtenances, designed to treat approximately 34,500 gallons of average daily flow from the power pl[illegible] The treated water will be discharged to the Saline River via the existing discharge #001.

This Permit is issued subject to the following Special Condition(s). If such Special Condition(s) require(s) additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for issuance of a Supplemental Permit.

SPECIAL CONDITION #1: Embankments shall be seeded from the outside toe to 1 foot above the high water line on the dikes, measured on the sloped.

SPECIAL CONDITION #2: The existing fly ash holding pond shall be abandoned and covered as indicated on the submitted plan. The top soil shall be seeded to prevent erosion.

SPECIAL CONDITION #3: This permit covers construction only. Operation is covered by NPDES Permit IL0004316.

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE OF THIS PERMIT (PAGE 1a) MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:CCH:sh1064/1
cc: EPA - Region 5
Burns & McDonnell

DIVISION OF WATER POLLUTION CONTROL

[redacted]
Manager, Permit Section

2023013 - 5 - 6 - 0

Electronic Filing: Received, Clerk's Office 01/13/2023

READ ALL CONDITIONS CAREFULLY:
STANDARD CONDITIONS

1. If any statement or representation is found to be incorrect, this permit may be revoked and the permittee thereupon waives all rights thereunder.

2. During or after the construction or the installation of the facilities covered by this permit any agent duly authorized by the Illinois Environmental Protection Agency shall have the right to inspect such facilities and its operation.

3. The issuance of this permit (a) shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located; (b) does not release the permittee from any liability for damage to person or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (c) does not take into consideration the structural stability of any units or parts of the project; and (d) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or with applicable local laws, regulations or ordinances.

4. Treatment works will be operated or supervised by a duly qualified treatment works operator certified under the Regulations of the Illinois Environmental Protection Agency.

5. The facilities covered by this permit shall be constructed and operated in compliance with the provision of the Illinois Environmental Protection Act and Chapter 3 of the Rules and Regulations as adopted by the Illinois Pollution Control Board.

6. Final plans, specifications, application and supporting documents as submitted by the person indicated on Page 1 as approved shall constitute part of this permit and are identified in the records of the Illinois Environmental Protection Agency, Division of Water Pollution Control by the permit number and log number(s) designated in the heading of Page 1.

7. This Permit may be assigned or transferred without a new permit from the Illinois Environmental Protection Agency.

8. There shall be no deviations from the approved plans and specifications unless revised plans, specifications and application shall first have been submitted to the Illinois Environmental Protection Agency and a supplemental permit issued.

9. The installation shall be made under the supervision of an inspector, who is familiar with the approved plans and specifications provided by and approved by the owner, and said inspector shall require that construction complies with the plans and specifications approved by this Agency.

10. Unless otherwise stated by Special Condition, construction must be completed in three years for treatment works and two years for sewers and wastewater sources.

11. Discharges into the sanitary sewer(s) constructed under this permit shall consist of wastewater only. Storm waters shall not be permitted to enter the sanitary sewer(s). Roof and footing drains shall not be connected to the sanitary sewer(s) constructed under this permit.

12. If any Special Conditions are indicated on Page 1 which require additional or revised facilities, satisfactory engineering plan documents must be submitted to this Agency for review and approval for the issuance of a supplemental permit.

1932016

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FOR IEPA USE: 3/1/78
LOG # 3732-77
DATE RECEIVED:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

RECEIVED
OCT 19 1977
IEPA-DWPC-Records - SPFD

APPLICATION FOR PERMIT OR CONSTRUCTION APPROVAL

WPC-PS-1

1. NAME AND LOCATION:

Name of project: Southern Illinois Power Cooperative, Inc.

Municipality or Township 8 miles south of Marion County Williamson

2. BRIEF DESCRIPTION OF PROJECT: Abandonment of existing fly-ash holding pond and construction of new impoundment. Said impoundment to discharge to existing discharge 001 (Il.NPDES 0004316)

3. DOCUMENTS BEING SUBMITTED: If the project involves any of the items listed below, submit the corresponding schedule, and check the appropriate spaces.

PROJECT

Private Sewer Connection	A___	Spray Irrigation	H___
Public Sewer Extension	B___	Septic Tanks	I___
Sewer Extension Construct Only	C___	Industrial Treatment or Pretreatment	J X
Sewage Treatment Works	D___	Deepwell Injection	K___
Excess Flow Treatment	E___	Cyanide Acceptance	L___
Lift Station/Force Main	F___	Updating Cyanide Acceptance Form	M___
Sludge Disposal	G___	Waste Characteristics	N X

Plans: Title Flyash Wastewater Contr.. System Modifications

Number of Pages

Specifications: Title Impoundment (Flyash Holding)

Number of Books/Pages

Other Documents (Please Specify) SIPC Dwg. G-212 Ash Pond Area

4. This is an Application for: Construction Permit___, Operating Permit___, Joint Construction and Operating X, Cyanide Acceptance Permit___.

5. CERTIFICATIONS AND APPROVAL

5.1 Certificate by Design Engineer

I hereby certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete and accurate.

ENGINEER E. T. Stinson (NAME) 52-32609 (REGISTRATION NUMBER)

FIRM Burns & McDonnell

ADDRESS 2600 E. 63rd St. - P. O. Box 173

Kansas City, Missouri 64141 PHONE NUMBER 816-333-4375

SIGNATURE E. T. Stinson

7-160-0230-1

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5.2 Certificate by Applicant(s)

I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application.

I/We hereby agree to conform with the Standard Conditions and with any other Special Conditions made part of the Permit.

5.2.1 NAME OF APPLICANT FOR PERMIT TO CONSTRUCT Southern Illinois Power Cooperative, Inc.

Route 4 Box 255 (STREET) Marion, (CITY) Illinois (STATE) 62959 (ZIP CODE)

SIGNATURE _____ DATE _____

TITLE Executive Vice President and General Manager

5.2.2 NAME OF APPLICANT FOR PERMIT TO OWN AND OPERATE Southern Illinois Power Cooperative, Inc.

Route 4 - Box 255, (STREET) Marion, (CITY) Illinois (STATE) 62959 (ZIP CODE)

SIGNATURE _____ DATE _____

TITLE Executive Vice President and General Manager

5.3 Attested (Units of Government) N/A

DATE _____ SIGNATURE _____ TITLE _____

(CITY CLERK, VILLAGE CLERK, SANITARY DISTRICT CLERK, ET CETERA)

5.4 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or his duly authorized representative.

5.5 Certificate by INTERMEDIATE SEWER OWNER N/A

I hereby certify that the sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3 of the Regulations as adopted by the Illinois Pollution Control Board.

Name of sewer system to which this project will be tributary:

_____

NAME OF SEWER SYSTEM OWNER _____

_____

STREET CITY STATE ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

5.6 Certificate by Waste Treatment Works Owner N/A

I hereby certify that the treatment works to which this project will be tributary have adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3 of the Regulations as adopted by the Illinois Pollution Control Board.

Name and location of waste treatment works to which this project will be tributary: _____

_____

TREATMENT WORKS OWNER _____

_____

STREET CITY STATE ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

1932016

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FOR IEPA USE:
LOG # 5732-77.
DATE RECEIVED:

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

SCHEDULE J INDUSTRIAL TREATMENT WORKS CONSTRUCTION OR PRETREATMENT WORKS

1. NAME AND LOCATION:

1.1 Name of project Southern Illinois Power Cooperative, Inc. Marion Plant

1.2 Plant Location

1.2.1	Quarter Section	Section	Township	Range	P.M.
	N.E.	26	10S	2E	3

1.2.2 Latitude 37 ° 37 ' 31 "North
Longitude 88 ° 57 ' 00 "West

1.2.3 Name of USGS Quadrangle Map (7.5 or 15 Minutes) Goreville (15) Marion (15)

2. NARRATIVE DESCRIPTION AND SCHEMATIC WASTE FLOW DIAGRAM: (see instructions)

Discharge 001 - Flyash Pond #3 discharge. This is the flyash holding basin and is directly upstream and in tandem to the discharge pond (001). Function is to settle solids out and let water flow to 001.

2.1 PRINCIPAL PRODUCTS: electricity

2.2 PRINCIPAL RAW MATERIALS: coal

3. DESCRIPTION OF TREATMENT FACILITIES:

3.1 Submit a flow diagram through all treatment units showing size, volumes, detention times, organic loadings, surface settling rate, weir overflow rate, and other pertinent design data. Include hydraulic profiles and description of monitoring systems.

3.2 Waste Treatment Works is: Batch x, Continuous ____; No. of Batches/day /, as required No. of Shifts/day 3

3.3 Submit plans and specifications for proposed construction.

3.4 Discharge is: Existing x; Will begin on ____

4. DIRECT DISCHARGE IS TO: Receiving Stream x Municipal Sanitary Sewer ____, Municipal storm or municipal combined sewer ____. If receiving stream or storm sewer indicated complete the following:

Name of receiving stream South fork of Saline River, tributary to Saline River;
tributary to Ohio River; tributary to Mississippi River.

5. Is the treatment works subject to flooding? If so, what is the maximum flood elevation of record (in reference to the treatment works datum) and what provisions have been made to eliminate the flooding hazard? no

6. APPROXIMATE TIME SCHEDULE: Estimated construction schedule:

Start of Construction October 1, 1977 Date of Completion November 30, 1977
Operation Schedule Not applicable; Date Operation Begins immediately after construction
100% design load to be reached by year 1978

WPC-158

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7. DESIGN LOADINGS

7.1 Design population equivalent (one population equivalent = 100 gallons per day sewage flow containing 0.17 pounds of BOD_5 and 0.20 pounds of suspended solids;

BOD N/A ; Suspended Solids N/A ; Flow N/A .

7.2 Design Average Flow Rate Flow is intermittent. Pond acts as surge MGD.

7.3 Design Maximum Flow Rate 2.9 basin so that control can be maintained. MGD.

7.4 Design Minimum Flow Rate 0.0 MGD.

7.5 Minimum 7-day, 10-year low flow 0.0 cfs 0.0 MGD.

Minimum 7-day, 10-year flow obtained from U.S.D I Geological Survey Report for Il. Water Resources Data. Data taken from Gauging Sta. located 4-1/2 miles S.W. of Carrier Mills, Il. on Hwy. 45 (SW 1/4 of NE1/4 of Sec. 20, T105, R3E Min. Daily Discharge 29-30 July 66 = 0.6 cfs Max. Daily Discharge 28 April 66 = 2940 cfs

7.6 Dilution ratio N/A ; .

8. FLOW TO TREATMENT WORKS (if existing):

8.1 Flow (last 12 months)

8.1.1 Average Flow 0.335 MGD *

8.1.2 Maximum Flow 0.452 MGD *

8.2 Equipment used in determing above flows Pumping times and ISCO Model 1700 Flow meter w/rectangular weir.

9. Has a preliminary engineering report for this project been submitted to this Agency for Approval?

YES ___ NO X If so, when was it submitted and approved. Date Submitted

Certification#

Dated

10. List Permits previously issued for the facility: Permit #1969-EB-707 (Discharge 001) NPDES IL 0004316

11. Describe provisions for operation during contingencies such as power failures, flooding, peak loads, equipment failure, maintenances shut-downs and other emergencies. This pond will be used for back up treatment only. The existing flows will be discontinued because of the SO_2 scrubber which will produce a stable product. It will contain our flyash, bottom ash, and spent limestone slurry cake from the SO_2 scrubber. When the scrubber malfunctions ashes must be sluiced in the conventional manner as we are doing now.

12. Complete and submit Schedule G if sludge disposal will be required by this facility.

13. WASTE CHARACTERISTICS: Schedule N must be submitted.

14. TREATMENT WORKS OPERATOR CERTIFICATION: List names and certification numbers of certified operators:

Carl M. Stafford, Industrial Sewage Treatment Works Operator

* Values given are actual. These values taken from Daily Monitoring Reports over past 8 months.

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FOR IEPA USE:
LOG #: 235-732-77
DATE RECEIVED:

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

SCHEDULE N WASTE CHARACTERISTICS Discharge 001

1. Name of Project Southern Illinois Power Cooperative, Inc. (Marion Station)

2. FLOW DATA

	EXISTING	PROPOSED-DESIGN
2.1 Average Flow (gpd)	320,000	34,500
2.2 Maximum Daily Flow (gpd)	500,000	2,900,000

2.3 TEMPERATURE

Time of year	Ave. Intake Temp. F	Avg. Effluent Temp. F	Max. Intake Temp. F	Max. Effluent Temp. F	Max. Temp. Outside Mixing Zone F
SUMMER	75	76.0	80	81	82
WINTER	45	46.0	48	49	50

2.4 Minimum 7-day, 10-year flow: 0.0 cfs 0.0 MGD.

2.5 Dilution Ratio: N/A ;

2.6 Stream flow rate at time of sampling N/A cfs N/A MGD.

3. CHEMICAL CONSTITUENT Existing Permitted Conditions X ; Existing conditions ; Proposed Permitted Conditions X .

Type of sample: grab (time of collection); X composite (Number of samples per day)

(see instructions for analyses required)

All effluent quality parameters are to be in accordance with N.P.D.E.S. Permit Il. #0004316 (NTF=Not Treated For)

Constituent	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l)	Max.	UPSTREAM SAMPLES (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Ammonia Nitrogen (asN)					
Arsenic (total)					
Barium					
Boron		2.0	5.0	< 1	0.1
BOD_5		NTF	NTF	NTF	
Cadmium					
Carbon Chloroform Extract					
Chloride					
Chromium (total hexavalent)		NTF	NTF		
Chromium (total tribalent)		NTF	NTF		
Copper		NTF	NTF		
Cyanide (total)					
Cyanide (readily released @150°F & pH 4.5)					
Dissolved Oxygen					
Fecal Coliform					

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	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l)	Max.	UPSTREAM (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Fluoride					
Hardness (as $CaCO_3$)					
Iron (total)			2.0	0.6	0.4
Lead					
Manganese				0.40	0.12
MBAS					
Mercury					
Nickel					
Nitrates (asN)					
Oil & Grease (hexane solubles or equivalents)			15.0		
Organic Nitrogen (as N)					
pH			6.0-9.0	7.5	7.3
Phenols					
Phosphorous (as P)					
Radioactivity					
Selenium					
Silver					
Sulfate					
Suspended Solids			15.0	36	
Total Dissolved Solids			*	200	110
Zinc					
Others					

* Total Dissolved Solids will not be increased more than 750mg/L above the background T.D.S.

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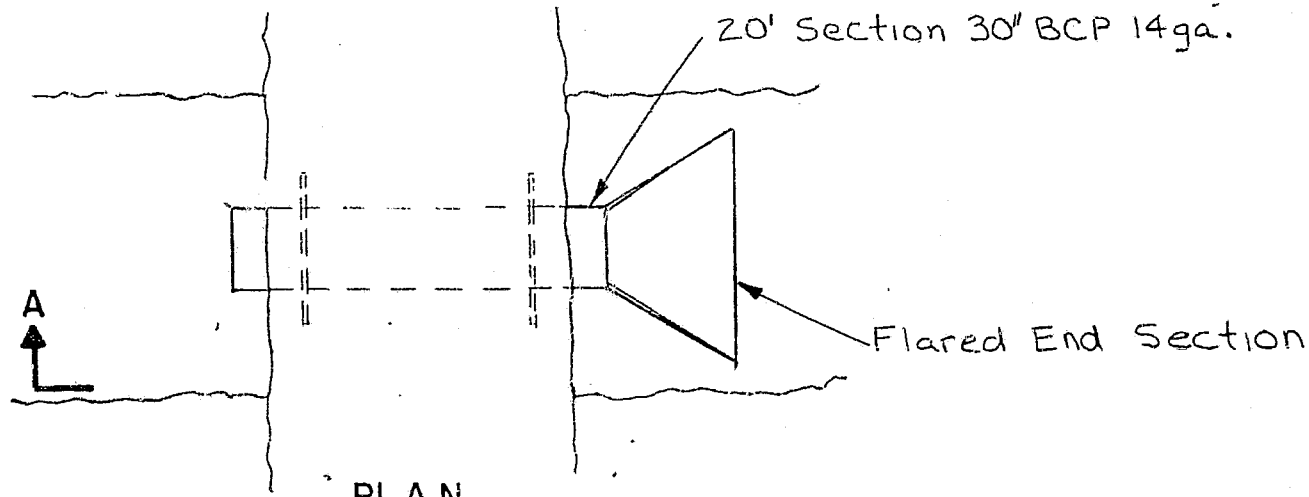
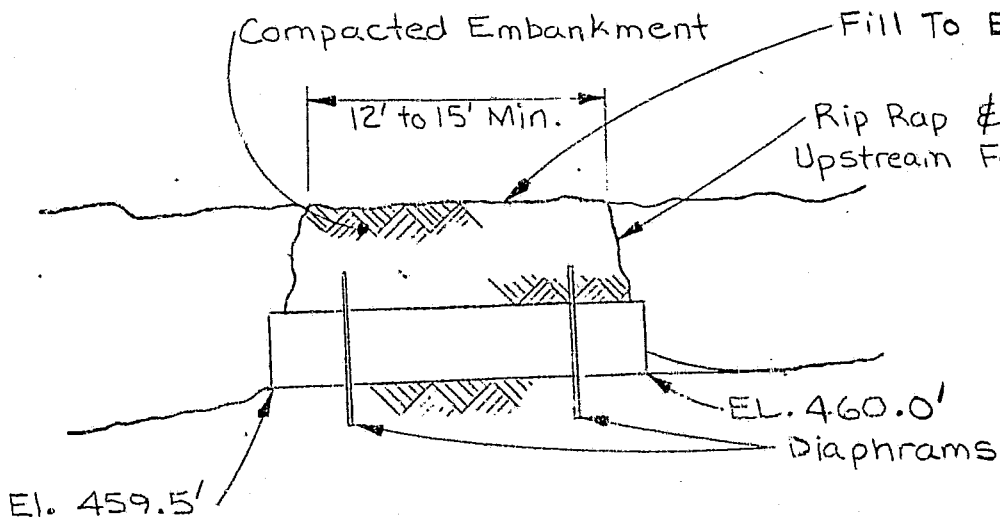


PLAN



SECTION A—A

BG

SO. ILLINOIS POWER CO-OP MARION, ILL.		
DRAINAGE DETAIL CONTRACTORS ACCESS ROAD		
SCALE 1" = 10'	W.O. 77-1644	DATE 10-13-77
DRAWN SBS		DWG. NO. A-264

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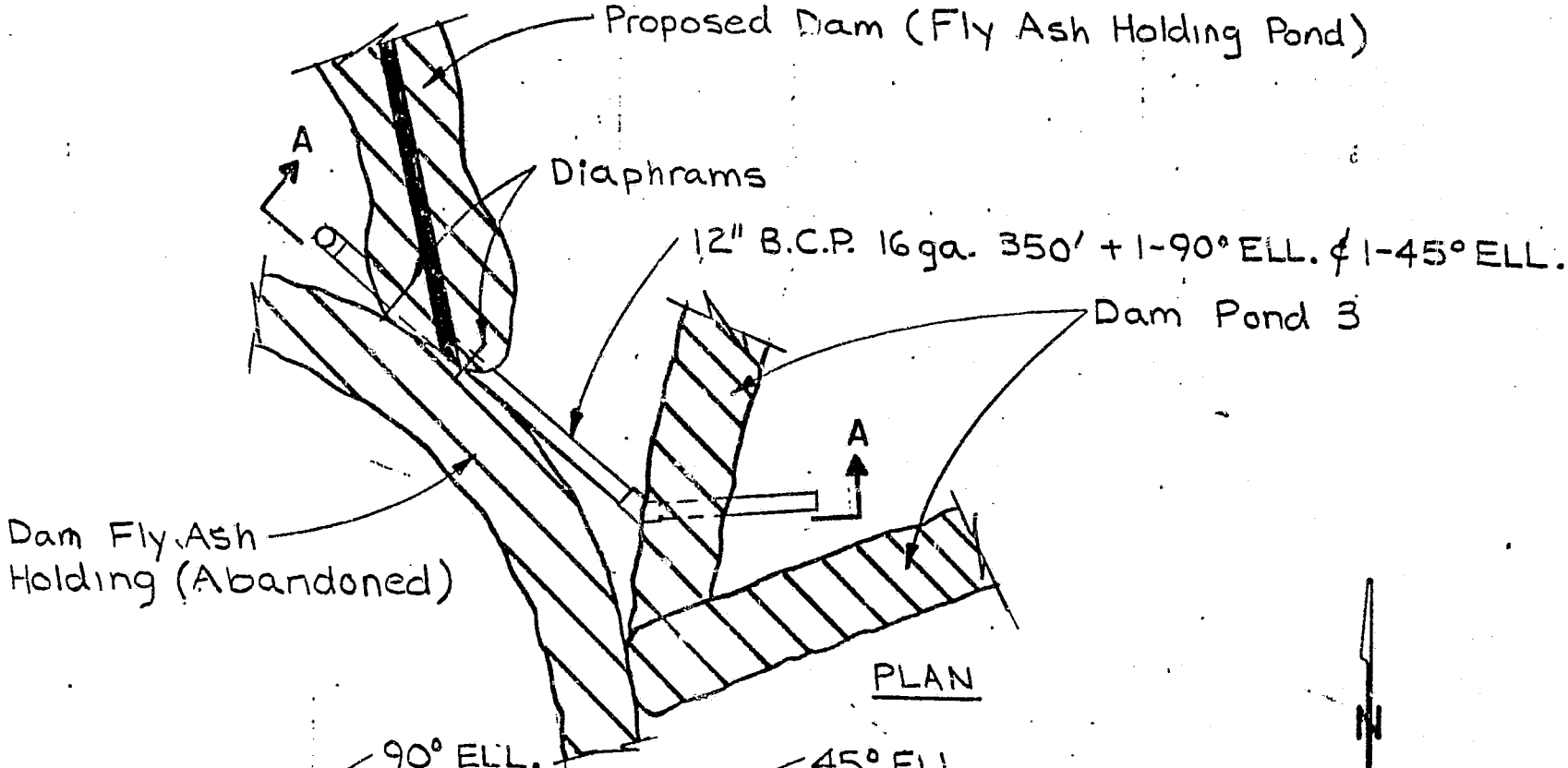
1932021624



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SO. ILLINOIS POWER CO-OP
MARION, ILL.

DRAINAGE DETAIL PROPOSED FLY ASH HOLDING

SCALE None	W.O. 77-1644	DATE 10-13-77
DRAWN SBS		DWG. NO. A-263

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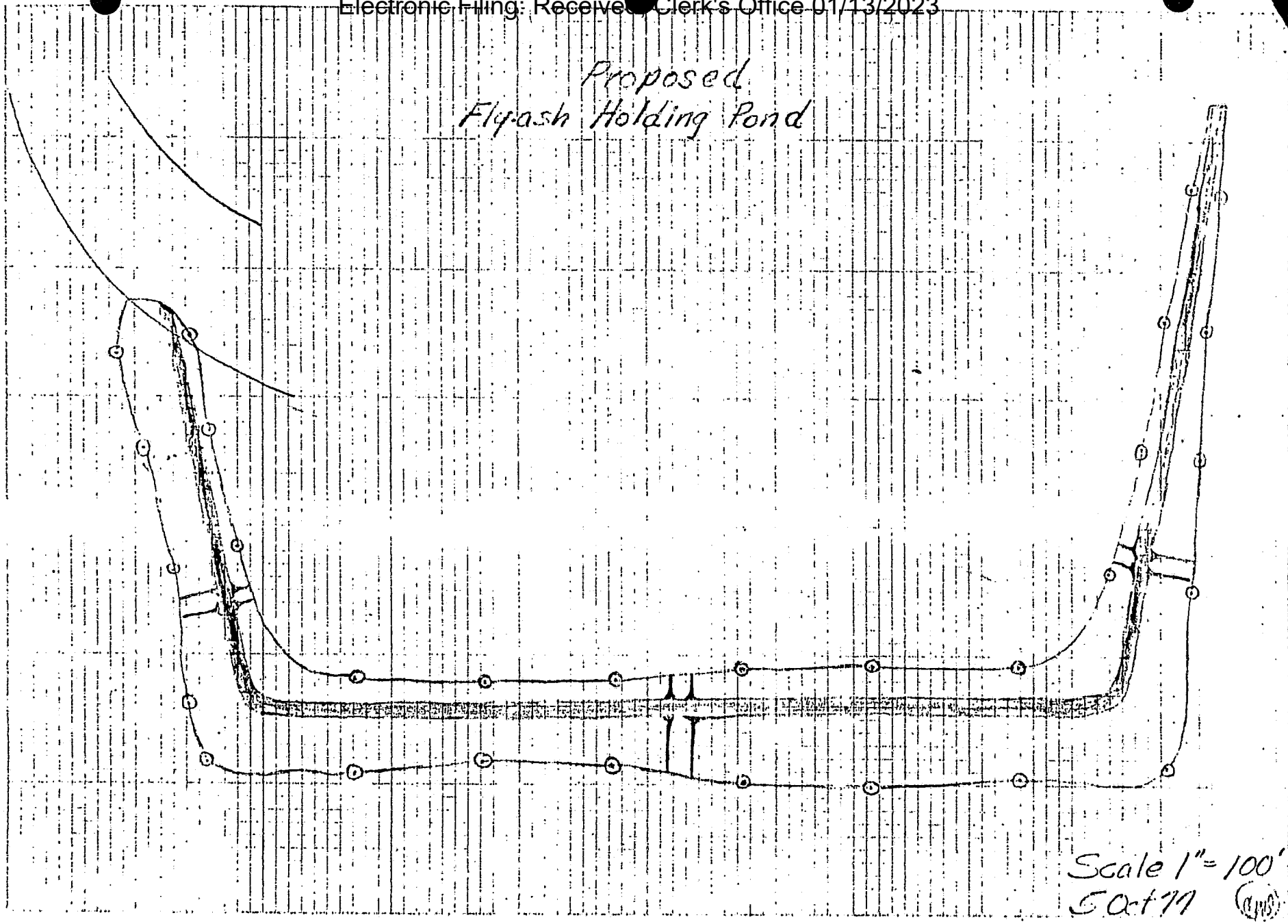
19320001625



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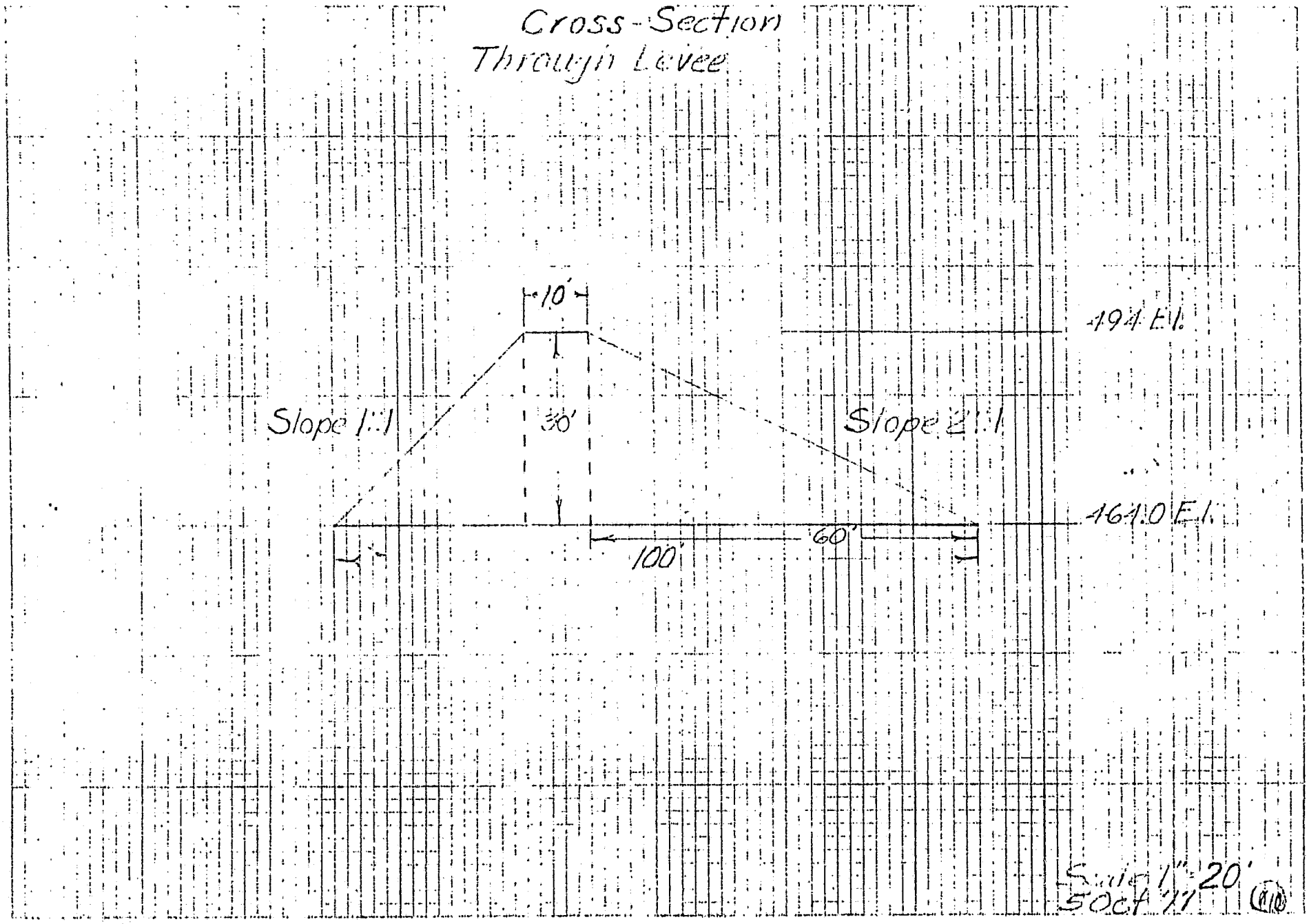

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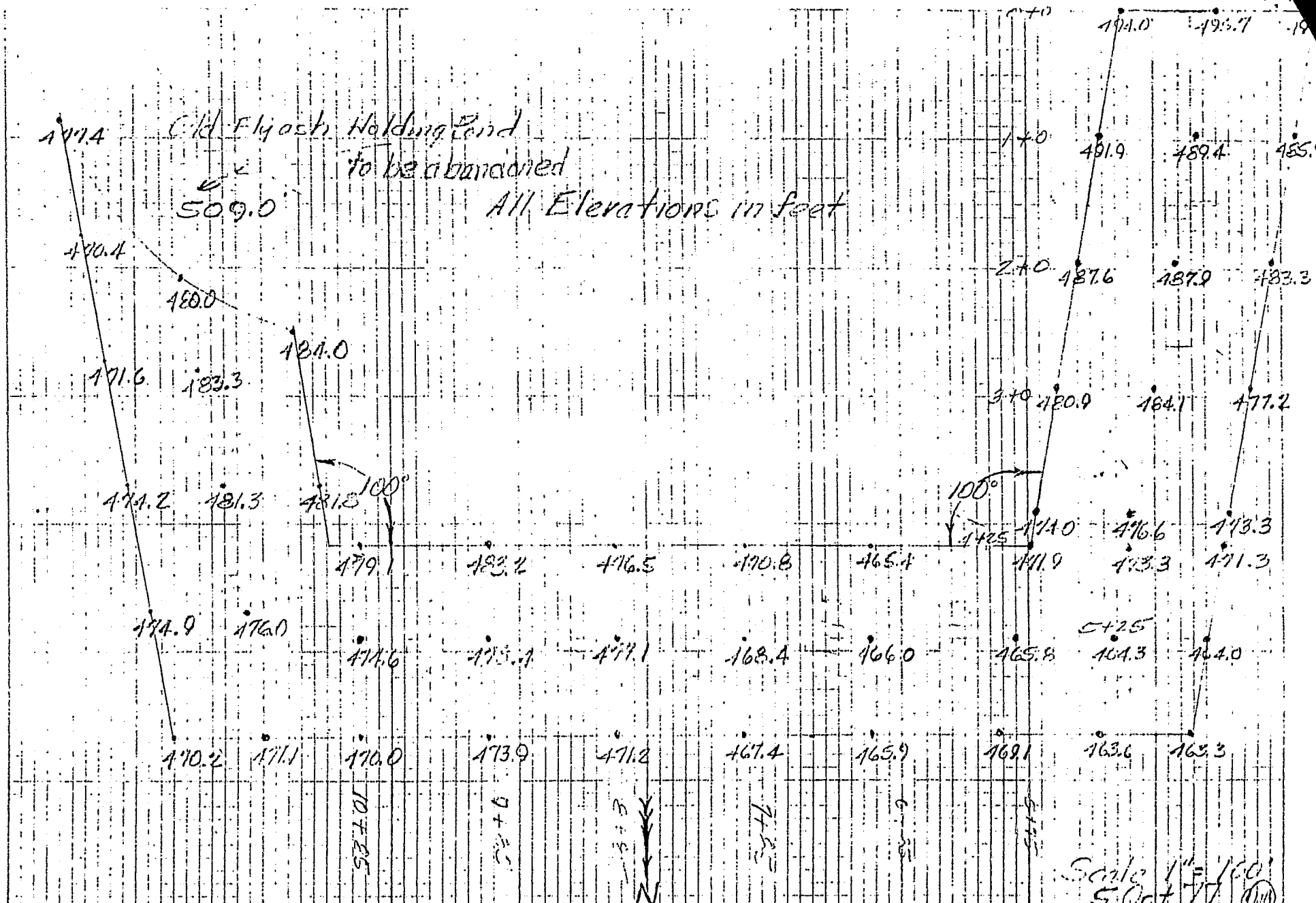

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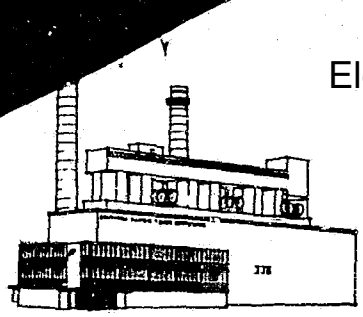

SOUTHERN ILLINOIS POWER CO-OP.

RT. 4 - BOX 255 • MARION, ILLINOIS 62959 • AREA CODE 618 / ~~993-8123~~ 964-1448

October 17, 1977

RECEIVED
OCT 19 1977
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
STATE OF ILLINOIS

Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section
2200 Churchill Road
Springfield, Illinois 62706

Gentlemen:

Enclosed please find our application for permit to construct and operate an impoundment. Please note the necessary forms have been completed and enclosed along with our Drawing G-212.

If there are any questions please do not hesitate to contact me.

Very truly yours,

Thomas Clevenger
Executive Vice President and
General Manager

TC/vw

Enclosures

5732-17

RECEIVED
OCT 19 1977
IEPA-DWPC-Records - SPFD

2016032600139

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PLAN MICROFILM "JACKET" INFORMATION

1. Division Code W
2. FIPS County Code 199
3. City/Township Code 055
4. Governing Body Code 1676A
5. Permittee Name

SO ILL POWER COOP - NEW ASH POND

6. File Division 04
7. IEPA Permit Number 1977EN5732--

CROSS-REFERENCE INFORMATION

8. Governing Body Name

SOUTHERN ILLINOIS POWER CO-OP

9. F/S/P Code B1525

NPDES NO. IL0004316

DWPC Records Unit
RU-6 (11-77)

05100000182

MICROFILM

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Southern Illinois Power Coop, Inc — New Ash Pond
Log # 5732-77
Permit # 1977-EM-5732

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Southern Illinois Power Cooperative

11543 Lake of Egypt Road
Marion, IL 62959
(618) 964-1448 Fax (618) 964-1867

January 22, 2020

Illinois Environmental Protection Agency
Fiscal Services #2
1021 N. Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: SIPC Coal Combustion Residuals Surface Impoundment Fee; Acct. # W1998600002

Dear IEPA Accounts Receivable:

This letter responds on behalf of Southern Illinois Power Cooperative ("SIPC") to the Agency's fee invoice received on December 17, 2019, requesting that SIPC pay a fee for nine claimed Coal Combustion Residuals ("CCR") surface impoundments at Marion Station. The invoice seeks payment of a fee totaling $675,000.00 pursuant to Section 22.59(j) of the Illinois Environmental Protection Act ("Act"), which authorizes the Agency to assess each owner or operator an initial fee of "$75,000.00 for each CCR surface impoundment that ha[s] not completed closure." 415 ILCS 5/22.59(j)(1). For the reasons addressed below, which we have initially discussed with Illinois Environmental Protection Agency via telephone conference on Tuesday, January 14, 2020, eight of the units identified in the invoice are not subject to a fee, either because they do not meet the definition of a regulated CCR surface impoundment or they are used exclusively for the beneficial use of CCRs and are thus exempt from Section 22.59. Accordingly, SIPC is enclosing with this letter a check in the amount of $75,000 for Emery Pond, the status of which SIPC does not contest.

Each of the specific units as identified in the Agency's invoice is described in more detail below. We appreciate the Agency's consideration of this information.

Ponds 1 and 2: These units are not regulated CCR surface impoundments. Instead, SIPC has always used these units to temporarily collect bottom ash prior to selling it for beneficial reuse as roofing material. The collected bottom ash material is regularly removed from the units, almost always within one week, and shipped offsite for beneficial use. The bottom ash is hard and crystalline, not readily subject to leaching. In fact, the results of a recent water grab sample from one of these units showed non detect for all metals except barium, and the barium result was well below the Class I groundwater quality standard. A copy of the grab sample result is attached to this letter. This makes it ideal for beneficial use, and further reduces the risk of any potential impact while being collected at the site for off-site sale and shipment.

Touchstone Energy®
The power of human connections

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The Illinois Environmental Protection Act (Act) defines "coal combustion by-product" as "coal combustion waste when used beneficially in any of the following ways: . . . [t]he use of CCB as a raw ingredient or mineral filler in the manufacture of the following commercial products . . . asphalt or cementious roofing products." 415 ILCS 5/3.135(a)(2). When CCRs are used in this way, the material no longer constitutes a solid waste under the Act. Moreover, no notification to IEPA is required to conduct this activity. 415 ILCS 5/3.135(a-5)(C) ("Notification shall not be required for users of CCB for purposes described in item[] . . . (a)(2) . . . ."). SIPC sells all of the bottom ash collected from "Ponds" 1 and 2 for use as roofing materials, regularly excavating the units to the extent possible. This practice meets the definition of CCB under Section 3.135(a)(2).

The Act and federal rules encourage the beneficial reuse of materials in Illinois, including CCBs. Therefore, exempting CCB activities from the provisions of Section 22.59 is consistent with not only the Act's legislative findings and the Act's definition of "CCR surface impoundment," which requires that the pond treat, store or dispose of material rather than facilitate its prompt reuse as CCB, but also the intent and applicability of the federal CCR Rule.

To be subject to RCRA and its implementing regulations, including the federal CCR Rule, a material must be a solid waste. Consistent with this principle, the CCR Rule "does not apply to practices that meet the definition of a beneficial use of CCR." 40 CFR §257.50(g). The beneficial use exemption (40 CFR §257.50(g)) reflects EPA's May 2000 regulatory determination that it is not necessary to federally regulate the beneficial use of CCR. 65 Fed. Reg. 32213 (May 22, 2000).

Like the federal CCR Rule, a material must constitute a solid waste to be subject to Title V of the Act (Land Pollution and Waste Disposal) or draft proposed Part 845 regulations under Subtitle G of the Illinois Administrative Code (Waste Disposal).[1] Indeed, the Agency's December 2019 draft proposed Part 845 regulations specifically exempt the beneficial use of CCRs from coverage under the rules. Proposed 35 IAC 845.100(f). They define "beneficial use of CCR" as CCR that meets the CCB definition under the Act and the federal CCR rule's beneficial use definition. Draft Proposed 35 IAC 845.120. CCBs are not solid wastes under the Act or the federal rules. Accordingly, "Ponds" 1 and 2 are exempt from regulation under Section 22.59 of the Act and draft proposed Part 845 regulations and SIPC should not be invoiced for these two units as CCR surface impoundments.

Ponds A-1 and B-3: No discharges to these former ponds occurred after 2003. Prior to that time, Pond A-1, but not B-3, received direct CCR discharges. Pond A-1 was taken out of service as a CCR surface impoundment in connection with the Fluidized Bed Boiler in 2003, and all ash from Pond A-1 was removed and landfilled prior to October 14, 2015 with IEPA oversight. CCR was never directly discharged to Pond B-3. Pond B-3 served as a wastewater treatment pond. Pond B-3 received water from Pond A-1, and that water may have contained, if anything, *de minimis* amounts of CCR prior to discharge through Outfall 005. The results of groundwater samples taken from various locations in Pond B-3 in 2017 were all below Class I groundwater quality standards.

[1] Note, the Agency's draft regulatory proposal has not yet been filed with the Illinois Pollution Control Board as of the date of this letter.

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SIPC breached the dams on both Pond A-1 and B-3 to ensure no water could accumulate, and neither unit is currently capable of holding an accumulation of CCR or liquids. Sediment samples taken in 2012 within the Pond A-1 footprint showed very low levels of extractable constituents at that time. Additional sediment samples taken in the area of the former Ponds A-1 and B-3 in 2017 again confirmed very low levels of extractable constituents. The sediment sample results from A-1 and B-3 and a map showing the locations where sampling occurred are attached to this letter.

The Act 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." 415 ILCS 5/3.143. Because Ponds A-1 and B-3 cannot treat, store or dispose of CCR, the units do not meet the definition of CCR surface impoundment. Further, these former ponds would not be regulated under the express language of the Agency's December 2019 proposed rules. These former ponds clearly are not new ponds. Nor are they "existing" or "inactive" ponds as defined by the proposed state rules because CCR was removed from former Pond A-1 prior to October 2015, CCR was not placed in Pond B-3 prior to that date and CCR was not placed in either pond after that date.

Accordingly, SIPC should not be invoiced for these two former units.

South Fly Ash Pond, Ponds 3, 4 and 6: Though originally designed to hold an accumulation of CCR and liquids (and is named accordingly), South Fly Ash Pond has never been used to receive fly ash or other CCR. Rather, the South Fly Ash Pond is a wastewater treatment pond that receives only discharge water from Emery Pond. SIPC constructed the South Fly Ash Pond for additional capacity as Pond A-1 neared the end of its useful life. However, prior to discharging fly ash to the South Fly Ash Pond, SIPC switched to dry handling and no longer needed it to treat, store, or dispose of CCR. The South Fly Ash Pond is the first pond after Emery Pond in a series of ponds through which water flows before discharging through outfall 002. The other ponds in this system in flow order after the South Fly Ash Pond are Ponds 3, 6 and 4. The ponds in the system are connected by pumps or gravity flow. As a first step in this system, water from Emery Pond is pumped to the higher elevation South Fly Ash Pond.

At most, the South Fly Ash Pond receives *de minimis* amounts of CCR in the flow it receives from Emery Pond. Even if *de minimis* amounts of CCR are present in the South Fly Ash Pond as a result of water pumped from Emery Pond, that does not make the pond a regulated CCR surface impoundment subject to a fee under the Act.

Both the Act and the Agency's proposed regulations have the same definition of "CCR surface impoundment," which is copied from the federal CCR regulations. Compare definitions in 40 CFR 257.53, 415 ILCS 5/3.143 and proposed regulation 35 IAC 854.120. Thus, a pond that is not a CCR surface impoundment under the federal definition, should not be considered a CCR surface impoundment under the same state definitions.

Under U.S. EPA's guidance, the presence of a *de minimis* amount of CCR in a pond does not create a CCR surface impoundment. U.S. EPA has stated in the CCR Rule Preamble that the rule is intended to address risks from only those surface impoundments with certain characteristics. "Specifically, these are

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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 CCRs are unlikely to present the significant risks this rule is intended to address." 80 Fed. Reg. at 21357 (Apr. 17, 2015).

U.S. EPA further explained in the CCR Rule Preamble that the rule was not meant to capture low-risk units like process water or cooling water ponds because they will not contain the significant CCR quantities that give rise to the risks modeled in its assessment. According to U.S. EPA, 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. *Id.*

South Fly Ash Pond has not received any CCR directly from plant operations. Instead, this is a wastewater pond that has received *de minimis* CCR, if any, in water pumped from Emery Pond as part of a wastewater pond system. Under the relevant definitions and U.S. EPA guidance, this unit is not a regulated CCR surface impoundment and the assessment of an initial fee for this unit was in error.

Ponds 3, 4 and 6 also are wastewater treatment ponds through which water from the South Fly Ash Pond eventually flows before discharging through outfall 002. They are not designed or constructed to hold an accumulation of CCR and liquids, and no CCR is directly placed into these ponds. These three ponds are even further removed from Emery Pond than the South Fly Ash Pond, and thus any CCR in these ponds from the water that originated from Emery Pond is even more *de minimis*.[2] Because Ponds 3, 4, and 6 do not treat, store or dispose of CCR within the meaning of the relevant definitions, the units are not regulated CCR surface impoundments and the assessment of an initial fee for these units was in error.

Emery Pond: Emery Pond no longer receives CCR discharges, but it has been considered a CCR surface impoundment due to prior activity. SIPC is currently in discussions with the Agency regarding plans to close or retrofit Emery Pond.

Based on the above discussion, SIPC contests the fees assessed for eight of the nine units. SIPC does not object to the requested fee of $75,000 for Emery Pond, and has enclosed a check for this amount. We hope to continue working with you, providing more information where possible, to resolve these issues. If the Agency has questions at any time, please do not hesitate to call me at 312-258-5550.

[2] No sediment samples were taken from the South Fly Ash Pond or Ponds 3, 4, or 6. Federal and state rules do not require SIPC to sample sediments in wastewater treatment ponds, and the federal CCR Rule does not define a CCR surface impoundment as exceeding minimum constituent levels in sediment.

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Best

Wendell Watson

Cc: Darin LeCrone
Steve Bonebrake
Amy Antoniolli

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EXHIBIT

VV

Southern Illinois Power Cooperative

Closure and Decontamination Completion Report for Emery Pond at Marion Power Station

Illinois Administrative Code 35 Sections 845.740(e) and 760(e)

SIPC has completed the closure of Emery Pond by removal. The documents attached to this report confirm completed closure and decontamination activities and support the certification of closure and decontamination. CCR removal, decontamination and disposal activities were completed in general accordance with 40 CFR Section 257.102. To comply with federal deadlines, removal, decontamination and disposal of CCR from the former Emery Pond occurred prior to approval of the closure plan submitted to IEPA pursuant to VN negotiations and prior to the effective date of 35 Illinois Administrative Code 845 and thus prior to notice of later adopted Part 845 requirements that became applicable to closures performed after the effective date, but CCR removal and decontamination activities were generally consistent with Part 845 as later adopted and the Emery Pond closure plan as well. The following documents, which confirm completion of the Emery Pond closure and decontamination activities, are attached to this report:

A) Engineering and hydrology reports:
    a. Clarida & Ziegler Engineering Co. CQA reports that document the daily and weekly activities during closure, “SIPC Emery Pond Project #20091 On Site Inspection and QAC”.
    b. Holcomb Foundation Engineering Reports, “Daily Field Report Notes”.
B) Photographs showing pre-project, excavation, and post-excavation views of the Emery Pond site.
C) Written summary in Attachment C of applicable closure requirements and completed activities as set forth in the closure plan and Part 845.
D) Other information relied on to support closure in compliance with the rules and plans, and in making the related closure certifications
    a. Topographic diagrams showing the pre and post excavation elevations and amount of material removed from Emery Pond and the Gypsum Loadout Area.
    b. Documentation on the installation of a geo-membrane for the non-CCR storm water basin that replaced Emery Pond. NOTE – This is not a retrofit since the new storm water basin is not a CCR impoundment.
    c. Disposal manifests showing amounts of material removed from the Emery Pond site and transported to Perry Ridge Landfill, which is a licensed landfill for storage and disposal of RCRA wastes.
    d. Daily weather observations during closure activities.
E) Decontamination and Closure certification by a qualified professional engineer

Attachment A:

SIPC Emery Pond Project #20091 On Site Inspection and QAC and Daily Field Report Notes

CLARIDA & ZIEGLER ENGINEERING CO.
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410 North Court Street / P.O. Box 937 / Marion, Illinois 62959 / Telephone (618) 993-6411
FAX: (618) 993-6750

SIPC EMERY POND PROJECT #20091
ON SITE INSPECTION & QAC

01-11-21

On Site Pre-Construction Meeting
SIPC – Wendell Watson, Jason McLaurin
Clarida & Ziegler Eng.– Patrick Devine, David Rix
06 – Environmental – Cody Lonas

01-11/01-17

- 06 – ENV – Prepped clay soil berm
- 06 - ENV – Set up GPS coordinates using C&Z Eng. Control points
- Reviewed scope of work with SIPC & 06-ENV
- Started CCR material removal
- HFE (Holcomb Foundation Engineering) on-site for soil sample
- Set up plan for controlling water inflow to project area
- Verified that SIPC will be providing sub-drain dewatering pumps

01-18/01-24

- 06-ENV – brought in additional excavation & hauling equipment
- 06-ENV – Intake structure – Box culvert sections delivered
- 06-ENV – Continued site dewatering
- 06-ENV – Continued CCR removal & relocation
- 06-ENV – Completed CCR removal
- SIPC, C&Z Eng., 06-ENV, & HFE on site 01/20 to inspect CCR removal. Determined that CCR material has been removed.
- C&Z Eng. Surveyor on site to profile excavated area (see report)
- 06-ENV – Started backfill & compaction
- HFE – onsite to make compaction tests (see report) 01/22 & 23

01-25/01-31

- 06-ENV – Continued with dewatering site
- 06-ENV, C&Z Eng, SIPC – conferred & identified existing drain pipe that will be incorporated into pond liner.
- 06-ENV continued with placement & compaction of backfill
- HFE on-site to make compaction test. (see reports) 01/27, 28, 29

02-01/02-07

- 06-ENV continued with dewatering site
- 06-ENV continued with placement & compaction of backfill
- 06-ENV requested an elevation change for bottom of pond at west end
- C&Z Eng. received approval from Hanson Eng. for elevation change
- 06-ENV started excavation for sub-drain system
- Note – two days work stopped due to rain

02-08/02-14

- 06-ENV continued with dewatering
- 06-ENV continued with placement & completion of backfill
- 06-ENV completed sub-drain installation
- HFE onsite to make compaction tests (02/09, 11, 12) see reports
- HFE onsite to collect samples for Hydraulic Conductivity Testing (02/11)

02-15/02-21

- Note: Due to weather conditions, No work this week

02-22/02-28

- 06-ENV dewatered & cleaned up site
- 06-ENV continued with dewatering
- 06-ENV continued with placement & compaction of backfill material
- Note: some in place backfill was removed due to deterioration from weather
- HFE on site to make compaction tests; 02-24 & 02-26 (see reports)

03-01/03-07

- 06-ENV & continued dewatering
- 06-ENV & continued with placement & compaction of backfill
- 06-ENV & completed work on sub-drainage system risers
- HFE & onsite making compaction tests (03-04) see report
- Note: SIPC, Hansen Eng & IEPA discussed & concluded that additional aggregate backfill as previously proposed would not be needed on this project.
- Note: Work delayed again two days this week due to weather.

03-08/03-14

- 06-ENV continued with dewatering
- 06-ENV continued with placement & compaction of backfill
- 06-ENV installed intake structure (box culvert sections)
- HFE on site making compaction tests (03-08, 10)
- 06-ENV completed clay liner placement & compaction
- 06-ENV started smooth rolling of clay liner surface and misc. compaction preparation of HDPE liner placement.
- C&Z Eng. Surveyor on site to make final grade checks (3-11 – see report)
- Note: No work 03-12 thru 03-15 due to weather conditions.

03-15/03-21

- 06-ENV has started additional work on FGD storage area
- 06-ENV excavating FGD storage area
- 06-ENV continued with dewatering

03-22/03-28

- 06-ENV continued dewatering
- 06-ENV continued FGD storage area excavation

03-29/04-04

- 06-ENV continued with dewatering
- 06-ENV continued with FGD storage area excavation
- 06-ENV completed FGD storage area excavation
- C&Z Eng. Surveyor on site to profile/grade excavated FGD area

04-05/04-11

- 06-ENV revised start date of HDPE liner from 04-05 to 04-08.
- 06-ENV sub-contractor Donelson Concrete on site to work on sealing up intake structure connection to existing pump structure.
- 06-ENV continued with dewatering
- 06-ENV continued with FGD storage area backfilling
- 06-ENV Liner sub-contractor Geo-Synthetics representative on site
- 06-ENV Installed 24" HDPE drain pipe from abandoned junction box near west side of FGD area over to & through west end of pond wall.
- 06-ENV continued with smooth rolling of pond clay liner in prep for Geo-Synthetics liner installation.
- Geo-Synthetics crew on site to start prep work on liner installation.

04-12/04-18

- 06-ENV completed final rolling of clay liner
- 06-ENV started with 2'x2' trench for liner anchor around top perimeter of pond.
- 06-ENV started material placement & compaction of excavated FGD storage area
- Geo-Synthetics started installation of geomembrane (HDPE) liner.
- Geo-Synthetics made (4 ea.) destruct tests & patched test areas (all passed)
- Geo-Synthetics made continuous seam tests during geomembrane install
- Geo-Synthetics completed liner installation, cleaned site & demobbed equipment.

04-19/04-25

- 06-ENV completed placement & compaction FGD storage area
- 06-ENV completed backfill & compaction of liner anchor trench
- Donelson Concrete completed grouting & sealing of intake structure
- 06-ENV started site clean-up & demobilization of equipment

04-26/04-30

- 06-ENV completed misc. site clean-up, final grading, and punch list items.
- C&Z Eng. Surveyor on site (4-26) to make final grades on FGD storage area

05-01/05-31

- 06-ENV completed demobilization & clean-up
- 06-ENV seal coated existing pump structure
- Note: end of project documentation & report to be submitted when received & compiled.

The above report was compiled from Daily Book Project #20091

By David Rix_____

2091

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

Project No. H-19093
Project SIPC EMERY POND

Date 1-14-21
Page 1 of 1
DFR Sequence No. 1

DAILY FIELD REPORT NOTES

Project Location: Street, City, State	Client or Owner	General Contractor
LAKE OF EGYPT RD. MARION, IL	CLARIDA - ZEIGLER ENG.	
General Location	**Owner or Clients Representative**	**Sub-Contractor**
BORROW AREA	DAVE RIX	
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
SUNNY 50'S	DANIEL RUSSELL	

MET WITH DAVE RIX TO SAMPLE BORROW SITE AREA FOR PROCTOR SAMPLE.

SAMPLED BORROW AREA IN 4 DIFFERENT LOCATIONS TO OBTAIN 1 COMPOSITE SAMPLE

North

Reviewed By:

20091

Holcomb Foundation Engineering

Moisture - Density Relationship

Project: SIPC Emery Pond
Marion, Illinois

Location: Stockpile South of Coal Pile

Project No.: H-19093

Date: 1/18/21

Test Data ASTM D-698 (standard)

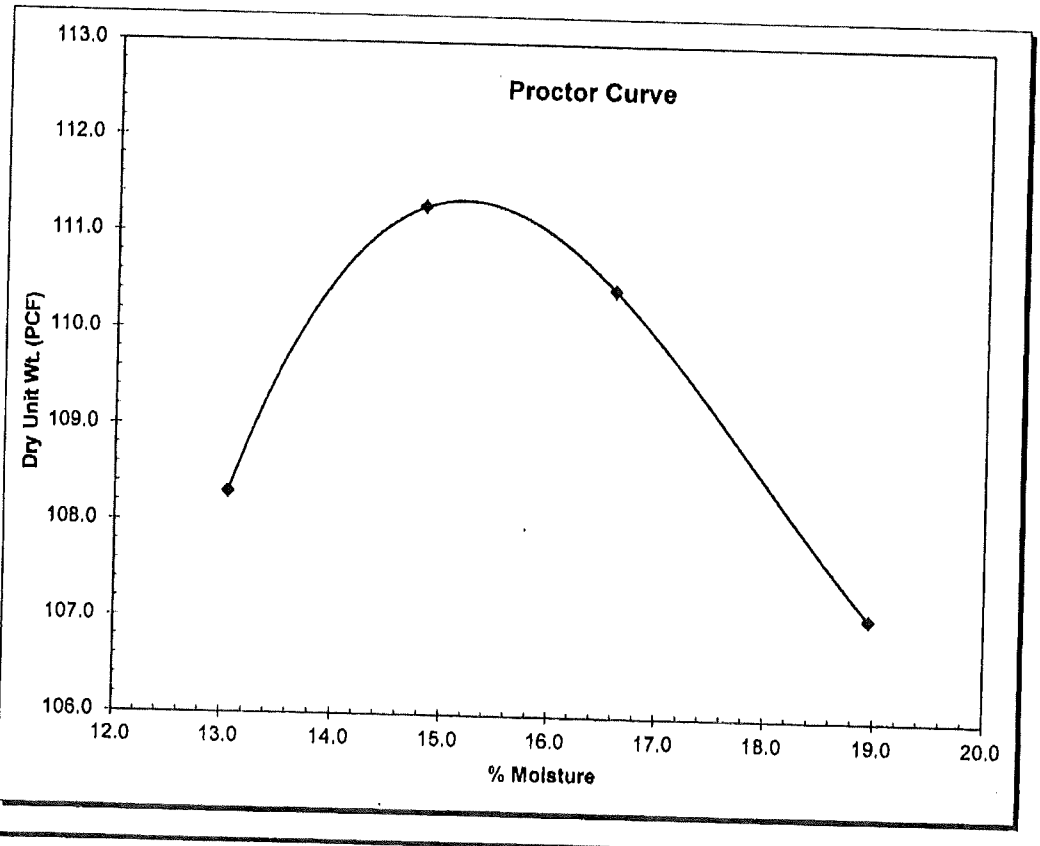
Proctor Test Results

Soil Classification: Brown Mottled Gray Silty CLAY

Maximum Dry Density (PCF) 111.4

Optimum Moisture Content (%) 15.1

Moisture Content (%)	Dry Unit Wt. (PCF)
13.0	108.3
14.8	111.3
16.6	110.4
19.0	107.1



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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

Permeability Tests Results

Emery Pond
Marion, Illinois

HFE File: H-19093
Date: 2/19/21

Location	Moisture Content (%) Before Test	Moisture Content (%) After Test	Dry Unit Weight (PCF)	Permeability (Cm./Sec.)
N.W. Slope	19.1	19.7	110.4	6.8 x 10-8

Permeability Tests performed in accordance with ASTM D-5084

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY J. HOLCOMB
062-042149
ILLINOIS

Expires 11-30-21

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

Project No. H-19093
Project SIPC CCR IMPOUNDMENT
Date 1/20/21
Page 1 of 1
DFR Sequence No. 2

DAILY FIELD REPORT NOTES

Project Location: Street, City, State	Client or Owner	General Contractor
LAKE OF EGYPT ROAD WILLIAMSON CO, IL	CLARIDA ENGR	06 ENVIRONMENTAL
General Location	**Owner or Clients Representative**	**Sub-Contractor**
EMERY POND - BOTTOM	DAVE RIX	MAY EXC
Weather/Temp. SUNNY ±40°	**Technician** STEVE MARCEC	**Superintendent or Supervisor** KYLE RAYMER - 06 ENV. JESSE MAY

CALLED TO SITE TO CHECK SOIL AT BOTTOM OF COAL COMBUSTION RESIDUALS IMPOUNDMENT (EMERY POND). CONTRACTOR HAD REMOVED MOST OF THE POND CONTENTS DOWN TO SOIL. CONTRACTOR WANTED VERIFICATION THAT CCR HAD BEEN REMOVED DOWN TO SOIL. SUGGESTED THAT HFE COULD RUN SOIL CLASSIFICATION TESTS i.e. PLASTICITY INDEX (ATTERBERG) AND GRAIN SIZE (HYDROMETER) TO PROVIDE AN ACCURATE CLASSIFICATION OF THE EXPOSED SOILS. THE PROBLEM WITH THIS WOULD BE THAT THE CCR WOULD ALSO HAVE THESE VALUES AND THE TESTS WOULD NOT PROVIDE A DEFINITIVE DIFFERENTIATION. HFE TECH SUGGESTED THAT A TEST FOR CHEMICAL COMPOSITION WOULD PROVIDE MORE USEFUL RESULTS. SOIL SAMPLES TAKEN BY HFE FOR TESTING IF REQUESTED.

North

Reviewed By:

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Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT
COMPACTION

Project No. H-19093
Project SIPC CCR Impoundment
Date 1/22/21
Page 1 of 1
DFR Sequence No. 3

Project Location: Street, City, State Lake of Egypt Rd. Williamson Co. IL	Client or Owner Clarida Engr	General Contractor 06 Environmental
General Location Emery pond	Owner or Clients Representative Dave Rix	Sub-Contractor May Exc.
Weather/Temp. 37 - 40 sunny	Technician S. Shin	Superintendent or Supervisor Kyle Raymer - 06Env. Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other
Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☒ ASTM D-698 ☐ Moisture Limits Yes ☒ No ☐ + 2 % - 2 %

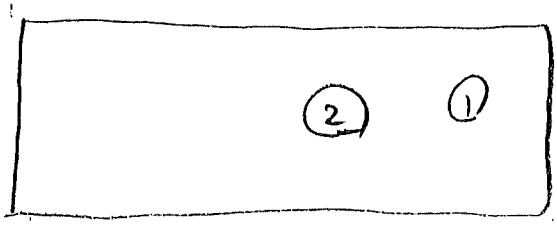
Troxler Serial # 24236 | Mode and Depth 4 -12" | Density Standard 1786 | Moisture Standard 635

Test #	1	2					
Location							
Elevation	1st lift →						
Dens Cnt	443	2031					
Wet Dens	114.8	121.4					
Mstre Cnt	174	182					
Moisture	15.5	16.3					
Opt Moisture	15.1	15.1					
% Moisture	15.6	15.5					
Std Dens	111.4	111.4					
Dry Dens	99.3	105.1					
% Comp	89.1	94.4					
Spec.	95	95					
Pass/Fail	FAIL	FAIL					

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

Two tests fail due to low density.



DN

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DAILY FIELD REPORT
COMPACTION

Project No. H-1903
Project SIPC CCR Impoundment
Date 1/23/21
Page 1 of 1
DFR Sequence No. 4

Project Location: Street, City, State Lake of Egypt Rd. Williamson, Co. IL	Client or Owner Clarida Engr.	General Contractor 06 Environmental
General Location Emery Pond	Owner or Clients Representative Dave RIX	Sub-Contractor May Exc.
Weather/Temp. 20's Sunny	Technician S. Shin	Superintendent or Supervisor Kyle Raymer - 06 Env Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other
Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ Moisture Limits Yes ☒ No ☐ + 2 % - 2 %

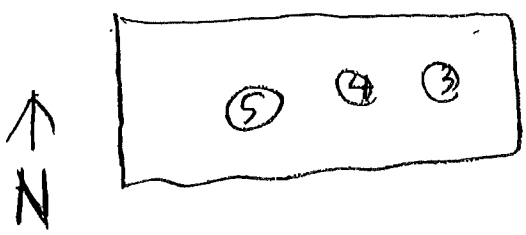
Troxler Serial # 24236 Mode and Depth 6" Density Standard 1785 Moisture Standard 6.3

Test #	3	4	5				
Location	Retest #1	Retest # 2					
Elevation	1st lift	→	→				
Dens Cnt	1587	1611	1519				
Wet Dens	121.1	120.3	122.9				
Mstre Cnt	170	166	184				
Moisture	15.0	14.7	16.4				
Opt Moisture	15.1	15.1	15.1				
% Moisture	14.2	13.9	15.4				
Std Dens	111.4	111.4	111.4				
Dry Dens	106.1	105.6	106.5				
% Comp	95.2	95.0	95.6				
Spec.	95	95	95				
Pass/Fail	pass	pass	pass				

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

Two retests and a test pass compaction requirements



Reviewed By:

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Carbondale, IL 62901
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DAILY FIELD REPORT
COMPACTION

Project No. H-19093
Project SIPC CCR Impoudment
Date 1/27/21
Page 1 of 1
DFR Sequence No. 5

Project Location: Street, City, State Lake of 57Pt Rd. Willamson CO, IL	Client or Owner Clarida Engr.	General Contractor 06 Environmental
General Location Emery pond	Owner or Clients Representative Dave Rix	Sub-Contractor MAX EXC.
Weather/Temp. 30's Snow	Technician S. Shim	Superintendent or Supervisor Kyle Rayner - 06 Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☒ No ☐ + 2 % - 2 %

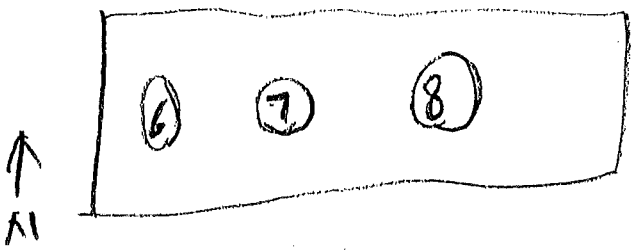
Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
66589	12"	2027	650

Test #	6	7	8				
Location	See Diagram →	→	→				
Elevation	2nd lift	→	→				
Dens Cnt	431	408	436				
Wet Dens	124.6	126.4	124.3				
Mstre Cnt	209	210	213				
Moisture	17.5	17.6	17.9				
Opt Moisture	15.1	15.1	15.1				
% Moisture	16.4	16.2	16.8				
Std Dens	111.4	111.4	111.4				
Dry Dens	107.1	108.8	106.4				
% Comp	96.2	97.7	95.5				
Spec.	95	95	95				
Pass/Fail	pass	pass	pass				

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

All tests pass compaction requirement.



Reviewed By:

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Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT
COMPACTION

Project No. H-191093
Project SIPC CCR Impoundment
Date 1/28/21
Page 1 of 1
DFR Sequence No. 6

Project Location; Street, City, State	Client or Owner	General Contractor
Lake of Egypt Rd. Williamson Co. IL	Clarida Engr.	DB Environmental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emery pond	Dave Rix	Max Exc.
Weather/Temp. 30's Sunny	**Technician** S. Shim	**Superintendent or Supervisor** Kyle Raymer - DB Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

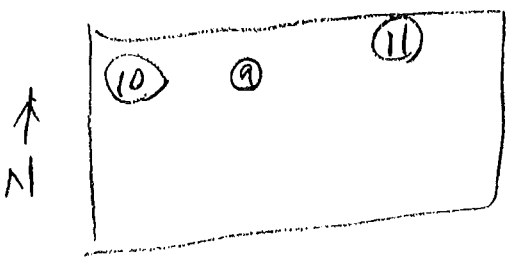
Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☒ No ☐ + 2 % - 2 %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
66589	12"	2040	590

Test #	9	10	11				
Location	See Diagram →						
Elevation	2nd lift →						
Dens Cnt	463	378	379				
Wet Dens	122.6	124.2	124.0				
Mstre Cnt	185	183	192				
Moisture	17.1	16.9	17.8				
Opt Moisture	15.1	15.1	15.1				
% Moisture	16.2	15.0	16.0				
Std Dens	116.4	111.4	111.4				
Dry Dens	105.5	112.3	111.3				
% Comp	95	100.8	99.9				
Spec.	95	95	95				
Pass/Fail	pass	pass	pass				

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions



None.
All tests pass compaction spec

Reviewed By:

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DAILY FIELD REPORT COMPACTION

Project No. H-19093
Project SIPC CCR IMPOUNDMENT
Date 1/29/21
Page 1 of 1
DFR Sequence No. 7

Project Location: Street, City, State	Client or Owner	General Contractor
LOE Rd. WILLIAMSON, CO. IL	CLARIDA ENG.	OB ENVIRONMENTAL
General Location	**Owner or Clients Representative**	**Sub-Contractor**
EMERY POND LINER	DAVE RIX	MAY EXCAVATING
Weather/Temp	**Technician**	**Superintendent or Supervisor**
SUNNY 40°	M. ASA	JESSE MAY

Type of Work: Embankment ☐ Backfill ☒ Other ☐ Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ Moisture Limits Yes ☒ No ☐ + 2 % - 2 %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
67945	10 - 12	1816	685

Test #	12	13					
Location							
Elevation	F/-GRADE						
Dens Cnt	404	375					
Wet Dens	127.0	130.1					
Mstre Cnt	207	240					
Moisture	16.0	18.0					
Opt Moisture	15.1	15.1					
% Moisture	14.3	16.9					
Std Dens	111.4	111.4					
Dry Dens	111.8	111.3					
% Comp	100.4	99.9					
Spec.	95	95					
Pass/Fail	PASS	PASS					

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

1N

BOTH TESTS PASSED COMPACTION REQUIREMENTS

Reviewed By:

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT COMPACTION

Project No. H-19093
Project SIPC CCR Impoundment
Date 2-9-21
Page 1 of 1
DFR Sequence No. 8

Project Location: Street, City, State	Client or Owner	General Contractor
Lake of Egypt Rd. Williamson, Co. IL.	Clarida Eng.	O6 Environmental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emery Pond Liner	Dave Rix	May Excavating
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
Cloudy 20°s	Ethan Cherry	Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☒ No ☐ + 5 % - %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
67945	12"	2186	700

Test #	14	15	16				
Location	Clayliner NW	North Centr.	North East centr.				
Elevation	± Grade	-	-				
Dens Cnt	388	455	390				
Wet Dens	129.4	124.2	129.3				
Mstre Cnt	243	234	229				
Moisture	19.0	18.3	17.8				
Opt Moisture	15.1	15.1	15.1				
% Moisture	17.2	17.2	16.0				
Std Dens	111.4	111.4	111.4				
Dry Dens	110.3	106.0	111.4				
% Comp	99.1	95.1	100.0				
Spec.	95	95	95				
Pass/Fail	Pass	Pass	Pass				

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions
Notified David Rix of passing tests.

Reviewed By:

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT COMPACTION

Project No. H-19093
Project SIPC CCR IMPOUNDMENT
Date 2/11/21
Page 1 of
DFR Sequence No. 9

Project Location: Street, City, State	Client or Owner	General Contractor
LAKE OF EGYPT Rd, WILLIAMSON CO., IL	CLARIDA ENG.	06 ENVIRONMENTAL
General Location	**Owner or Clients Representative**	**Sub-Contractor**
SLOPE	DAVE RIX	MAY EXCAVATING
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
CLOUDY 25°	M. ASA	JESSE MAY

Type of Work: Embankment ☒ Backfill ☐ Other — Benchmark Elev.

Source and Description of Fill Materials

Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☐ Moisture Limits Yes ☒ No ☐ + 5 % - %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
67945	10"-12"	2184	699

Test #	17	18					
Location	NW SLOPE						
Elevation							
Dens Cnt	418	395					
Wet Dens	127.0	128.8					
Mstre Cnt	241	247					
Moisture	18.9	19.4					
Opt Moisture	15.1	15.1					
% Moisture	17.4	17.7					
Std Dens	111.4	111.4					
Dry Dens	108.1	109.4					
% Comp	97.0	98.2					
Spec.	95	95					
Pass/Fail	PASS	PASS					

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

ALL TESTS PASSED COMPACTION REQUIREMENTS.

Reviewed By:

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT COMPACTION

Project No. H-19093
Project SIPC CCR Impoundment
Date 2-12-21
Page 1 of 1
DFR Sequence No. 10

Project Location: Street, City, State	Client or Owner	General Contractor
Lake of Egypt Rd. Williamson, Co. IL	Clarida Eng.	06 Environmental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emery Pond Liner	Dave Rix	May Excavating
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
Cloudy 20° ±	Ethan Cherry	Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ , Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☐ No ☐ +5 % - %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
67945	12"	2157	686

Test #	19	20					
Location	Top North Wall	—					
Elevation							
Dens Cnt	430	379					
Wet Dens	125.7	129.7					
Mstre Cnt	215	237					
Moisture	17.0	18.9					
Opt Moisture	15.1	15.1					
% Moisture	15.7	17.1					
Std Dens	111.4	111.4					
Dry Dens	108.7	110.8					
% Comp	97.5	99.4					
Spec.	95	95					
Pass/Fail	Pass	Pass					

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions
Notified Dave Rix of passing tests

Reviewed By:

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT
COMPACTION

Project No. 11-19093
Project SIPC
CCR Impoundment
Date 2-24-21
Page 1 of 1
DFR Sequence No. 11

Project Location: Street, City, State	Client or Owner	General Contractor
Lake of Egypt Rd Williamson Co, IL	Clarida	06 Environmental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emery Pond Liner	Dave Rix	May Excavating
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
Sunny ± 60°	S. Holcomb	Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☒ No ☐ + 5 % - %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
37033	12"	1977	640

Test #	21	22	23	24	25	26
Location	Clay Liner South Wall West	→ Ctr	→ East	Structural Course → East	→ Ctr	→ West
Elevation						
Dens Cnt	360	378	371	414	357	367
Wet Dens	130.7	129.1	129.7	126.2	131.0	130.1
Mstre Cnt	208	223	216	211	209	204
Moisture	17.2	18.5	17.9	17.4	17.2	16.8
Opt Moisture	15.1	15.1	15.1	15.1	15.1	15.1
% Moisture	15.1	16.7	16.0	16.0	15.2	14.8
Std Dens	111.4	111.4	111.4	111.4	111.4	111.4
Dry Dens	113.5	110.6	111.8	108.8	113.7	113.3
% Comp	101.9	99.2	100.4	97.6	102.1	101.7
Spec.	95	95	95	95	95	95
Pass/Fail	PASS	PASS	PASS	PASS	PASS	PASS

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

Notified Dave Rix of test results.
All tests meet compaction spec.

Reviewed By:

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT COMPACTION

Project No. H-19093
Project SIPC CLR Impoundment
Date 2/26/21
Page 1 of 1
DFR Sequence No. 12

Project Location: Street, City, State	Client or Owner	General Contractor
Lake of Egypt Rd. Williamson Co. IL	Clarida	06 Environmental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emery pond Liner	Dave Rix	May Excavating
Weather/Temp. 40's	**Technician**	**Superintendent or Supervisor**
cloudy	S. Shim	Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☑ No ☐ + 5 % - %

Troxler Serial # 21649	Mode and Depth 12"	Density Standard 1806	Moisture Standard 587

Test #	27	28	29	30	31		
Location	clay liner → Southwall → East	ctr	West	structural course → west	→ East		
Elevation	t/ grade	→	→	-12"	→		
Dens Cnt	320	311	331	356	351		
Wet Dens	129.4	130.5	127.8	125.9	126.3		
Mstre Cnt	205	187	207	197	208		
Moisture	19.2	17.4	19.4	18.4	19.5		
Opt Moisture	15.1	15.1	15.1	15.1	15.1		
% Moisture	17.5	15.4	17.9	17.1	18.3		
Std Dens	111.4	111.4	111.4	111.4	111.4		
Dry Dens	110.2	113.1	108.3	107.4	106.8		
% Comp	98.9	101.5	97.2	97.1	95.8		
Spec.	95	95	95	95	95		
Pass/Fail	pass	pass	pass	pass	pass		

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions
None.

Reviewed By:

Electronic Filing: Received, Clerk's Office 01/13/2023

Holcomb Foundation Engineering
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Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT
COMPACTION

Project No. 21-19093
Project SIPC
CLR Impoundment
Date 3-5-21
Page 1 of 1
DFR Sequence No. 13

Project Location: Street, City, State	Client or Owner	General Contractor
Lake of Egypt Rd, Williamson Co., IL.	Clarida	06 Environmental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emery Pond Liner	DaveRix/Patrick Devine	May Excavating
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
Partly Cloudy 40's	Ethan Cherry	Jesse May

Type of Work: Embankment ☐ Backfill ☒ Other | Benchmark Elev.

Source and Description of Fill Materials

Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☒ No ☐ + 5 % - %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
67945	12"	2142	690

Test #	32	33	34				
Location	Clay Liner South Wall	Clay Liner Southeast Corner	Clay Liner East Wall				
Elevation							
Dens Cnt	389	441	423				
Wet Dens	128.6	124.6	125.8				
Mstre Cnt	244	219	254				
Moisture	19.4	17.3	20.3				
Opt Moisture	15.1	15.1	15.1				
% Moisture	17.8	16.1	19.2				
Std Dens	111.4	111.4	111.4				
Dry Dens	109.2	107.4	105.6				
% Comp	98.0	96.4	95.0				
Spec.	95	95	95				
Pass/Fail	Pass	Pass	Pass				

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

Notified Patrick Devine of test results.

Reviewed By:

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT
COMPACTION

Project No. H-19093
Project SIPC CLR Impoundment
Date 3-8-21
Page 1 of 1
DFR Sequence No. 14

Project Location: Street, City, State	Client or Owner	General Contractor
Lake of Egypt Williamson Co, IL	Clarida + Ziegler Eng	06 Environmental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emery Pond Liner	Dave Rix	May Excavating
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
Sunny ±65°	S. Holcomb	Jesse May

Type of Work: Embankment ☒ Backfill ☐ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☒ No ☐ + 5 % - 2 %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
37033	12"	1978	633

Test #	35	36	37				
Location	Clay Liner Upper Radius →	Clay Liner	Clay Liner →				
Elevation	Grade →		→				
Dens Cnt	479	456	396				
Wet Dens	121.7	123.3	127.9				
Mstre Cnt	173	168	156				
Moisture	14.2	13.7	12.7				
Opt Moisture	15.1	15.1	15.1				
% Moisture	13.2	12.5	11.0 *				
Std Dens	111.4	111.4	111.4				
Dry Dens	107.5	109.6	115.2				
% Comp	96.5	96.8	103.4				
Spec.	95	95	95				
Pass/Fail	PASS	PASS	FAIL *				

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions

Test #37 fails due to low moisture content
other tests meet compaction requirement

Reviewed By:

Holcomb Foundation Engineering
393 Wood Road
Carbondale, IL 62901
(618) 529-5262

DAILY FIELD REPORT COMPACTION

Project No. H-19093
Project SIPC CLR Impoundment
Date 3/10/21
Page 1 of 1
DFR Sequence No. 15

Project Location: Street, City, State	Client or Owner	General Contractor
Lake of Egypt Williamson Co. IL	Clarida + Ziegler Engr.	06 Enviromental
General Location	**Owner or Clients Representative**	**Sub-Contractor**
Emety pond Liner	Dave Rix	May Excavating
Weather/Temp.	**Technician**	**Superintendent or Supervisor**
cloudy & windy	S. Shin	Jesse May

Type of Work: Embankment ☒ Backfill ☐ Other | Benchmark Elev.

Source and Description of Fill Materials
Sand ☐ Crushed Stone ☐ Soil ☒ Coal Refuse ☐ Stabilized ☐ Type:

Specifications: ASTM D-1557 ☐ ASTM D-698 ☒ | Moisture Limits Yes ☒ No ☐ + 5 % - 2 %

Troxler Serial #	Mode and Depth	Density Standard	Moisture Standard
24236	12"	1781	578

Test #	38	39	40	41	42	43
Location	Retest #37 clay liner	East side Intake S. side	→ N. side	N.W. Intake E. side	→ W. side	center-west liner →
Elevation	Stable	→	→	→	→	→
Dens Cnt	321	312	300	311	272	332
Wet Dens	125.2	125.9	127.2	126.2	130.6	124.0
Mstre Cnt	150	203	193	167	184	164
Moisture	14.6	20.3	19.2	16.5	18.3	16.1
Opt Moisture	15.1	15.1	15.1	15.1	15.1	15.1
% Moisture	13.2	19.2	17.8	15.0	16.3	15.0
Std Dens	111.4	111.4	111.4	111.4	111.4	111.4
Dry Dens	110.6	105.6	108.0	109.7	112.3	107.9
% Comp	99.3	95	97.0	98.5	100.8	96.6
Spec.	95	95	95	95	95	95
Pass/Fail	pass	pass	pass	pass	pass	pass

Describe Equipment Used for Hauling, Spreading, Watering, Conditioning, and Compacting

Notes: Describe Work Completed During The Day, Any Problems and Their Solutions
All tests pass compaction requirements

Reviewed By:

Attachment B: Photographic Documentation of Closure Activities for Emery Pond

Prior to beginning of excavation 12/7/2020

During excavation 12/23/2020

January 28, 2021

Clay liner being placed, excavation from Emery Pond is complete.

April 16, 2021

Installation of geomembrane liner.

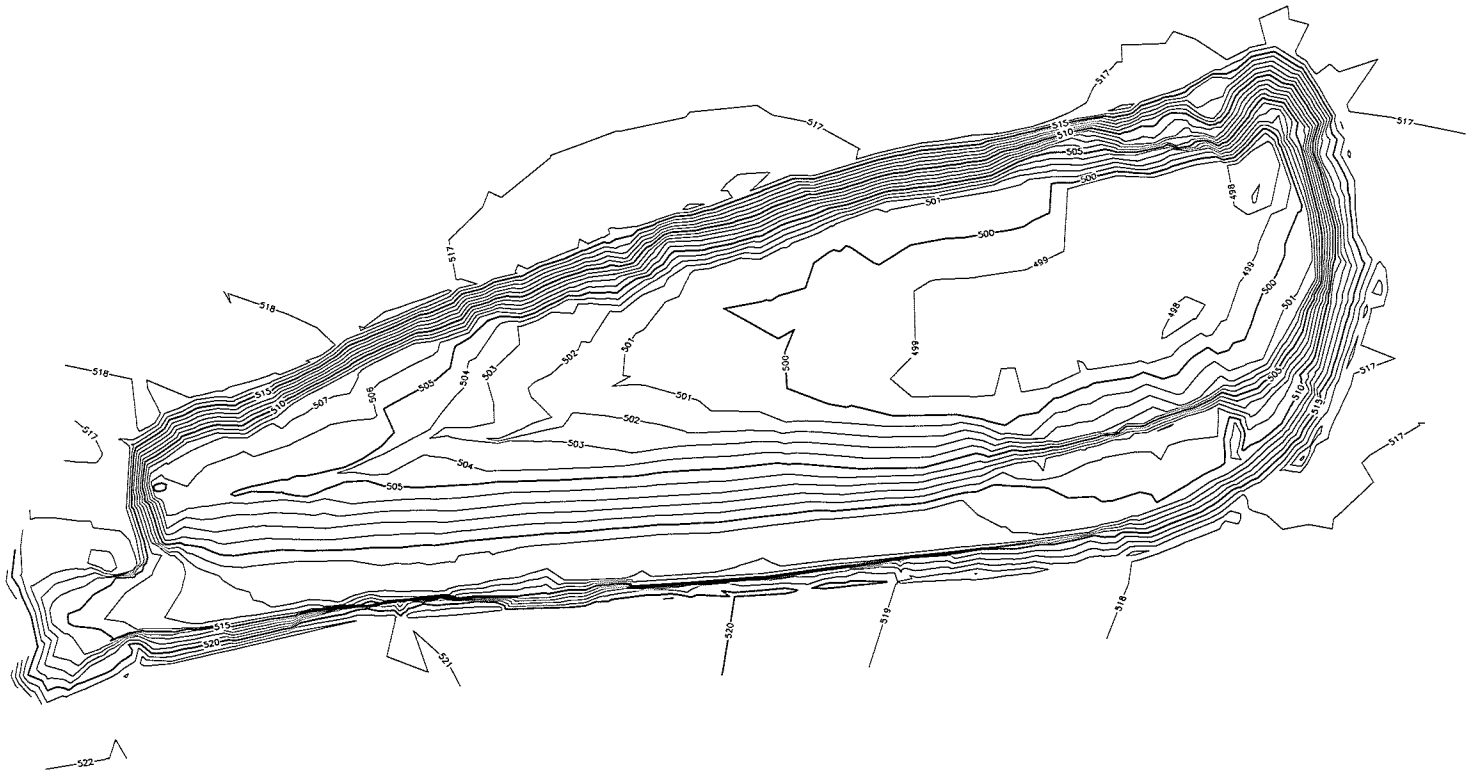
Attachment C: Summary of Closure Requirements and Completed Activities

1. CCR Removal, Decontamination and Disposal – All visible CCR was removed from the Emery Pond site and the former pond area was decontaminated through excavation and related activities. Disposal of CCR and other excavated materials, including rip rap, was at a permitted disposal facility. CCR removal, decontamination and disposal was generally consistent with applicable rules and the Emery Pond closure plan, for which SIPC did not receive formal approval from IEPA until July 15 2021, months after submission of the plan to IEPA and completion of the field closure work, which was performed in the winter of 2020/2021 to ensure compliance with federal CCR rule deadlines. On site management of the CCR removal and the closure process is described further below. Because the closure activities were performed before Part 845 was adopted and thus before 35 IAC 845.740 became effective, the closure work did not address and thus did not satisfy certain reporting and other provisions of 35 IAC 845.740(c) and (d), which were not applicable at the time of the closure work. However, this does not impact the complete removal of CCR from the Emery Pond site, and its proper disposal offsite.
2. Sediment and Erosion Control Measures –all excavation and removal work was done inside the foot print of the pond and FGD Load Out Area and did not require sediment and erosion control measures as the pond acted to contain all sediment and erosion.
3. Unwatering - Before CCR sediment was removed, it was unwatered. This water was discharged at the existing NPDES discharge.
4. The remaining sediment was dewatered – The dewatered “water” was sent to an existing tank for storage until permitting is obtained for its discharge.
5. Riprap Excavation – The riprap excavated from the former Emery Pond site was sent to the same permitted disposal facility as the excavated CCR. The disposal facility is the Perry Ridge Landfill at 6305 Sacred Heart Road, DuQuoin, IL. Manifests for this material are included in Attachment D.
6. FGD Load out Area – Material, including any CCR, was excavated and removed from this area. The area was sloped to drain toward the proposed Storm Water Basin to prevent surface water run-off.
7. Permanent Stabilization of Disturbed Areas – the perimeter roadway was stabilized with gravel surfacing to minimize wind and water erosion. The roadway was graded to drain toward the proposed stormwater basin.
8. Construct a lined stormwater basin. The new lined stormwater basin was constructed in the foot print of the previous Emery Pond pursuant to a construction permit issued by IEPA. This new basin will not receive regulated CCR material and is not a CCR impoundment. Therefore, it is not regulated as a retrofit. To relieve potential pressure below the liner, a drainage system with pumps was installed beneath the liner. The collected water is pumped into the stormwater basin.

Attachment D: Other Information Relied on to Support Closure

CCR

PRE-EXCAVATION TOPOGRAPHIC EXHIBIT



SCALE : 1" = 20'

20 0 20 40 60

N

STATE OF ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-004515

REVISIONS

DATE	NO.

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410 North Court St, P.O. Box 937
Marion, Illinois 62959
Phone – (618)993-6411, Fax – (618)993-6750

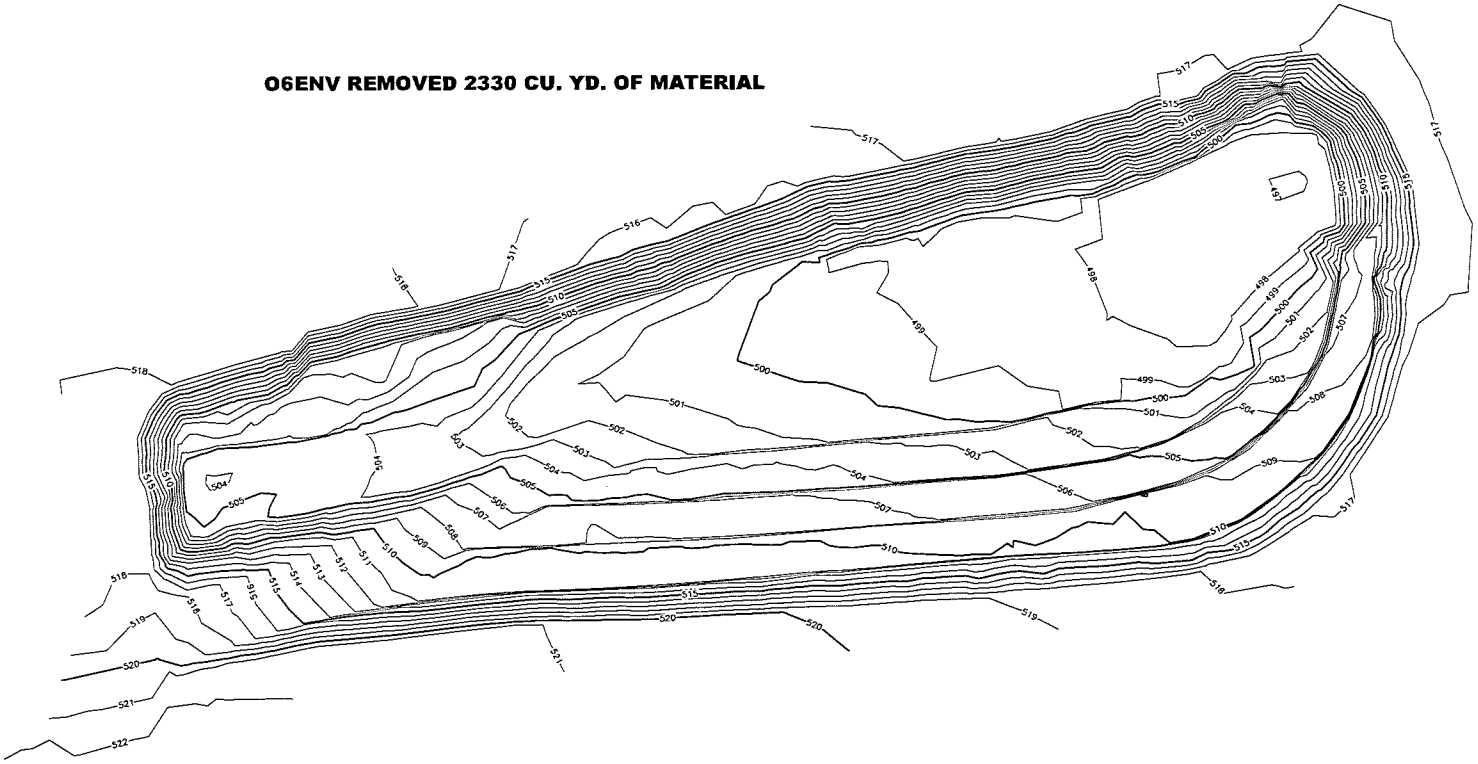
TOPOGRAPHIC EXHIBIT
FOR 06 ENVIRONMENTAL, LLC
EMERY POND CLOSURE
SOUTHERN ILLINOIS POWER COOPERATIVE

Date 03-24-2021 | DR. By BPP | CKD By WCR
Scale 1"=20' | Job No. 20091 | Sheet No. 1 of 3

Electronic Filing: Received, Clerk's Office 01/13/2023

POST-EXCAVATION
TOPOGRAPHIC EXHIBIT

O6ENV REMOVED 2330 CU. YD. OF MATERIAL



SCALE : 1" = 20'

20 0 20 40 60

N

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DATE	NO.

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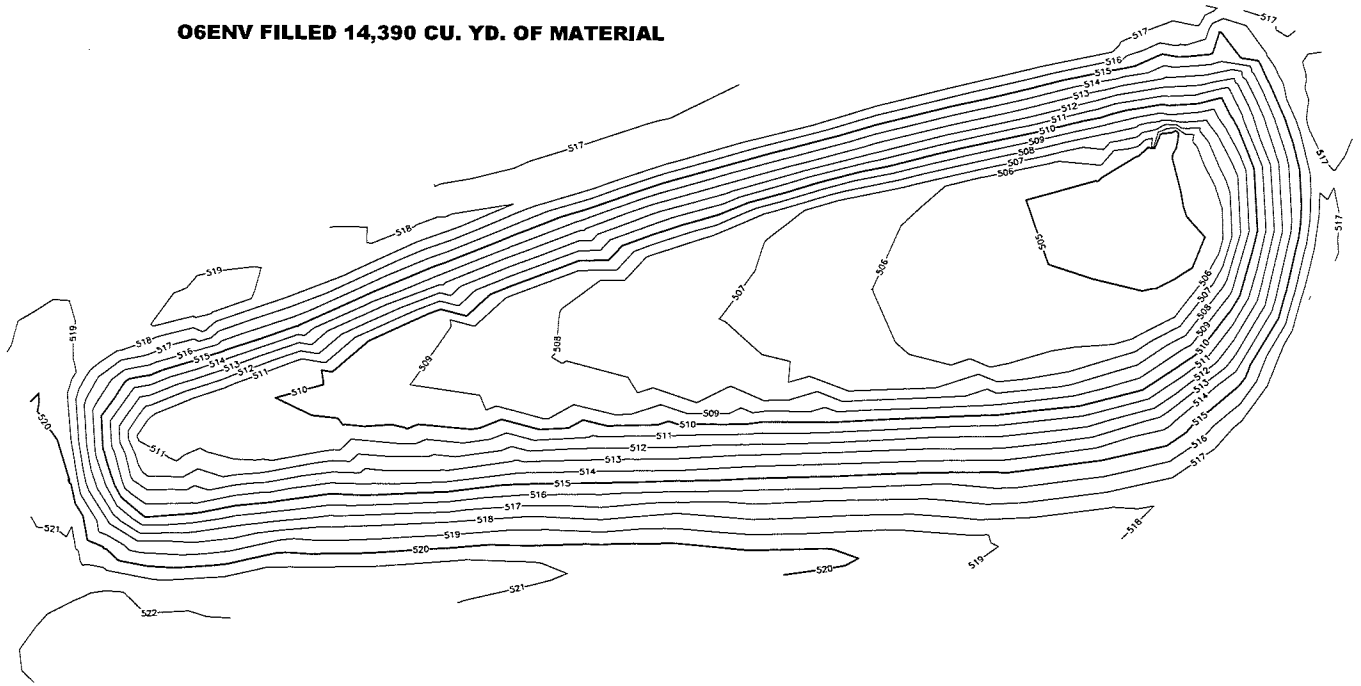
TOPOGRAPHIC EXHIBIT
FOR 06 ENVIRONMENTAL, LLC
EMERY POND CLOSURE
SOUTHERN ILLINOIS POWER COOPERATIVE

Date 03-24-2021 | DR. By BPP | CK'D By WCB
Scale 1"=20' | Job No. 20091 | Sheet No. 2 of 3

Electronic Filing: Received, Clerk's Office 01/13/2023

POST-FILL
TOPOGRAPHIC EXHIBIT

O6ENV FILLED 14,390 CU. YD. OF MATERIAL



SCALE : 1" = 20'

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FOR 06 ENVIRONMENTAL, LLC
EMERY POND CLOSURE
SOUTHERN ILLINOIS POWER COOPERATIVE

Date 03-24-2021 | DR. By BPP | CK'D By WCB
Scale 1"=20' | Job No. 20091 | Sheet No. 3 of 3

Electronic Filing: Received, Clerk's Office 01/13/2023

FGP

O6ENV REMOVED 5310 CU. YD. OF MATERIAL

POST-EXCAVATION TOPOGRAPHIC EXHIBIT

SCALE : 1" = 10'

10 0 10 20 30

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Marion, Illinois 62959
Phone – (618)993-6411, Fax – (618)993-6750

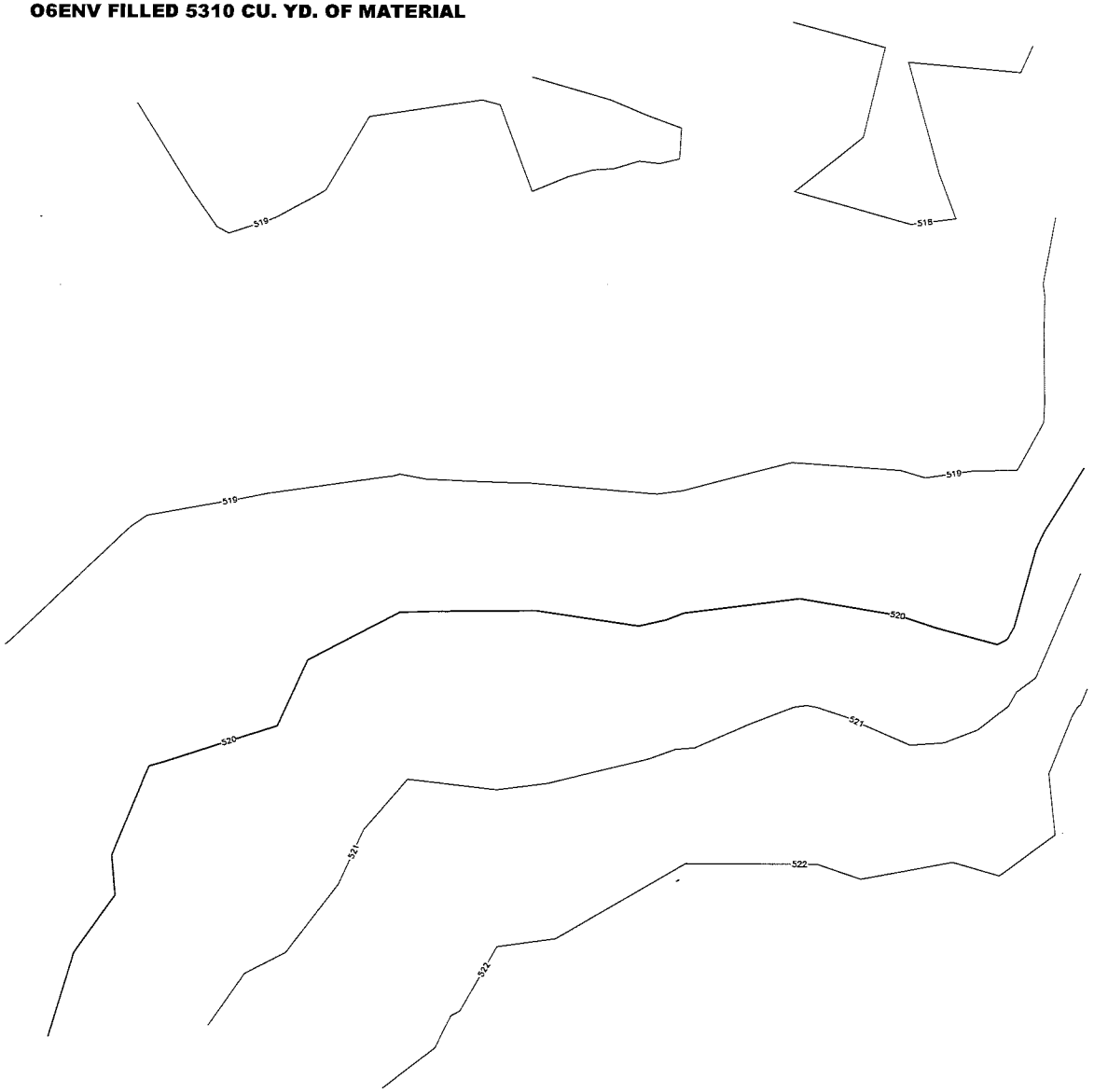
TOPOGRAPHIC EXHIBIT
FOR 06 ENVIRONMENTAL, LLC
BURIED BOTTOM ASH DEPOSITS
SOUTHERN ILLINOIS POWER COOPERATIVE

Date 04-28-2021 | DR. By BPP | CKD By WCB
Scale 1"=10' | Job No. 20091 | Sheet No. 1 of 2

Electronic Filing: Received, Clerk's Office 01/13/2023

POST-FILL TOPOGRAPHIC EXHIBIT

O6ENV FILLED 5310 CU. YD. OF MATERIAL



N

SCALE : 1" = 10'

10 0 10 20 30

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DATE	NO.

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Marion, Illinois 62959
Phone – (618)993-8411, Fax – (618)993-8750

TOPOGRAPHIC EXHIBIT
FOR 06 ENVIRONMENTAL LLC
BURIED BOTTOM ASH DEPOSITS
SOUTHERN ILLINOIS POWER COOPERATIVE

Date 04-26-2021 | DR. By BPP | CKD By WCH
Scale 1"=10' | Job No. 20091 | Sheet No. 2 of 2

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Geo-Synthetics SYSTEMS
a Babcock Power Inc. company

PROJECT NAME:
EMERY POND RETROFIT PLAN - MARION POWER PLANT
Hanson Services, Inc. Project No.: 18E0022A; GSI Project No.: 720030

Section: 02400 HDPE Geomembrane

1.4.C.3
Subgrade Acceptance Certificate
Provided In This Submittal

2401 PEWAUKEE ROAD • WAUKESHA, WI 53188-6904 • 262-524-7979 • Fax: 262-524-7961 • 800-444-5523 • www.geo-synthetics.com

Electronic Filing: Received, Clerk's Office 01/13/2023

a Babcock Power Inc company

Construction Services Group

2401 Pewaukee Road
Waukesha, WI 53188
(800)444-5523
Fax:(262)542-8306

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOSYNTHETIC INSTALLATION

PROJECT NAME: SIPC Emery Pond

LOCATION: Marion Illinois JOB NO.: 20030

PROJECT OWNER: _____ PRIME CONTRACTOR: Olo Environmental
(If GSI is not contracted with the Owner)

AREA ACCEPTED:

P1 – P12

The undersigned authorized representative of Geo-Synthetics Systems, LLC (GSI) certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

This certification is based on observations of the subgrade surface conditions only. GSI has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade. Nor does GSI take responsibility that the subgrade is within the project specifications.

I, the undersigned, a duly appointed representative of the Owner and/or Contractor, do hereby acknowledge and accept Geo-Synthetics Systems, LL terms for Certification of Acceptance of Subgrade Surface Preparation for Geosynthetic Installation.

CERTIFICATE APPROVED AND ACCEPTED BY:

William D. Rix 04/12/21
Owner / CQA Representative Signature Date

Cody Lanos 4/12/21
Contractor Representative Signature Date

William D. Rix CQA
Representative Name and Title

Cody Lanos Project Manager
Representative Name and Title

4-12-21
Geo-Synthetics Systems, LLC Representative Signature Date

Jesus Salazar QC
Representative Name and Title

Electronic Filing: Received, Clerk's Office 01/13/2023

a Babcock Power Inc. company

Construction Services Group

2401 Pewaukee Road
Waukesha, WI 53188
(800)444-5523
Fax:(262)542-6306

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOSYNTHETIC INSTALLATION

PROJECT NAME: SIPC Emery Pond

LOCATION: Marion Illinois JOB NO.: 720030

PROJECT OWNER: _____ PRIME CONTRACTOR: OG Environmental
(If GSI is not contracted with the Owner)

AREA ACCEPTED:

P-13 – P20

The undersigned authorized representative of Geo-Synthetics Systems, LLC (GSI) certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

This certification is based on observations of the subgrade surface conditions only. GSI has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade. Nor does GSI take responsibility that the subgrade is within the project specifications.

I, the undersigned, a duly appointed representative of the Owner and/or Contractor, do hereby acknowledge and accept Geo-Synthetics Systems, LL terms for Certification of Acceptance of Subgrade Surface Preparation for Geosynthetic Installation.

CERTIFICATE APPROVED AND ACCEPTED BY:

William D. Rix 04/14/21
Owner / CQA Representative Signature Date

Cody Lonas 4/14/21
Contractor Representative Signature Date

William D. Rix CQA
Representative Name and Title

Cody Lonas Project Manager
Representative Name and Title

Jason Sch 4-14-21
Geo-Synthetics Systems, LLC Representative Signature Date

Jason Sch CQA
Representative Name and Title

Electronic Filing: Received, Clerk's Office 01/13/2023

GSI
a Babcock Power Inc company

Construction Services Group

2401 Pewaukee Road
Waukesha, WI 53188
(800)444-5523
Fax:(262)542-8306

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOSYNTHETIC INSTALLATION

PROJECT NAME: SIPC Emery Pond

LOCATION: Marion Illinois JOB NO.: 720030

PROJECT OWNER: _____ PRIME CONTRACTOR: Ole Olmsted
(If GSI is not contracted with the Owner)

AREA ACCEPTED:

P21 - P34 20,100 sqft Infiltrest

The undersigned authorized representative of Geo-Synthetics Systems, LLC (GSI) certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

This certification is based on observations of the subgrade surface conditions only. GSI has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade. Nor does GSI take responsibility that the subgrade is within the project specifications.

I, the undersigned, a duly appointed representative of the Owner and/or Contractor, do hereby acknowledge and accept Geo-Synthetics Systems, LL terms for Certification of Acceptance of Subgrade Surface Preparation for Geosynthetic Installation.

CERTIFICATE APPROVED AND ACCEPTED BY:

William D Rix
Owner / CQA Representative Signature Date

William D. Rix
Representative Name and Title

Contractor Representative Signature 4-16-21
Date

Cody Lanos 4-16 21
Representative Name and Title

Geo-Synthetics Systems, LLC Representative Signature 04-15-21
Date

Jesus Salazar QC
Representative Name and Title

Electronic Filing: Received, Clerk's Office 01/13/2023

Geo-Synthetics SYSTEMS
a Babcock Power Inc. company

PROJECT NAME:
EMERY POND RETROFIT PLAN - MARION POWER PLANT
Hanson Services, Inc. Project No.: 18E0022A; GSI Project No.: 720030

Section: 02400 HDPE Geomembrane

1.4.C.5
Test Seam Samples
Provided In This Submittal

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PREWELD REPORT

Project Name: SIPC EMERY POND RETROFIT **Job No. :** 720030 **Superintendent:** FRANK MATA

Material Type: 60 MIL HDPE TEXTURE **Primary** X **Pond** X **Peel Test Extrusion Minimum** 78 PPI

Job Description: **Secondary** **Cell** **Peel Test Fusion Minimum** 91 PPI

Quality Controller: JESUS SALAZAR **Other** **Pad** **Shear Test Minimum** 120 PPI

Liner Types **S = Smooth** **T = Textured** **SG = Super Grip** **MS= Microspike MD= MicroDrain**

Weld Date / Liner Type	Time am / pm	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp		Coupon 1 A / B	Coupon 2 A / B	Coupon 3 A / B	Coupon 4 A / B	Coupon 5 A / B	Test Results
4/12/21	8:22	LUIS SANCHEZ	109	4	850		76	Peel	109 / 129	136 / 121	131 / 145	110 / 112	121 / 122	Pass
S TO S	AM							Shear	165	157	168	161	164	
4/12/21	8:31	LUIS SANCHEZ	109	4	850		76	Peel	111 / 116	118 / 119	123 / 134	124 / 126	128 / 131	Pass
T TO T	AM							Shear	168	152	165	164	166	
4/12/21	2:15	VIRUTH LONG	X96		550	550	81	Peel	/ 121	/ 125	/ 128	/ 125	/ 128	Pass
T TO T	PM							Shear	136	139	141	140	141	
4/12/21	8:09	LUIS SANCHEZ	109	4	850		78	Peel	128 / 126	125 / 127	134 / 141	135 / 138	139 / 137	Pass
S TO S	am							Shear	168	169	171	161	168	
4/12/21	8:11	LUIS SANCHEZ	109	4	850			Peel	129 / 131	141 / 145	131 / 139	141 / 143	146 / 148	Pass
T TO T	am							Shear	161	168	159	156	181	
4/12/21	8:41	VIRUTH LONG	X96		550	550	79	Peel	/ 135	/ 138	/ 141	/ 123	/ 133	Pass
T TO T	am							Shear	126	131	151	141	131	
4/14/21	8:06	LUIS SANCHEZ	109	4	850		75	Peel	128 / 126	131 / 134	129 / 127	140 / 139	141 / 140	Pass
T TO T	am							Shear	151	149	169	171	168	
4/14//2021	8:21	LUIS SANCHEZ	109	4	850		76	Peel	131 / 134	137 / 141	137 / 136	141 / 145	139 / 140	Pass
S TO S	am							Shear	168	169	171	169	172	
4/14/21	8:24	VIRUTH LONG	X96		550	550	72	Peel	/ 139	/ 121	/ 149	/ 136	/ 125	Pass
T TO T	am							Shear	141	139	151	161	151	
4/15/21	7:21	LUIS SANCHEZ	109	4	850		72		129 / 132	131 / 128	127 / 129	135 / 136	129 / 130	Pass
S TO S	am							Shear	142	152	158	161	171	
4/15/21	7:19	LUIS SANCHEZ	109	4	850		74	Peel	131 / 136	141 / 142	139 / 141	142 / 142	139 / 140	Pass
T TO T	AM							Shear	172	168	151	162	159	
4/5/21	7:21	VIRUTH LONG	X96		550	550	76	Peel	/ 131	/ 141	/ 139	/ 141	/ 152	Pass
T TO T	am							Shear	160	171	159	164	163	
	:							Peel	/	/	/	/	/	
TO								Shear						

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Geo-Synthetics Systems, LLC. Confidential-Rev. 210106

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Geo-Synthetics SYSTEMS
a Babcock Power Inc. company

PROJECT NAME:
EMERY POND RETROFIT PLAN - MARION POWER PLANT
Hanson Services, Inc. Project No.: 18E0022A; GSI Project No.: 720030

Section: 02400 HDPE Geomembrane

1.4.C.9
Record Drawings
Provided In This Submittal

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a Babcock Power Inc. company

COMPLETE FIELD DATA PACKAGE

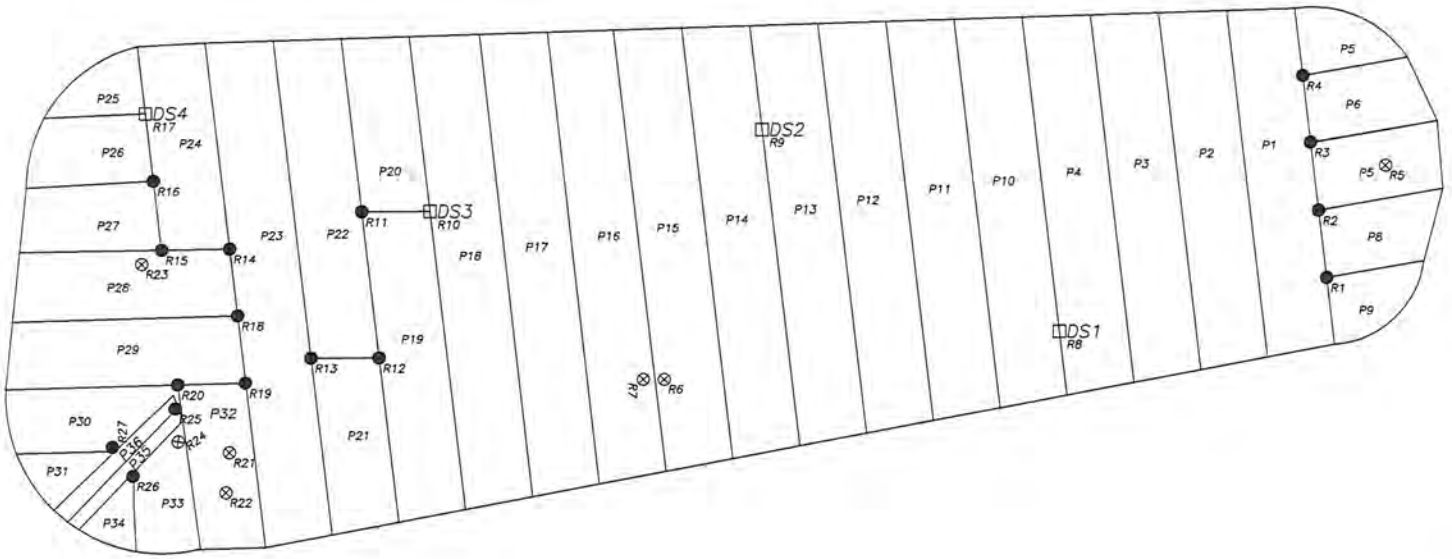
Job Name	SIPC EMERY POND RETROFIT
Job No.	720030
Superintendent	FRANK MATA
Quality Controller	JESUS SALAZAR
Material Type	60 MIL HDPE TEXTURE
Owner	SOUTHERN ILLINOIS POWER
Engineer	BRAD HOOTS
Contractor	O6 ENVIRONMENTAL
Primary	X
Secondary	
Pond	X
Cell	
Pad	
Other	

Description (i.e. Phase #, Cell #, Pond # etc.)

Technician Names	Machine No.	Linear Feet
LUIS SANCHEZ	109	3,018
VIRUTH LONG	X96	-
		-
		-
		-
		-
		-
		-
		-
		-
		-
		-
		-
		-

Peel Test Extrusion Minimum	78	PPI
Peel Test Fusion Minimum	91	PPI
Shear Test Minimum	120	PPI
Air Pressure Test	30	PSI
Air Pressure Hold Time	5	Minutes
Allowable Air Pressure Loss	3	PSI

Electronic Filing: Received, Clerk's Office 01/13/2023



NOTES:

1. RECORD DRAWING IS FOR SCHEMATIC PURPOSES ONLY.

LEGEND

- CELL OUTLINE
- PANEL OUTLINE
- P# PANEL NUMBER
- R# REPAIR NUMBER
- PATCH
- □DS# DESTRUCTIVE TEST
- ⊗ PIPE BOOT
- CAP PATCH
- EXTRUSION WELD

SCALE

0 15 30

N

DRAWN BY: JS DATE: 04/22/21
CHKD BY: AL DATE: 05/19/21
SCALE: 1" = 30'-0"
JOB #: 720030 EST #: 1200097

REVISIONS

NO.	DATE

GEO-SYNTHETICS SYSTEMS, LLC
2401 PEWAUKEE ROAD
WAUKESHA, WI 53188
262-524-7979

PROJECT NAME & LOCATION:
SIPC EMERY POND RETROFIT
MARION, ILLINOIS

MATERIAL & DRAWING DESCRIPTION:
60MIL HDPE TEXTURED
RECORD DRAWING

FILENAME
SIPC EMERY POND RETROFIT

DRAWING #
RD-1

Electronic Filing: Received, Clerk's Office 01/13/2023

a Babcock Power Inc. company

830

Panel Placement Log

Electronic Filing: Received, Clerk's Office 01/13/2023

Project: SIPC EMERY POND RETROFIT
Owner: SOUTHERN ILLINOIS POWER
Engineer: BRAD HOOTS
Contractor: O6 ENVIRONMENTAL
Installation Supervisor: FRANK MATA
Quality Controller: JESUS SALAZAR
Materials: 60 MIL HDPE TEXTURE

Panel Number	Roll Number	Installation Date	Material Type	Width	Length	Square Footage	Daily Totals
1	8307	4/12/2021	60 Mil Texture	22.5	108.5	2441.25	
2	8307	4/12/2021	60 Mil Texture	22.5	109	2452.5	
3	8307	4/12/2021	60 Mil Texture	22.5	113.5	2553.75	
4	8307	4/12/2021	60 Mil Texture	22.5	125	2812.5	
5	8308	4/12/2021	60 Mil Texture	22.5	40	900	
6	8308	4/12/2021	60 Mil Texture	22.5	37	832.5	
7	8308	4/12/2021	60 Mil Texture	22.5	32	720	
8	8308	4/12/2021	60 Mil Texture	22.5	36	810	
9	8308	4/12/2021	60 Mil Texture	22.5	29	652.5	
10	8308	4/12/2021	60 Mil Texture	22.5	133.5	3003.75	
11	8308	4/12/2021	60 Mil Texture	22.5	141	3172.5	
12	8309	4/12/2021	60 Mil Texture	22.5	147.5	3318.75	23670
13	8309	4/14/2021	60 Mil Texture	22.5	151.5	3408.75	
14	8309	4/14/2021	60 Mil Texture	22.5	160	3600	
15	8301	4/14/2021	60 Mil Texture	22.5	168.5	3791.25	
16	8301	4/14/2021	60 Mil Texture	22.5	170	3825	
17	8304	4/14/2021	60 Mil Texture	22.5	174.5	3926.25	
18	8304	4/14/2021	60 Mil Texture	22.5	179	4027.5	
19	8304	4/14/2021	60 Mil Texture	22.5	102.5	2306.25	
20	8301	4/14/2021	60 Mil Texture	22.5	80	1800	26685
21	8301	4/15/2021	60 Mil Texture	22.5	80	1800	
22	8300	4/15/2021	60 Mil Texture	22.5	104	2340	
23	8300	4/15/2021	60 Mil Texture	22.5	182.5	4106.25	
24	8300	4/15/2021	60 Mil Texture	22.5	72.25	1625.625	

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a Babcock Power Inc. company

830

Panel Placement Log

Electronic Filing: Received, Clerk's Office 01/13/2023

Project: SIPC EMERY POND RETROFIT
Owner: SOUTHERN ILLINOIS POWER
Engineer: BRAD HOOTS
Contractor: O6 ENVIRONMENTAL
Installation Supervisor: FRANK MATA
Quality Controller: JESUS SALAZAR
Materials: 60 MIL HDPE TEXTURE

Panel Number	Roll Number	Installation Date	Material Type	Width	Length	Square Footage	Daily Totals
25	8310	4/15/2021	60 Mil Texture	22.5	19.5	438.75	
26	8300	4/15/2021	60 Mil Texture	22.5	34.5	776.25	
27	8300	4/15/2021	60 Mil Texture	22.5	48	1080	
28	8310	4/15/2021	60 Mil Texture	22.5	74.5	1676.25	
29	8310	4/15/2021	60 Mil Texture	22.5	77.25	1738.125	
30	8310	4/15/2021	60 Mil Texture	22.5	44.5	1001.25	
31	8310	4/15/2021	60 Mil Texture	22.5	27	607.5	
32	8310	4/15/2021	60 Mil Texture	22.5	54	1215	
33	8310	4/15/2021	60 Mil Texture	22.5	29.5	663.75	
34	8310	4/15/2021	60 Mil Texture	10	14.75	147.5	
35	8310	4/15/2021	60 Mil Texture	13	34	442	
36	8310	4/15/2021	60 Mil Texture	13	34	442	20100.25
						0	

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Geo-Synthetics SYSTEMS
a Babcock Power Inc. company

PROJECT NAME:
EMERY POND RETROFIT PLAN - MARION POWER PLANT
Hanson Services, Inc. Project No.: 18E0022A; GSI Project No.: 720030

Section: 02400 HDPE Geomembrane

1.4.C.7
Destructive Test Results
Provided In This Submittal

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a Babcock Power Inc. company

DESTRUCTIVE SAMPLES REPORT

Project Name: SIPC EMERY POND RETROFIT **Job No. :** 720030 **Superintendent:** FRANK MATA

Material Type: 60 MIL HDPE TEXTURE **Primary** X **Cell** | **Peel Test Extrusion Minimum** 78 PPI

Job Description: **Secondary** **Pond** X | **Peel Test Fusion Minimum** 91 PPI

Quality Controller: JESUS SALAZAR **Other** **Pad** | **Shear Test Minimum** 120 PPI

D.S. No.	Seam No.	Weld Date	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp		Coupon 1 A : B	Coupon 2 A : B	Coupon 3 A : B	Coupon 4 A : B	Coupon 5 A : B	Test Results
DS-1	4 / 10	4/12/21	LUIS SANCHEZ	109	4	850		Peel	139 : 141	135 : 132	131 : 134	134 : 141	151 : 141	Pass
								Shear	210	206	210	206	211	
DS-2	13 / 14	4/14/21	LUIS SANCHEZ	109	4	850		Peel	144 : 137	118 : 135	134 : 139	136 : 112	141 : 142	Pass
								Shear	177	205	181	201	204	
DS-3	18 / 19	4/14/21	LUIS SANCHEZ	109	4	850		Peel	144 : 150	123 : 140	131 : 139	127 : 122	141 : 146	Pass
								Shear	211	205	202	198	206	
DS-4	25 / 26	4/15/21	LUIS SANCHEZ	109	4	850		Peel	128 : 137	123 : 125	129 : 129	125 : 137	136 : 131	Pass
								Shear	197	185	191	190	191	
	/							Peel	:	:	:	:	:	
								Shear						

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Date: 2021-04-16

Mail To:
Steven Brothers
GSI
2401 Peewaukee Road
Waukesha , WI , 53185

Bill To:

GSI
720030

e-mail:sbrothers@gsibp.com

Dear Mr. Brothers,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**SIPC Emery Pond**
TRI Job Reference Number:	**63113**
Material(s) Tested:	(4) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,

Kendall Villarreal
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: GSI
Project: SIPC Emery Pond

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 63113

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: DS-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	136	149	127	131	139	**136**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	147	153	138	156	146	**148**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	190	182	184	181	**184**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: DS-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	128	144	154	165	130	**144**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	139	141	137	142	139	**140**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	191	192	185	187	184	**188**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: GSI
Project: SIPC Emery Pond

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 63113

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: DS-3 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	141	142	148	135	144	**142**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	142	147	157	145	154	**149**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	185	190	182	184	181	**184**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: DS-4 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	133	133	132	134	135	**133**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	145	145	146	149	149	**147**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	188	189	183	184	182	**185**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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Geo-Synthetics SYSTEMS
a Babcock Power Inc. company

PROJECT NAME:
EMERY POND RETROFIT PLAN - MARION POWER PLANT
Hanson Services, Inc. Project No.: 18E0022A; GSI Project No.: 720030

Section: 02400 HDPE Geomembrane

1.4.C.8
Daily Field Installation Reports
Provided In This Submittal

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REPAIR REPORT

uality Controller: JESUS SALAZAR Superintendent: FRANK MATA Job No.: 720030

roject Name: SIPC EMERY POND RETROFIT Primary [X] Cell [ ] Pad [ ]

laterial Type: 60 MIL HDPE TEXTURE Secondary [ ] Pond [X] Other

ob Description:

amage Codes

CR –Crease; DS –Destruct Sample; SI –Subgrade Irregularity; SJ –Seam Joint; BO –Burn Out; FS –Failed Seam; WR –Wrinkle; AV –Airvent; AO –Add On; PB –Pipe Boot; MatD –Material Defect; WS –Welder Restart; RW –Roller Wrinkle; FM –Fishmouth; CF –Custom Fit; LL –Lost Lap; MD –Mechanical Damage; DO –Damage By Others

SF Patch Material	Test Type	Abbrv.	Repair Types
470	Vacuum Air Pressure Spark	*S=South *N=North *W=West	C–Cap Strip P–Patch * if aplicable
LF Welded 390.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam Number	Panel Number	Location	Repair Type	Patch (Feet)			SF Total	Date Welded	Operator Name	Date Complete	Test Type	Test Results	*Date of Re-test
R1	SJ	1/8/9		T joint	P-Patch	2	x	2	4	4/12/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R2	SJ	1/5/8		T joint	P-Patch	2	x	2	4	4/12/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R3	SJ	1/5/6		T joint	P-Patch	2	x	2	4	4/12/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R4	SJ	1/6/7		T joint	P-Patch	2	x	2	4	4/12/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R5	PB		5	20 E From W AT P5/P8 11' S	P-Patch	6	x	6	36	4/12/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R6	PB		15	30'S From N AT P15/P16 3' W	P-Patch	6	x	8	48	4/12/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R7	PB		16	31' S From N AT P15/P16 3' E	P-Patch	6	x	8	48	4/12/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R8	DS	4/10		21' S From P4/P10 N AT (DS-1)	P-Patch	6	x	6	36	4/14/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R9	DS	13/14		35' N From P13/P14 S AT (DS-2)	P-Patch	6	x	6	36	4/14/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R10	DS	18/19/20		T joint(DS-3)	P-Patch	6	x	6	36	4/14/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R11	SJ	19/20/22		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R12	SJ	19/21/22		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R13	SJ	21/22/23		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R14	SJ	23/24/28		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R15	SJ	24/27/28		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R16	SJ	24/26/27		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R17	SJ	24/25/26		T JOINT (DS-4)	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R18	SJ	23/28/29		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R19	SJ	23/29/32		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R20	SJ	29/30/32		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R21	PB		32	22 S From P23/P32 N AT 11 E	P-Patch	6	x	5	30	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	

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REPAIR REPORT

uality Controller: JESUS SALAZAR **Superintendent:** FRANK MATA **Job No.:** 720030

roject Name: SIPC EMERY POND RETROFIT **Primary** [X] **Cell** [ ] **Pad** [ ]

laterial Type: 60 MIL HDPE TEXTURE **Secondary** [ ] **Pond** [X] **Other**

ob Description:

amage Codes

CR –Crease
DS –Destruct Sample
SI –Subgrade Irregularity
SJ –Seam Joint
BO –Burn Out
FS –Failed Seam
WR –Wrinkle
AV –Airvent
AO –Add On
PB –Pipe Boot
MatD –Material Defect
WS –Welder Restart
RW –Roller Wrinkle
FM –Fishmouth
CF –Custom Fit
LL –Lost Lap
MD –Mechanical Damage
DO –Damage By Others

SF Patch Material	Test Type	Abbrv.	Repair Types
470	Vacuum Air Pressure Spark	*S=South *N=North *W=West	C--Cap Strip P--Patch * if aplicable
LF Welded 390.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam Number	Panel Number	Location	Repair Type	Patch (Feet)			SF Total	Date Welded	Operator Name	Date Complete	Test Type	Test Results	*Date of Re-test
R22	PB		32	33' From P23/P32 N AT 8 E	P-Patch	7	x	6	42	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R23	PB		28	46 W From P29/P28 E AT 18' S	P-Patch	8	x	6	48	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R24	PB		33	35 S From P32/P33 3' E	P-Patch	6	x	7	42	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R25	SJ	35/36		T JOINT	P-Patch	2	X	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R26	SJ	33/34/35		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
R27	SJ	30/31/36		T JOINT	P-Patch	2	x	2	4	4/15/21	Kelvin Carbajal	04/15/21	Vacuum	Pass	
							x								

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Geo-Synthetics SYSTEMS
a Babcock Power Inc. company

PROJECT NAME:
EMERY POND RETROFIT PLAN - MARION POWER PLANT
Hanson Services, Inc. Project No.: 18E0022A; GSI Project No.: 720030

Section: 02400 HDPE Geomembrane

1.4.C.6
Non-Destructive Test Results
Provided In This Submittal

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a Babcock Power Inc. company

SEAM CONTROL REPORT

Project Name: SIPC EMERY POND RETROFIT
Job No. : 720030
Superintendent: FRANK MATA

Material Type: 60 MIL HDPE TEXTURE
Job Description:
Quality Controller: JESUS SALAZAR

Primary	X	Cell	
Secondary		Pond	X
Other		Pad	

Air Pressure Test	30	PSI
Air Pressure Hold Time	5	Minutes
Allowable Air Pressure Loss	3	PSI

3,018 **Total LF of Welding to Date Combined**

Extrusion LF Weld Total To Date -

Fusion LF Weld Total To Date: 3,018

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
4/12/21	1 / 2	112	11:18 AM	LUIS SANCHEZ	109	4	850			Air Pressure	2:11 30	2:16 29	1	Pass
4/12/21	2 / 3	106	11:35 AM	LUIS SANCHEZ	109	4	850			Air Pressure	2:04 30	2:09 28	2	Pass
4/12/21	3 / 4	121	11:57 AM	LUIS SANCHEZ	109	4	850			Air Pressure	2:07 30	2:12 29	1	Pass
4/12/21	5 / 8	40	1:35 PM	LUIS SANCHEZ	109	4	850			Air Pressure	1:54 30	1:59 29	1	Pass
4/12/21	5 / 6	40	1:47 PM	LUIS SANCHEZ	109	4	850			Air Pressure	1:58 30	2:04 30		Pass
4/12/21	6 / 7	34	1:55 PM	LUIS SANCHEZ	109	4	850			Air Pressure	2:03 30	2:08 29	1	Pass
4/12/21	8 / 9	32	2:00 PM	LUIS SANCHEZ	109	4	850			Air Pressure	2:15 30	2:20 29	1	Pass
4/12/21	1 / 9	22.5	2:16 PM	LUIS SANCHEZ	109	4	850			Air Pressure	2:20 30	2:25 29	1	Pass
4/12/21	1 / 8	22.5	2:19 PM	LUIS SANCHEZ	109	4	850			Air Pressure	2:21 30	2:26 30		Pass
4/12/21	1 / 5	22.5	2:22 PM	LUIS SANCHEZ	109	4	850			Air Pressure	2:35 30	2:40 29	1	Pass
4/12/21	1 / 6	22.5	2:25 PM	LUIS SANCHEZ	109	4	850			Air Pressure	2:36 30	2:41 30		Pass
4/12/21	1 / 7	2.5	2:28 PM	LUIS SANCHEZ	109	4	850			Air Pressure	2:43 30	2:48 30		Pass
4/12/21	4 / 10	129	3:30 PM	LUIS SANCHEZ	109	4	850			Air Pressure	9:21 30	9:26 29	1	Pass
4/12/21	10 / 11	138	4:10 PM	LUIS SANCHEZ	109	4	850			Air Pressure	9:30 30	9:35 29	1	Pass

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SEAM CONTROL REPORT

Project Name: SIPC EMERY POND RETROFIT
Material Type: 60 MIL HDPE TEXTURE
Job Description:
Quality Controller: JESUS SALAZAR

Job No. : 720030
Superintendent: FRANK MATA

Primary	X	Cell	
Secondary		Pond	X
Other		Pad	

Air Pressure Test	30	PSI
Air Pressure Hold Time	5	Minutes
Allowable Air Pressure Loss	3	PSI

3,018 Total LF of Welding to Date Combined

Extrusion LF Weld Total To Date: -

Fusion LF Weld Total To Date: 3,018

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
4/12/21	11 / 12	144	4:30 PM	LUIS SANCHEZ	109	4	850			Air Pressure	9:38 30	9:43 28	2	Pass
4/14/21	12 / 13	151	8:05 PM	LUIS SANCHEZ	109	4	850			Air Pressure	9:38 30	9:43 30		Pass
4/14/21	13 / 14	156	8:36 PM	LUIS SANCHEZ	109	4	850			Air Pressure	9:41 30	9:46 28	2	Pass
4/14/21	14 / 15	160	9:12 PM	LUIS SANCHEZ	109	4	850			Air Pressure	9:43 30	9:47 28	2	Pass
4/14/21	15 / 16	168	9:43 PM	LUIS SANCHEZ	109	4	850			Air Pressure	10:58 30	11:04 28	2	Pass
4/14/21	16 / 17	172	11:17 PM	LUIS SANCHEZ	109	4	850			Air Pressure	1:35 30	1:40 29	1	Pass
4/14/21	17 / 18	177	11:20 PM	LUIS SANCHEZ	109	4	850			Air Pressure	1:38 30	1:43 30		Pass
4/14/21	18 / 19	102	12:37 PM	LUIS SANCHEZ	109	4	850			Air Pressure	1:40 30	1:45 29	1	Pass
4/14/21	18 / 20	79	12:53 PM	LUIS SANCHEZ	109	4	850			Air Pressure	1:45 30	1:50 29	1	Pass
4/14/21	19 / 20	22.5	12:26 PM	LUIS SANCHEZ	109	4	850			Air Pressure	1:43 30	1:47 29	1	Pass
4/15/21	19 / 21	80	8:51 AM	LUIS SANCHEZ	109	4	850			Air Pressure	10:10 30	10:15 28	2	Pass
4/15/21	19 / 22	23	8:18 AM	LUIS SANCHEZ	109	4	850			Air Pressure	10:17 30	10:22 28	2	Pass
4/15/21	20 / 22	81	8:21 AM	LUIS SANCHEZ	109	4	850			Air Pressure	10:24 30	10:29 28	2	Pass
4/15/21	21 / 22	22.5	8:07 AM	LUIS SANCHEZ	109	4	850			Air Pressure	10:31 30	10:36 29	1	Pass

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a Babcock Power Inc. company

SEAM CONTROL REPORT

Project Name: SIPC EMERY POND RETROFIT
Material Type: 60 MIL HDPE TEXTURE
Job Description:
Quality Controller: JESUS SALAZAR

Job No. : 720030
Superintendent: FRANK MATA

Primary	X	Cell	
Secondary		Pond	X
Other		Pad	

Air Pressure Test 30 PSI
Air Pressure Hold Time 5 Minutes
Allowable Air Pressure Loss 3 PSI

3,018 **Total LF of Welding to Date Combined**
Extrusion LF Weld Total To Date -
Fusion LF Weld Total To Date: 3,018

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
4/15/21	22 / 23	80	9:07 AM	LUIS SANCHEZ	109	4	850			Air Pressure	10:41 / 30	10:46 / 29	1	Pass
4/15/21	23 / 24	85	10:30 AM	LUIS SANCHEZ	109	4	850			Air Pressure	11:15 / 30	11:20 / 28	2	Pass
4/15/21	23 / 28	22.5	10:38 AM	LUIS SANCHEZ	109	4	850			Air Pressure	11:23 / 30	11:27 / 29	1	Pass
4/15/21	23 / 29	22.5	10:41 AM	LUIS SANCHEZ	109	4	850			Air Pressure	11:32 / 30	11:37 / 29	1	Pass
4/15/21	23 / 32	54	10:48 AM	LUIS SANCHEZ	109	4	850			Air Pressure	11:41 / 30	11:46 / 30		Pass
4/15/21	24 / 28	22.5	9:27 AM	LUIS SANCHEZ	109	4	850			Air Pressure	11:51 / 30	11:56 / 28	2	Pass
4/15/21	24 / 25	22.5	10:23 AM	LUIS SANCHEZ	109	4	850			Air Pressure	12:00 / 30	12:05 / 28	2	Pass
4/15/21	24 / 26	22.5	10:28 AM	LUIS SANCHEZ	109	4	850			Air Pressure	12:11 / 30	12:16 / 30		Pass
4/15/21	24 / 27	22.5	10:32 AM	LUIS SANCHEZ	109	4	850			Air Pressure	1:05 / 30	1:10 / 29	1	Pass
4/15/21	28 / 29	76	3:04 AM	LUIS SANCHEZ	109	4	850			Air Pressure	5:00 / 30	5:05 / 5	25	Fail
4/15/21	29 / 32	22.5	2:25 PM	LUIS SANCHEZ	109	4	850			Air Pressure	5:01 / 30	5:06 / 29	1	Pass
4/15/21	29 / 30	57	3:31 AM	LUIS SANCHEZ	109	4	850			Air Pressure	5:02 / 30	5:07 / 29	1	Pass
4/15/21	30 / 31	32	3:35 PM	LUIS SANCHEZ	109	4	850			Air Pressure	5:05 / 30	5:10 / 29	1	Pass
4/15/21	30 / 32	12	3:40 PM	LUIS SANCHEZ	109	4	850			Air Pressure	5:12 / 30	5:17 / 28	2	Pass

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Geo-Synthetics Systems, LLC. Confidential-Rev.210106

a Babcock Power Inc. company

SEAM CONTROL REPORT

Project Name: SIPC EMERY POND RETROFIT
Job No. : 720030
Superintendent: FRANK MATA

Material Type: 60 MIL HDPE TEXTURE
Job Description:
Quality Controller: JESUS SALAZAR

Primary	X	Cell	
Secondary		Pond	X
Other		Pad	

Air Pressure Test 30 PSI
Air Pressure Hold Time 5 Minutes
Allowable Air Pressure Loss 3 PSI

3,018 **Total LF of Welding to Date Combined**
Extrusion LF Weld Total To Date -
Fusion LF Weld Total To Date: 3,018

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
4/15/21	32 / 33	42	3:50 PM	LUIS SANCHEZ	109	4	850			Air Pressure	4:28 / 30	4:33 / 28	2	Pass
4/15/21	33 / 34	17	4:10 PM	LUIS SANCHEZ	109	4	850			Air Pressure	4:40 / 30	4:45 / 29	1	Pass
4/15/21	35 / 36	22.5	4:15 PM	LUIS SANCHEZ	109	4	850			Air Pressure	4:39 / 30	4:44 / 29	1	Pass
	/		:								: /	: /		

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SOUTHERN ILLINOIS POWER COOPERATIVE

INVOICE INPUT FORM

VENDOR NAME: BEELMAN TRUCKING VENDOR NO: 10181 VOUCHER NO:

ENTER DATE: 03/31/21 DATE DUE: 03/22/21 TAXES TO BE ADDED T = YES

ONLY IF INVOICES ARE PAID PRIOR TO ENTRY INTO THE SYSTEM CHECK NO. CHECK DATE P.O. #

LINE	INVOICE DATE	DESCRIPTION - INVOICE NUMBER - (LIMIT 30 CHAR.)	AMOUNT
1	03/31/21	HAULING - COAL COMBUSTION RESIDUALS TO PERRY RIDGE LANDFILL	21,350.00
2		FEBRUARY 8-12, 2021.	
3		INVOICE# 778673	
4			
5	03/31/21	HAULING - COAL COMBUSTION RESIDUALS TO PERRY RIDGE LANDFILL	44,296.00
6		FEBRUARY 22-26, 2021.	
7			
8			
		TOTAL ALL INVOICES	65,646.00

LINE	ACCOUNT NO.	WORK ORDER	QUANTITY	UNIT	DESCRIPTION OR INVOICE #	AMOUNT
1	10720-000	16-0008	213.50	HOURS	HAULING - COAL COMBUSTION RESIDUA	21,350.00
					FEBRUARY 8-12, 2021.	
3					INVOICE# 778673	
4						
5	10720-000	16-0008	3164.00	TONS	HAULING - COAL COMBUSTION RESIDUALS T	44,296.00
6					FEBRUARY 22-26, 2021. $14/Ton	
7						
8						
					TOTAL DIST. ALL INVOICES	65,646.00

RETAINAGE CODE R = RETAINAGE

PREPARED BY TW APPROVED BY TBT

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTHERN ILLINOIS POWER COOPERATIVE

P.O.	CCR LANDFILL	FEBRUARY 2021

	DATE	TIME	SIPC #	TRUCK #	DELIVERY CO.	COAL CO.	GROSS	TARE	NET	TONS
1	2/22/21	6:53 A	1208165	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80400	31420	48980	24.49
2	2/22/21	7:04 A	1208170	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77680	26720	50960	25.48
3	2/22/21	7:09 A	1208173	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77640	26520	51120	25.56
4	2/22/21	7:14 A	1208177	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77000	26140	50860	25.43
5	2/22/21	7:19 A	1208178	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78480	31680	46800	23.40
6	2/22/21	7:23 A	1208181	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77540	26900	50640	25.32
7	2/22/21	7:27 A	1208182	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	76760	31240	45520	22.76
8	2/22/21	9:34 A	1208226	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80320	31420	48900	24.45
9	2/22/21	9:48 A	1208233	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78860	26140	52720	26.36
10	2/22/21	9:52 A	1208235	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	76400	26720	49680	24.84
11	2/22/21	9:56 A	1208237	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78420	26520	51900	25.95
12	2/22/21	9:59 A	1208238	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79140	31700	47440	23.72
13	2/22/21	10:05	1208241	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79940	31500	48440	24.22
14	2/22/21	10:17	1208246	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77120	31680	45440	22.72
15	2/22/21	10:39	1208251	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78980	31600	47380	23.69
16	2/22/21	10:41	1208252	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78560	31240	47320	23.66
17	2/22/21	12:21	1208287	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78380	31420	46960	23.48
18	2/22/21	12:25	1208288	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77220	26140	51080	25.54
19	2/22/21	12:37	1208296	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80320	26520	53800	26.90
20	2/22/21	12:41	1208298	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77560	26720	50840	25.42
21	2/22/21	12:44	1208299	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77960	31700	46260	23.13
22	2/22/21	12:49	1208302	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79560	31500	48060	24.03
23	2/22/21	12:52	1208303	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79460	31680	47780	23.89
24	2/22/21	1:10 P	1208308	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77460	31240	46220	23.11
25	2/22/21	1:15 P	1208309	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80480	31600	48880	24.44

$14 / ton
per Robert Conn
3-10-21

16-0008

3,164 tons

$44,296.00

POUNDS	1,223,980
TONS	612.00

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SOUTHERN ILLINOIS POWER COOPERATIVE

P.O.	CCR LANDFILL	FEBRUARY 2021

	DATE	TIME	SIPC #	TRUCK #	DELIVERY CO.	COAL CO.	GROSS	TARE	NET	TONS
1	2/23/21	6:38 A	1208345	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77860	26140	51720	25.86
2	2/23/21	6:42 A	1208346	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77340	26720	50620	25.31
3	2/23/21	6:54 A	1208350	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79460	31420	48040	24.02
4	2/23/21	7:04 A	1208355	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79000	31700	47300	23.65
5	2/23/21	7:06 A	1208356	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78680	31240	47440	23.72
6	2/23/21	7:15 A	1208358	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79660	31600	48060	24.03
7	2/23/21	7:18 A	1208361	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80100	31500	48600	24.30
8	2/23/21	7:38 A	1208366	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79600	31680	47920	23.96
9	2/23/21	8:53 A	1208387	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79760	26520	53240	26.62
10	2/23/21	9:26 A	1208399	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80340	26140	54200	27.10
11	2/23/21	9:32 A	1208401	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78220	26720	51500	25.75
12	2/23/21	9:36 A	1208403	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77920	31420	46500	23.25
13	2/23/21	9:44 A	1208404	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80060	31700	48360	24.18
14	2/23/21	9:54 A	1208409	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78400	31240	47160	23.58
15	2/23/21	10:01	1208414	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77140	31600	45540	22.77
16	2/23/21	10:09	1208416	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79820	31500	48320	24.16
17	2/23/21	10:17	1208419	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80460	31680	48780	24.39
18	2/23/21	11:47	1208442	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79160	26520	52640	26.32
19	2/23/21	11:52	1208444	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79320	26140	53180	26.59
20	2/23/21	12:04	1208446	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77420	26720	50700	25.35
21	2/23/21	12:07	1208447	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78180	31420	46760	23.38
22	2/23/21	12:32	1208458	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	76860	31240	45620	22.81
23	2/23/21	12:43	1208464	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78320	31600	46720	23.36
24	2/23/21	12:46	1208468	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79020	31700	47320	23.66
25	2/23/21	12:51	1208471	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80380	31680	48700	24.35
26	2/23/21	1:01 P	1208474	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80500	31500	49000	24.50
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POUNDS	1,273,940
TONS	637.00

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SOUTHERN ILLINOIS POWER COOPERATIVE

P.O. | CCR LANDFILL | FEBRUARY 2021

	DATE	TIME	SIPC #	TRUCK #	DELIVERY CO.	COAL CO.	GROSS	TARE	NET	TONS
1	2/24/21	6:48 A	1208524	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77380	31500	45880	22.94
2	2/24/21	6:51 A	1208527	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78380	26720	51660	25.83
3	2/24/21	6:55 A	1208529	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80140	31420	48720	24.36
4	2/24/21	7:05 A	1208531	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78280	31240	47040	23.52
5	2/24/21	7:07 A	1208532	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79500	31680	47820	23.91
6	2/24/21	7:26 A	1208534	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77680	31600	46080	23.04
7	2/24/21	7:38 A	1208535	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79540	26520	53020	26.51
8	2/24/21	7:39 A	1208536	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80120	31700	48420	24.21
9	2/24/21	9:24 A	1208570	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77800	26140	51660	25.83
10	2/24/21	9:28 A	1208572	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79840	31500	48340	24.17
11	2/24/21	9:35 A	1208575	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77740	26720	51020	25.51
12	2/24/21	9:38 A	1208577	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78780	31420	47360	23.68
13	2/24/21	9:43 A	1208579	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77940	31680	46260	23.13
14	2/24/21	9:45 A	1208582	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77780	31240	46540	23.27
15	2/24/21	9:59 A	1208584	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78340	31600	46740	23.37
16	2/24/21	10:08	1208586	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77700	31700	46000	23.00
17	2/24/21	10:20	1208592	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79360	26520	52840	26.42
18	2/24/21	12:17	1208628	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79060	26720	52340	26.17
19	2/24/21	12:20	1208629	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77600	31420	46180	23.09
20	2/24/21	12:23	1208631	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80280	31680	48600	24.30
21	2/24/21	12:25	1208632	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79980	31500	48480	24.24
22	2/24/21	12:30	1208634	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80060	31240	48820	24.41
23	2/24/21	12:35	1208636	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	76980	31600	45380	22.69
24	2/24/21	12:46	1208643	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79140	26520	52620	26.31
25	2/24/21	12:56	1208646	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79300	31700	47600	23.80
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POUNDS	1,215,420
TONS	608.00

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SOUTHERN ILLINOIS POWER COOPERATIVE

P.O.	CCR LANDFILL	FEBRUARY 2021

	DATE	TIME	SIPC #	TRUCK #	DELIVERY CO.	COAL CO.	GROSS	TARE	NET	TONS
1	2/25/21	6:44 A	1208696	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	76600	26140	50460	25.23
2	2/25/21	6:49 A	1208699	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78960	26720	52240	26.12
3	2/25/21	6:53 A	1208700	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79280	31420	47860	23.93
4	2/25/21	6:58 A	1208701	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79140	26520	52620	26.31
5	2/25/21	7:08 A	1208706	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79280	31500	47780	23.89
6	2/25/21	7:09 A	1208707	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79960	31240	48720	24.36
7	2/25/21	7:15 A	1208708	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79560	31600	47960	23.98
8	2/25/21	7:24 A	1208711	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80040	31700	48340	24.17
9	2/25/21	7:37 A	1208722	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78320	31680	46640	23.32
10	2/25/21	9:36 A	1208766	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78700	26140	52560	26.28
11	2/25/21	9:47 A	1208769	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79680	26720	52960	26.48
12	2/25/21	9:49 A	1208770	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80160	26520	53640	26.82
13	2/25/21	9:50 A	1208771	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80380	31420	48960	24.48
14	2/25/21	9:56 A	1208774	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77820	31240	46580	23.29
15	2/25/21	9:57 A	1208776	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80300	31700	48600	24.30
16	2/25/21	9:59 A	1208780	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80000	31500	48500	24.25
17	2/25/21	10:19	1208786	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79800	31680	48120	24.06
18	2/25/21	10:27	1208790	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78960	31600	47360	23.68
19	2/25/21	12:23	1208833	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78660	26520	52140	26.07
20	2/25/21	12:29	1208838	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79100	26140	52960	26.48
21	2/25/21	12:30	1208839	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79660	31420	48240	24.12
22	2/25/21	12:32	1208841	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79820	26720	53100	26.55
23	2/25/21	12:38	1208843	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78060	31500	46560	23.28
24	2/25/21	12:41	1208845	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79460	31700	47760	23.88
25	2/25/21	12:46	1208848	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79740	31240	48500	24.25
26	2/25/21	12:50	1208850	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79920	31680	48240	24.12
27	2/25/21	12:53	1208851	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78160	31600	46560	23.28
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POUNDS	1,333,960
TONS	667.00

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTHERN ILLINOIS POWER COOPERATIVE

P.O.	CCR LANDFILL	FEBRUARY 2021

	DATE	TIME	SIPC #	TRUCK #	DELIVERY CO.	COAL CO.	GROSS	TARE	NET	TONS
1	2/26/21	6:31 A	1208910	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78720	26140	52580	26.29
2	2/26/21	6:42 A	1208914	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79100	26720	52380	26.19
3	2/26/21	6:56 A	1208920	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79720	31500	48220	24.11
4	2/26/21	7:02 A	1208921	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79240	31240	48000	24.00
5	2/26/21	7:03 A	1208922	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79400	31420	47980	23.99
6	2/26/21	7:20 A	1208926	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78580	26520	52060	26.03
7	2/26/21	7:25 A	1208928	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79020	31600	47420	23.71
8	2/26/21	7:32 A	1208935	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78580	31680	46900	23.45
9	2/26/21	7:45 A	1208941	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79880	31700	48180	24.09
10	2/26/21	8:55 A	1208965	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77220	26140	51080	25.54
11	2/26/21	9:22 A	1208978	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80200	26720	53480	26.74
12	2/26/21	9:37 A	1208981	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79140	31420	47720	23.86
13	2/26/21	9:39 A	1208983	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79860	31500	48360	24.18
14	2/26/21	9:44 A	1208986	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79500	31240	48260	24.13
15	2/26/21	9:48 A	1208987	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77820	26520	51300	25.65
16	2/26/21	9:53 A	1208989	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	76120	31600	44520	22.26
17	2/26/21	10:03	1208997	BEE9305	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79920	31680	48240	24.12
18	2/26/21	10:10	1209002	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79040	31700	47340	23.67
19	2/26/21	11:30	1209033	BEE9255	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79880	26140	53740	26.87
20	2/26/21	12:09	1209044	BEE9023	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79860	26720	53140	26.57
21	2/26/21	12:14	1209046	BEE9298	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	78380	31420	46960	23.48
22	2/26/21	12:19	1209049	BEE2110	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80100	31500	48600	24.30
23	2/26/21	12:23	1209050	BEE1145	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	79180	26520	52660	26.33
24	2/26/21	12:28	1209053	BEE9313	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77760	31240	46520	23.26
25	2/26/21	12:50	1209064	BEE9064	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	80120	31700	48420	24.21
26	2/26/21	12:54	1209065	BEE1116	BEELMAN TRUCKII	CCR (SANITARY LANDFILL)	77640	31600	46040	23.02
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POUNDS	1,280,100
TONS	640.00

Beelman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER	778673
INVOICE DATE	2/18/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #:SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9615211	2/12/2021	Delivery Charge	8.25	100.00 HR	$825.00
		Reference Numbers Bill of Lading # 9615211			
				Total for Order 9615211A:	$825.00
9615212	2/12/2021	Slurry Coal			
9615212	2/12/2021	Delivery Charge	5.50	100.00 HR	$550.00
		Reference Numbers Bill of Lading # 9615212			
				Total for Order 9615212A:	$550.00
9615213	2/12/2021	Slurry Coal			
9615213	2/12/2021	Delivery Charge	8.25	100.00 HR	$825.00
		Reference Numbers Bill of Lading # 9615213			
				Total for Order 9615213A:	$825.00

Total # of Loads :	27	**Total Freight :**	$21,350.00
Total Weight :	0.00	**Total FSC :**	$0.00
		Total Materials:	$0.00
		Total Sales Tax:	$0.00
		Total Misc:	$0.00
		Grand Total :	**$21,350.00**

16-0008

SEND REMITTANCE TO:
Beelman Logistics LLC
PO BOX 954389
ST. LOUIS, MO 63195-4389

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

Electronic Filing: Received, Clerk's Office 01/13/2023

Bedman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER 778673
INVOICE DATE 2/18/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #:SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9607362	2/8/2021	Slurry Coal			
9607362	2/8/2021	Delivery Charge	7.50	100.00 HR	$750.00
		Reference Numbers Bill of Lading # 9607362			
			Total for Order 9607362A:		$750.00
9607363	2/8/2021	Slurry Coal			
9607363	2/8/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9607363			
			Total for Order 9607363A:		$800.00
9607364	2/8/2021	Slurry Coal			
9607364	2/8/2021	Delivery Charge	4.75	100.00 HR	$475.00
		Reference Numbers Bill of Lading # 9607364			
			Total for Order 9607364A:		$475.00
9607365	2/8/2021	Slurry Coal			
9607365	2/8/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9607365			
			Total for Order 9607365A:		$800.00
9607366	2/8/2021	Slurry Coal			
9607366	2/8/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9607366			
			Total for Order 9607366A:		$850.00
9607367	2/8/2021	Slurry Coal			
9607367	2/8/2021	Delivery Charge	4.00	100.00 HR	$400.00
		Reference Numbers Bill of Lading # 9607367			
			Total for Order 9607367A:		$400.00
9607368	2/8/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

Beelman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER	778673
INVOICE DATE	2/18/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #:SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9607368	2/8/2021	Delivery Charge	8.25	100.00 HR	$825.00
		Reference Numbers Bill of Lading # 9607368			
				Total for Order 9607368A:	$825.00
9607369	2/8/2021	Slurry Coal			
9607369	2/8/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9607369			
				Total for Order 9607369A:	$800.00
9607370	2/8/2021	Slurry Coal			
9607370	2/8/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9607370			
				Total for Order 9607370A:	$800.00
9613681	2/11/2021	Slurry Coal			
9613681	2/11/2021	Delivery Charge	9.00	100.00 HR	$900.00
		Reference Numbers Bill of Lading # 9613681			
				Total for Order 9613681A:	$900.00
9613682	2/11/2021	Slurry Coal			
9613682	2/11/2021	Delivery Charge	9.00	100.00 HR	$900.00
		Reference Numbers Bill of Lading # 9613682			
				Total for Order 9613682A:	$900.00
9613683	2/11/2021	Slurry Coal			
9613683	2/11/2021	Delivery Charge	8.25	100.00 HR	$825.00
		Reference Numbers Bill of Lading # 9613683			
				Total for Order 9613683A:	$825.00
9613684	2/11/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

Bedman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER	778673
INVOICE DATE	2/18/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #:SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9613684	2/11/2021	Delivery Charge	9.25	100.00 HR	$925.00
		Reference Numbers Bill of Lading # 9613684			
			Total for Order 9613684A:		$925.00
9613685	2/11/2021	Slurry Coal			
9613685	2/11/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9613685			
			Total for Order 9613685A:		$850.00
9613686	2/11/2021	Slurry Coal			
9613686	2/11/2021	Delivery Charge	9.00	100.00 HR	$900.00
		Reference Numbers Bill of Lading # 9613686			
			Total for Order 9613686A:		$900.00
9613687	2/11/2021	Slurry Coal			
9613687	2/11/2021	Delivery Charge	8.25	100.00 HR	$825.00
		Reference Numbers Bill of Lading # 9613687			
			Total for Order 9613687A:		$825.00
9613688	2/11/2021	Slurry Coal			
9613688	2/11/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9613688			
			Total for Order 9613688A:		$850.00
9613689	2/11/2021	Slurry Coal			
9613689	2/11/2021	Delivery Charge	9.25	100.00 HR	$925.00
		Reference Numbers Bill of Lading # 9613689			
			Total for Order 9613689A:		$925.00
9615136	2/12/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

Bodman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER	778673
INVOICE DATE	2/18/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #: SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9615136	2/12/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9615136			
				Total for Order 9615136A:	$800.00
9615137	2/12/2021	Slurry Coal			
9615137	2/12/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9615137			
				Total for Order 9615137A:	$800.00
9615194	2/12/2021	Slurry Coal			
9615194	2/12/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9615194			
				Total for Order 9615194A:	$850.00
9615199	2/12/2021	Slurry Coal			
9615199	2/12/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9615199			
				Total for Order 9615199A:	$850.00
9615204	2/12/2021	Slurry Coal			
9615204	2/12/2021	Delivery Charge	6.00	100.00 HR	$600.00
		Reference Numbers Bill of Lading # 9615204			
				Total for Order 9615204A:	$600.00
9615210	2/12/2021	Slurry Coal			
9615210	2/12/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9615210			
				Total for Order 9615210A:	$850.00
9615211	2/12/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

SOUTHERN ILLINOIS POWER COOPERATIVE

INVOICE INPUT FORM

VENDOR NAME: **BEELMAN TRUCKING** VENDOR NO: **10181** VOUCHER NO:

ENTER DATE: **02/28/21** DATE DUE: **03/05/21** TAXES TO BE ADDED T = YES

ONLY IF INVOICES ARE PAID PRIOR TO ENTRY INTO THE SYSTEM CHECK NO. CHECK DATE P.O. #

LINE	INVOICE DATE	DESCRIPTION - INVOICE NUMBER - (LIMIT 30 CHAR.)	AMOUNT
1	02/28/21	**HAULING - COAL COMBUSTION RESIDUALS TO PERRY RIDGE LANDFILL**	21,425.00
2		**FEBRUARY 3-5, 2021.**	
3		INVOICE# 777659	
4			
5			
6			
7			
8			
		TOTAL ALL INVOICES	21,425.00

LINE	ACCOUNT NO.	WORK ORDER	QUANTITY	UNIT	DESCRIPTION OR INVOICE #	AMOUNT
1	10720-000	16-0008	214.25	HOUR	**HAULING - COAL COMBUSTION RESIDUA**	21,425.00
					FEBRUARY 3-5, 2021.	
3					INVOICE# 777659	
4						
5						
6						
7						
8						
					TOTAL DIST. ALL INVOICES	21,425.00

RETAINAGE CODE R = RETAINAGE

PREPARED BY APPROVED BY

Beelman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER 777659
INVOICE DATE 2/11/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #: SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9603995	2/5/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9603995			
				Total for Order 9603995A:	$800.00
9603996	2/5/2021	Slurry Coal			
9603996	2/5/2021	Delivery Charge	7.50	100.00 HR	$750.00
		Reference Numbers Bill of Lading # 9603996			
				Total for Order 9603996A:	$750.00
9603997	2/5/2021	Slurry Coal			
9603997	2/5/2021	Delivery Charge	7.75	100.00 HR	$775.00
		Reference Numbers Bill of Lading # 9603997			
				Total for Order 9603997A:	$775.00
9603998	2/5/2021	Slurry Coal			
9603998	2/5/2021	Delivery Charge	8.75	100.00 HR	$875.00
		Reference Numbers Bill of Lading # 9603998			
				Total for Order 9603998A:	$875.00
9603999	2/5/2021	Slurry Coal			
9603999	2/5/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9603999			
				Total for Order 9603999A:	$800.00

Total # of Loads : 29
Total Weight : 0.00

Total Freight :	$21,425.00
Total FSC :	$0.00
Total Materials:	$0.00
Total Sales Tax:	$0.00
Total Misc:	$0.00
Grand Total :	**$21,425.00**

Pay - Per Robert Conn
2-24-21

16-0008

SEND REMITTANCE TO:
Beelman Logistics LLC
PO BOX 954389
ST. LOUIS, MO 63195-4389

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

Electronic Filing: Received, Clerk's Office 01/13/2023

Beelman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER 777659
INVOICE DATE 2/11/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #: SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9599680	2/3/2021	Slurry Coal			
9599680	2/3/2021	Delivery Charge	8.25	100.00 HR	$825.00
		Reference Numbers Bill of Lading # 9599680			
			Total for Order 9599680A:		$825.00
9599681	2/3/2021	Slurry Coal			
9599681	2/3/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9599681			
			Total for Order 9599681A:		$850.00
9599682	2/3/2021	Slurry Coal			
9599682	2/3/2021	Delivery Charge	5.00	100.00 HR	$500.00
		Reference Numbers Bill of Lading # 9599682			
			Total for Order 9599682A:		$500.00
9599683	2/3/2021	Slurry Coal			
9599683	2/3/2021	Delivery Charge	7.50	100.00 HR	$750.00
		Reference Numbers Bill of Lading # 9599683			
			Total for Order 9599683A:		$750.00
9599684	2/3/2021	Slurry Coal			
9599684	2/3/2021	Delivery Charge	8.50	100.00 HR	$850.00
		Reference Numbers Bill of Lading # 9599684			
			Total for Order 9599684A:		$850.00
9600620	2/3/2021	Slurry Coal			
9600620	2/3/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9600620			
			Total for Order 9600620A:		$800.00
9600621	2/3/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

Beelman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER 777659
INVOICE DATE 2/11/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #: SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9600621	2/3/2021	Delivery Charge	7.25	100.00 HR	$725.00
		Reference Numbers Bill of Lading # 9600621			
				Total for Order 9600621A:	$725.00
9601077	2/3/2021	Slurry Coal			
9601077	2/3/2021	Delivery Charge	5.25	100.00 HR	$525.00
		Reference Numbers Bill of Lading # 9601077			
				Total for Order 9601077A:	$525.00
9601078	2/3/2021	Slurry Coal			
9601078	2/3/2021	Delivery Charge	5.25	100.00 HR	$525.00
		Reference Numbers Bill of Lading # 9601078			
				Total for Order 9601078A:	$525.00
9601079	2/3/2021	Slurry Coal			
9601079	2/3/2021	Delivery Charge	4.00	100.00 HR	$400.00
		Reference Numbers Bill of Lading # 9601079			
				Total for Order 9601079A:	$400.00
9601081	2/3/2021	Slurry Coal			
9601081	2/3/2021	Delivery Charge	5.00	100.00 HR	$500.00
		Reference Numbers Bill of Lading # 9601081			
				Total for Order 9601081A:	$500.00
9599707	2/4/2021	Slurry Coal			
9599707	2/4/2021	Delivery Charge	7.50	100.00 HR	$750.00
		Reference Numbers Bill of Lading # 9599707			
				Total for Order 9599707A:	$750.00
9599708	2/4/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

CUSTOMER COPY

Beelman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER 777659
INVOICE DATE 2/11/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #: SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9599708	2/4/2021	Delivery Charge	7.75	100.00 HR	$775.00
		Reference Numbers Bill of Lading # 9599708			
				Total for Order 9599708A:	$775.00
9599709	2/4/2021	Slurry Coal			
9599709	2/4/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9599709			
				Total for Order 9599709A:	$800.00
9602571	2/4/2021	Slurry Coal			
9602571	2/4/2021	Delivery Charge	7.50	100.00 HR	$750.00
		Reference Numbers Bill of Lading # 9602571			
				Total for Order 9602571A:	$750.00
9602574	2/4/2021	Slurry Coal			
9602574	2/4/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9602574			
				Total for Order 9602574A:	$800.00
9602575	2/4/2021	Slurry Coal			
9602575	2/4/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9602575			
				Total for Order 9602575A:	$800.00
9602577	2/4/2021	Slurry Coal			
9602577	2/4/2021	Delivery Charge	7.50	100.00 HR	$750.00
		Reference Numbers Bill of Lading # 9602577			
				Total for Order 9602577A:	$750.00
9602578	2/4/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

Electronic Filing: Received, Clerk's Office 01/13/2023

Beelman Logistics LLC

One Racehorse Dr
East St Louis, IL 62205
ph.(618)646-5300 fax(618)646-5400

INVOICE NUMBER 777659
INVOICE DATE 2/11/2021

Customer : SOUMAR

Bill To: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Shipper: SOUTHERN ILLINOIS POWER COOP
Attn: Leonard Hopkins
11543 Lake Egypt Rd
Marion, IL 62959

Consignee: PERRY RIDGE LANDFILL INC
6305 Sacred Heart Rd
Du Quoin, IL 62832

MASTER #: SCOSOUDUQ

Order	Del Date	Description	Bill Qty	Rate	Amount
9602578	2/4/2021	Delivery Charge	7.75	100.00 HR	$775.00
		Reference Numbers Bill of Lading # 9602578			
				Total for Order 9602578A:	$775.00
9602579	2/4/2021	Slurry Coal			
9602579	2/4/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9602579			
				Total for Order 9602579A:	$800.00
9599710	2/5/2021	Slurry Coal			
9599710	2/5/2021	Delivery Charge	7.50	100.00 HR	$750.00
		Reference Numbers Bill of Lading # 9599710			
				Total for Order 9599710A:	$750.00
9599711	2/5/2021	Slurry Coal			
9599711	2/5/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9599711			
				Total for Order 9599711A:	$800.00
9599712	2/5/2021	Slurry Coal			
9599712	2/5/2021	Delivery Charge	8.00	100.00 HR	$800.00
		Reference Numbers Bill of Lading # 9599712			
				Total for Order 9599712A:	$800.00
9603994	2/5/2021	Slurry Coal			
9603994	2/5/2021	Delivery Charge	8.25	100.00 HR	$825.00
		Reference Numbers Bill of Lading # 9603994			
				Total for Order 9603994A:	$825.00
9603995	2/5/2021	Slurry Coal			

TERMS:
All bills are due and payable 30 days from the invoice date. A service charge of 1.5% per month(18% annual) will be added on unpaid balance after due date. In the event legal action becomes necessary, reasonable attorney's fees and court costs will be added.

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223195		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	08:32	08:32		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76760 LB
Manual Tare Wt. 29040 LB
Net Weight 47720 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.86	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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NET AMOUNT
TENDERED
CHANGE

Manifest # GTS 510

SIGNATURE _____

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223196		SUZANNE

DH-1

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	08:35	08:35		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80460 LB
Manual Tare Wt. 31100 LB
Net Weight 49360 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.68	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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NET AMOUNT
TENDERED
CHANGE

Manifest # GTS 594

SIGNATURE _____

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223199		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	08:47	08:47		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79640 LB
Manual Tare Wt. 28480 LB
Net Weight 51160 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.58	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223201		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	08:52	08:52		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75000 LB
Manual Tare Wt. 31320 LB
Net Weight 43680 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.84	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223204		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	09:05	09:05		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78980 LB
Manual Tare Wt. 29740 LB
Net Weight 49240 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.62	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 608 SC SIGNATURE

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223220		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	11:07	11:07		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78640 LB
Manual Tare Wt. 31820 LB
Net Weight 46820 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.41	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 556 SIGNATURE

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-2

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223221		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	11:08	11:08		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76860 LB
Manual Tare Wt. 31100 LB
Net Weight 45760 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.88	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223226		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	11:29	11:29		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77420 LB
Manual Tare Wt. 28480 LB
Net Weight 48940 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.47	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223227		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	11:37	11:37		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76300 LB
Manual Tare Wt. 31320 LB
Net Weight 44980 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.49	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223229		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	11:54	11:54		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79200 LB
Manual Tare Wt. 29740 LB
Net Weight 49460 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.73	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 608

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-3

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223244		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	13:45	13:45		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78320 LB
Manual Tare Wt. 31100 LB
Net Weight 47220 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.61	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223247		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	13:52	13:52		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78000 LB
Manual Tare Wt. 31820 LB
Net Weight 46180 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.09	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 556

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223252		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	14:35	14:35		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76620 LB
Manual Tare Wt. 28480 LB
Net Weight 48140 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.07	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223253		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	14:42	14:42		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76120 LB
Manual Tare Wt. 31320 LB
Net Weight 44800 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.40	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223255		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/19/21	01/19/21	14:50	14:50		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78420 LB
Manual Tare Wt. 29740 LB
Net Weight 48680 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.34	TON	Fly Ash-Non Special				

SC

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 608

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223272		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	08:12	08:12		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76720 LB
Manual Tare Wt. 31320 LB
Net Weight 45400 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.70	TON	Fly Ash-Non Special				

SC

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223275		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	08:37	08:37		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 74460 LB
Manual Tare Wt. 29840 LB
Net Weight 44620 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.31	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223276		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	08:39	08:39		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75060 LB
Manual Tare Wt. 31560 LB
Net Weight 43500 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.75	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-3

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223278		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	08:43	08:43		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77960 LB
Manual Tare Wt. 30920 LB
Net Weight 47040 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.52	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

DH4

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223305		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	11:35	11:35		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76580 LB
Manual Tare Wt. 30920 LB
Net Weight 45660 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.83	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223318		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	13:31	13:31		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76100 LB
Manual Tare Wt. 30840 LB
Net Weight 45260 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.63	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223322		SUZANNE

DH-5

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	14:22	14:22		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77960 LB
Manual Tare Wt. 30920 LB
Net Weight 47040 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.52	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223325		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	14:28	14:28		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77340 LB
Manual Tare Wt. 29920 LB
Net Weight 47420 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.71	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223326		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	14:29	14:29		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76100 LB
Manual Tare Wt. 29000 LB
Net Weight 47100 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.55	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE apie

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223328		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	14:32	14:32		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75320 LB
Manual Tare Wt. 31380 LB
Net Weight 43940 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.97	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223329		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/20/21	01/20/21	14:56	14:56		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77460 LB
Manual Tare Wt. 29200 LB
Net Weight 48260 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.13	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 596

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223395		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	13:11	13:11		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt.	77640 LB
Manual Tare Wt.	31820 LB
Net Weight	45820 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.91	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 556

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **11:58:49 AM**
TICKET **1205588**
Truck # : **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS

Gross **77,460 lb**
Tare : SL **31,820 lb**
Net : 45,640 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 12:14:13 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **11:58:49 AM**
TICKET : **1205588**
Truck # **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS

Gross **77,460 lb**
Tare S **31,820 lb**
Net : 45,640 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 12:14:13 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223358		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	09:39	09:39		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79100 LB
Manual Tare Wt. 31820 LB
Net Weight 47280 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.64	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 556 SC

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **8:06:31 AM**
TICKET **1205541**
Truck # **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 23.64

Gross **78,940 lb**
Tare : SC **31,820 lb**
Net : 47,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 8:21:56 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **8:06:31 AM**
TICKET : **1205541**
Truck # **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 23.64

Gross **78,940 lb**
Tare : SC **31,820 lb**
Net : 47,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 8:21:56 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223349		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	08:34	08:34		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78000 LB
Manual Tare Wt. 29000 LB
Net Weight 49000 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.50	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **7:19:22 AM**
TICKET **1205524**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,860 lb**
Tare : **29,000 lb**
Net : 48,860 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 7:34:47 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **7:19:22 AM**
TICKET : **1205524**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,860 lb**
Tare : **29,000 lb**
Net : 48,860 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale
Print timestamp 1/21/21 7:34:47 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223379		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	11:19	11:19		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77680 LB
Manual Tare Wt. 29000 LB
Net Weight 48680 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.34	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 10:10:06 AM
TICKET 1205567
Truck # : GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 77,520 lb
Tare : 29,000 lb
Net : 48,520 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 10:25:30 AM

SOUTHERN ILLINOIS
Marion, IL
TRUCK SCALE RE
Date : 01/21/2021
Time : 10:10:06 A
TICKET : 1205567
Truck # GTS558
RF # 12014169
HAULER:
GREGS TRUCK SE
PRODUCT:
CCR (SANITARY LANI
PO #
Gross 77,52
Tare : 29,00
Net : 48,52
No Trucks over 80,000 allowed to leave Southern IL Po material.
RUSH -Remote Unattend
Print timestamp 1/21/21 10:

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223403		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	14:25	14:25		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80160 LB
Manual Tare Wt. 29000 LB
Net Weight 51160 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.58	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **1:09:51 PM**
TICKET **1205609**
Truck # : **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,000 lb**
Tare : **29,000 lb**
Net : 51,000 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 1:25:15 PM

SOUTHERN ILLINO
Marion, IL
TRUCK SCALE R

Date : 01/21/202
Time : 1:09:51 P
TICKET : 120560
Truck # GTS55
RF # 1201416
HAULER:
GREGS TRUCK S
PRODUCT:
CCR (SANITARY LA
PO #

Gross 80,0
Tare : 29,0
Net : 51,0

No Trucks over 80,0 allowed to leave Southern IL material.

RUSH -Remote Unatte
Print timestamp 1/21/21

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223353		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	09:07	09:07		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76740 LB
Manual Tare Wt. 30840 LB
Net Weight 45900 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.95	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 7:57:56 AM
TICKET 1205537
Truck # GTS482
RF # 11995220

HAULER:
GREGS TRUCK SERVICE

PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 76,540 lb
Tare : 30,840 lb
Net : 45,700 lb

No Trucks over 80,000# will be allowed
to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 8:13:20 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 7:57:56 AM
TICKET 1205537
Truck # GTS482
RF # 11995220

HAULER:
GREGS TRUCK SERVIC

PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 76,540 lb
Tare : 30,840 lb
Net : 45,700 lb

No Trucks over 80,000# will
allowed
to leave Southern IL Power
material.

RUSH -Remote Unattended S
Print timestamp 1/21/21 8:13:20

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223384		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	11:59	11:59		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75880 LB
Manual Tare Wt. 30840 LB
Net Weight 45040 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.52	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 10:48:36 AM
TICKET 1205576
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,680 lb**
Tare : **30,840 lb**
Net : 44,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 11:04:00 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 10:48:36 AM
TICKET 1205576
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,680 lb**
Tare : **30,840 lb**
Net : 44,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 11:04:00 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

DH-2

SITE	TICKET	GRID	WEIGHMASTER
02	00223348		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	08:17	08:17		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt.	78980 LB
Manual Tare Wt.	31160 LB
Net Weight	47820 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.91	TON	Fly Ash Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

DH-2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 7:10:59 AM
TICKET 1205521
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	78,840 lb
Tare :	31,160 lb
Net :	**47,680 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 7:26:23 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 7:10:59 AM
TICKET : 1205521
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	78,840 lb
Tare :	31,160 lb
Net :	**47,680 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 7:26:23 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223399		SUZANNE

DH-4

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	13:59	13:59		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79480 LB
Manual Tare Wt. 31160 LB
Net Weight 48320 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.16	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

DH-4

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **12:54:49 PM**
TICKET **1205603**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,360 lb**
Tare : **31,160 lb**
Net : 48,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 1:10:13 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **12:54:49 PM**
TICKET : **1205603**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,360 lb**
Tare : **31,160 lb**
Net : 48,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 1:10:13 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-3

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223376		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	11:00	11:00		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76400 LB
Manual Tare Wt. 31160 LB
Net Weight 45240 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.62	TON	Fly Ash-Non Special				

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Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

DH-3

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **9:52:06 AM**
TICKET **1205563**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **76,280 lb**
Tare : **31,160 lb**
Net : 45,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 10:07:30 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **9:52:06 AM**
TICKET : **1205563**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **76,280 lb**
Tare : **31,160 lb**
Net : 45,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 10:07:30 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	CUST	WEIGHMASTER
02	00223406		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	14:58	14:58		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80660 LB
Manual Tare Wt. 30840 LB
Net Weight 49820 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.91	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **1:44:37 PM**
TICKET **1205616**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**80,440 lb**
Tare :	**30,840 lb**
Net :	**49,600 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 2:00:01 PM

SOUTHERN ILLINOIS POW
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **1:44:37 PM**
TICKET : **1205616**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVIC
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**80,440 lb**
Tare :	**30,840 lb**
Net :	**49,600 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power wit material.

RUSH -Remote Unattended Scale
Print timestamp 1/21/21 2:00:01 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223371		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	10:37	10:37		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76940 LB
Manual Tare Wt. 31380 LB
Net Weight 45560 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.78	TON	Fly Ash-Non Special				

NET AMOUNT
TENDERED
CHANGE

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Manifest # GTS 570

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 9:08:04 AM
TICKET 1205555
Truck # : GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,780 lb
Tare :	31,380 lb
Net :	**45,400 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 9:23:28 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/21/2021
Time : 9:08:04 AM
TICKET : 1205555
Truck # GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,780 lb
Tare :	31,380 lb
Net :	**45,400 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 9:23:28 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223408		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	15:11	15:11		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78380 LB
Manual Tare Wt. 31380 LB
Net Weight 47000 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.50	TON	Fly Ash-Non Special				

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Manifest # GTS 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **12:43:26 PM**
TICKET **1205598**
Truck # : **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,200 lb**
Tare : **31,380 lb**
Net : 46,820 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 12:58:50 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **12:43:26 PM**
TICKET : **1205598**
Truck # **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,200 lb**
Tare : **31,380 lb**
Net : 46,820 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 12:58:50 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223370		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	10:36	10:36		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78120 LB
Manual Tare Wt. 29920 LB
Net Weight 48200 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.10	TON	Fly Ash-Non Special				

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Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **9:05:36 AM**
TICKET **1205553**
Truck # : **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**77,900 lb**
Tare :	**29,920 lb**
Net :	**47,980 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 9:21:00 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **9:05:36 AM**
TICKET : **1205553**
Truck # **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**77,900 lb**
Tare :	**29,920 lb**
Net :	**47,980 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 9:21:00 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

R6

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223409		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/21/21	01/21/21	15:12	15:12		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78840 LB
Manual Tare Wt. 29920 LB
Net Weight 48920 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.46	TON	Fly Ash-Non Special				

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Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

R5

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **12:55:51 PM**
TICKET **1205605**
Truck # : **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,660 lb**
Tare : **29,920 lb**
Net : 48,740 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/21/21 1:11:15 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/21/2021**
Time : **12:55:51 PM**
TICKET : **1205605**
Truck # **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,660 lb**
Tare : **29,920 lb**
Net : 48,740 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/21/21 1:11:15 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

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Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223426		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	08:27	08:27		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76980 LB
Manual Tare Wt. 29000 LB
Net Weight 47980 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.99	TON	Fly Ash-Non Special				

NET AMOUNT
TENDERED
CHANGE

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Manifest # GTS 558

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:15:02 AM**
TICKET **1205651**
Truck # **GTS558**
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**76,820 lb**
Tare :	**29,000 lb**
Net :	**47,820 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 7:30:26 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:15:02 AM**
TICKET : **1205651**
Truck # **GTS558**
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**76,820 lb**
Tare :	**29,000 lb**
Net :	**47,820 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 7:30:26 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223431		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	08:48	08:48		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76560 LB
Manual Tare Wt. 29920 LB
Net Weight 46640 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.32	TON	Fly Ash-Non Special				

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Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:17:12 AM**
TICKET **1205652**
Truck # : **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,360 lb**
Tare : **29,920 lb**
Net : 46,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 7:32:36 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:17:12 AM**
TICKET : **1205652**
Truck # **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,360 lb**
Tare : **29,920 lb**
Net : 46,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 7:32:36 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223432		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	08:49	08:49		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78800 LB
Manual Tare Wt. 31820 LB
Net Weight 46980 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.49	TON	Fly Ash-Non Special				

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Manifest # GTS 556

SIGNATURE

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:19:15 AM**
TICKET **1205654**
Truck # : **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,660 lb**
Tare **31,820 lb**
Net : 46,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 7:34:39 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:19:15 AM**
TICKET : **1205654**
Truck # **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,660 lb**
Tare : **31,820 lb**
Net : 46,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 7:34:39 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223451		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	11:24	11:24		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80260 LB
Manual Tare Wt. 29000 LB
Net Weight 51260 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.63	TON	Fly Ash-Non Special				

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Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:08:03 AM**
TICKET **1205696**
Truck # : **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,940 lb**
Tare : **29,000 lb**
Net : 50,940 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 10:23:27 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:08:03 AM**
TICKET : **1205696**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,940 lb**
Tare : **29,000 lb**
Net : 50,940 lb

No Trucks over 80,000# will b allowed to leave Southern IL Power w material.

RUSH -Remote Unattended Sca
Print timestamp 1/22/21 10:23:27

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223454		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	11:45	11:45		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78040 LB
Manual Tare Wt. 29200 LB
Net Weight 48840 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.42	TON	Fly Ash-Non Special				

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Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:27:09 AM**
TICKET **1205703**
Truck # : **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,840 lb**
Tare : **29,920 lb**
Net : 47,920 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 10:42:33 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:27:09 AM**
TICKET : **1205703**
Truck # **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,840 lb**
Tare : **29,920 lb**
Net : 47,920 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power wit' material.

RUSH -Remote Unattended S
Print timestamp 1/22/21 10:42:33 A

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223455		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	11:46	11:46		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78220 LB
Manual Tare Wt. 31820 LB
Net Weight 46400 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.20	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 556

SIGNATURE

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:36:32 AM**
TICKET **1205704**
Truck # : **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,100 lb**
Tare : **31,820 lb**
Net : 46,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 10:51:56 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:36:32 AM**
TICKET : **1205704**
Truck # **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,100 lb**
Tare : **31,820 lb**
Net : 46,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 22/21 10:51:56 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223472		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	14:18	14:18		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78420 LB
Manual Tare Wt. 29000 LB
Net Weight 49420 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.71	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **1:08:03 PM**
TICKET **1205732**
Truck # : **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,240 lb**
Tare : **29,000 lb**
Net : 49,240 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 1:23:27 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **1:08:03 PM**
TICKET : **1205732**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,240 lb**
Tare : **29,000 lb**
Net : 49,240 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 1:23:27 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223474		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	14:40	14:40		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt.	80060 LB
Manual Tare Wt.	31820 LB
Net Weight	48240 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.12	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 556

SIGNATURE

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **1:28:21 PM**
TICKET **1205737**
Truck # : **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,960 lb**
Tare : **31,820 lb**
Net : 48,140 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 1:43:45 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **1:28:21 PM**
TICKET : **1205737**
Truck # **GTS556**
RF # **12013516**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,960 lb**
Tare : **31,820 lb**
Net : 48,140 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 1:43:45 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223477		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	15:06	15:06		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt.	79080 LB
Manual Tare Wt.	29920 LB
Net Weight	49160 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.58	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **1:26:01 PM**
TICKET **1205736**
Truck # **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,040 lb**
Tare : **29,920 lb**
Net : 49,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 1:41:24 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **1:26:01 PM**
TICKET : **1205736**
Truck # **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,040 lb**
Tare : **29,920 lb**
Net : 49,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 1:41:24 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223466		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	13:46	13:46		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt.	75460 LB
Manual Tare Wt.	31380 LB
Net Weight	44080 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.04	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **12:35:37 PM**
TICKET **1205728**
Truck # : **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **75,500 lb**
Tare : **31,380 lb**
Net : 44,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 12:51:00 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **12:35:37 PM**
TICKET **1205728**
Truck # **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **75,500 lb**
Tare : **31,380 lb**
Net : 44,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 12:51:00 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

DUPLICATE TICKET

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223447		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	11:00	11:00		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76580 LB
Manual Tare Wt. 31380 LB
Net Weight 45200 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.60	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **9:50:02 AM**
TICKET **1205694**
Truck # **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **76,480 lb**
Tare : **31,380 lb**
Net : 45,100 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 10:05:25 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **9:50:02 AM**
TICKET **1205694**
Truck # **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **76,480 lb**
Tare : **31,380 lb**
Net : 45,100 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 10:05:25 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223423		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	08:18	08:18		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 73680 LB
Manual Tare Wt. 30840 LB
Net Weight 42840 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.42	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:09:42 AM**
TICKET **1205649**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **73,460 lb**
Tare : **30,840 lb**
Net : 42,620 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 7:25:06 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:09:42 AM**
TICKET : **1205649**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **73,460 lb**
Tare : **30,840 lb**
Net : 42,620 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 7:25:06 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223471		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	14:16	14:16		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77040 LB
Manual Tare Wt. 30840 LB
Net Weight 46200 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.10	TON	Fly Ash-Non Special	JR			

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/22/2021
Time : 1:02:45 PM
TICKET 1205730
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # JR

Gross 76,900 lb
Tare : 30,840 lb
Net : 46,060 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 1:18:09 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/22/2021
Time : 1:02:45 PM
TICKET : 1205730
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # JR

Gross 76,900 lb
Tare : 30,840 lb
Net : 46,060 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 1:18:09 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223450		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	11:20	11:20		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79560 LB
Manual Tare Wt. 30840 LB
Net Weight 48720 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.36	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:12:52 AM**
TICKET **1205698**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**79,380 lb**
Tare :	**30,840 lb**
Net :	**48,540 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 10:28:16 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **10:12:52 AM**
TICKET : **1205698**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**79,380 lb**
Tare :	**30,840 lb**
Net :	**48,540 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 10:28:16 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-2

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223422		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	08:15	08:15		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80220 LB
Manual Tare Wt. 31140 LB
Net Weight 49080 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.54	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

DH-2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:06:02 AM**
TICKET **1205647**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,120 lb**
Tare : **31,140 lb**
Net : 48,980 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 7:21:26 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/22/2021**
Time : **7:06:02 AM**
TICKET : **1205647**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,120 lb**
Tare : **31,140 lb**
Net : 48,980 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 7:21:26 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH3

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223449		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/22/21	01/22/21	11:10	11:10		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 80080 LB
Manual Tare Wt. 31140 LB
Net Weight 48940 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.47	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

DH3

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/22/2021
Time : 10:04:08 AM
TICKET 1205695
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 80,080 lb
Tare : 31,140 lb
Net : 48,940 lb

No Trucks over 80,000# will be allowed
to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/22/21 10:18:33 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/22/2021
Time : 10:04:08 AM
TICKET 1205695
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 80,080 lb
Tare : 31,140 lb
Net : 48,940 lb

No Trucks over 80,000# will be allowed
to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/22/21 10:18:33 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

GREG'S TRUCK SERVICE 140 WOLF CREEK RD GOREVILLE, IL 62939
PHONE 618-995-2646 FAX 618-995-1634

SIPC-HOURLY-01/16/20 THRU 01/31/20 DATE: FEBRUARY 5, 2021 INVOICE # 9497

Date	Ticket #	Driver	To	From	Ton/Bu	Rate	Amount
01-19-21	482	JR	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-19-21	510	AK	LANDFIELD	SIPC	3.50	$90.00	$315.00
01-19-21	556	JF	LANDFIELD	SIPC	5.50	$90.00	$495.00
01-19-21	558	KM	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-19-21	608	ST	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-20-21	482	JR	LANDFIELD	SIPC	6.00	$90.00	$540.00
01-20-21	558	MS	LANDFIELD	SIPC	4.00	$90.00	$360.00
01-20-21	570	AM	LANDFIELD	SIPC	5.50	$90.00	$495.00
01-20-21	608	ST	LANDFIELD	SIPC	4.00	$90.00	$360.00
01-20-21	608	ST	LANDFIELD	SIPC	4.00	$90.00	$360.00
01-21-21	482	JR	LANDFIELD	SIPC	8.00	$90.00	$720.00
01-21-21	556	ST	LANDFIELD	SIPC	7.00	$90.00	$630.00
01-21-21	558	KM	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-21-21	570	AM	LANDFIELD	SIPC	7.50	$90.00	$675.00
01-22-21	482	JR	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-22-21	556	JF	LANDFIELD	SIPC	9.50	$90.00	$855.00
01-22-21	558	KM	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-22-21	570	AM	LANDFIELD	SIPC	7.00	$90.00	$630.00

Ton/Bu	Sum:
125.5	$11,295.00

Jim Webb

THANK YOU FOR YOUR BUSINESS!!!
PAYMENT DUE UPON RECEIPT

10720
16-008

Electronic Filing: Received, Clerk's Office 01/13/2023

GREG'S TRUCK SERVICE 140 WOLF CREEK RD GOREVILLE, IL 62939
PHONE 618-995-2646 FAX 618-995-1634

SIPC-HOURLY-01/10/20 THRU 01/16/20 DATE:JANUARY 18, 2021 INVOICE # 9475

Date	Ticket #	Driver	To	From	Ton/Bu	Rate	Amount
01-11-21	482	JR	LANDFIELD	SIPC	5.00	$90.00	$450.00
01-11-21	510	AK	LANDFIELD	SIPC	6.00	$90.00	$540.00
01-11-21	514	RS	LANDFIELD	SIPC	3.00	$90.00	$270.00
01-11-21	558	KM	LANDFIELD	SIPC	3.00	$90.00	$270.00
01-11-21	570	SR	LANDFIELD	SIPC	6.00	$90.00	$540.00
01-11-21	594	DH	LANDFIELD	SIPC	5.00	$90.00	$450.00
01-11-21	604	RN	LANDFIELD	SIPC	5.25	$90.00	$472.50
01-11-21	606	FL	LANDFIELD	SIPC	6.00	$90.00	$540.00
01-12-21	510	AK	LANDFIELD	SIPC	5.50	$90.00	$495.00
01-12-21	556	JF	LANDFIELD	SIPC	1.00	$90.00	$90.00
01-12-21	570	SR	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-12-21	594	DH	LANDFIELD	SIPC	5.00	$90.00	$450.00
01-12-21	604	RN	LANDFIELD	SIPC	5.25	$90.00	$472.50
01-12-21	606	FL	LANDFIELD	SIPC	5.75	$90.00	$517.50
01-13-21	482	JR	LANDFIELD	SIPC	11.00	$90.00	$990.00
01-13-21	482	JR	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-13-21	510	AK	LANDFIELD	SIPC	8.00	$90.00	$720.00
01-13-21	514	RS	LANDFIELD	SIPC	3.00	$90.00	$270.00
01-13-21	570	SR	LANDFIELD	SIPC	8.00	$90.00	$720.00
01-13-21	594	DH	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-13-21	604	RN	LANDFIELD	SIPC	8.00	$90.00	$720.00
01-13-21	606	FL	LANDFIELD	SIPC	5.75	$90.00	$517.50
01-13-21	608	ST	LANDFIELD	SIPC	7.00	$90.00	$630.00
01-14-21	482	JR	LANDFIELD	SIPC	5.00	$90.00	$450.00
01-14-21	510	AK	LANDFIELD	SIPC	6.50	$90.00	$585.00
01-14-21	514	RS	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-14-21	556	JF	LANDFIELD	SIPC	5.50	$90.00	$495.00
01-14-21	558	KM	LANDFIELD	SIPC	5.00	$90.00	$450.00
01-14-21	570	SR	LANDFIELD	SIPC	8.50	$90.00	$765.00
01-14-21	594	DH	LANDFIELD	SIPC	9.00	$90.00	$810.00
01-14-21	606	FL	LANDFIELD	SIPC	8.25	$90.00	$742.50
01-14-21	608	ST	LANDFIELD	SIPC	7.50	$90.00	$675.00
01-15-21	500	JH	LANDFIELD	SIPC	3.50	$90.00	$315.00
01-15-21	510	AK	LANDFIELD	SIPC	5.50	$90.00	$495.00
01-15-21	514	RS	LANDFIELD	SIPC	5.50	$90.00	$495.00
01-15-21	556	JF	LANDFIELD	SIPC	6.50	$90.00	$585.00
01-15-21	558	M	LANDFIELD	SIPC	5.00	$90.00	$450.00
01-15-21	570	SR	LANDFIELD	SIPC	6.00	$90.00	$540.00
01-15-21	594	DH	LANDFIELD	SIPC	7.50	$90.00	$675.00
01-15-21	604	JG	LANDFIELD	SIPC	8.00	$90.00	$720.00
01-15-21	606	FL	LANDFIELD	SIPC	6.25	$90.00	$562.50
01-15-21	608	ST	LANDFIELD	SIPC	9.00	$90.00	$810.00

Ton/Bu	Sum:
266.5	$23,985.00

16-0008

Jim Webb

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:24:35 AM
TICKET 1205276
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	80,320 lb
Tare :	31,100 lb
Net :	**49,220 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 7:40:00 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:24:35 AM
TICKET : 1205276
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	80,320 lb
Tare :	31,100 lb
Net :	**49,220 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 7:40:00 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:20:40 AM
TICKET 1205274
Truck # : GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	76,560 lb
Tare :	29,040 lb
Net :	**47,520 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 7:36:05 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:20:40 AM
TICKET : 1205274
Truck # GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	76,560 lb
Tare :	29,040 lb
Net :	**47,520 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 7:36:05 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:31:45 AM
TICKET 1205278
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO # J

Gross	74,760 lb
Tare :	31,320 lb
Net :	**43,440 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 7:47:10 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:31:45 AM
TICKET : 1205278
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO # J

Gross	74,760 lb
Tare :	31,320 lb
Net :	**43,440 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 7:47:10 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:27:32 AM
TICKET 1205277
Truck # : GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	79,440 lb
Tare :	28,480 lb
Net :	**50,960 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 7:42:57 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:27:32 AM
TICKET : 1205277
Truck # GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	79,440 lb
Tare :	28,480 lb
Net :	**50,960 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 7:42:57 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:00:20 AM
TICKET 1205317
Truck # : GTS556
RF # 11995120
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	78,460 lb
Tare :	31,820 lb
Net :	**46,640 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 10:15:45 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:00:20 AM
TICKET : 1205317
Truck # GTS556
RF # 11995120
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	78,460 lb
Tare :	31,820 lb
Net :	**46,640 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 10:15:45 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:39:37 AM
TICKET 1205281
Truck # : GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO # TONS 24.62

Gross	78,800 lb
Tare :	29,740 lb
Net :	**49,060 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 7:55:02 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 7:39:37 AM
TICKET : 1205281
Truck # GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO # TONS 24.62

Gross	78,800 lb
Tare	29,740 lb
Net :	**49,060 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 7:55:02 AM

DH-2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:17:53 AM
TICKET 1205322
Truck # : GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	77,180 lb
Tare :	28,480 lb
Net :	**48,700 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 10:33:18 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:17:53 AM
TICKET : 1205322
Truck # GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	77,180 lb
Tare :	28,480 lb
Net :	**48,700 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 10:33:18 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:03:46 AM
TICKET 1205318
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	76,720 lb
Tare :	31,100 lb
Net :	**45,620 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 10:19:11 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:03:46 AM
TICKET : 1205318
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	76,720 lb
Tare :	31,100 lb
Net :	**45,620 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 10:19:11 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:43:30 AM
TICKET 1205334
Truck # : GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 24.73

Gross	79,000 lb
Tare :	29,740 lb
Net :	**49,260 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 10:58:55 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:43:30 AM
TICKET : 1205334
Truck # GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 24.73

Gross	79,000 lb
Tare	29,740 lb
Net :	**49,260 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 10:58:55 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:28:29 AM
TICKET 1205328
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # 1

Gross	76,060 lb
Tare :	31,320 lb
Net :	**44,740 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 10:43:54 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 10:28:29 AM
TICKET : 1205328
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # 1

Gross	76,060 lb
Tare :	31,320 lb
Net :	**44,740 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 10:43:54 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 12:43:24 PM
TICKET 1205363
Truck # : GTS556
RF # 11995120
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	77,880 lb
Tare :	31,820 lb
Net :	**46,060 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 12:58:49 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 12:43:24 PM
TICKET : 1205363
Truck # GTS556
RF # 11995120
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDF L)
PO #

Gross	77,880 lb
Tare :	31,820 lb
Net :	**46,060 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 12:58:49 PM

DH-3

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 12:40:02 PM
TICKET 1205362
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	78,240 lb
Tare :	31,100 lb
Net :	**47,140 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 12:55:27 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 12:40:02 PM
TICKET : 1205362
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	78,240 lb
Tare :	31,100 lb
Net :	**47,140 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/19/21 12:55:27 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 1:33:18 PM
TICKET 1205372
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # JR

Gross	75,940 lb
Tare :	31,320 lb
Net :	**44,620 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 1:48:43 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 1:33:18 PM
TICKET : 1205372
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # JR

Gross	75,940 lb
Tare :	31,320 lb
Net :	**44,620 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp/19/21 1:48:43 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 1:16:58 PM
TICKET 1205370
Truck # : GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,540 lb
Tare :	28,480 lb
Net :	**48,060 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 1:32:23 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 1:16:58 PM
TICKET : 1205370
Truck # GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,540 lb
Tare :	28,480 lb
Net :	**48,060 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp/19/21 1:32:23 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:01:38 AM
TICKET 1205401
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,480 lb
Tare :	31,320 lb
Net :	**45,160 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 7:17:02 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:01:38 AM
TICKET : 1205401
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,480 lb
Tare :	31,320 lb
Net :	**45,160 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp/20/21 7:17:02 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 1:34:37 PM
TICKET 1205373
Truck # : GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS 24.34

Gross	78,280 lb
Tare :	29,740 lb
Net :	**48,540 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/19/21 1:50:02 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/19/2021
Time : 1:34:37 PM
TICKET 1205373
Truck # GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS 24.34

Gross	78,280 lb
Tare :	29,740 lb
Net :	**48,540 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp/19/21 1:50:02 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:21:08 AM
TICKET 1205408
Truck # : GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	74,240 lb
Tare :	29,840 lb
Net :	**44,400 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 7:36:33 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:21:08 AM
TICKET : 1205408
Truck # GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	74,240 lb
Tare :	29,840 lb
Net :	**44,400 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/20/21 7:36:33 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:03:00 AM
TICKET 1205402
Truck # : GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	74,880 lb
Tare :	31,560 lb
Net :	**43,320 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 7:18:25 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:03:00 AM
TICKET : 1205402
Truck # GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	74,880 lb
Tare :	31,560 lb
Net :	**43,320 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/20/21 7:18:25 AM

DH-4

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 10:31:45 AM
TICKET 1205442
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,500 lb
Tare :	30,920 lb
Net :	**45,580 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 10:47:09 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 10:31:45 AM
TICKET : 1205442
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,500 lb
Tare :	30,920 lb
Net :	**45,580 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/20/21 10:47:09 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:40:02 AM
TICKET 1205416
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	77,880 lb
Tare :	30,920 lb
Net :	**46,960 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 7:55:26 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 7:40:02 AM
TICKET : 1205416
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	77,880 lb
Tare :	30,920 lb
Net :	**46,960 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/20/21 7:55:26 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:24:09 PM
TICKET 1205465
Truck # : GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	77,140 lb
Tare :	29,920 lb
Net :	**47,220 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:39:33 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:24:09 PM
TICKET : 1205465
Truck # GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	77,140 lb
Tare :	29,920 lb
Net :	**47,220 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:39:33 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:18:12 PM
TICKET 1205464
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # JT

Gross	75,820 lb
Tare :	30,840 lb
Net :	**44,980 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:33:37 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:18:12 PM
TICKET : 1205464
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # JT

Gross	75,820 lb
Tare :	30,840 lb
Net :	**44,980 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:33:37 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:40:55 PM
TICKET 1205472
Truck # : GTS596
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS 24.13

Gross	77,340 lb
Tare : SC	29,200 lb
Net :	**48,140 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:56:19 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:40:55 PM
TICKET : 1205472
Truck # GTS596
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY L
PO # TONS 24.13

Gross	77,340 lb
Tare : SC	29,200 lb
Net :	**48,140 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:56:19 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:26:15 PM
TICKET 1205466
Truck # : GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	75,100 lb
Tare :	31,380 lb
Net :	**43,720 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:41:39 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/20/2021
Time : 12:26:15 PM
TICKET : 1205466
Truck # GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	75,100 lb
Tare :	31,380 lb
Net :	**43,720 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 12:41:39 PM

DH-5

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/20/2021**
Time : **1:00:41 PM**
TICKET **1205478**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	**77,820 lb**
Tare :	**30,920 lb**
Net :	**46,900 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 1:16:06 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/20/2021**
Time : **1:00:41 PM**
TICKET : **1205478**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **77,820 lb**
Tare : **30,920 lb**
Net : 46,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/20/21 1:16:06 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/20/2021**
Time : **1:06:04 PM**
TICKET **1205479**
Truck # : **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	**76,020 lb**
Tare :	**29,000 lb**
Net :	**47,020 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/20/21 1:21:29 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/20/2021**
Time : **1:06:04 PM**
TICKET : **1205479**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **76,020 lb**
Tare : **29,000 lb**
Net : 47,020 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/20/21 1:21:29 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222743		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	08:39	08:39		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75280 LB
Manual Tare Wt. 31320 LB
Net Weight 43960 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.98	TON	Fly Ash-Non Special				

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Open on Saturday by appointment only

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:22:09 AM**
TICKET **1204473**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,100 lb**
Tare : **31,320 lb**
Net : 43,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 7:37:36 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:22:09 AM**
TICKET : **1204473**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,100 lb**
Tare : **31,320 lb**
Net : 43,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 7:37:36 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222742		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	08:37	08:37		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76760 LB
Manual Tare Wt. 29040 LB
Net Weight 47720 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.86	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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CHANGE

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AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:17:53 AM**
TICKET **1204472**
Truck # : **GTS510**
RF # **12036466**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **76,620 lb**
Tare : **29,040 lb**
Net : 47,580 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 7:33:21 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/11/2021
Time : 7:17:53 AM
TICKET 1204472
Truck # GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 76,620 lb
Tare : 29,040 lb
Net : 47,580 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 7:33:21 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222744		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	08:41	08:41		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 80320 LB
Manual Tare Wt. 29800 LB
Net Weight 50520 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.26	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:11:21 AM**
TICKET **1204470**
Truck # : **GTS604**
RF # 12014238
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,180 lb**
Tare : **29,800 lb**
Net : 50,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 7:26:49 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:11:21 AM**
TICKET : **1204470**
Truck # **GTS604**
RF # 12014238
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,180 lb**
Tare : **29,800 lb**
Net : 50,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 7:26:49 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

PL

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222745		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	08:43	08:43		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75740 LB
Manual Tare Wt. 30780 LB
Net Weight 44960 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.48	TON	Fly Ash-Non Special				

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CHANGE

SIGNATURE _____

PL

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:14:32 AM**
TICKET **1204471**
Truck # : **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,560 lb**
Tare : **30,780 lb**
Net : 44,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 7:29:59 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:14:32 AM**
TICKET : **1204471**
Truck # **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,560 lb**
Tare : **30,780 lb**
Net : 44,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 7:29:59 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222748		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	08:49	08:49		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 78100 LB
Manual Tare Wt. 31860 LB
Net Weight 46240 LB

SR

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.12	TON	Fly Ash-Non Special				

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **6:47:35 AM**
TICKET **1204459**
Truck # : **GTS570** SR
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,000 lb**
Tare : **31,560 lb**
Net : 46,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 7:03:03 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **6:47:35 AM**
TICKET **1204459**
Truck # **GTS570** SR
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,000 lb**
Tare : **31,560 lb**
Net : 46,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 7:03:03 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-1

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222750		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	08:54	08:54		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 78480 LB
Manual Tare Wt. 31280 LB
Net Weight 47200 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.60	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

DH1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:08:26 AM**
TICKET **1204469**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,360 lb**
Tare : **29,800 lb**
Net : 48,560 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 7:23:54 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **7:08:26 AM**
TICKET : **1204469**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,360 lb**
Tare : **29,800 lb**
Net : 48,560 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 7:23:54 AM

DEPART 11:36

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-2

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222765		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	11:10	11:10		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79860 LB
Manual Tare Wt. 29800 LB
Net Weight 50060 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.03	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

DH-2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/11/2021
Time : 10:03:23 AM
TICKET 1204519
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,740 lb**
Tare **29,800 lb**
Net : 49,940 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 10:18:50 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/11/2021
Time : 10:03:23 AM
TICKET : 1204519
Truck # GTS594
RF # 12013911
HAULER.
GREGS TRUCK SERVICE
PRODUCT.
CCR (SANITARY LANDFILL)

PO #

Gross **79,740 lb**
Tare : **29,800 lb**
Net : 49,940 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 10:18:50 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222769		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	11:19	11:19		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 72860 LB
Manual Tare Wt. 31560 LB
Net Weight 41300 LB

SIL

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
20.65	TON	Fly Ash-Non Special				

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NET AMOUNT
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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/11/2021
Time : 10:11:14 AM
TICKET 1204524
Truck # : GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SIL
Gross **72,860 lb**
Tare : **31,560 lb**
Net : 41,300 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 10:26:42 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/11/2021
Time : 10:11:14 AM
TICKET : 1204524
Truck # GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SIL
Gross **72,860 lb**
Tare : **31,560 lb**
Net : 41,300 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 10:26:42 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222770		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	11:21	11:21		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 76380 LB
Manual Tare Wt. 29040 LB
Net Weight 47340 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.67	TON	Fly Ash-Non Special				

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AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **10:10:26 AM**
TICKET **1204523**
Truck # : **GTS510**
RF # **12036466**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**76,380 lb**
Tare :	**29,040 lb**
Net :	**47,340 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 10:25:54 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **10:10:26 AM**
TICKET **1204523**
Truck # **GTS510**
RF # **12036466**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**76,380 lb**
Tare :	**29,040 lb**
Net :	**47,340 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 10:25:54 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222775		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	11:42	11:42		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt.	78040 LB
Manual Tare Wt.	30780 LB
Net Weight	47260 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.63	TON	Fly Ash-Non Special				

12:15 pm

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PL

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/11/2021
Time : 10:30:01 AM
TICKET 1204532
Truck # : GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	77,860 lb
Tare :	30,780 lb
Net :	**47,080 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 10:45:28 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/11/2021
Time : 10:30:01 AM
TICKET : 1204532
Truck # GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	77,860 lb
Tare :	30,780 lb
Net :	**47,080 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 10:45:28 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222774		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	11:41	11:41		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79100 LB
Manual Tare Wt. 29800 LB
Net Weight 49300 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.65	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **10:32:04 AM**
TICKET **1204534**
Truck # : **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**78,940 lb**
Tare :	**29,800 lb**
Net :	**49,140 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 10:47:32 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **10:32:04 AM**
TICKET : **1204534**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**78,940 lb**
Tare :	**29,800 lb**
Net :	**49,140 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 10:47:32 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222776		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	11:43	11:43		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78280 LB
Manual Tare Wt. 31320 LB
Net Weight 46960 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.48	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **10:34:34 AM**
TICKET **1204535**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,140 lb**
Tare : **31,320 lb**
Net : 46,820 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 10:50:02 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **10:34:34 AM**
TICKET : **1204535**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,140 lb**
Tare : **31,320 lb**
Net : 46,820 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 10:50:02 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222790		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	14:08	14:08		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 73260 LB
Manual Tare Wt. 28480 LB
Net Weight 44780 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.39	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **12:50:40 PM**
TICKET **1204569**
Truck # : **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **73,260 lb**
Tare : **28,480 lb**
Net : 44,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 1:06:08 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **12:50:40 PM**
TICKET : **1204569**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **73,260 lb**
Tare : **28,480 lb**
Net : 44,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 1:06:08 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222792		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/11/21	01/11/21	14:11	14:11		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt.	78680 LB
Manual Tare Wt.	29840 LB
Net Weight	48840 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.42	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **12:54:06 PM**
TICKET **1204571**
Truck # : **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,680 lb**
Tare : **29,840 lb**
Net : 48,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/11/21 1:09:34 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/11/2021**
Time : **12:54:06 PM**
TICKET : **1204571**
Truck # **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,680 lb**
Tare : **29,840 lb**
Net : 48,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/11/21 1:09:34 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-1

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222815		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	08:13	08:13		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 79300 LB
Manual Tare Wt. 29800 LB
Net Weight 49500 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.75	TON	Fly Ash-Non Special				

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DH-1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **6:58:52 AM**
TICKET **1204596**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,300 lb**
Tare : **29,800 lb**
Net : 49,500 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 7:14:20 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **6:58:52 AM**
TICKET : **1204596**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,300 lb**
Tare : **29,800 lb**
Net : 49,500 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 7:14:20 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222817		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	08:17	08:17		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt.	77080 LB
Manual Tare Wt.	29800 LB
Net Weight	47280 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.64	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **7:12:20 AM**
TICKET **1204606**
Truck # : **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,080 lb**
Tare : **29,800 lb**
Net : 47,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 7:27:47 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **7:12:20 AM**
TICKET : **1204606**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,080 lb**
Tare : **29,800 lb**
Net : 47,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 7:27:47 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222818		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	08:19	08:19		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 79160 LB
Manual Tare Wt. 30780 LB
Net Weight 48380 LB

FL 1

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.19	TON	Fly Ash-Non Special				

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FL 1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/12/2021
Time : 7:03:29 AM
TICKET 1204600
Truck # : GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,160 lb**
Tare : **30,780 lb**
Net : 48,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 7:18:56 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/12/2021
Time : 7:03:29 AM
TICKET : 1204600
Truck # GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,160 lb**
Tare : **30,780 lb**
Net : 48,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 7:18:56 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222822		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	09:03	09:03		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 77020 LB
Manual Tare Wt. 29200 LB
Net Weight 47820 LB

SR

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.91	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **7:58:43 AM**
TICKET **1204618**
Truck # : **GTS596**
RF # **12013930**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **77,020 lb**
Tare : **29,200 lb**
Net : 47,820 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 8:14:10 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **7:58:43 AM**
TICKET : **1204618**
Truck # **GTS596**
RF # **12013930**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **77,020 lb**
Tare : **29,200 lb**
Net : 47,820 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 8:14:10 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-2

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222833		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	10:52	10:52		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 79000 LB
Manual Tare Wt. 29800 LB
Net Weight 49200 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.60	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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DH-2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **9:46:29 AM**
TICKET **1204651**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,000 lb**
Tare : **29,800 lb**
Net : 49,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 10:01:56 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **9:46:29 AM**
TICKET : **1204651**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,000 lb**
Tare : **29,800 lb**
Net : 49,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 10:01:56 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222836		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	11:27	11:27		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78280 LB
Manual Tare Wt. 29800 LB
Net Weight 48480 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.24	TON	Fly Ash-Non Special				

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NET AMOUNT

TENDERED

CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **10:19:09 AM**
TICKET **1204665**
Truck # : **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,120 lb**
Tare : **29,800 lb**
Net : 48,320 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 10:34:36 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **10:19:09 AM**
TICKET : **1204665**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,120 lb**
Tare : **29,800 lb**
Net : 48,320 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 10:34:36 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222837		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	11:28	11:28		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 78160 LB
Manual Tare Wt. 30780 LB
Net Weight 47380 LB

FL2

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.69	TON	Fly Ash-Non Special				

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NET AMOUNT
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FL2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/12/2021
Time : 10:17:13 AM
TICKET 1204664
Truck # GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,160 lb**
Tare : **30,780 lb**
Net : 47,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 10:32:41 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/12/2021
Time : 10:17:13 AM
TICKET 1204664
Truck # GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,160 lb**
Tare : **30,780 lb**
Net : 47,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 10:32:41 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222840		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	11:50	11:50		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 70400 LB
Manual Tare Wt. 29200 LB
Net Weight 41200 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
20.60	TON	Fly Ash-Non Special				

SR

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **10:44:12 AM**
TICKET **1204671**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **70,400 lb**
Tare : **29,200 lb**
Net : 41,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 10:59:39 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **10:44:12 AM**
TICKET : **1204671**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **70,400 lb**
Tare : **29,200 lb**
Net : 41,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 10:59:39 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
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INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222858		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	14:33	14:33		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 70940 LB
Manual Tare Wt. 29200 LB
Net Weight 41740 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
20.87	TON	Fly Ash-Non Special				

SR

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **1:24:16 PM**
TICKET **1204717**
Truck # : **GTS596**
RF # **12013930**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **70,940 lb**
Tare : **29,200 lb**
Net : 41,740 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 1:39:43 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **1:24:16 PM**
TICKET : **1204717**
Truck # **GTS596**
RF # **12013930**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **70,940 lb**
Tare : **29,200 lb**
Net : 41,740 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 1:39:43 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
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INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222816		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	08:15	08:15		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 75500 LB
Manual Tare Wt. 29040 LB
Net Weight 46460 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.23	TON	Fly Ash-Non Special				

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NET AMOUNT

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AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **7:08:10 AM**
TICKET **1204602**
Truck # : **GTS510**
RF # **12036466**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,500 lb**
Tare : **29,040 lb**
Net : 46,460 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 7:23:37 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/12/2021**
Time : **7:08:10 AM**
TICKET : **1204602**
Truck # **GTS510**
RF # **12036466**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,500 lb**
Tare : **29,040 lb**
Net : 46,460 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 7:23:37 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
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INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222834		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/12/21	01/12/21	11:02	11:02		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 75700 LB
Manual Tare Wt. 29040 LB
Net Weight 46660 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.33	TON	Fly Ash-Non Special				

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NET AMOUNT

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CHANGE

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AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/12/2021
Time : 9:54:08 AM
TICKET 1204654
Truck # : GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	75,700 lb
Tare :	29,040 lb
Net :	**46,660 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/12/21 10:09:35 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/12/2021
Time : 9:54:08 AM
TICKET : 1204654
Truck # GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	75,700 lb
Tare :	29,040 lb
Net :	**46,660 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/12/21 10:09:35 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-2

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222878		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	08:00	08:00		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 74940 LB
Manual Tare Wt. 31180 LB
Net Weight 43760 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.88	TON	Fly Ash-Non Special				

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NET AMOUNT

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DH-2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 6:53:14 AM
TICKET 1204743
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRU SER E
PRODUCT:
CCR (SANI L)

PO #

Gross **74,940 lb**
Tare : **31,180 lb**
Net : 43,760 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 7:08:41 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 6:53:14 AM
TICKET : 1204743
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **74,940 lb**
Tare : **31,180 lb**
Net : 43,760 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 7:08:41 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222879		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	08:03	08:03		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 65500 LB
Manual Tare Wt. 29200 LB
Net Weight 36300 LB

SR

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
18.15	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 6:56:27 AM
TICKET 1204745
Truck # : GTS596
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **65,500 lb**
Tare : **29,200 lb**
Net : 36,300 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 7:11:54 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 6:56:27 AM
TICKET : 1204745
Truck # GTS596
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **65,500 lb**
Tare : **29,200 lb**
Net : 36,300 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 7:11:54 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222881		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	08:07	08:07		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 77800 LB
Manual Tare Wt. 30780 LB
Net Weight 47020 LB

FL1

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.51	TON	Fly Ash-Non Special				

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FL 1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **7:02:34 AM**
TICKET **1204747**
Truck # : **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,800 lb**
Tare : **30,780 lb**
Net : 47,020 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 7:18:01 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **7:02:34 AM**
TICKET : **1204747**
Truck # **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,800 lb**
Tare : **30,780 lb**
Net : 47,020 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 7:18:01 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222882		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	08:15	08:15		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 77060 LB
Manual Tare Wt. 29040 LB
Net Weight 48020 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.01	TON	Fly Ash-Non Special				

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AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **7:09:42 AM**
TICKET **1204750**
Truck # : **GTS510**
RF # **12036466**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **77,060 lb**
Tare : **29,040 lb**
Net : 48,020 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 7:25:09 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 7:09:42 AM
TICKET : 1204750
Truck # GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 77,060 lb
Tare : 29,040 lb
Net : 48,020 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 7:25:09 AM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHTMASTER
02	00222885		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	08:32	08:32		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 77240 LB
Manual Tare Wt. 29800 LB
Net Weight 47440 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.72	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **7:33:06 AM**
TICKET **1204756**
Truck # : **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,240 lb**
Tare : **29,800 lb**
Net : 47,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 7:48:33 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **7:33:06 AM**
TICKET : **1204756**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,240 lb**
Tare : **29,800 lb**
Net : 47,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 7:48:33 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222896		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	09:46	09:46		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 77020 LB
Manual Tare Wt. 29740 LB
Net Weight 47280 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.64	TON	Fly Ash-Non Special				

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CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 8:17:06 AM
TICKET 1204772
Truck # : GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS 23.64

Gross 77,020 lb
Tare : 29,740 lb
Net : 47,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 8:32:33 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 8:17:06 AM
TICKET : 1204772
Truck # GTS608
RF # 12014146
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS 23.64

Gross 77,020 lb
Tare : 29,740 lb
Net : 47,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

lost RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 8:32:33 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222906		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	10:41	10:41		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 67100 LB
Manual Tare Wt. 29200 LB
Net Weight 37900 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
18.95	TON	Fly Ash-Non Special	SR			

Operating hours 7:00am to 4:00pm Monday thru Friday and
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NET AMOUNT

TENDERED

CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 9:36:51 AM
TICKET 1204794
Truck # : GTS596
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **67,100 lb**
Tare : **29,200 lb**
Net : 37,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 9:52:18 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 9:36:51 AM
TICKET : 1204794
Truck # GTS596
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **67,100 lb**
Tare : **29,200 lb**
Net : 37,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 9:52:18 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-3

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222907		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	10:42	10:42		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 76060 LB
Manual Tare Wt. 31180 LB
Net Weight 44880 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.44	TON	Fly Ash-Non Special				

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NET AMOUNT

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CHANGE

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DH-3

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **9:35:57 AM**
TICKET **1204793**
Truck # : **GTS594**
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,060 lb**
Tare : **31,180 lb**
Net : 44,880 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 9:51:24 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **9:35:57 AM**
TICKET **1204793**
Truck # **GTS594**
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,060 lb**
Tare : **31,180 lb**
Net : 44,880 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 9:51:24 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222909		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	10:51	10:51		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt.	76480 LB
Manual Tare Wt.	29040 LB
Net Weight	47440 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.72	TON	Fly Ash-Non Special				

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CHANGE

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AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **9:45:35 AM**
TICKET **1204801**
Truck # **GTS510**
RF # **12036466**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,480 lb**
Tare **29,040 lb**
Net : 47,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 10:01:02 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 9:45:35 AM
TICKET : 1204801
Truck # GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 76,480 lb
Tare : 29,040 lb
Net : 47,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 10:01:02 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222911		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	10:59	10:59		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 77860 LB
Manual Tare Wt. 30780 LB
Net Weight 47080 LB

FL 2

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.54	TON	Fly Ash-Non Special				

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FL2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **9:40:24 AM**
TICKET **1204796**
Truck # **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,860 lb**
Tare : **30,780 lb**
Net : 47,080 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 9:55:51 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **9:40:24 AM**
TICKET : **1204796**
Truck # **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,860 lb**
Tare : **30,780 lb**
Net : 47,080 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 9:55:51 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222918		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	11:22	11:22		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 80160 LB
Manual Tare Wt. 29800 LB
Net Weight 50360 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.18	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **10:16:31 AM**
TICKET **1204809**
Truck # : **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,160 lb**
Tare : **29,800 lb**
Net : 50,360 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 10:31:58 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **10:16:31 AM**
TICKET : **1204809**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,160 lb**
Tare : **29,800 lb**
Net : 50,360 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 10:31:58 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
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INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222936		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	13:31	13:31		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 72060 LB
Manual Tare Wt. 29200 LB
Net Weight 42860 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.43	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:21:50 PM**
TICKET **1204843**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #
Gross **72,060 lb**
Tare : **29,200 lb**
Net : 42,860 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 12:37:17 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:21:50 PM**
TICKET : **1204843**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #
Gross **72,060 lb**
Tare : **29,200 lb**
Net : 42,860 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 12:37:17 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH4

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222937		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	13:33	13:33		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 75880 LB
Manual Tare Wt. 31180 LB
Net Weight 44700 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.35	TON	Fly Ash-Non Special				

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CHANGE

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DH-4

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:27:36 PM**
TICKET **1204845**
Truck # : **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,880 lb**
Tare : **31,180 lb**
Net : 44,700 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 12:43:03 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:27:36 PM**
TICKET : **1204845**
Truck # **GTS594**
RF # **12013911**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,880 lb**
Tare : **31,180 lb**
Net : 44,700 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 12:43:03 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222939		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	13:38	13:38		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 79740 LB
Manual Tare Wt. 29040 LB
Net Weight 50700 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.35	TON	Fly Ash-Non Special				

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AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 12:32:53 PM
TICKET 1204847
Truck # : GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 79,740 lb
Tare : 29,040 lb
Net : 50,700 lb

No Trucks over 80,000# will be allowed
to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 12:46:19 PM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 12:32:53 PM
TICKET 1204847
Truck # GTS510
RF # 12036466
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 79,740 lb
Tare : 29,040 lb
Net : 50,700 lb

No Trucks over 80,000# will be allowed
to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 12:46:19 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222942		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	13:48	13:48		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 75700 LB
Manual Tare Wt. 29740 LB
Net Weight 45960 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.98	TON	Fly Ash-Non Special				

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SC

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:34:30 PM**
TICKET **1204848**
Truck # : **GTS608**
RF # **12014146**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 22.98

Gross **75,700 lb**
Tare SC **29,740 lb**
Net : 45,960 lb

No Trucks over 80,000# will be allowed to leave Southern IL. Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 12:49:57 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:34:30 PM**
TICKET : **1204848**
Truck # **GTS608**
RF # **12014146**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 22.98

Gross **75,700 lb**
Tare SC **29,740 lb**
Net : 45,960 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 12:49:57 PM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222943		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	13:50	13:50		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 77620 LB
Manual Tare Wt. 29800 LB
Net Weight 47820 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.91	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 12:41:59 PM
TICKET 1204850
Truck # : GTS604
RF # 12014238
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	77,620 lb
Tare :	29,800 lb
Net :	**47,820 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 12:57:26 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/13/2021
Time : 12:41:59 PM
TICKET : 1204850
Truck # GTS604
RF # 12014238
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	77,620 lb
Tare :	29,800 lb
Net :	**47,820 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 12:57:26 PM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222947		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	14:06	14:06		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 79380 LB
Manual Tare Wt. 29840 LB
Net Weight 49540 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.77	TON	Fly Ash-Non Special				

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NET AMOUNT
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RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:37:47 PM**
TICKET **1204849**
Truck # : **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,380 lb**
Tare : **29,840 lb**
Net : 49,540 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 12:53:14 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **12:37:47 PM**
TICKET : **1204849**
Truck # **GTS514**
RF # **12013919**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,380 lb**
Tare : **29,840 lb**
Net : 49,540 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 12:53:14 PM

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Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222949		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	14:27	14:27		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 75880 LB
Manual Tare Wt. 31320 LB
Net Weight 44560 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.28	TON	Fly Ash-Non Special				

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SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **10:22:10 AM**
TICKET **1204810**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,480 lb**
Tare : **31,320 lb**
Net : 48,160 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 10:37:37 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **10:22:10 AM**
TICKET : **1204810**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,480 lb**
Tare : **31,320 lb**
Net : 48,160 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 10:37:37 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222921		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	11:33	11:33		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 79480 LB
Manual Tare Wt. 31320 LB
Net Weight 48160 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.08	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **1:17:50 PM**
TICKET **1204859**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,880 lb**
Tare : **31,320 lb**
Net : 44,560 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 1:33:17 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **1:17:50 PM**
TICKET : **1204859**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,880 lb**
Tare : **31,320 lb**
Net : 44,560 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 1:33:17 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222884		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/13/21	01/13/21	08:30	08:30		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 76800 LB
Manual Tare Wt. 31320 LB
Net Weight 45480 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.74	TON	Fly Ash-Non Special				

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **7:19:57 AM**
TICKET **1204753**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,800 lb**
Tare : **31,320 lb**
Net : 45,480 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/13/21 7:35:25 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/13/2021**
Time : **7:19:57 AM**
TICKET : **1204753**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,800 lb**
Tare : **31,320 lb**
Net : 45,480 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/13/21 7:35:25 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222968		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	08:08	08:08		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78120 LB
Manual Tare Wt. 29200 LB
Net Weight 48920 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.46	TON	Fly Ash-Non Special	SR			

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 6:59:40 AM
TICKET 1204889
Truck # GTS596
RF # 12013930 SR
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	78,040 lb
Tare :	29,200 lb
Net :	**48,840 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 7:15:06 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 6:59:40 AM
TICKET : 1204889
Truck # GTS596 SR
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross	78,040 lb
Tare :	29,200 lb
Net :	**48,840 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 7:15:06 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222972		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	08:27	08:27		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79580 LB
Manual Tare Wt. 30780 LB
Net Weight 48800 LB

FL 1

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.40	TON	Fly Ash-Non Special				

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

FL 1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **7:12:41 AM**
TICKET **1204894**
Truck # : **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**79,440 lb**
Tare :	**30,780 lb**
Net :	**48,660 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 7:28:07 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **7:12:41 AM**
TICKET : **1204894**
Truck # **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	**79,440 lb**
Tare :	**30,780 lb**
Net :	**48,660 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 7:28:07 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222975		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	09:05	09:05		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76860 LB
Manual Tare Wt. 29160 LB
Net Weight 47700 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.85	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **7:29:53 AM**
TICKET **1204900**
Truck # : **GTS584**
RF # **11995122**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,680 lb**
Tare : **29,160 lb**
Net : 47,520 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 7:45:20 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 7:29:53 AM
TICKET : 1204900
Truck # GTS584
RF # 11995122
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 76,680 lb
Tare : 29,160 lb
Net : 47,520 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 7:45:20 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222978		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	09:40	09:40		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79720 LB
Manual Tare Wt. 31560 LB
Net Weight 48160 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.08	TON	Fly Ash-Non Special				

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Manifest # GTS 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 8:24:23 AM
TICKET 1204921
Truck # : GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,620 lb**
Tare : **31,560 lb**
Net : 48,060 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 8:39:50 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 8:24:23 AM
TICKET : 1204921
Truck # GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,620 lb**
Tare : **31,560 lb**
Net : 48,060 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 8:39:50 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222990		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:02	11:02		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75180 LB
Manual Tare Wt. 29200 LB
Net Weight 45980 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.99	TON	Fly Ash-Non Special	SR			

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Manifest # GTS 586

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **9:53:19 AM**
TICKET **1204951**
Truck # : **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **75,180 lb**
Tare **29,200 lb**
Net : 45,980 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:08:45 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **9:53:19 AM**
TICKET : **1204951**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **75,180 lb**
Tare : **29,200 lb**
Net : 45,980 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:08:45 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222994		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:21	11:21		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78240 LB
Manual Tare Wt. 30780 LB
Net Weight 47460 LB

FL 2

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.73	TON	Fly Ash-Non Special				

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Manifest # GTS 606

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 10:13:47 AM
TICKET 1204965
Truck # : GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,080 lb**
Tare : **30,780 lb**
Net : 47,300 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:29:14 AM

FL 2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 10:13:47 AM
TICKET : 1204965
Truck # GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,080 lb**
Tare : **30,780 lb**
Net : 47,300 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:29:14 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223001		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:46	11:46		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75660 LB
Manual Tare Wt. 29160 LB
Net Weight 46500 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.25	TON	Fly Ash-Non Special				

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Manifest # 584

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **10:36:39 AM**
TICKET **1204973**
Truck # : **GTS584**
RF # 11995122
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **75,540 lb**
Tare : **29,160 lb**
Net : 46,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:52:06 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 10:36:39 AM
TICKET : 1204973
Truck # GTS584
RF # 11995122
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 75,540 lb
Tare : 29,160 lb
Net : 46,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:52:06 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223013		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	13:24	13:24		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77180 LB
Manual Tare Wt. 31560 LB
Net Weight 45620 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.81	TON	Fly Ash-Non Special				

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Manifest # 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **12:11:32 PM**
TICKET **1204999**
Truck # : **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 22.81

Gross **77,100 lb**
Tare : SC **31,560 lb**
Net : 45,540 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 12:26:59 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **12:11:32 PM**
TICKET : **1204999**
Truck # **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 22.81

Gross SC **77,100 lb**
Tare . **31,560 lb**
Net : 45,540 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 12:26:59 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223016		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	13:46	13:46		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 72520 LB
Manual Tare Wt. 29200 LB
Net Weight 43320 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.66	TON	Fly Ash-Non Special		SR		

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Manifest # 596

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **12:35:04 PM**
TICKET **1205005**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **72,560 lb**
Tare : **29,200 lb**
Net : 43,360 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 12:50:30 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **12:35:04 PM**
TICKET : **1205005**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
SR

Gross **72,560 lb**
Tare : **29,200 lb**
Net : 43,360 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 12:50:30 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223018		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	13:54	13:54		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78720 LB
Manual Tare Wt. 30780 LB
Net Weight 47940 LB

FL3

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.97	TON	Fly Ash-Non Special				

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Manifest # 606

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

FL3

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **12:47:38 PM**
TICKET **1205007**
Truck # : **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,680 lb**
Tare : **30,780 lb**
Net : 47,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 1:03:05 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **12:47:38 PM**
TICKET : **1205007**
Truck # **GTS606**
RF # **12014207**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,680 lb**
Tare : **30,780 lb**
Net : 47,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 1:03:05 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-1

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222969		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	08:13	08:13		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78720 LB
Manual Tare Wt. 31180 LB
Net Weight 47540 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.77	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

SIGNATURE

NET AMOUNT
TENDERED
CHANGE

DH-1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **7:08:00 AM**
TICKET **1204893**
Truck # **GTS594**
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,600 lb**
Tare : **31,180 lb**
Net : 47,420 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 7:23:27 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **7:08:00 AM**
TICKET : **1204893**
Truck # **GTS594**
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,600 lb**
Tare : **31,180 lb**
Net : 47,420 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 7:23:27 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222970		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	08:14	08:14		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80560 LB
Manual Tare Wt. 29840 LB
Net Weight 50720 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.36	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

NET AMOUNT
TENDERED
CHANGE

SIGNATURE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 7:04:38 AM
TICKET 1204892
Truck # : GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	80,360 lb
Tare :	29,840 lb
Net :	**50,520 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 7:20:05 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 7:04:38 AM
TICKET : 1204892
Truck # GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	80,360 lb
Tare :	29,840 lb
Net :	**50,520 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 7:20:05 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222973		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	08:35	08:35		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77860 LB
Manual Tare Wt. 31320 LB
Net Weight 46540 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.27	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # GTS 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 7:16:48 AM
TICKET 1204896
Truck # : GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,660 lb**
Tare : **31,320 lb**
Net : 46,340 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 7:32:15 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 7:16:48 AM
TICKET : 1204896
Truck # GTS482
RF # 11995220
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,660 lb**
Tare : **31,320 lb**
Net : 46,340 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 7:32:15 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-2

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222991		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:04	11:04		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79180 LB
Manual Tare Wt. 31180 LB
Net Weight 48000 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.00	TON	Fly Ash-Non Special				

NET AMOUNT
TENDERED
CHANGE

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 594

SIGNATURE _____

DH-2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 9:58:08 AM
TICKET 1204955
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,160 lb**
Tare : **31,180 lb**
Net : 47,980 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:13:35 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 9:58:08 AM
TICKET : 1204955
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,160 lb**
Tare : **31,180 lb**
Net : 47,980 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:13:35 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222997		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:32	11:32		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79700 LB
Manual Tare Wt. 28480 LB
Net Weight 51220 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.61	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 10:19:03 AM
TICKET 1204967
Truck # : GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 79,580 lb
Tare : 28,480 lb
Net : 51,100 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:34:29 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 10:19:03 AM
TICKET : 1204967
Truck # GTS558
RF # 12014169
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 79,580 lb
Tare : 28,480 lb
Net . 51,100 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:34:29 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222998		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:36	11:36		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79980 LB
Manual Tare Wt. 29840 LB
Net Weight 50140 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.07	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **10:02:53 AM**
TICKET **1204959**
Truck # **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,840 lb**
Tare : **29,840 lb**
Net : 50,000 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:18:20 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **10:02:53 AM**
TICKET **1204959**
Truck # **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,840 lb**
Tare : **29,840 lb**
Net : 50,000 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:18:20 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00222999		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:37	11:37		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76860 LB
Manual Tare Wt. 31820 LB
Net Weight 45040 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.52	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # GTS 556

SIGNATURE

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **10:24:42 AM**
TICKET **1204970**
Truck # : **GTS556**
RF # 11995120
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,840 lb**
Tare : **31,820 lb**
Net : 45,020 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:40:08 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **10:24:42 AM**
TICKET : **1204970**
Truck # **GTS556**
RF # 11995120
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,840 lb**
Tare : **31,820 lb**
Net : 45,020 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:40:08 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223000		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	11:45	11:45		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78840 LB
Manual Tare Wt. 31320 LB
Net Weight 47520 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.76	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **10:35:18 AM**
TICKET **1204972**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,720 lb**
Tare : **31,320 lb**
Net : 47,400 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 10:50:45 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **10:35:18 AM**
TICKET : **1204972**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,720 lb**
Tare : **31,320 lb**
Net : 47,400 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 10:50:45 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-3

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223017		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	13:47	13:47		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79880 LB
Manual Tare Wt. 31180 LB
Net Weight 48700 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.35	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # 594

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

DH-3

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 12:39:16 PM
TICKET 1205006
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,960 lb**
Tare : **31,180 lb**
Net : 48,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 12:54:43 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 12:39:16 PM
TICKET : 1205006
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,960 lb**
Tare : **31,180 lb**
Net : 48,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 12:54:43 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223024		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	14:28	14:28		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80300 LB
Manual Tare Wt. 28480 LB
Net Weight 51820 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.91	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **1:14:52 PM**
TICKET **1205014**
Truck # : **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **80,320 lb**
Tare : **28,480 lb**
Net : 51,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 1:30:18 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **1:14:52 PM**
TICKET : **1205014**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **80,320 lb**
Tare : **28,480 lb**
Net : 51,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 1:30:18 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223025		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	14:34	14:34		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78140 LB
Manual Tare Wt. 29840 LB
Net Weight 48300 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.15	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 1:24:19 PM
TICKET 1205016
Truck # : GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,080 lb**
Tare : **29,840 lb**
Net : 48,240 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 1:39:46 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/14/2021
Time : 1:24:19 PM
TICKET : 1205016
Truck # GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **78,080 lb**
Tare : **29,840 lb**
Net : 48,240 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 1:39:46 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223026		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	14:35	14:35		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77400 LB
Manual Tare Wt. 31820 LB
Net Weight 45580 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.79	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

Visit our website at www.perryridgelandfill.com

Manifest # 556

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **1:17:48 PM**
TICKET **1205015**
Truck # : **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,400 lb**
Tare : **31,820 lb**
Net : 45,580 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 1:33:14 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **1:17:48 PM**
TICKET : **1205015**
Truck # **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,400 lb**
Tare : **31,820 lb**
Net : 45,580 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp/14/21 1:33:14 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223027		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/14/21	01/14/21	14:37	14:37		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75660 LB
Manual Tare Wt. 31320 LB
Net Weight 44340 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.17	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **1:27:50 PM**
TICKET **1205017**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,560 lb**
Tare : **31,320 lb**
Net : 44,240 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/14/21 1:43:17 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/14/2021**
Time : **1:27:50 PM**
TICKET : **1205017**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,560 lb**
Tare : **31,320 lb**
Net : 44,240 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/14/21 1:43:17 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223051		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	08:14	08:14		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 74880 LB
Manual Tare Wt. 29200 LB
Net Weight 45680 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.84	TON	Fly Ash-Non Special				

SR

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 596

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:03:50 AM**
TICKET **1205052**
Truck # : **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **74,860 lb**
Tare : **29,200 lb**
Net : 45,660 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 7:19:16 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:03:50 AM**
TICKET : **1205052**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR
Gross **74,860 lb**
Tare : **29,200 lb**
Net : 45,660 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 7:19:16 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223053		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	08:17	08:17		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76380 LB
Manual Tare Wt. 29160 LB
Net Weight 47220 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.61	TON	Fly Ash-Non Special				

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Manifest # 584

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 7:12:01 AM
TICKET 1205056
Truck # : GTS584
RF # 11995122
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **76,220 lb**
Tare : **29,160 lb**
Net : 47,060 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 7:27:27 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 7:12:01 AM
TICKET : 1205056
Truck # GTS584
RF # 11995122
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross 76,220 lb
Tare : 29,160 lb
Net : 47,060 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp/15/21 7:27:27 AM

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

Electronic Filing: Received, Clerk's Office 01/13/2023

INBOUND CHARGE

02	00223054		SUZANNE		
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	08:23	08:23		

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77180 LB
Manual Tare Wt. 30780 LB
Net Weight 46400 LB

Fl 1

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.20	TON	Fly Ash-Non Special				

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Manifest # 606

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

Fl 1

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 7:15:07 AM
TICKET 1205057
Truck # : GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **77,040 lb**
Tare : **30,780 lb**
Net : 46,260 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 7:30:33 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 7:15:07 AM
TICKET : 1205057
Truck # GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **77,040 lb**
Tare : **30,780 lb**
Net : 46,260 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 7:30:33 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-4

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223070		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	10:43	10:43		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77000 LB
Manual Tare Wt. 31100 LB
Net Weight 45900 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.95	TON	Fly Ash-Non Special				

NET AMOUNT
TENDERED
CHANGE

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 594

SIGNATURE _____

DH-4

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 9:40:14 AM
TICKET 1205110
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,920 lb
Tare :	31,100 lb
Net :	**45,820 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 9:55:41 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 9:40:14 AM
TICKET : 1205110
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	76,920 lb
Tare :	31,100 lb
Net :	**45,820 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 9:55:41 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223071		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	10:59	10:59		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 72140 LB
Manual Tare Wt. 29200 LB
Net Weight 42940 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.47	TON	Fly Ash-Non Special SR				

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Manifest # 596

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : **9:53:50 AM**
TICKET **1205114**
Truck # : **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **72,100 lb**
Tare : **29,200 lb**
Net : 42,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:09:17 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 9:53:50 AM
TICKET : **1205114**
Truck # **GTS596**
RF # 12013930
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # SR

Gross **72,100 lb**
Tare : **29,200 lb**
Net : 42,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:09:17 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223073		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:07	11:07		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80060 LB
Manual Tare Wt. 29160 LB
Net Weight 50900 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.45	TON	Fly Ash-Non Special				

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Manifest # 584

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:03:22 AM**
TICKET **1205121**
Truck # : **GTS584**
RF # **11995122**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,920 lb**
Tare : **29,160 lb**
Net : 50,760 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:18:49 AM

AK

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:03:22 AM**
TICKET : **1205121**
Truck # **GTS584**
RF # **11995122**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)

PO #

Gross **79,920 lb**
Tare : **29,160 lb**
Net : 50,760 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:18:49 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223074		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:12	11:12		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78060 LB
Manual Tare Wt. 30780 LB
Net Weight 47280 LB

FL2

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.64	TON	Fly Ash-Non Special				

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Manifest # 606

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

FL2

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 10:08:38 AM
TICKET 1205122
Truck # : GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,860 lb**
Tare : **30,780 lb**
Net : 47,080 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:24:05 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 10:08:38 AM
TICKET : 1205122
Truck # GTS606
RF # 12014207
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 77,860 lb
Tare : 30,780 lb
Net : 47,080 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:24:05 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223086		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	12:33	12:33		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 72800 LB
Manual Tare Wt. 31360 LB
Net Weight 41440 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
20.72	TON	Fly Ash-Non Special				

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Manifest # 500

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 11:28:29 AM
TICKET 1205152
Truck # : GTS500
RF # 12013581
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	72,720 lb
Tare :	31,360 lb
Net :	**41,360 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 11:43:56 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 11:28:29 AM
TICKET : 1205152
Truck # GTS500
RF # 12013581
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	72,720 lb
Tare :	31,360 lb
Net :	**41,360 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 11:43:56 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

DH-5

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223096		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	13:35	13:35		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 78440 LB
Manual Tare Wt. 31100 LB
Net Weight 47340 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.67	TON	Fly Ash-Non Special				

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NET AMOUNT

TENDERED

CHANGE

SIGNATURE _____

DH-5

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 12:28:54 PM
TICKET 1205165
Truck # : GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	78,440 lb
Tare :	31,100 lb
Net :	**47,340 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 12:44:21 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 12:28:54 PM
TICKET : 1205165
Truck # GTS594
RF # 12013911
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross	78,440 lb
Tare :	31,100 lb
Net :	**47,340 lb**

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 12:44:21 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223052		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	08:15	08:15		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76300 LB
Manual Tare Wt. 29800 LB
Net Weight 46500 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.25	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 604

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:07:09 AM**
TICKET **1205053**
Truck # : **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,180 lb**
Tare : **29,800 lb**
Net : 46,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 7:22:35 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:07:09 AM**
TICKET : **1205053**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,180 lb**
Tare : **29,800 lb**
Net : 46,380 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 7:22:35 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223056		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	08:29	08:29		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76760 LB
Manual Tare Wt. 31320 LB
Net Weight 45440 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.72	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:19:50 AM**
TICKET **1205058**
Truck # : **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,600 lb**
Tare : **31,320 lb**
Net : 45,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 7:35:16 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:19:50 AM**
TICKET : **1205058**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **76,600 lb**
Tare : **31,320 lb**
Net : 45,280 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 7:35:16 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223057		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	08:45	08:45		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75140 LB
Manual Tare Wt. 29840 LB
Net Weight 45300 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.65	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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Manifest # 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:24:15 AM**
TICKET **1205060**
Truck # : **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **74,940 lb**
Tare : **29,840 lb**
Net : 45,100 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 7:39:41 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **7:24:15 AM**
TICKET : **1205060**
Truck # **GTS514**
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **74,940 lb**
Tare : **29,840 lb**
Net : 45,100 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 7:39:41 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223059		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	08:55	08:55		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 76800 LB
Manual Tare Wt. 31560 LB
Net Weight 45240 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.62	TON	Fly Ash-Non Special				

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Manifest # 570 SC

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 7:45:55 AM
TICKET 1205070
Truck # : GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS 22.62

Gross **76,680 lb**
Tare : SC **31,560 lb**
Net : 45,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 8:01:22 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 7:45:55 AM
TICKET : 1205070
Truck # GTS570
RF # 12013958
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # TONS 22.62

Gross **76,680 lb**
Tare : SC **31,560 lb**
Net : 45,120 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 8:01:22 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

SITE	TICKET	GRID	WEIGHMASTER
02	00223072		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:01	11:01		

REFERENCE	ORIGIN
FLYASH	IN-STATE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

Scale 1 Gross Wt. 77420 LB
Manual Tare Wt. 29800 LB
Net Weight 47620 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.81	TON	Fly Ash-Non Special				

NET AMOUNT

TENDERED

CHANGE

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Manifest # 604

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **9:56:34 AM**
TICKET **1205116**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,300 lb**
Tare : **29,800 lb**
Net : 47,500 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:12:00 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **9:56:34 AM**
TICKET : **1205116**
Truck # **GTS604**
RF # **12014238**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **77,300 lb**
Tare : **29,800 lb**
Net : 47,500 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:12:00 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223076		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:29	11:29		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80360 LB
Manual Tare Wt. 28480 LB
Net Weight 51880 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.94	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:22:17 AM**
TICKET **1205124**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,280 lb**
Tare : **28,480 lb**
Net : 51,800 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:37:44 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:22:17 AM**
TICKET **1205124**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **80,280 lb**
Tare : **28,480 lb**
Net : 51,800 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:37:44 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

RS

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223077		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:41	11:41		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 77240 LB
Manual Tare Wt. 29840 LB
Net Weight 47400 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.70	TON	Fly Ash-Non Special				

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Open on Saturday by appointment only

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Manifest # 514

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

RS

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 10:25:48 AM
TICKET 1205125
Truck # : GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 77,040 lb
Tare : 29,840 lb
Net : 47,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:41:14 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 10:25:48 AM
TICKET : 1205125
Truck # GTS514
RF # 12013919
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross 77,040 lb
Tare : 29,840 lb
Net : 47,200 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:41:14 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223078		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:42	11:42		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79340 LB
Manual Tare Wt. 31820 LB
Net Weight 47520 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.76	TON	Fly Ash-Non Special				

NET AMOUNT
TENDERED
CHANGE

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Manifest # 556

SIGNATURE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:31:16 AM**
TICKET **1205131**
Truck # : **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,240 lb**
Tare : **31,820 lb**
Net : 47,420 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:46:42 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:31:16 AM**
TICKET **1205131**
Truck # **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,240 lb**
Tare : **31,820 lb**
Net : 47,420 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:46:42 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET		WEIGHMASTER
02	00223081		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:54	11:54		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79100 LB
Manual Tare Wt. 31560 LB
Net Weight 47540 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.77	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

SC

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Manifest # 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:43:44 AM**
TICKET **1205137**
Truck # : **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,000 lb**
Tare : SC **31,560 lb**
Net : 47,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:59:11 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:43:44 AM**
TICKET : **1205137**
Truck # **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,000 lb**
Tare SC **31,560 lb**
Net : 47,440 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:59:11 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832 INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223082		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	11:58	11:58		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 75300 LB
Manual Tare Wt. 31320 LB
Net Weight 43980 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
21.99	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 482

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:34:13 AM**
TICKET **1205133**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,100 lb**
Tare : **31,320 lb**
Net : 43,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 10:49:39 AM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **10:34:13 AM**
TICKET : **1205133**
Truck # **GTS482**
RF # **11995220**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,100 lb**
Tare : **31,320 lb**
Net : 43,780 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 10:49:39 AM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223098		jessica

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	13:47	13:47		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Manual Gross Wt. 75160 LB
Manual Tare Wt. 29800 LB
Net Weight 45360 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
22.68	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
Open on Saturday by appointment only

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NET AMOUNT
TENDERED
CHANGE

SIGNATURE _____

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 12:41:21 PM
TICKET 1205168
Truck # : GTS604
RF # 12014238
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,160 lb**
Tare : **29,800 lb**
Net : 45,360 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 12:56:47 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : 01/15/2021
Time : 12:41:21 PM
TICKET : 1205168
Truck # GTS604
RF # 12014238
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **75,160 lb**
Tare : **29,800 lb**
Net : 45,360 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 12:56:47 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223101		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	14:20	14:20		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 79360 LB
Manual Tare Wt. 28480 LB
Net Weight 50880 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
25.44	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 558

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **1:09:31 PM**
TICKET **1205169**
Truck # : **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,320 lb**
Tare : **28,480 lb**
Net : 50,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 1:24:57 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **1:09:31 PM**
TICKET : **1205169**
Truck # **GTS558**
RF # **12014169**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **79,320 lb**
Tare : **28,480 lb**
Net : 50,840 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 1:24:57 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223103		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	14:26	14:26		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 78920 LB
Manual Tare Wt. 31820 LB
Net Weight 47100 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
23.55	TON	Fly Ash-Non Special				

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 556

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **1:18:09 PM**
TICKET **1205172**
Truck # : **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,720 lb**
Tare : **31,820 lb**
Net : 46,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 1:33:36 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **1:18:09 PM**
TICKET : **1205172**
Truck # **GTS556**
RF # **11995120**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO #

Gross **78,720 lb**
Tare : **31,820 lb**
Net : 46,900 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 1:33:36 PM

Electronic Filing: Received, Clerk's Office 01/13/2023

Perry Ridge Landfill
6305 Sacred Heart Rd.
Du Quoin, Illinois 62832

INBOUND CHARGE

641448 Southern Illinois Power Coop
11543 Lake of Egypt Road
Marion IL 62959

SITE	TICKET	GRID	WEIGHMASTER
02	00223106		SUZANNE

DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
01/15/21	01/15/21	15:09	15:09		

REFERENCE	ORIGIN
FLYASH	IN-STATE

Scale 1 Gross Wt. 80620 LB
Manual Tare Wt. 31560 LB
Net Weight 49060 LB

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
24.53	TON	Fly Ash-Non Special				

SC

Operating hours 7:00am to 4:00pm Monday thru Friday and
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Manifest # 570

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **1:42:15 PM**
TICKET **1205176**
Truck # : **GTS570**
RF # **12013958**
HAULER:
GREGS TRUCK SERVICE
PRODUCT:
CCR (SANITARY LANDFILL)
PO # Tons 24.53

Gross **80,380 lb**
Tare SC **31,560 lb**
Net : 48,820 lb

No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale Host
Print timestamp 1/15/21 1:57:42 PM

SOUTHERN ILLINOIS POWER
Marion, IL
TRUCK SCALE RECEIPT

Date : **01/15/2021**
Time : **1:42:15 PM**
TICKET **1205176**
Truck # **GTS570**
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HAULER:
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No Trucks over 80,000# will be allowed to leave Southern IL Power with material.

RUSH -Remote Unattended Scale H
Print timestamp 1/15/21 1:57:42 PM

SIPC EMERY POND PROJECT #20091
DAILY WEATHER CONDITIONS

DATE:	CONDITION	HIGH	LOW	PRECIPITATION
01-11-21	Cloudy	28	19	0 in.
01-12-21	Mostly Sunny	43	18	0
01-13-21	Mostly Sunny	50	0	0
01-14-21	Cloudy	54	34	0
01-15-21	Cloudy/Snow	41	31	0
01-16-21	Cloudy	39	32	0.01
01-17-21	Cloudy	39	32	0
01-18-21	Cloudy	46	30	0
01-19-21	Cloudy	45	27	0
01-20-21	Cloudy	45	23	0
01-21-21	Cloudy	51	32	0
01-22-21	Mostly Sunny	39	21	0
01-23-21	Cloudy	41	17	0
01-24-21	Cloudy	41	33	0.02
01-25-21	Rain/Cloudy	39	36	0.31
01-26-21	Cloudy/Rain	45	32	0.77
01-27-21	Cloudy	34	26	0
01-28-21	Mostly Sunny	36	16	0.06
01-29-21	Mostly Sunny	43	18	0
01-30-21	Cloudy	46	33	0
01-31-21	Cloudy/Rain	51	33	0.68
02-01-21	Cloudy	37	31	0
02-02-21	Cloudy	39	23	0
02-03-21	Mostly Sunny	45	0	0
02-04-21	Cloudy/Lt. Rain	45	30	0.20
02-05-21	Cloudy/Lt. Rain	45	24	0.18
02-06-21	Snow/Cloudy	36	24	0
02-07-21	Cloudy	25	10	0
02-08-21	Cloudy	30	19	0
02-09-21	Cloudy	26	19	0.02
02-10-21	Cloudy	27	21	0
02-11-21	Cloudy/Snow	27	19	0.21
02-12-21	Cloudy	22	13	0
02-13-21	Cloudy/Snow	13	8	0
02-14-21	Cloudy	12	1	0

DATE:	CONDITION	HIGH	LOW	PRECIPITATION
02-15-21	Snow	10	3	0 in.
02-16-21	Snow	14	-3	0.04
02-17-21	Cloudy	20	0	0
02-18-21	Snow	28	12	0
02-19-21	Mostly Sunny	36	0	0
02-20-21	Cloudy	37	13	0
02-21-21	Cloudy	48	26	0
02-22-21	Cloudy	50	37	0.10
02-23-21	Mostly Sunny	63	34	0
02-24-21	Partly Cloudy	64	38	0
02-25-21	Mostly Sunny	50	28	0
02-26-21	Scattered Showers	46	31	0
02-27-21	Foggy/Cloudy	57	34	0.06
02-28-21	Scattered Showers	64	44	1.05
03-01-21	Partly Cloudy/Lt. Rain	46	31	0.32
03-02-21	Mostly Sunny	54	24	0
03-03-21	Mostly Sunny	66	33	0
03-04-21	Mostly Sunny	63	31	0
03-05-21	Mostly Sunny	46	29	0
03-06-21	Mostly Sunny	54	25	0
03-07-21	Mostly Sunny	63	29	0
03-08-21	Mostly Sunny	64	39	0
03-09-21	Mostly Cloudy	70	39	0
03-10-21	Cloudy	67	51	0
03-11-21	Cloudy	68	50	0
03-12-21	Rain	57	47	2.83
03-13-21	Cloudy	55	44	0.04
03-14-21	Cloudy	55	47	0
03-15-21	Cloudy	64	44	0
03-16-21	Foggy	54	41	0
03-17-21	Showers	61	42	0
03-18-21	Cloudy	58	41	0
03-19-21	Cloudy	52	35	0
03-20-21	Mostly Sunny	61	28	0
03-21-21	Mostly Sunny	68	31	0
03-22-21	Cloudy	66	42	0
03-23-21	Cloudy	63	55	0
03-24-21	Mostly Sunny	72	51	0
03-25-21	Cloudy	61	48	0
03-26-21	Cloudy	64	47	0
03-27-21	Mostly Sunny	77	44	0
03-28-21	Cloudy	58	36	0

DATE:	CONDITION	HIGH	LOW	PRECIPITATION
03-29-21	Mostly Sunny	64	33	0 in.
03-30-21	Cloudy	72	46	0
03-31-21	Cloudy	54	38	0
04-01-21	Mostly Sunny	45	28	0
04-02-21	Mostly Sunny	54	23	0
04-03-21	Mostly Sunny	64	34	0
04-04-21	Mostly Sunny	75	44	0
04-05-21	Mostly Sunny	75	49	0
04-06-21	Mostly Sunny	79	52	0
04-07-21	Mostly Sunny	77	60	0
04-08-21	Cloudy	75	54	0
04-09-21	Showers	82	53	0.01
04-10-21	Cloudy	66	52	0.21
04-11-21	Cloudy	70	48	0
04-12-21	Mostly Sunny	70	42	0
04-13-21	Cloudy	63	50	0
04-14-21	Cloudy	64	47	0
04-15-21	Mostly Sunny	59	38	0
04-16-21	Cloudy	61	37	0
04-17-21	Cloudy	55	45	0
04-18-21	Cloudy	61	40	0.02
04-19-21	Mostly Sunny	68	42	0.09
04-20-21	Cloudy	52	32	0.32
04-21-21	Cloudy	54	32	0.24
04-22-21	Mostly Sunny	55	33	0.28
04-23-21	Cloudy	61	43	0.84
04-24-21	Cloudy	56	49	0
04-25-21	Mostly Sunny	68	41	0
04-26-21	Mostly Sunny	77	46	0
04-27-21	Mostly Sunny	8	61	0
04-28-21	Cloudy	72	65	0
04-29-21	Cloudy	69	55	0
04-30-21	Mostly Sunny	75	49	0
05-01-21	Mostly Sunny	79	50	0
05-02-21	Cloudy	70	59	0
05-03-21	Cloudy	79	60	0
05-04-21	Cloudy	68	53	0
05-05-21	Mostly Sunny	64	47	0
05-06-21	Mostly Sunny	64	45	0
05-07-21	Mostly Sunny	72	40	0
05-08-21	Cloudy	61	50	0
05-09-21	Cloudy	67	48	0.1

DATE:	CONDITION	HIGH	LOW	PRECIPITATION
05-10-21	Mostly Sunny	59	38	0.21 in.
05-11-21	Cloudy	64	39	0
05-12-21	Mostly Sunny	63	41	0
05-13-21	Mostly Sunny	66	37	0
05-14-21	Mostly Sunny	72	38	0
05-15-21	Cloudy	66	43	0
05-16-21	Cloudy	78	54	0
05-17-21	Cloudy	72	62	0
05-18-21	Cloudy	72	63	0
05-19-21	Cloudy	79	66	0
05-20-21	Mostly Sunny	84	67	0
05-21-21	Mostly Sunny	82	64	0
05-22-21	Partly Cloudy	84	59	0
05-23-21	Mostly Sunny	86	63	0
05-24-21	Partly Cloudy	86	61	0
05-25-21	Partly Cloudy	88	64	0
05-26-21	Cloudy	81	63	0
05-27-21	Mostly Cloudy	82	62	0
05-28-21	Cloudy	72	50	0
05-29-21	Cloudy	59	49	0
05-30-21	Foggy	70	42	0
05-31-21	Mostly Sunny	73	46	0

Attachment E: Decontamination and Closure Completion Certification

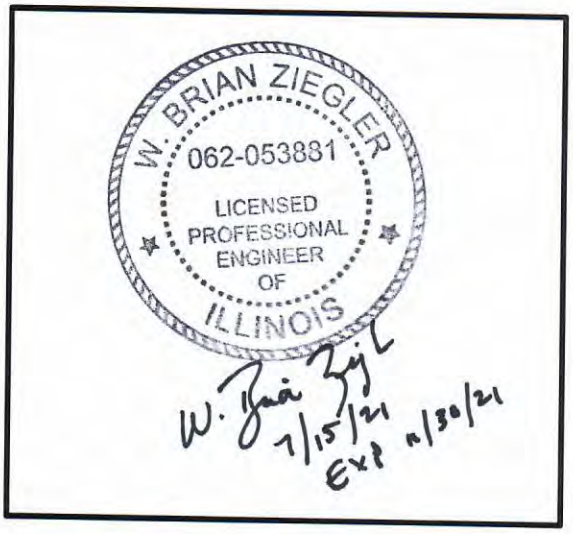
Electronic Filing: Received, Clerk's Office 01/13/2023

Decontamination Certification and Closure Completion Certification
Emery Pond

I am a Professional Engineer (P.E.) in the State of Illinois and President of Clarida & Ziegler Engineering Co. I am the P.E. with oversight for the Clarida & Ziegler Engineering Co. contract with Southern Illinois Power Cooperative for construction observation and oversight for the contract with 06 Environmental related to the closure of Emery Pond and the FGD Loadout Area at the Marion Power Station ("Emery Pond Site"). I have personal knowledge of the 06 Environmental Emery Pond Site closure activities and related documentation performed pursuant to the design documents produced by Hanson Professional Services, Inc. titled "Emery Pond Closure & Storm Water Basin Construction Plans," dated July 14, 2020, and included as Appendix B to the Emery Pond closure plan dated April 15, 2021.

I hereby certify that to the best of my knowledge, and based upon visual observation and other information, all CCR was removed from the Emery Pond Site in connection with the performed Emery Pond Site closure, and the CCR removal action at the Emery Pond Site was completed in general accordance with 35 Ill. Adm. Code 845.740(a) and with the Emery Pond Closure & Storm Water Basin Construction Plans dated July 14, 2020, and included as Appendix B to the Emery Pond closure plan. I further certify that to the best of my knowledge closure of the Emery Pond Site was completed in general accordance with those provisions of the Emery Pond closure plan that apply to the closure activities for which Clarida & Ziegler Engineering Co. had oversight responsibility or as to which SIPC has provided information, including documentation, confirming the work performed. [1]

The removal and decontamination of the Emery Pond Site was complete as of April 5, 2021, and final inspection was complete as of May 28, 2021.



W. Brian Ziegler, P.E.,

Printed Name

July 14, 2021

Date

CH2:25048737.3

[1] Clarida & Ziegler Engineering Co. was responsible for closure work oversight except for the following activities outlined in the Emery Pond Closure Plan produced by Hanson Professional Services, Inc., revision date April 15, 2021: Section 3.4 CCR Sediment Dewatering; Section 3.5 CCR Sediment Sampling; Section 3.8 CCR Management During Closure and Transportation; Section 3.10 FGD Loadout Area; and Section 5.4 Sampling and Analysis/Testing. SIPC has provided information, including documentation, confirming that CCR, including material from the FGD loadout area, was sampled, hauled off site and disposed of properly to meet the requirements of Sections 3.4, 3.5, 3.10 and 5.4 of the closure plan, as to which Clarida & Ziegler Engineering Co. did not have field oversight responsibility.

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EXHIBIT

WW

Electronic Filing - Received, Clerk's Office 01/10/2020

Electronic Filing: Received, Clerk's Office 01/13/2023

PERMIT/PLAN/SPECIFICATION
MICROFILM "JACKET" INFORMATION

1. Division Code W
2. FIPS County Code 199
3. City/Township Code 055
4. Governing Body Code 1676A
5. PERMITTEE NAME (File Subject)

SOUTHERN ILL POWER-POND 4 DISC 002

6. File Division 03
7. IEPA Permit Number 1973ED1349--

CROSS-REFERENCE INFORMATION

8. Governing Body Name

SOUTHERN ILLINOIS POWER COOP

9. ~~F/S/P Code~~ B1525
10. NPDES Number IL00

DWPC Records Unit

IL 532-0486
ADM 1081 8/78

2020100 - 9132 - 6

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NUMBER: 1973-ED-1349-OP

DATE ISSUED: June 27, 1973
PROJECT LOG NUMBERS: 1626-73

SUBJECT: SOUTHERN ILLINOIS POWER CO-OP (Williamson Co.)
Blending Pond #4 Discharge 002

TO OPERATE: Southern Illinois Power Co-Op
P.O. Box 143
Marion, Illinois 62959

Permit is hereby granted to the above designated permitee to discharge wastewater described as follows:

Blending Pond #4 receiving waste from facilities issued Permit #1970-ED-1355 tributary to the Little Saline Creek @ 1.94 MGD.

The final plans, specifications and supporting documents approved by this permit were prepared by Southern Illinois Power Co-Op and are identified in the records of the Illinois Environmental Protection Agency, Division of Water Pollution Contol, Permit Section, by the log numbers designated in the subject heading above.

The Standard Conditions of issuance of this permit are itemized below.

COPY - COPY - COPY -

READ ALL CONDITIONS CAREFULLY:

STANDARD CONDITIONS

Pertaining to both construction and operation permits.

1. If any statement or representation is found to be incorrect, this permit may be revoked and the permittee thereupon waives all rights thereunder.

2. During or after the construction or the installation of the sewage works, any agent duly authorized by the Environmental Protection Agency shall have the right to inspect such work and its operation.

3. The issuance of this permit (a) shall not be considered as in any manner affecting the title of the premises upon which the sewage works are to be located; (b) does not release the permittee from any liability for damage to person or property caused by or resulting from the installation, maintenance or operation of the proposed sewage works; (c) does not take into consideration the structural stability of any units or parts of the project; and (d) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or with applicable local laws, regulations or ordinances.

4. Treatment works will be operated or supervised by a duly qualified sewage works operator certified under the Regulations of the Environmental Protection Agency.

5. The treatment works or wastewater source covered by this permit shall be constructed and operated in compliance with the provision of the Environmental Protection Act and Chapter 3 of the Rules and Regulations as adopted by the Illinois Pollution Control Board.

6. Plans, specifications and other documentation submitted shall constitute a part of the application and when approved shall constitute part of the permit.

7. This Permit may not be assigned or transferred without a new permit from the Illinois Environmental Protection Agency.

Pertaining only to construction permits.

1. There shall be no deviations from the approved plans and specifications unless revised plans, specifications, and application shall first have been submitted to the Environmental Protection Agency and a supplemental written permit issued.

2. The installation shall be made under the supervision of an inspector, who is familiar with the approved plans and specifications provided by and approved by the owner, and said inspector shall require that construction to compliance with the plans and specifications approved by this Agency.

3. Unless otherwise stated by Special Condition, construction must be completed in three years for treatment works and two years for sewers and wastewater sources.

4. Unless otherwise stated by Special Condition, the issuance of this permit shall be a joint construction and operation permit provided that:

a) All standard and Special Conditions, are compiled with.

b) This Agency is notified within ten (10) days, respectively, of the start of construction and the date of testing and start-up of full operation.

c) The submission of operating reports of the treatment works covered under this permit shall be at a frequency specified by this Agency.

d) The operation permit shall expire one year from the date of start-up of operation.

e) At least 90 days prior to the expiration date of the operation permit, the permittee shall apply for a renewal of the operation permit.

This permit is issued in accordance with the Illinois Environmental Protection Act of 1970 and the Chapter III Water Pollution Regulations adopted by the Illinois Pollution Control Board in March of 1972.

TRW/RRF/ik
cc: Standards Section
Grants & Tax Certification
EPA-Collinsville Surveillance Office
Div. of Water Resource Management
USEPA

DIVISION OF WATER POLLUTION CONTROL

William H. Busch

William H. Busch, P.E.
Manager, Permit Section

0932006015 20

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FORM STW-2

FOR EPA USE: Log # Received Permit Number Date

File Subject

Richard B. Ogilvie
Governor

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
Division of Water Pollution Control
Permit Section
Springfield, Illinois 62706

William L. Blaser
Director

RECEIVED
11-26-73
ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS

APPLICATION FOR PERMIT FOR TREATMENT WORKS OR WASTEWATER SOURCES

(Read Instruction Booklet Before Completing)

PART II - APPLICATION FOR OPERATING PERMIT

SECTION I - General Information

1. Name of Facility Blending Pond #4 (S.I.P.C. Indust.) (Discharge 002)

2. Owner's Name and Address Southern Illinois Power Cooperative (Name)

P. O. Box 143 (Street) Marion (City) Illinois (State) 62959 (Zip Code)

3. Plant Mailing Address Same as above (Street) (City) (State) (Zip Code)

4. County Williamson

5. Engineer Harold G. Clarida (Name) 24022 (Illinois Registration Number)

Firm Clarida Engineering

Address 308 South Court (Street) Marion (City) Illinois (State) 62959 (Zip Code)

Telephone 618 (Area Code) 993-6411 (Number)

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6. Construction permit issued for the construction, additions, modifications, and upgrading of this treatment works or wastewater source. 1970 - EB - 355

7. List previous operation permits issued for this facility after July 1, 1972.

None

8. Date that treatment works or wastewater source started operation, using all facilities currently at plant October, 1970

9. Name of certified operator in charge of this facility Carl M. Stafford

IL320015 22

SECTION II - Effluent Data

1. Approved Loadings (Design)

a. Gallons Per Day 1000 GPD

b. Pounds of BOD Per Day @.17#/100 gal. .17 1.7 Lbs BOD/Day

c. Pounds Suspended Solids Per Day@ .20#/100 Gal. .20 2.0 Lbs SS/Day

d. Population Equivalent (at .17 lb BOD/P.E. 25 P.E.

2. Current Loadings on stream

a. Gallons Per Day 1,940,000 GPD

b. Influent BOD Concentration 0.70 mg/l

c. Pounds of BOD Per Day 11.25 Lbs BOD/Day

d. Influent Suspended Solids Concentration 12.0 mg/l

e. Pounds Suspended Solids Per Day 194 Lbs. SS/Day

f. Population Equivalent(at .17 lb BOD/P.E. 19,400 P.E.

3. History of Flows

	Year	Flow
(a)		MGD
*	1970	2.104 MGD
	19[illegible]	2.199 MGD
	1972	1.940 MGD

(b) Graph of Flows (Last 12 Months)

4. Excess flows

a. Number of times which flow was bypassed to excess flow treatment or bypassed raw to the waters of the State for as long as data is available 0 Times

b. Length of time that above data covers 2 Years 2 Months

* This facility constructed in October, 1970. Flow projected for year on operational data for November, & December, 1970.

2023012500139

c. Average amount of flow bypassed each time None Million Gallons

d. Maximum amount of flow bypassed during single bypassing period None Million Gallons

5.

Chemical Constituents	a Influent to Treatment Works	b Effluent from Treatment Works	c Upstream Sample	d Downstream Sample
Ammonia Nitrogen (as N)	0.10	0.05		
Arsenic (Total)				
Barium				
Boron (Total)				
Cadmium (Total)				
Chloride	3.0	3.0		
Carbon Chloroform Extract			NOT AVAILABLE	NOT AVAILABLE
Chromium (Total Hexavalent)				
Chromium (Total Trivalent)	0.03	0.03		
Copper (Total)	0.08	0.03		
Cyanide				
Flouride				
Iron (Total)	5.0	0.050		
Iron (Dissolved)				
Lead (Total)				
Manganese (Total)				
Mercury (Total)				
Nickel (Total)	0.04	0.04		
Oil (Hexane Soluables or Equivalent)				
pH	7.3	6.6	7.3 *	7.3 *
Phenols	0.001	0.10		
Phosphorous (as P)	0.10	0.10	NOT AVAILABLE	NOT AVAILABLE
Selenium (Total)				
Silver				
Sulfate	6.0	8.0		
Total Dissolved Solids	85.0	135		
Zinc (Total)	0.04	0.04		
Dissolved Oxygen	8.0	7.8		
Specific Conductance	140 u mhos	240	230 *	230 *
Suspended Solids	5.0	9.0	31 *	37 *

* Avg. Values	
Max. ptt 8.5	7.7
Spec. Cond 510	400
Sus. Solids286	273
Min. ph 7.1	6.8
Spec. Cond 180	120
Sus. Solids 3	5

1932001524

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FOR EPA USE: Log # Received Permit Number Date

File Subject

SECTION IV - Septic Tank and Seepage Field Application for Operating Permit

1. Name of Facility Sewage Treatment Plant
2. Owner's Name and Address Southern Illinois Power Cooperative (Name)

   P. O. Box 143 (Street) Marion (City) Illinois (State) 62959 (Zip Code)
3. County Williamson
4. Construction Permit Issued for this Facility 1971 - FB - 499
5. List Previous Operation Permits Issued for this Facility after July 1, 1972 None
6. Date that operation began December 2, 1971
7. Average daily flow 640 Gallons/Day
8. Period of time used for determing #7 One (1) Year 0 Months
9. Permitted Average Daily flow specified in Construction Permit 1000 GPD

Certificate by Owner

I hereby certify that the information submitted above is true and that the operation of my facility is in compliance with all Standard and Special Conditions listed on the Construction Permit issued for this facility. I further agree that the application shall not constitute a permit until signed by the Manager of the Permit Section, Division of Water Pollution Control.

Date April 19, 1973 Signature of Owner

Approval by the Illinois Environmental Protection Agency

Permit Number
Date
This Permit Expires

Manager
Permit Section
Division of Water Pollution Control

1932015225

SECTION III - Non-contact Cooling Water

1. Source of Water Intake Lake of Egypt

2. Discharge Quantities (Average of Last Year)

	Minimum	Average	Maximum
Flow (MGD)	1.440	1.940	2.469
Intake Temperature(°F)	43.0	59.9	77.0
Discharge Temperature (°F	47.0	63.5	80.9

3. Does maximum discharge temperature normally occur at times of maximum discharge flow?
(Yes) No (Circle) If no, explain.

[illegible] TEMP
FLOW X 10^3 # @ 24 Hrs./da, LAKE [illegible]
INTAKE DI[illegible]

1932001526

SECTION V - Signature by Engineer

I hereby certify to the best of my knowledge that the information contained in this application is true and correct.

Date April 19, 1973 Signature Glenn Clarke (Seal)

Certificate by Applicant

I hereby certify to the best of my knowledge that the information submitted is true and correct and the facility for which this permit is applied is being operated in compliance with all Standard and Special Conditions listed on the Construction Permit issued for this facility. I further agree that this Application for Permit shall not constitute a Permit until signed by the Manager of the Permit Section, Division of Water Pollution Control.

Date April 19, 1973 Signature of Applicant Carl M. Dafft

Title Plant Engineer

Approval by Illinois Environmental Protection Agency

Permit Number _____

Date _____

This Permit Expires _____

_____

Manager
Permit Section
Division of Water Pollution Control

2021500127 1932

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Southern Illinois Power Cooperative (SIPC) is a generation and transmission cooperative, providing wholesale electrical energy to three member Rural Electric Cooperatives who serve 27,000 rural customers in 18 Illinois counties.

Current generating facilities consist of 3 identical coal fired units totaling 105,000 KW located at the Marion Steam Plant approximately 8 miles south of Marion, Illinois. The site actually used by the generation station consists of approximately 180 acres. The site also includes a coal storage area, ash disposal ponds and borders the Lake of Egypt, which is also owned by SIPC. The lake was built in conjunction with the station to provide cooling water requirements. At full load, this plant will require in excess of 100,000 gallons per minute, most of which is used to condense the steam from the turbines and then discharged back to the lake. At normal pool, the lake covers 2,300 acres to an average depth of 18.5 feet, and a maximum depth of 50 feet at the dam.

The earth fill dam is 3,100 feet long and 70 feet high at the highest point. 485,000 cubic yards of earth were required for its construction. The spillway is 200 feet long and its top located at 500.0 feet above mean sea level. The maximum pool stage is at 510.0 feet above mean sea level at which point the spillway will discharge at the rate of 16,000 c.f.s. or 7,200,000 gallons per minute. The highest pool stage recorded in the past ten years is 503.7 feet above mean sea level.

The foregoing statements are made not only to furnish general background information but also to make the point that all plant flows, whether it be coal, steam, air, or waste water, are proportional to the electrical generation load on the plant. (See Table 1).

There are 33 men working in the plant. Twenty of the men are in plant operations, and therefore, 5 of these men will be off duty on any given day. During the hours of 00:00 to 08:00 there will be 5 men on duty 7 days a week. During the hours of 08:00 to 16:00 there will be 23 men on duty 5 days a week and during the hours of 16:00 to 24:00 there will be 5 men on duty 7 days a week. This calculates to be 8.8 P.E. per day loading on the small sewage plant. If overtime work amounts to 15% of the total hours worked, then there is an equivalent of 10 men on duty in the plant 24 hours a day, 7 days a week, 52 weeks per year. The system has a design P.E. of 15 at 1,000 gpd flow. The sewage plant consists of a very large septic tank of approximately 2,750 gallons capacity coupled to a pumping tank or secondary sedimentation chamber, a recirculating tank and a chlorinating tank each with a capacity of approximately 600 gallons.

The septic tank was one of the earliest primary treatment devices. They are no longer used except for small institutions or individual residences. The function of any primary treatment device is to remove from the sewage organic and inorganic settleable solids by the process of sedimentation. This is effected by reducing the velocity of the flow. Sewers are designed to maintain a velocity of approximately 2 ft./sec. which is adequate to carry all solids with the sewage flow and prevent their deposition in the sewer. In septic

tank primary treatment, this velocity is further reduced to a fraction of an inch per second and held under anaerobic conditions for a period of 12 to 24 hours during which time a high removal of the settleable solids is effected. These solids decompose in the bottom of the tank with the formation of gas which entrained in the solids causes them to rise through the sewage to the surface and lie as a scum layer until the gas has escaped, after which they again settle. The continual floatation and resettling of solids carry them in the current of the sewage toward the outlet with some eventually passing out with the effluent, thus partially defeating the purpose of the tank. Due to the long holding period and the mixing with the decomposing solids, the sewage leaves the tank in a septic condition making the secondary treatment more difficult.

The dosing pump operates on a float switch whose limits are set one foot apart. From start of the pump to stop, then approximately 17 cu. ft. of sewage is removed from the dosing tank and pumped up on the sand filter where it seeps through 30" of sand and 6" of sized gravel into two collecting troughs of the bottom of the filter and returned to the recirculating tank. By orificing the influent line to the chlorination chamber, approximately 75% of the filtered water is returned to the dosing tank to be refiltered again, while the other 25% passes to the chlorination tank. The small hypochlorinator is interlocked with the dosing pump such that each pump is running simultaneously. A residual of 0.5 to 1.0 ppm free CL_2 is maintained in the chlorination chamber effluent at all times. A small electrical pulsing counter in the dosing pump circuit indicates the number of times the filter is dosed each day. The average number of counts is 20. If the pump limits are set one foot apart and require 4 minutes of pumping time to pass between start and stop, then 17 ft^3 x 7.48 gal./ft^3 = 127 gpm is pumped. If 20 counts per day are recorded, then 2,540 gallons per day have been pumped to the sand filter; and if 75% of the flow is recirculated, then 2540 - .75 (2540) = 635 gal. per day is the effluent flow to and from the chlorination chamber. From the foregoing measurements, the influent flow to the system is 635 gallons per day average and the effluent flow from the system is 635 gallons per day. The pumping chamber of this system also acts as a secondary sedimentation chamber. It is receiving sewage at the rate of 635 gpd and 150 ppm BOD_5 + 1,905 gpd recirculation flow from the "high rate" sand filter with a BOD_5 of 5 ppm. From this chamber the sewage is pumped to the sand filter which would be classified as a "high rate" trickling filter since the BOD_5 loading is slightly in excess of 15#/1,000 ft^3 of filter medium. The area of this filter is 13' x 26' = 338 sq. ft. The depth of the sand and gravel filter medium is 3 ft. making the volume 1,014 ft^3. The area of the filter in acres would be:

$$\text{Acres} = \frac{338\ ft^2}{43560\ ft^2/\text{Acre}} = .0078$$

The hydraulic loading to the filter would be:

$$\text{Hyd. loading} = \frac{2540\ \text{gpd}}{.0078\ \text{acres}} = \frac{.002540\ \text{mg/day}}{.0078\ \text{acres}} = 0.325\ \text{mgp/d}$$

19320015 26

$$\#BOD_5 \text{ applied} = .000635 \text{ mg/day} \times 8.34 \#/\text{gal} \times 150 \text{ ppm } BOD_5 +$$

$$.001905 \times 8.34 \times 5$$
$$= 15.86 \#BOD_5/\text{day}$$

$$BOD_5 \text{ loading} = \left(\frac{15.86 \#BOD_5/\text{day}}{1014.0 \text{ ft}^3}\right) 1000 = 15.64 \frac{\#BOD_5}{1000 \text{ ft}^3}$$

of filter medium/day.

The system has been in operation for 15 months and produces effluents having an average pH of 7.0 suspended solids of 10 ppm, five day BOD of 4 ppm, and dissolved oxygen of 2 - 5 ppm. The wastes treated by the system are almost 100% domestic with only a small amount of oil coming from the mechanics hands and bodies. Oil in the turbine generators is centrifuged, filtered and recycled. Oil in the machine shop is also filtered and recycled.

Routinely the sewage plant is checked daily to insure an adequate supply of hypochlorite solution and the free operation of the dosing pump switch. Since the sewage enters the secondary sedimentation chamber in a septic condition, malfunctioning of the pump switch causes the whole system to "go septic" in 24 hours or less depending on the ambient temperature. The filter bed is levelled, aerated, and weeded as required. The percent settleable solids in the influent and effluent of the system is checked twice weekly. The pH, conductivity, suspended solids, and free chlorine of the effluent are checked daily. One BOD_5 sample is taken weekly from the effluent of the sand filter, which has produced effluents from 1 - 9 ppm of BOD_5.

The holding ponds 1 & 2 take only ash slurry from the power plant (see sketch B-36). Their only function is to provide the necessary retention time to precipitate the ashes from the water. The over flow from these two ponds flows to pond #4. Only one pond is in use at a time, while the other is being cleaned of its ashes.

Pond #3 receives only the run-off from the ash storage area plus a small amount of precipitated solids from the small (250 gpm) package water plant plus the sink drain from the plant laboratory. The holding capacity of #3 pond is approximately 6 million gallons. The water will invariably be acid and have an average pH of 4.0. Treatment consists of inducing hydrated lime slurry to the water through a special lime feeder designed solely for this purpose (see attached pictures). Of the several compounds available for neutralization of acid water and the precipitation of any associated iron, lime was chosen because of its ready availability, safety in handling, and cost. Theoretically, it requires approximately .65 pound of hydrated lime of 95% available calcium hydroxide to neutralize 1,000 gallons of water containing 100 ppm acid. Because the coal used as fuel originally contained iron pyrite in varying amounts and because of other factors involved, it will usually require approximately 1 pound of commercial hydrated lime to neutralize 1,000 gallons of acid water of 100 ppm acid content.

2023015

The following equations show the possible reactions which may occur when water, oxygen, and coal ashes come into contact.

(1) $2\ FeS_2$ + $7O_2$ + $2\ H_2O \longrightarrow 2\ FeSO_4 + 2\ H_2SO_4$

Iron Disulfide Pyrite or Sulfur balls + oxygen + water → Ferrous Sulfate + Sulfuric Acid

In this reaction iron disulfide is partly oxidized which frees part of the sulfur which unites with oxygen and water to form acid.

(2) $4\ FeSO_4 + O_2 + 2\ H_2SO_4 \rightarrow 2\ Fe_2(SO_4)_3 + 2\ H_2O$

Ferrous Sulfate + Oxygen + Sulfuric Acid → Ferric Sulfate + water

In this reaction ferrous sulfate is oxidized to ferric sulfate.

(3) $Fe_2(SO_4)_3 + 6\ H_2O \longrightarrow 2\ Fe(OH)_3 + 3\ H_2(SO_4)$

Ferric Sulfate + water → Ferric Hydroxide (Insoluable) + Sulfuric Acid

In this reaction ferric sulfate is hydrolized to sulfuric acid.

Some further reactions which may occur are:

(4) $Fe_2(SO4)_3 + FeS_2 \longrightarrow 3\ FeSO_4 + 2\ S$

Ferric Sulfate + Iron Disulfide (Pyrite) → Ferrous sulfate (as in 2 above) + Sulfur

(5) $S + 1\ 1/2\ O + H_2O \longrightarrow H_2SO_4$

Sulfur (as in 4) + Oxygen + water → Sulfuric Acid

This reaction is very slow.

(6) $FeS_2 + 2\ O_2 \rightarrow Fe(SO_4) + S$

Iron DiSulfide + Oxygen → Ferrous Sulfate + Sulfur

From this reaction, reactions 2, 3, 4 and 5 may occur or repeat. A case of regeneration.

Reactions of acid and iron compounds (ferrous sulfate and ferric sulfate) in acid water when treated with hydrated lime ($Ca(OH)_2$)

(7) $H_2SO_4 + Ca(OH)_2 \longrightarrow CaSO_4 + 2\ H_2O$

Sulfuric acid + Calcium hydroxide → Calcium sulfate (Insoluable after a certain point.) + water

(8) $FeSO4 + Ca(OH)_2 \longrightarrow Fe(OH)_2 + CaSO_4$

Ferrous Sulfate + Calcium Hydroxide → Ferrous Hydroxide (Insoluable) + Calcium Sulfate (Insoluable)

2022053-0003932

(9) $Fe_2(SO_4)_3$ + 3 Ca $(OH)_2$ ⟶ 2 $Fe(OH)_3$ + 3 $CaSO_4$

Ferric Sulfate + Calcium Hydroxide ⟶ Ferric Hydroxide (Insoluable) + Calcium Sulfate (Insoluable)

Although Ferric Hydroxide $Fe(OH)_3$ of (9) may react with Ferrous Disulfide (FeS_2) (Pyrite) if any is present, this is unlikely to be the case after treatment with Hydrated Lime. When acid water containing acid, ferrous iron, and ferric iron is treated with hydrated lime, it is not likely that the three reactions 7, 8, and 9 occur simultaneously. The acid is neutralized first. The acid will be neutralized at approximately 6.0 pH after which the iron will be precipitated by the lime. Usually, all of the iron will be precipitated out at pH 8.5. Once treated to this level the iron is fixed and will not hydrolize to form more acid. Pond #3 is drained through a 4" siphon after water has been tested in the plant laboratory and found to meet present water quality standards.

The same treatment principles are used to treat the over flow of pond #4. This pond has a holding capacity of approximately 18 million gallons which gives 7.3 days of holding when the plant is operating at full load. The pond will also hold 6 days of full load operation plus 3" of rain fall. Full load operation at 105,000 KW/hr. will produce a waste water flow of approximately 2.4 mgd to #4 pond. (See Table 1).

Pond #4 has a control valve in its discharge. Daily laboratory testing of the water for pH, conductivity, and suspended solids determines whether this water is to be discharged or not. Also one BOD_5 and one dissolved oxygen determination are made on this discharge each week. If this pond or #3 has been treated with lime to pH 8.5 or greater, the iron content determination is made on the water to be discharged. Average iron content of these effluents is 50 p.p.b.

2023013

R2020015333

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	MWH TOTAL GEN.	PLANT STEAM FLOW x 10^3 #/MO	UNITS OPERATIONAL	IN TEMP. #4 POND F°	OUT TEMP. #4 POND F°	[illegible] GAL/MO	[illegible] GAL/MO	SEWAGE PLANT FLOW GAL/MO.	[illegible] FLOW GAL/MO.	[illegible] GAL/MO. #4 pond	TOTAL [illegible] GAL/MO. #4 pond
JAN.'72	47780	444398	3	[illegible]	48.0	[illegible]	[illegible],829,200	19,2[illegible]	[illegible],[illegible]2,000	75,773,240	2,444,300
FEB.	43950	408012	3	[illegible]	47.4	[illegible]	[illegible],48,000	[illegible]9.[illegible]	[illegible],363,000	69,484,[illegible]	2,396,[illegible]0
MAR.	35700	330544	2	48.8	52.2	[illegible]	[illegible],331,200	[illegible]	[illegible],692,[illegible]	[illegible],[illegible]40,[illegible]	1,44[illegible],[illegible]
APR.	34180	316188	2	57.[illegible]	60.6	379,[illegible]	[illegible],[illegible]1,200	[illegible]	[illegible],000,000	43,200,[illegible]	1,440,000
MAY	35410	331072	2	63.0	66.4	[illegible]	[illegible],[illegible]1,200	[illegible]	[illegible],[illegible]33,[illegible]	44,640,400	1,4[illegible],[illegible]
JUN.	35350	330892	2	66.0	71.6	[illegible]	[illegible],31,200	[illegible]	[illegible],460,000	43,217,600	1,440,000
JUL.	49650	468224	3	73.3	76.9	[illegible]	[illegible]	[illegible]	[illegible],[illegible]82.[illegible]	[illegible],[illegible]80.[illegible]	2,445,000
AUG.	57220	540088	3	[illegible]	80.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible],889,[illegible]	2,448,000
SEPT.	52570	496332	3	76.[illegible]	80.6	[illegible]	[illegible],[illegible]17,[illegible]	[illegible]	[illegible],[illegible]3,[illegible]00	72,454,400	2,415,100
OCT.	44330	415620	2	67.[illegible]	70.9	[illegible]	[illegible],534,400	[illegible]	6,[illegible]3,[illegible]	44,742,500	1,443,300
NOV.	36500	343315	2	54.3	57.7	[illegible]	[illegible]	[illegible]	[illegible],[illegible]86,000	43,232,500	1,441,000
DEC.	50430	471992	3	46.0	49.4	[illegible]	[illegible],836,200	[illegible]	[illegible],[illegible]92,[illegible]	75,806,318	2,445,300

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R 2 0 0 1 5 3 5

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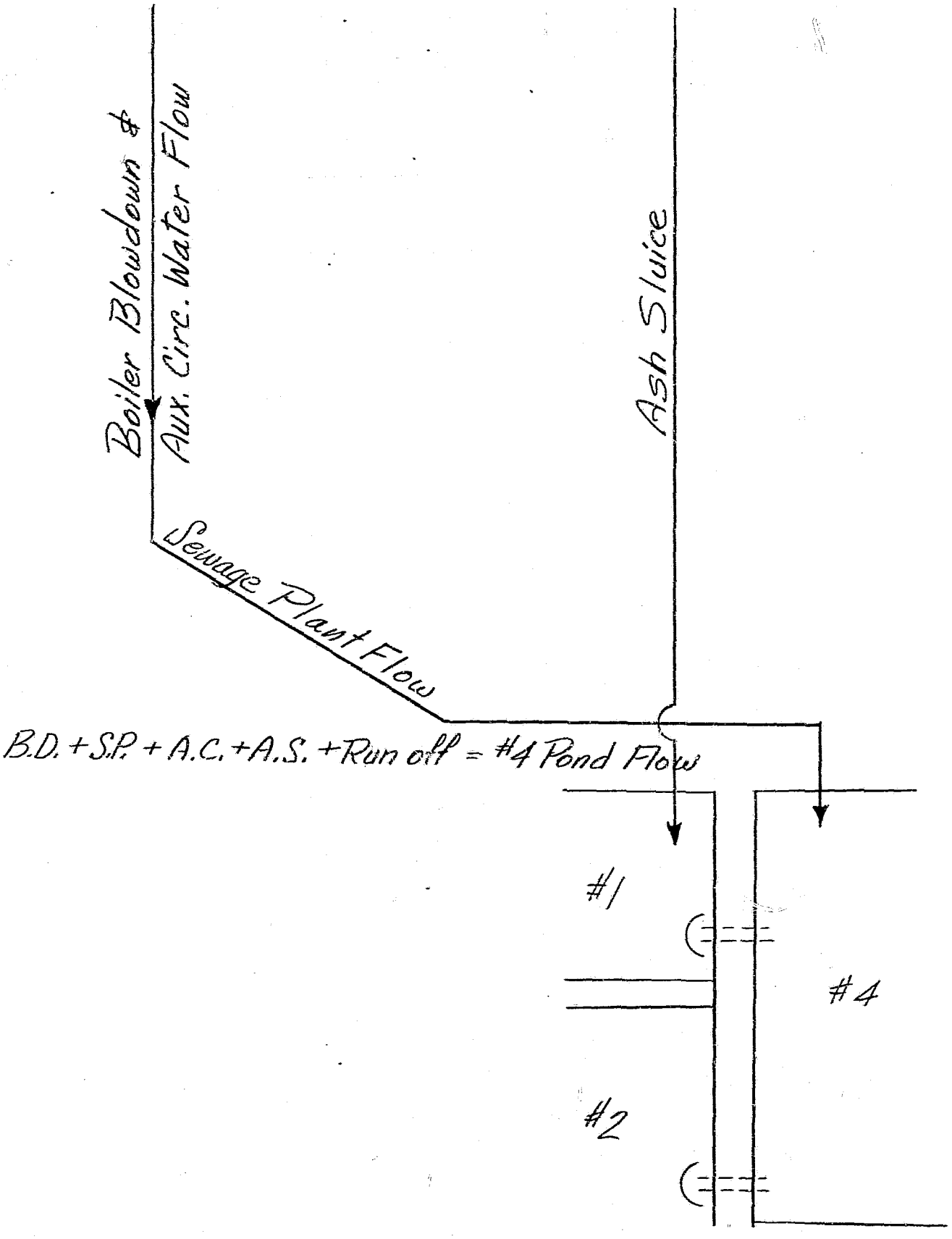
APR. 9 E 1973
STATE OF ILLINOIS

Electronic Filing: Received, Clerk's Office 01/13/2023

I 9 3 2 0 0 0 1 5 3 6



Electronic Filing: Received, Clerk's Office 01/13/2023

K-E

I 9320001537

#4 Pond drainage (...) 1972

#5 Pond drainage (...) 1972

2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2

Jan. Feb. Mar. Apr. ... Nov.

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APR 20 1973
ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS

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2200153

INTAKE STRUCTURE

EXISTING WATER PLANT

EXISTING FILTERS

PP-A

PD-D

PD-E

WPW-A

BAH-A

Air HEATER WASH SYSTEM (8 NOZZLES)**

BAH-B

WPW-B

EXISTING DOMESTIC USE

PSS-A

WPW-C

NEW DOMESTIC USE

PSS-B

E

EXISTING HEAT BALANCE SYSTEM

BED-A

HFW-A

HE-A

EXISTING EVAPORATOR

HE-B

WPW-D

EXISTING PROCESS USES

PD-A

EXISTING SANITARY TREATMENT

PSS-C

CLINKER GRINDER OBSERVATION PORTS (4 PARTS)

PD-F

WPW-E

PROCESS USES

PD-B

WPW-F

FLOOR AND EQUIPMENT DRAINS

PD-H

OIL SEPARATOR

PD-C

HE-C

EVAPORATOR

HE-D

BED-B

HFW-B

E

HEAT BALANCE SYSTEM

BED-C

COAL PILE AND CONSTRUCTION RUNOFF

PP-C

PP-B

ABA-A

E

RCW-A

RCW-C

RAC-A

EXISTING PLANT COOLING

CONDENSER COOLING

AUXILIARY COOLING

RCW-B

RCW-D

RAC-B

S

ABA-C

GMW-A

E

AFA-A

NEW BOTTOM ASH HANDLING SYSTEM

SCRUBBER SYSTEM

EXISTING HYDROVEYOR EXHAUSTER*

EXISTING BOTTOM ASH HANDLING SYSTEM

PD-G

PRECIP.

E

ABA-B

EXISTING BOTTOM ASH PONDS

GSD-B

AFA-B

ABA-D

ABA-F

ABA-E

GSD-A

E

PRECIP.

SLAG STORAGE PILE RUNOFF

DEWATERING BINS

SOLID WASTE STORAGE

EXISTING FLY ASH POND

C 002

R 001

*ALL FLY ASH WILL NORMALLY BE CONVEYED DRY

**AIR HEATER WASH IS USED TWICE A YEAR ON UNIT OUTAGES

LEGEND

NEW SYSTEM
EXISTING SYSTEM
INTERMITTANT FLOW

(S) SEALING WEIR OR CIRCULATING WATER LINE
(R) SOUTH FORK, SALINE RIVER
(C) SALINE CREEK
(E) EVAPORATION

RECEIVED
OCT - 91975
ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
RECORDS UNIT — SPRINGFIELD
STATE OF ILLINOIS
1119-75

Southern Illinois Power Cooperative
PROJECT WATER USAGE

SIPC 73-108-1

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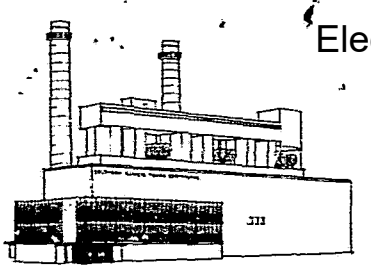

SOUTHERN ILLINOIS POWER CO-OP.

P. O. BOX 143 • MARION, ILLINOIS 62959 • AREA CODE 618 993-8123

RECEIVED
CHAMPAIGN
APR 20 1973
ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS

1635A-73
1636A-73

April 19, 1973

Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section
2125 South 1st Street
Champaign, Illinois 61820

Gentlemen:

Please find enclosed application for operation permit for our holding ponds #3 and #4, discharges 001 and 002 respectively, rule 903A of the Illinois Water Pollution Control standards.

Please note that I have had Mr. Glenn Clarida of Marion, Illinois (Registration #24022) to examine and seal this permit application.

Very truly yours,

Carl M. Stafford

CARL M. STAFFORD
Plant Engineer

CMS:jr
Enc.

2125-S-73
2126-S-73

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STATE OF ILLINOIS
DEPARTMENT OF
REGISTRATION AND EDUCATION
[redacted] Dean Barringer
DIRECTOR, SPRINGFIELD
BOARD OF
NATURAL RESOURCES
AND CONSERVATION
[redacted] CHAIRMAN
Dean Barringer
BIOLOGY . . . . . THOMAS PARK
ENGINEERING . . ROBERT H. ANDERSON
FORESTRY . . . . CHARLES E. OLMSTED
GEOLOGY . . . . . LAURENCE L. SLOSS
SOUTHERN ILLINOIS UNIVERSITY . . . .
ROGER E. BEYLER
UNIVERSITY OF ILLINOIS . . . . . .
WILLIAM L. EVERITT

Illinois State Water Survey

WATER RESOURCES BUILDING • MAIL: BOX 232, URBANA, ILLINOIS 61801 • AREA CODE 217
605 E. SPRINGFIELD, CHAMPAIGN PHONE 333-2219

WILLIAM C. ACKERMANN, CHIEF

February 7, 1973

Mr. Carl Stafford
Southern Illinois Power Cooperative
P. O. Box 143
Marion, Illinois 62959

Hello Carl:

You had phoned us on February 5, 1973 for the 7-day 10-year low flow in Little Saline Creek upstream of the effluent from your Cooperative (NW 1/4 Sec. 26, T. 10S, R. 2E, Marion Quadrangle, Williamson County, Illinois). The 7-day 10-year low flow at the desired location is zero. This has been conveyed to you on the phone.

Sincerely yours,
ILLINOIS STATE WATER SURVEY

Krishan P. Singh
Hydrologist

KPS/ce

FEB 1973

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EXHIBIT

XX

W19986016 76A SOUTHERN ILL POWER-PND 3 OF001 03 1985EN3031 1

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PERMIT/PLAN/SPECIFICATION
MICROFILM JACKET INFORMATION

1.	DIVISION CODE	W
2.	FIPS COUNTY CODE	199
3.	CITY/TOWNSHIP CODE	860
4.	GOVERNING BODY CODE	1676A
5.	PERMITTEE NAME (FILE SUBJECT) SOUTHERN ILL POWER-PND 3 OFC01	
6.	FILE DIVISION	03
7.	IEPA PERMIT NUMBER	1985EN3C31

CROSS REFERANCE INFORMATION

8.	GOVERNING BODY NAME SOUTHERN ILLINOIS POWER COOP	
9.	F/S/P/ CODE	B1525A
10.	NPDES NUMBER	IL0004316

2019060803

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL PERMIT

PERMIT NO.: 1985-EN-3031 DATE ISSUED: November 6, 1985

FINAL PLANS, SPECIFICATIONS, APPLICATION AND SUPPORTING DOCUMENTS
PREPARED BY: Southern Illinois Power Co-Operative

LOG NUMBERS: 3031-85

SUBJECT: SOUTHERN ILLINOIS POWER CO-OPERATIVE - Marion Generating Station
Construction of a New Outfall from Ash Pond No. 3

PERMITTEE TO CONSTRUCT
Southern Illinois Power Co-Operative
Route 4, Box 311
Marion, IL 62959

Permit is hereby granted to the above designated permittee to construct water pollution control facilities described as follows:

Water pollution control facilities which were previously approved under Permit No. 1969-EB-707 issued October 6, 1969 have been revised as follows: Discharge from ash pond No. 3 to the South Fork Saline River via outfall No. 001 shall be terminated and a new 12 inch diameter PVC pipeline installed to convey effluent from ash pond No. 3 to the Little Saline Creek. The proposed 12 inch diameter PVC pipeline will be approximately 1,000 feet in length and will have an invert elevation of 466 MSL at the ash pond No. 3 overflow with discharge into the Little Saline Creek through an overflow box with a weir elevation of 461 MSL. Ash pond No. 3 has a design capacity of three million cubic feet and an average discharge rate of 2.0 MGD. Ash pond No. 3 is a final settling pond receiving overflow from three on-site fly ash ponds and a scrubber sludge storage area. The fly ash/scrubber sludge pond system receives waste waters generated as a result of power production at the Marion Generating Station which includes the following: fly ash sluice with an average flow 0.514 MGD; water treatment plant wastes with an average flow 0.008 MGD; demineralizer regenerant wastes with an average flow of 0.001 MGD; floor and equipment drainage with an average flow 0.017 MGD; blowdown from the recirculating house service water system with an average flow 0.017 MGD; and the following intermittent waste streams: air heater wash water, slag storage pile runoff and scrubber sludge storage area runoff.

Operation of the subject facility shall be governed by the requirements set forth in NPDES Permit No. IL0004316.

THE STANDARD CONDITIONS OF ISSUANCE INDICATED ON THE REVERSE SIDE MUST BE COMPLIED WITH IN FULL. READ ALL CONDITIONS CAREFULLY.

TGM:GC:mgg2697e/18
cc: EPA - Region 7
R. H. Dunham
IEPA-RU
Permit Section

DIVISION OF WATER POLLUTION CONTROL

Thomas G. McSwiggin, P.E.
Manager, Permit Section

IL 532-0009
WPC 146 Rev. 2/82

READ ALL CONDITION
STANDARD CONDITIONS

The Illinois Environmental Protection Act (Illinois Revised Statutes Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues

1. Unless the construction for which this permit is issued has been completed, this permit will expire (1) two years after the date of issuance for permits to construct sewers or wastewater sources or (2) three years after the date of issuance for permits to construct treatment works or pretreatment works.

2. The construction or development of facilities covered by this permit shall be done in compliance with applicable provisions of Federal laws and regulations, the Illinois Environmental Protection Act, and Rules and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification of the project, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any agent duly authorized by the Agency upon the presentation of credentials:

   a. to enter at reasonable times, the permittee's premises where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit.

   b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit.

   c. to inspect at reasonable times, including during any hours of operation of equipment constructed or operated under this permit, such equipment or monitoring methodology or equipment required to be kept, used, operated, calibrated and maintained under this permit.

   d. to obtain and remove at reasonable times samples of any discharge or emission of pollutants.

   e. to enter at reasonable times and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. does not take into consideration or attest to the structural stability of any units or parts of the project;

   e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. Unless a joint construction operation permit has been issued, a permit for operating shall be obtained from the Agency before the facility or equipment covered by this permit is placed into operation.

7. These standard conditions shall prevail unless modified by special conditions.

8. The Agency may file a complaint with the Board for suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed; or

   b. upon finding that any standard or special conditions have been violated; or

   c. upon any violation of the Environmental Protection Act or any Rule or Regulation effective thereunder as a result of the construction or development authorized by this permit.

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

IL 532-0357
ADM 39
054-002

Subject Southern Illinois Power Co Operative
Data Marion Generating Station
Reviewed by GC Date

Receiving Date: 8-29-85 Southern Illinois Power Co-Operative submits application for permit to move Outfall No. 001 from its present location where it discharges into the South Fork Saline River to 1000 feet North of the present location which will then discharge into the Little Saline Creek.

Location: SIPC
Marion Generating Station
NE 1/4, Sec. 26, T10S. R2E 3rd P.M.
Williamson County

Latitude: 37°37'29"
Longitude: 88°57'02"

Flow: DAF 1.6 MGD
DMF ?
DMR's Ave 1984 2.0 MGD

Receiving Stream: Little Saline Creek 7 Q 10 = Zero

Design: 12" diameter PVC at Inv. 466 MSL to a overflow weir box at Inv. 461 MSL

Box 4' * 3.5' * 4'
12" diameter CMP from weir box to stream.
Rip rap below outfall

Note: Additional discharges are comming from SIPC ashponds to the Little Saline Creek upstream of the proposed discharge location
002 = 5.6 MGD
004 = proposed new Fly ashpond
Water quality monitoring may be required in NPDES Permit modification.

IL0002127

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Subject Southern Illinois Power Co Operations
Data Marion Generating Station
Reviewed by GE Date

Permits: NPDES Permit No. IL0004316

Ash Pond No. 3 Construction Permit
No. 1969-EB-707 issued October 6, 1969

Waste Characteristics: Zn, Mn, B, Hg, TDS, pH, SO_4

NPDES Permit Modification Required

Action ⇒ Issue Construction Permit
Begin NPDES Permit Modification Procedures

2021060012

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

RECEIVED
AUG 29 1985
Environmental Protection Agency

APPLICATION FOR PERMIT OR CONSTRUCTION APPROVAL

WPC-PS-1

IEPA Permit Log In 799

1. NAME AND LOCATION:

Name of project: Outfall 001 relocation

~~Municipality or~~ Township Southern PRECINT 860 County Williamson

2. BRIEF DESCRIPTION OF PROJECT: Relocation of Outfall 001 approximately 1000 feet north of present location.

3. DOCUMENTS BEING SUBMITTED: If the project involves any of the items listed below, submit the corresponding schedule, and check the appropriate spaces.

PROJECT			
Private Sewer Connection	A	Spray Irrigation	H
Public Sewer Extension	B	Septic Tanks	I
Sewer Extension Construct Only	C	Industrial Treatment or Pretreatment	J X
Sewage Treatment Works	D		
Excess Flow Treatment	E	Cyanide Acceptance	L
Lift Station/Force Main	F	Updating Cyanide Acceptance Form	M
Sludge Disposal	G	Waste Characteristics	N

LAND TRUST: Is the project identified in item number 1 herein, for which a permit is requested, to be constructed on land which is the subject of a trust? ____ Yes X No
If yes, item number 6.1.1 herein must be signed by a beneficiary, trustee or trust officer, and a trust disclosure must be submitted (see instructions, item 3).

Plans: Title G-480 proposed 001 Discharge line relocation Number of Pages 1 print

Specifications: Title ____ Number of Books/Pages ____

Other Documents (Please Specify) ____

4. THIS IS AN APPLICATION FOR (CHECK):

X A. Joint Construction And Operating Permit
___ B. Authorization To Construct (See Instructions) NPDES Permit No. ILO0 04316 Issue Date 3/29/85
___ C. Construct Only Permit (Does Not Include Operations)
___ D. Operate Only Permit (Does Not Include Construction)

5. CERTIFICATIONS AND APPROVAL:

5.1 Certificate by Design Engineer
I hereby certify that I am familiar with the information contained in this application, including the attached schedules indicated above, and that to the best of my knowledge and belief such information is true, complete and accurate. The plans and specifications (specifications other than Standard Specifications or local specifications on file with this Agency) as described above were prepared by me or under my direction.

ROY H. DUNHAM PROFESSIONAL ENGINEER SEALED TENNESSEE NO. 4047 COMMERCE

ENGINEER Roy H. Dunham (NAME) 4047 (REGISTRATION NUMBER)

FIRM Bechtel Energy Corp.

ADDRESS 15740 Shady Grove Rd. (1B6)
Gaithersburg, MD 20877-1454 PHONE NUMBER (301)258-3146

SIGNATURE Roy H. Dunham

6. CERTIFICATIONS AND APPROVALS FOR PERMITS:

6.1 Certificate by Applicant(s)
I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application, and am/are authorized to sign this application in accordance with the Rules and Regulations of the Illinois Pollution Control Board. I/We hereby agree to conform with the Standard Conditions and with any other Special Conditions made part of this Permit.
6.1.1 NAME OF APPLICANT FOR PERMIT OR AUTHORIZATION TO CONSTRUCT Southern Illinois Power Cooperative

Rt. 4, Box 311 (STREET) Marion (CITY) IL (STATE) 62959 (ZIP CODE)

SIGNATURE Richard D. Mylott

TITLE Support Systems Department Mgr. ORGANIZATION Southern Illinois Power Cooperative

WPC 150 Rev. 5/80

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6.1.2 NAME OF APPLICANT FOR PERMIT TO OWN AND OPERATE Southern Illinois Power Cooperative

Rt. 4, Box 311 | Marion | IL | 62959
STREET | CITY | STATE | ZIP CODE

SIGNATURE Richard G. Mypatt

TITLE Support Systems Department Manager

6.2 Attested (Units of Government)

DATE _____ SIGNATURE _____ TITLE _____
(CITY CLERK, VILLAGE CLERK, SANITARY DISTRICT CLERK, ETC.)

6.3 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or his duly authorized representative.

6.4 CERTIFICATE BY INTERMEDIATE SEWER OWNER

I hereby certify that (Please check one):

____1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3, Illinois Pollution Control Board Rules and Regulations, or

____2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Chapter 3 to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

6.4.1 ADDITIONAL CERTIFICATE BY INT. SEWER OWNER

I hereby certify that (Please check one):

____1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3, Illinois Pollution Control Board Rules and Regulations, or

____2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Chapter 3 to allow construction and operation of the facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

SEWER SYSTEM OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

6.5 CERTIFICATE BY WASTE TREATMENT WORKS OWNER

I hereby certify that (Please check one):

____1. The waste treatment plant to which this project will be tributary has adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Chapter 3, Illinois Pollution Control Board Rules and Regulations, or

____2. The Illinois Pollution Control Board, in PCB _____ dated _____, granted a variance from Chapter 3 to allow construction and operation of the facilities that are the subject of this application.

I also certify that the industrial waste discharges described in the application is capable of being treated by the treatment works, and such waste discharges will be in compliance with all currently applicable local, state or federal pretreatment requirements.

Name and location of waste treatment works to which this project will be tributary:

TREATMENT WORKS OWNER _____

STREET | CITY | STATE | ZIP CODE

SIGNATURE _____ DATE _____ TITLE _____

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DIVISION OF WATER POLLUTION CONTROL
PERMIT SECTION
Springfield, Illinois 62706

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SCHEDULE J INDUSTRIAL TREATMENT WORKS CONSTRUCTION OR PRETREATMENT WORKS

1. NAME AND LOCATION:

1.1 Name of project: Outfall 001 relocation

1.2 Plant Location

1.2.1	Quarter Section	Section	Township	Range	P.M.
	NE	26	10S	2E	3

1.2.2 Latitude 37 ° 37 ' 29 "North
Longitude 88 ° 57 ' 02 "West

1.2.3 Name of USGS Quadrangle Map (7.5 or 15 Minutes): Goreville (7.5)

2. NARRATIVE DESCRIPTION AND SCHEMATIC WASTE FLOW DIAGRAM: (see instructions)
Relocation of outfall 001 approximately 1000 feet north of present location

2.1 PRINCIPAL PRODUCTS: electricity

2.2 PRINCIPAL RAW MATERIALS: coal and air

3. DESCRIPTION OF TREATMENT FACILITIES:

3.1 Submit a flow diagram through all treatment units showing size, volumes, detention times, organic loadings, surface settling rate, weir overflow rate, and other pertinent design data. Include hydraulic profiles and description of monitoring systems.

3.2 Waste Treatment Works is: Batch ____, Continuous X ; No. of Batches/day ____, No. of Shifts/day ____

3.3 Submit plans and specifications for proposed construction.

3.4 Discharge is: Existing X ; Will begin on ____

4. DIRECT DISCHARGE IS TO: Receiving Stream X Municipal Sanitary Sewer ____, Municipal storm or municipal combined sewer ____. If receiving stream or storm sewer indicated complete the following:

Name of receiving stream Southfork Saline Creek; tributary to Little Saline Creek;

tributary to ---; tributary to ---.

5. Is the treatment works subject to flooding? If so, what is the maximum flood elevation of record (in reference to the treatment works datum) and what provisions have been made to eliminate the flooding hazard? No

6. APPROXIMATE TIME SCHEDULE: Estimated construction schedule:

Start of Construction 10/1/85; Date of Completion 10/15/85

Operation Schedule 10/16/85; Date Operation Begins 10/16/85

100% design load to be reached by year not applicable

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required under that Section. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

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7. DESIGN LOADINGS

7.1 Design population equivalent (one population equivalent is 100 gallons of wastewater per day, containing 0.17 pounds of BOD_5 and 0.20 pounds of suspended solids)

BOD N/A ; Suspended Solids N/A ; Flow N/A .

7.2 Design Average Flow Rate N/A MGD.

7.3 Design Maximum Flow Rate N/A MGD.

7.4 Design Minimum Flow Rate N/A MGD.

7.5 Minimum 7-day 10-year low flow N/A cfs N/A MGD.

Minimum 7-day, 10-year low flow obtained from N/A .

7.6 Dilution Ratio N/A ; N/A .

8. FLOW TO TREATMENT WORKS (if existing):

8.1 Flow (last 12 months)

8.1.1 Average Flow N/A MGD

8.1.2 Maximum Flow N/A MGD

8.2 Equipment used in determing above flows flow meter

9. Has a preliminary engineering report for this project been submitted to this Agency for Approval?

YES ___ NO X If so, when was it submitted and approved. Date Submitted ___

Certification ___

Dated ___

10. List Permits previously issued for the facility: NPDES

11. Describe provisions for operation during contingencies such as power failures, flooding, peak loads, equipment failure, maintenances shut-downs and other emergencies. Not applicable - see NPDES permit

12. Complete and submit Schedule G if sludge disposal will be required by this facility. not applicable

13. WASTE CHARACTERISTICS: Schedule N must be submitted. See attached NPDES application

14. TREATMENT WORKS OPERATOR CERTIFICATION: List names and certification numbers of certified operators:

Information previsouly provided for NPDES permit

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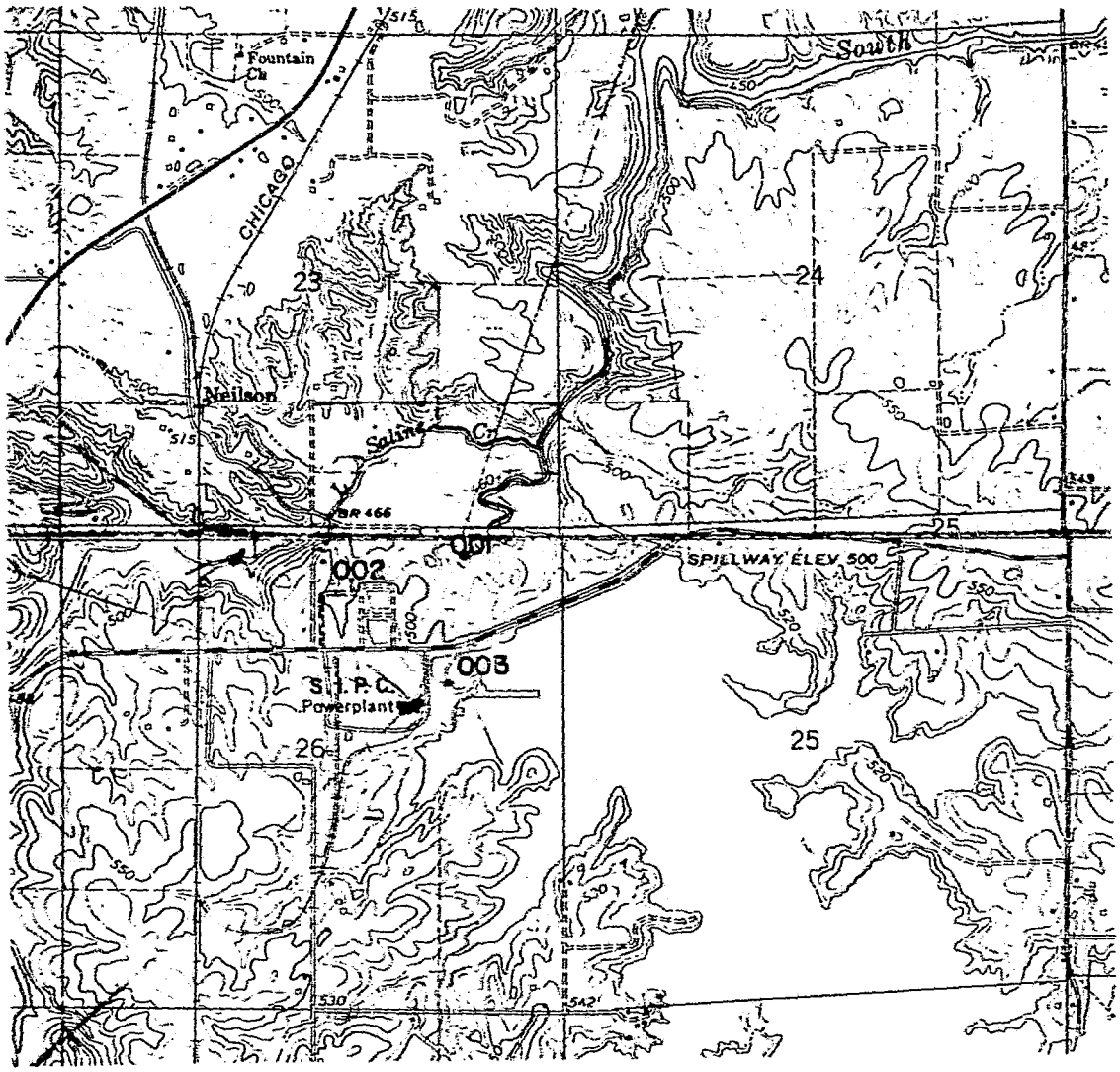

Figure – TOPOGRAPHICAL MAP OF AREA ADJACENT TO MARION STATION

SOURCE: SOUTHERN ILLINOIS POWER CO-OP INC. MARION, ILL.

SOUTHERN ILLINOIS POWER CO-OPERATIVE, INC.

NPDES PERMIT

IL 0004316

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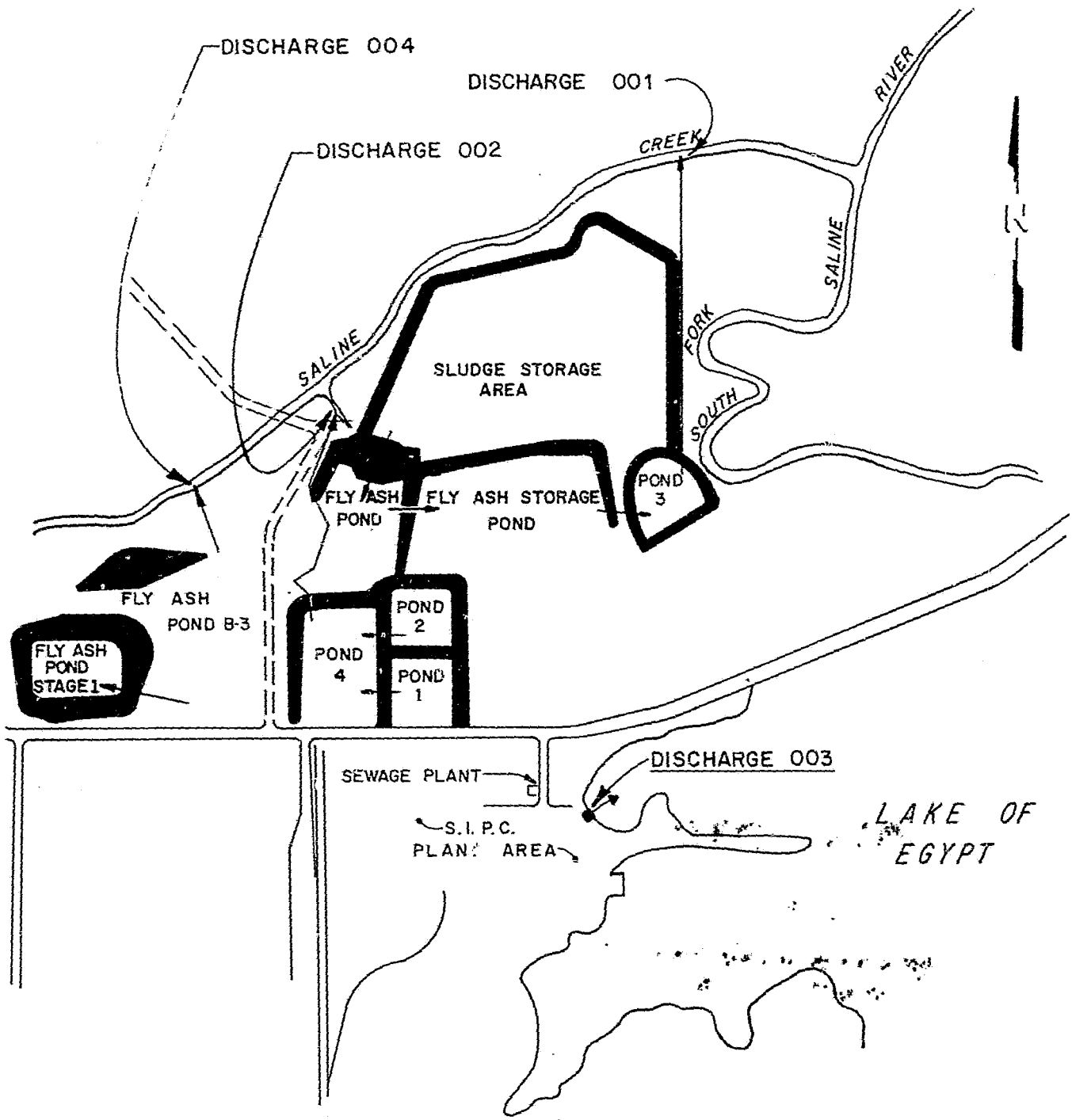

Figure – MAP SHOWING OUTFALLS – MARION STATION

SOURCE: SOUTHERN ILLINOIS POWER CO-OP INC. 1980
MARION, ILL.

SOUTHERN ILLINOIS POWER CO-OPERATIVE, INC.
NPDES PERMIT
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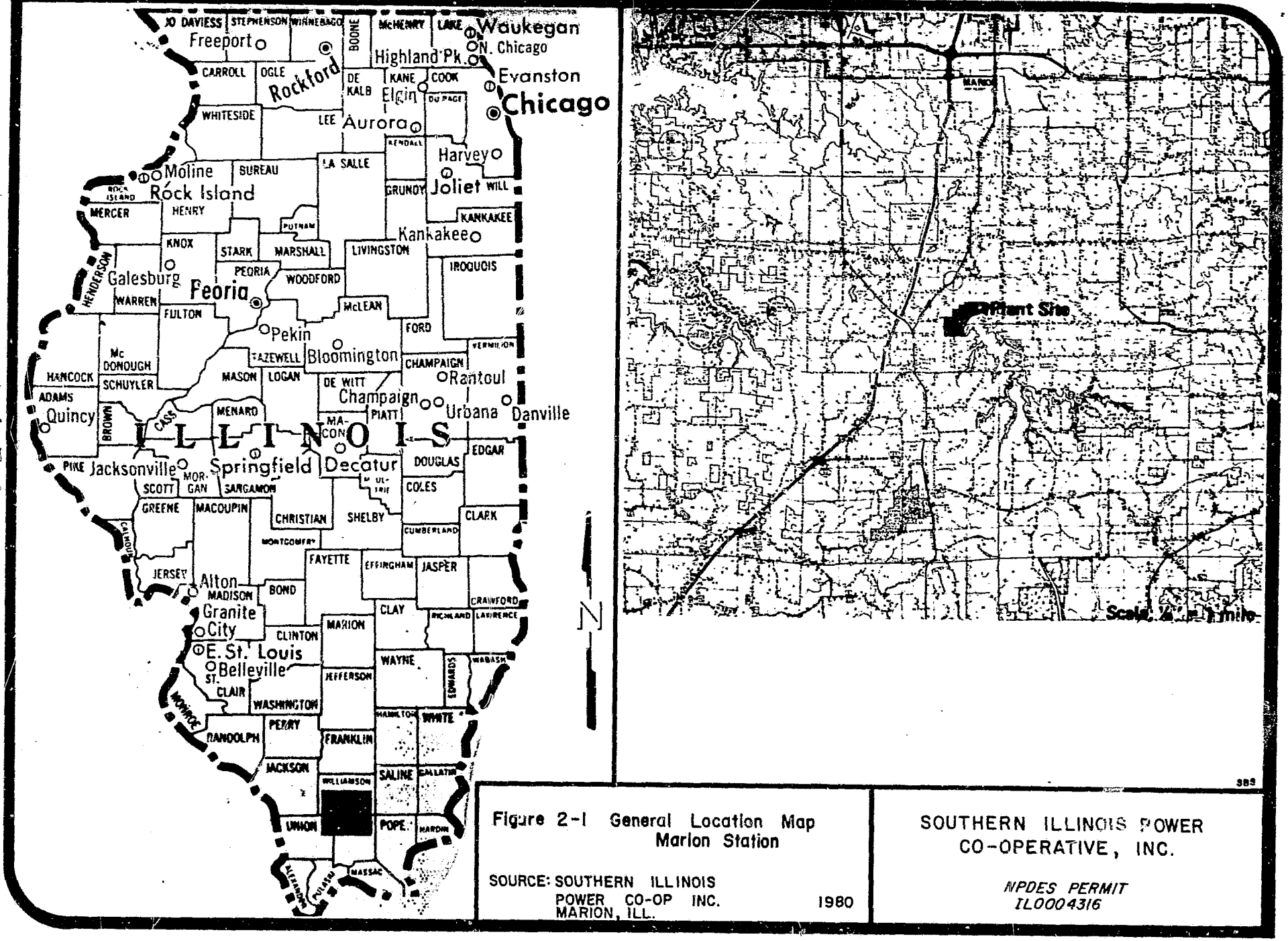

Figure 2-1 General Location Map
Marion Station

SOURCE: SOUTHERN ILLINOIS POWER CO-OP INC. MARION, ILL. 1980

SOUTHERN ILLINOIS POWER CO-OPERATIVE, INC.

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SOUTHERN ILLINOIS POWER CO-OPERATIVE

Route 4 • Box 311
Marion, Illinois 62959

Telephone
(618) 964-1448

August 26, 1985

3031-85

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AUG 29 1985
Environmental Protection Agency
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Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section
2200 Churchill Road
Springfield, IL 62706

Attention: Mr. Timothy Kluge

Dear Mr. Kluge:

Southern Illinois Power Cooperative is requesting a combination construction/operation permit to allow outfall 001 to be moved approximately 1,000 feet to the north of its present location. We plan to do some construction in the area of the present outfall which necessicates its relocation.

If you have any questions or comments, please contact us.

Very truly yours,

Richard Myott

Richard Myott
Support Systems
Department Manager

RM/ms

Enclosures

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Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-0610

Southern Illinois Power Cooperative
Marion Generating Station - Proposed Fly Ash/Scrubber
Sludge Disposal Pond - LOG # 3032-85
Review Letter

October 28, 1985

RECEIVED
Oct 31 '85
IEPA/DWPC
COMPLIANCE ASSURANCE
SECTION
SPRINGFIELD, IL

Richard Myott, Manager
Support Systems Department
Southern Illinois Power Cooperative
Route 4, Box 311
Marion, Illinois 62959

Dear Mr. Myott:

The Illinois Environmental Protection Agency received your Application for Permit and supporting plan documents concerning the above referenced project on August 29, 1985. The plan documents, as submitted, have been reviewed by the Permit Section staff, and based upon that review, the following items are offered for your consideration and appropriate action:

1. In the document "Technical Specification for Fly Ash Pond" on page 13 under "Pond Preparation" item 11, we request the specifications clearly indicate that the entire pond area both bottom and side slopes be lined with a minimum of three feet of compacted clay soils to form a seal exhibiting a maximum permeability of $1 * 10^{-7}$ cm/sec. Clay soils should be placed in maximum nine inch lifts and compacted to at least 95% of maximum dry density in accordance with ASTM D698. All unsuitable material shall be excavated and removed.

2. We request the specifications contain a statement requiring density testing of the pond bottom and side seal clay liner by the contractor similar to the specifications found at page nine, item 9-A, 4, and page eleven, item 9-A, 13.

Upon receipt of a satisfactory written reply and supplemental information required, we shall finalize our review of this subject.

Should you have any questions or comments regarding the contents of this letter, please contact Gary Cima of my staff at the above telephone number and address.

Very truly yours,

Timothy R. Kluge by JR Keller

Timothy R. Kluge, P.E., Manager
Industrial Unit, Permit Section
Division of Water Pollution Control

TRK:GC:mgg2647e/2

cc: Records Unit

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FIGURE 2: SUBSURFACE PROFILE THROUGH DAM MAXIMUM SECTION

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FIGURE 5: P-Q DIAGRAM - UU TESTS

FIGURE 6: P-Q DIAGRAM - CU TESTS

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LIST OF ATTACHMENTS

A: ILLINOIS DEPARTMENT OF TRANSPORTATION, LETTER FROM M. J. STRALOW TO RICHARD MYOTT, RE: PROPOSED FLY ASH DISPOSAL POND B-3, NOVEMBER 29, 1984.

B: ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, LETTER FROM T. R. KLUGE TO RICHARD MYOTT, RE: PRELIMINARY REPORT-REVIEW LETTER, JANUARY 7, 1985.

C: DRAWING 16240-C-004, "FLY ASH DISPOSAL POND B-3 - PLAN AND SECTIONS"

D: DRAWING 16240-C-005, "FLY ASH DISPOSAL POND B-3 - SECTIONS"

E: DRAWING 16240-C-006, "FLY ASH DISPOSAL POND B-3 - SITE UTILITY PLAN"

F: "SUBSURFACE INVESTIGATION AND SOIL TESTING REPORTS FOR PROPOSED FLY ASH AND SCRUBBER SLUDGE DISPOSAL POND B-3"

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1.0 INTRODUCTION

Southern Illinois Power Cooperative, Inc. (SIPCO) proposes to construct a compacted earthen dam as shown on the attached drawings and as described herein. The purpose of the earth dam is to provide a surface impoundment with a capacity of approximately 72,600 cubic yards for disposal of wet fly ash and sludge from sulfur dioxide scrubbers using a lime slurry reactant. This dam, which is designated "B-3," is located on the site of the Southern Illinois Power Cooperative's Marion Station, west of the existing fly ash and sludge disposal site in the NE 1/4, NW 1/4, Section 26, T10S, R2E, Williamson County, as shown on the site location map, Figure 1.

All designs and reports have been done in accordance with the following State of Illinois publications:

- "Procedural Guidelines for Preparation of Technical Data" (Reference 1)
- "Rules for Construction and Maintenance of Dams" (Reference 2)

In addition, SIPCO submitted a Preliminary Design Report (Reference 3) to the State of Illinois in November 1984, describing the design concepts for the B-3 Dam. Review letters on this submittal were received from the Illinois Department of Transportation (Reference 4), and the Illinois Environmental Protection Agency (Reference 5). Comments contained in those letters have been incorporated into the final design. Copies of these letters are included as Attachments A and B.

The applicant and the design engineer for this project are as follows:

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Applicant: Mr. Richard G. Myott, Manager
Support Systems Department
Southern Illinois Power Cooperative, Inc.
Route 4, Box 311
Marion, Illinois 62959
Tel. (618) 964-1448

Design Engineer: Mr. William F. Brittle
Bechtel Energy Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20877-1454
Tel. (301) 258-3000

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2.0 DOWNSTREAM AND SITE DESCRIPTION

The earth dam and its associated pond will be located adjacent to the Little Saline Creek which drains into the South Fork Saline River in the SE 1/4, Section 23, and W 1/2, N 1/2, Section 24. There are no buildings in the downstream flood plain within two miles of the proposed dam. There is a local county road (gravel) and a 6-inch-diameter domestic water pipeline for the Lake of Egypt Utility District located approximately 1000 feet downstream from the dam site. See attached drawings 16240-C-004 and 16240-C-006.

Based on information submitted in the "Preliminary Design Report" (Reference 3), the Illinois Department of Transportation has classified this proposed dam as a "small-sized Class III structure" (Reference 4).

The site for the B-3 Pond and dam is presently tree-covered with existing grade ranging from approximately El. 465 feet to El. 510 feet. An existing power line crosses the pond area and will be left in place. An existing drainage channel crosses the site from south to north and drains into Little Saline Creek. A farm pond is located adjacent to the eastern abutment of the proposed dam. In addition to these features, in 1984 SIPCO constructed fly ash disposal pond A-1 in the southwest corner of this site. See attached drawing 16240-C-004.

The B-3 Dam will be constructed across the northern end of an erosion feature on this site. The overall length of the dam is approximately 700 feet and the height of the dam is approximately 36 feet above the existing ground surface at the maximum dam section. The crest elevation for the dam is El. 498 feet. With a maximum pool elevation of El. 495 feet, the pond area is approximately 6.6 acres and the storage capacity is approximately 45 acre-feet. Other features include the outlet works for the reservoir and the wave and erosion protection provisions. See attached drawing 16240-C-004.

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3.0 SUBSURFACE INVESTIGATION

A total of 20 test borings have been completed for the proposed Fly Ash and Scrubber Sludge Disposal Pond B-3. Test borings BP-1 through BP-10 and BD-1 through BD-7 were completed in September 1983, for a fly ash disposal pond A-1 (already constructed), and for preparation of the preliminary design for this project. Borings BD-8, BD-9, and BD-10 were completed in March 1985 to supplement the previous information and to obtain samples for laboratory testing. Drilling of the test borings was done by Professional Service Industries, Inc., A&H Engineering Division (A&H) of Carbondale, Illinois, under the technical direction of Bechtel. The boring locations are shown on attached drawing 16240-C-004. The boring locations were selected by Bechtel and staked out in the field by SIPCO. Ground surface elevations at the boring locations were estimated from site drawings supplied by SIPCO.

In general, the test borings were drilled utilizing rotary drilling techniques using hollow stem augers to advance the holes. Rock coring was done in accordance with ASTM D-2113, Method for Diamond Core Drilling for Site Investigation (Reference 6).

Representative samples were obtained employing split-spoon sampling procedures in accordance with ASTM D-1586, Method for Penetration Test and Split-Barrel Sampling of Soils. Undisturbed samples were obtained using thin-wall sampling procedures in accordance with ASTM D-1587, Method for Thin-Walled Tube Sampling of Soils. Selection of soil samples for laboratory testing was done by Bechtel.

During the sampling procedure, standard penetration tests were performed at regular intervals to obtain the standard penetration value of the soil. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer falling 30 inches required to advance the split-spoon sampler one foot into the soil. The sampler is lowered to the bottom of the drill hole and the number of blows recorded for each

of three successive increments of 6 inches penetration. The "N" value is obtained by adding the second and third incremental numbers. The results of the standard penetration tests indicate the relative density and comparative consistency of the soils and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components. Fieldwork also included estimating the strength of clayey soils using a pocket penetrometer. The results of these estimates are noted on the individual boring logs by the symbol Q_p and are in units of tons/ft^2 (tsf).

The rock recovery percentage and the rock quality designation (RQD) is shown on the individual boring logs. The RQD, an indication of rock quality, is the percentage ratio between the total length of rock core at least 4 inches long and the length of core drilled.

Ground-water levels were recorded at the time of drilling and are shown on the boring logs. Logs of all test borings drilled during investigations are included in Appendix A of this report.

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4.0 LABORATORY TESTING PROGRAM

All laboratory testing was performed by A&H, with the exception of consolidated-drained triaxial tests on remolded samples of borrow material, which were performed by Shannon and Wilson of St. Louis, Missouri. All laboratory tests were conducted in accordance with applicable ASTM standards or other published procedures.

A listing of the field and laboratory tests performed are shown in Table 1. The results of field pocket penetrometer tests, Q_p, natural water content tests on split-spoon samples, M_c, and unconfined compressive strength tests on split-spoon samples, Q_u, are given on the individual boring logs. All other laboratory testing results are shown in Table 2. The laboratory testing data sheets are included in Attachment F.

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5.0 SUBSURFACE CONDITIONS

The subsurface conditions in the area of the proposed dam and pond generally consists of a brown silty clay of varying thickness overlying weathered sandstone bedrock. However, in the center of the valley and beneath the main dam section, a 12-foot-thick deposit of soft silt overlies 2 to 3 feet of sand with clay and silt which, in turn, is underlain by weathered sandstone. Figure 2 shows a subsurface profile beneath the main dam section illustrating these conditions. The general characteristics of the brown clay, soft silt and sandstone are further described below.

5.1 Brown Silty Clay

This stratum consists of brown and reddish brown silty clay with some sand and gravel. Standard penetration resistances vary from about 5 to over 50 blows/foot, and unconfined compressive strength estimates from field pocket penetrometer readings range from about 1 to over 4.5 tsf.

5.2 Soft Silt

This stratum consists of brown and gray clayey silt to silt with some fine sand and gravel. Standard penetration test resistances range from 2 to 14 blows/foot with an average of about 5 blows/foot. Unconfined compressive strength estimates from field pocket penetrometer readings range from 0.3 to 1.5 tsf with an average of 0.6 to 0.7 tsf. Figure 3 shows the standard penetration resistances versus depth for the soft silt layer.

5.3 Sandstone Bedrock

This stratum consists of brown, white, orange and red mottled weathered sandstone with shale seams and some clay seams, laminated and well cemented. Rock cores were only taken in two borings (BD-3 and BD-4A), with rock core recoveries ranging from 69 percent to 88 percent, and the RQD ranging from 7 percent to 60 percent.

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6.0 ENGINEERING PROPERTIES OF SUBSURFACE MATERIALS

The engineering properties of the soils encountered at the site have been assessed based on the results of laboratory tests and empirical relationships. Table 2 summarizes the results of selected laboratory tests performed on in situ soil samples and remolded samples of borrow material compacted to 95 percent of ASTM D 698. Figures 4, 5 and 6 are summaries of selected soil properties, including Atterberg limits, plasticity, and shear strength. Table 3 shows the engineering properties used for design.

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7.0 HYDROLOGIC AND HYDRAULIC DESIGN ANALYSIS

7.1 Introduction

This section addresses the hydrologic and hydraulic studies performed for the design of the outlet works and wave protection for the ash storage pond. The analysis included developing the inflow flood, sizing of the overflow outlet and the emergency spillway, and design of the erosion protection for the dam.

7.2 Watershed and Pond Description

The ash disposal pond will be created by the construction of an earth-fill dam about 35 feet high at its maximum section. The total watershed area is approximately 19 acres. The surface area of the pond including the overflow settling pond is approximately 6.6 acres. The pond is connected to the overflow settling pond by an open channel as shown on drawing 16240-C-004. The outflow from the pond takes place through this channel only.

Fly ash and sludge sluicing water is discharged into the pond at a rate of up to 1300 gpm. Normal outflow from the ponds will be through an overflow riser that will discharge into a 15-inch CMP pipe. The overflow riser is designed to carry the ash sluicing water and to pass the pond outflow from a 25-year rainfall (Reference 2).

The spillway crest and the energy dissipator are lined with riprap and will be designed to pass the pond outflow from a 100-year rainfall. This rainfall event is used to meet the requirement of the State of Illinois Division of Water Resources (Reference 2).

7.3 Basic Data

The following basic data are used in this design study:

100-year 6-hour rainfall	5.0 inches	(Reference 7)
25-year 6-hour rainfall	4.2 inches	(Reference 7)
Runoff coefficient	0.9	

Ash-sludge sluicing water	1300 gpm
Top of dam	El. 498
Maximum pond water level (100-year flood)	El. 495
Wind speed (10-year-fastest mile)	60 mph (Reference 8)

7.4 Hydrologic and Hydraulic Analyses

The approach followed in determining the inflow and outflow flood is based on volumetric method. Since the pond area is about one-third of the total watershed area of 19 acres, there will be a significant attenuation of the peak inflow into the pond.

A water balance was made during the 100-year 6-hour rainfall by considering runoff into the pond from the entire watershed plus the ash sluicing water during 6 hours, and an average outflow during this time period. Based on the inflow and the outflow, and the pond surface area and the spillway discharge capacity, the water levels were established in the settling pond and the disposal pond.

The same routing technique was used in sizing and setting the elevation of the riser and the outflow pipe to carry the 25-year 6-hour rainfall.

Based on the assumptions, the design parameters and the flood routing, the following summary is presented:

- Overflow Pipe (CMP):

Riser diameter	2.5 feet
Outflow pipe diameter	15 inches
Peak discharge	12 cfs
Top elevation of riser	El. 493

The outflow pipe is 15 inches in diameter and its route

and elevations are shown on drawings 16240-C-004 and 16240-C-005. The details of the riser and the outflow pipe are shown on drawing 16240-C-005.

- Emergency Spillway (Riprap lined crest and Energy Dissipator):

Crest elevation	493.75 feet
Crest length	6 feet
Design peak discharge	10 cfs
Actual peak discharge	5 cfs
Side slopes	1.5:1

- Maximum Water Level At:

Settling pond	El. 494.3
Disposal pond	El. 495

- Normal Water Level At:

Settling pond	El. 493.3
Disposal pond	El. 494.7

- Channel Between Disposal and Settling Pond

Bed width	16 feet
Crest elevation	494.5
Side slopes	2:1
Design peak discharge	17 cfs

The channel is covered with riprap with an average size of 6 inches and a total thickness of 12 inches.

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- Spillway Discharge Channel

The spillway channel will convey the emergency spillway discharge caused by runoff produced by a 100-year rainfall. The spillway crest is lined with riprap having D_{50} of 9 inches and will be placed in two layers with a total thickness of 18 inches. A filter layer 6 inches thick and a filter fabric as shown on the longitudinal profile on drawing 16240-C-005. The riprap is sized to withstand the velocity in the channel using USBR RR No. 24 (Reference 9). The discharge channel downstream of the energy dissipator is unlined with a bed width of 6 feet, side slopes of 1.5:1 or flatter, and the minimum depth of 1.5 feet.

7.5 Erosion Protection of the Dam

The upstream face of the dam is protected by riprap from elevation 493 feet (1.5 feet below normal water level) to elevation 496 feet (1 foot above top of wave runoff). The extent of the riprap was determined considering the pond operation and the wave runup coincident with the maximum 100-year flood water level of 495 feet MSL.

The riprap size is designed considering wind-generated waves. With a 60 mph wind, the significant wave height is 0.65 foot. A wave height of 1.0 foot was used in the design of the riprap. For the upstream face slope of 2H:1V the following riprap gradation is obtained using the Shore Protection Manual (Reference 10):

D_{50} = 6 inches

D_{85} = 9 inches

D_{15} = 3 inches

The riprap will be placed in two layers with a total thickness of 12 inches. A filter fabric will be placed under the riprap.

The wave runup was determined using the information in the Shore Protection Manual (Reference 10) for 2:1 side slope and using a 1 foot wave height.

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8.0 EMBANKMENT STABILITY ANALYSIS

8.1 Introduction

The B-3 Dam is approximately 700 feet long and 35 feet high, with a crest width of 10 feet. The crest elevation is El. 498 feet, while the maximum pond elevation is El. 495 feet. The upstream slope is 2H:1V and the downstream slope is 2-3/4H:1V. The existing soft silts below the main dam section will be removed down to competent material and replaced with compacted fill obtained from onsite borrow pits. The fill will be compacted to 95 percent of ASTM D-698.

8.2 Method of Analysis

The method of analysis utilized was a commercially available computer program entitled, "ISSAP," Reference 11. ISSAP is an interactive slope stability program which utilizes the modified Bishop method of analysis. The method is based on a static analysis of the mass above any trial arc. The factor of safety is defined as the ratio of the resisting moments to the driving moments around the center of the failure arc. Additionally, the program is able to handle standing pools; i.e., submergence of a portion of the slope, and earthquake loading.

8.3 Design Conditions

The cases for which stability analyses were performed are designated as: end of construction, sudden drawdown from maximum pool (not an operating case), steady seepage with maximum pool, and earthquake. The end-of-construction condition was analyzed using the total shear strength parameters, ϕ and c, as determined by unconsolidated-undrained (UU) and unconfined compression (UC) tests. The remaining conditions are analyzed using the effective shear strength parameters, $\bar{\phi}$ and $\bar{c}$, as determined by consolidated-undrained triaxial tests with pore pressure measurement (CU w/pp). The upstream slope was analyzed with both total and effective stress strength parameters, with a seismic coefficient of 0.10 g. (Reference 1).

The minimum acceptable factors of safety for the various design conditions and respective slopes are summarized below:

Case	Design Condition	Acceptable Factor of Safety	Slope	Strength Parameters
1	End of construction	1.3	Upstream	Total
2	Sudden drawdown from maximum pool	1.1	Upstream	Effective
3	Steady seepage with maximum pool	1.5	Downstream	Effective
4	Earthquake - steady seepage with maximum pool	1.0	Upstream Downstream	Total and Effective Effective

8.4 Results of Stability Analysis

The 35-foot-high dam embankment section analyzed for the above design conditions exceed the minimum factor of safety requirements. The lowest factor of safety is 1.0 for the dam downstream slope under the conditions of steady seepage with maximum pool and earthquake.

Following is a summary of the minimum computed factors of safety:

Case	Design Condition	Slope	Strength Parameters	Factors of Safety Calculated	Factors of Safety Required
1	End of construction	Upstream 2H:1V	Total	2.1	1.3
2	Sudden drawdown from maximum pool	Upstream 2H:1V	Effective	1.1	1.1
3	Steady seepage with maximum pool	Downstream 2-3/4H:1V	Effective	1.5	1.5
4	Earthquake - steady seepage with maximum pool	Upstream 2H:1V	Total	1.7	1.0
		Upstream 2H:1V	Effective	1.1	1.0
		Downstream 2-3/4H:1V	Effective	1.0	1.0

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8.5 Foundation Stability

Since the soft silts directly beneath the main dam section will be removed down to competent material, foundation stability will not be a concern.

8.6 Embankment Settlement

Settlement of the embankment will be due to compression under self weight only. Typical values of compression for embankments of this size are on the order of 1 percent of original embankment height. For a 47-foot-high embankment (35 feet of embankment, about 12 feet of subgrade fill), settlement at the maximum dam section would be approximately 5 to 6 inches.

8.7 Seepage Analysis

The seepage through the dam was estimated by approximate methods and simplified conditions.

The seepage quantity was computed by constructing a flow net through the embankment, assuming an impermeable base and applying Darcy's formula:

$$Q = k\ i\ A$$

where Q = discharge in given unit of time - cfs
k = coefficient of permeability of the soil - ft/sec
i = hydraulic gradient = h/l
h = difference in head causing flow to take place - ft.
l = length of flow path - ft
A = area through which flow takes place - ft^2

Assuming an embankment 700 feet long, with a head difference of 32 feet and a coefficient of permeability for the compacted fill of $5x10^{-8}$ cm/sec ($1.6x10^{-9}$ ft/sec), the amount of seepage through the embankment is negligible. Further, during normal operation, the sludge sediment will accumulate on the pond bottom and upstream

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slope of the dam, and further reduce the seepage loss. However, in order to provide protection against any possible seepage, a blanket drain is provided on the downstream face of the dam up to El. 478 feet. This drain consists of a layer of non-woven geotextile covered with a 12-inch layer of coarse bottom ash. The lowest portion of the dam toe is protected by riprap as shown on drawing 16240-C-004 to protect against erosion by local runoff and high Little Saline Creek flows.

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9.0 DESIGN RECOMMENDATION SUMMARY

Based on the analysis, the following design recommendations are made, and are shown on drawing 16240-C-004.

- The embankment be constructed with onsite silty clay, compacted -2 to +2 percent of optimum moisture content to a minimum 95 percent of ASTM D-698 (Standard Proctor).

- The soft silt beneath the main dam section will be removed down to competent material and replaced with compacted fill.

- The upstream and downstream slopes be constructed to 2H:1V and 2-3/4H:1V, respectively.

- Slope protection be placed on the upstream slope from El. 498 feet to El. 492.5 and on the downstream slope from El. 470 feet to the toe of slope. The slope protection will consist of one foot of riprap underlain by filter fabric.

- A downstream toe drain be installed consisting of a 2-foot-wide ditch with riprap protection.

- The embankment be constructed with a 12-inch camber at the maximum dam section, tapering to zero camber at each end of the embankment.

10.0 CONSTRUCTION REQUIREMENTS

10.1 Backfill Requirement

The onsite silty clay can be used for embankment backfill. The fill should be placed in loose lifts not to exceed 9 inches, and compacted from -2 to +2 percent of optimum moisture content to 95 percent of ASTM D 698.

10.2 Excavation

Excavate unsuitable foundation materials beneath the dam to competent soils with an undrained shear strength of 1600 psf or to rock. The depth of excavation will be determined in the field by the Resident Geotechnical Engineer. The depth of excavation shown on drawing 16240-C-004 is based on boring data, and is subject to change, and is shown to provide a basis for estimating and for bid purposes. The excavation should be backfilled with material as described in Section 10.1. The excavation side slopes can be as steep as possible as long as they are stable, but in no case steeper than 1H:1V. Dewatering, if required, can be accomplished with sumps and ditches.

10.3 Upstream Blanket

During excavation of the borrow material, care shall be taken to ensure that a minimum of 3 feet of impermeable soil be maintained over the weathered sandstone. If the weathered sandstone or any granular material is exposed, it should be covered with the silty clay borrow material and compacted from 1 to 4 percent above optimum moisture content to 95 percent of ASTM D 698.

10.4 Camber

Due to the potential of embankment compression (Section 8.6), the crest of the dam should be constructed 12 inches higher at the maximum section, tapering to zero camber at each end of the embankment.

10.5 Ground Cover

It is recommended that the downstream slope of the embankment be planted with crown vetch or similar ground cover, and be maintained to allow for routine inspections.

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11.0 MAINTENANCE PLAN

The ash pond will be inspected and maintained on a regular basis consistent with the requirements of State of Illinois, Rules for Construction and Maintenance of Dams (Reference 2), and Procedural Guidelines for Preparation of Technical Data to be Included in Application for Permit for Construction and Maintenance of Dams (Reference 1).

The areas disturbed during construction of the pond will be seeded with crown vetch or similar ground cover. During the first growing season, supplemental seedings of the ground cover will be done, if necessary, to assure complete coverage of the disturbed soil. On a yearly basis, inspections will be conducted and repairs to the ground cover made as required. Brush and trees will be removed from the embankment and spillway channel on an annual basis.

At the minimum of once a year, an inspection will be made of the riprap, bottom ash filter, spillway channel, CMP overflow, and toe of the A-1 dam embankment for damage and repairs will be made as required.

On an annual basis, a report will be submitted to the State of Illinois on forms furnished by the Division of Water Resources stating that the dam is being maintained in accordance with the maintenance plan and also outlining any changes to land use downstream within two ~~inches~~ Miles of the dam.

Every five years, an inspection of the dam will be made by an engineer or other qualified person and a report will be prepared.

In addition to the preceding inspections, the emergency spillway will be checked for unusual erosion or clogging by debris after heavy rainfalls.

Table 4 summarizes the type and frequency of inspections and maintenance actions.

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12.0 REFERENCES

1. "Procedural Guidelines for Preparation of Technical Data to be Included in Applications for Permit for Construction and Maintenance of Dams," Illinois Department of Transportation, Division of Water Resources, September, 1981.

2. "Rules for Construction on Maintenance of Dams," Illinois Department of Transportation, Division of Water Resources, February 23, 1983.

3. "Preliminary Design Report for Proposed Fly Ash and Scrubber Sludge Disposal Pond B-3" for Southern Illinois Power Cooperative, Inc. by Bechtel Energy Corporation, September, 1984.

4. Illinois Department of Transportation, Letter from M. J. Stralow to Richard Myott, Re: Proposed Fly Ash Disposal Pond B-3, November 29, 1984.

5. Illinois Environment Protection Agency, Letter from T. R. Kluge to Richard Myott, Re: Preliminary Report-Review Letter, January 7, 1985.

6. "1983 Annual Book of ASTM Standards, Volume 04.08, Soil and Rock; Building Stones," ASTM, 1983.

7. U.S. Weather Bureau, Technical Paper No. 40, "Rainfall Frequency Atlas of the United States for Duration from 30 Minutes to 24 Hours."

8. Thom, H. C. S., "New Distributions of Extreme Winds in the United States," ASCE Journal of Structural Division, July 1968.

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9. U.S. Bureau of Reclamation, "Hydraulic Design of Stilling Basin for Pipe or Channel Outlet," Research Report No. 24, 1978.

10. U.S. Army Corps of Engineers, "Shore Protection Manual," 1984.

11. "ISSAP-Interactive Slope Stability Analysis Package," Engineering Services, Longwood, Florida.

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TABLE 1

SUMMARY OF LABORATORY TESTING

	Number of Tests
o Natural water content	160
o Atterberg limits	11
o Sieve analysis	13
o Natural density	3
o Standard proctor test (ASTM D-698)	4
o Permeability test (remolded sample)	4
o Unconfined compression test (remolded sample)	4
o Unconfined compression test (shelby tube)	3
o Unconfined compression test (split-spoon sample)	11
o Consolidation test	2
o Unconsolidated, undrained, triaxial test (remolded sample)	5
o Consolidated, undrained triaxial test, with pore pressure measurement (remolded samples)	2

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TABLE 2

SOIL TEST RESULTS SUMMARY

PROJECT SIPCO B-3 DAM — LOCATION MARION, ILLINOIS — DATE 5/10/85 — Sheet 1 of 2

BORING NO.	SAMPLE No. or Depth	UNIFIED CLASS	PARTICLE SIZE ANALYSIS: GRAVEL 3" TO NO.4 %	SAND NO.4 TO NO.200 %	FINES MINUS NO.200 %	ATTERBERG LIMITS: LL	PL	PI	COMPACTION %	WATER CONT. %	DRY DENSITY PCF	UNDRAINED SHEAR STRENGTH: TV KSF	PP KSF	LAB. VANE UD KSF	LAB. VANE R KSF	UNCONFINED COMPRESSIVE STRENGTH: q KSF	ε %	TRIAXIAL SHEAR DATA: UU φ	UU c KSF	CD φ'	CD c' KSF	CU θ	CU c KSF	CU φ'	CU c' KSF	CONSOLIDATION DATA: e_o	S %	P_c KSF	C_c	C_r	Permeability k cm/sec
BP-3	4-AU	CL				32.2	19.2	13		17																				
BP-3	8-AU	CH	0	13	87	52.4	20	32.4		23																				
BP-3	9-ST									25.8	103.3																			
BP-4	BULK		0	34	66					14.9[1]	116.6[2]																			
BP-4	BULK								95.7	15.0	111.6						4.4	0	2.35											
BP-4	BULK								98.0	15.0	114.3						8.6	0	2.3											
BP-4	BULK								95.5	13.7	111.4																			$7.4x10^{-7}$
BP-4	BULK								94.9	13.7	110.6					2.54	4.0													
BP-7	3-AU	CL				27.6	18.4	9.2		19.0																				
BP-7	6-ST									15.7	118.7																			
BP-8	BULK		0	12	88					14.3[1]	119.0[2]																			
BP-8	5-ST	CL				30.8	18.5	12.3		20.7	106.4																			
BP-8	BULK								96.1	14.3	114.3						3.4	0	3.45											
BP-8	BULK								92.5	14.3	110.1						2.1	0	2.5											
BP-8	BULK								93.6	14.3	111.4						2.9	0	2.55											
BP-8	BULK								95.0	15.5	113.1																			$9.4x10^{-8}$
BP-8	BULK								94.3	15.5	112.2					3.32	4.0													
BD-1	5-SS	CL				35.6	23.3	12.3		17.0																				
BD-5	8-SS		0	0	100					22.0																				
BD-5	6-ST									22.0	96.7																0.74	92.0	4.2	0.15	0.01
BD-5A	22'-24'									20.7	97.1																0.74	84.2	3.0	0.12	0.015
BD-5A	21.5-22									22.0	105.7					0.9	4.5													

REMARKS:

[1]OMC From Compaction Test, ASTM D-698.

[2]Max. DD From Compaction Test, ASTM D-693.

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SOIL TEST RESULTS SUMMARY

TABLE 2 (Cont'd.)

PROJECT SIPCO B-3 DAM | LOCATION MARION, ILLINOIS | DATE 5/10/85 | Sheet 2 of 2

BORING NO.	SAMPLE NO. OR DEPTH	UNIFIED CLASS	PARTICLE SIZE ANALYSIS: GRAVEL 3" TO NO. 4 %	SAND NO. 4 TO NO. 200 %	FINES MINUS NO. 200 %	ATTERBERG LIMITS: LL	PL	PI	COMPACTION %	WATER CONT. %	DRY DENSITY PCF	UNDRAINED SHEAR STRENGTH: TV KSF	PF KSF	LAB. VANE UD KSF	LAB. VANE R KSF	UNCONFINED COMPRESSIVE STRENGTH: q KSF	ε %	TRIAXIAL SHEAR DATA: UU φ °	UU c KSF	CD φ' °	CD c' KSF	CU φ °	CU c KSF	CU φ' °	CU c' KSF	CONSOLIDATION DATA: e_o	S %	P_c KSF	C_c	C_r	Permeability k cm/sec
BD-5	6-ST									29.4	89.8					1.24	14.0														
BD-5A	23.5-24									20.7	108.9					2.28	5.8														
BD-7	10-SS		5	73	22					16.0																					
BD-8	2-ST	ML	0	0	100	26.5	24.8	1.7		29.0																					
BD-8	5-ST	ML	0	5	95	26.8	25.4	1.4		31.0																					
BD-9	2-ST	ML	0	5	95	27.4	25.2	2.2		26.0																					
BD-9	4-ST	ML	0	5	95	26.5	25.9	0.6		33.0																					
Bottom Ash	--	SP	4	96	0					5.1																					
30% FA & Sludge	--		0	13	87					12.5																					
20% FA & Sludge	--		0	6	94					86.1																					
Sludge	--		0	0	100					98.0																					
East Borrow Area	1	CL				37.6	23.1	14.5		16.4[1]	108.5[2]																				
"	1								96.7	17.9	104.9					3.64	7.5														
"	1								94.8	18.9	102.9													30	0.13		80.0				
"	1								96.1	18.2	104.3																				5.84×10^{-6}
"	2									16.7[1]	109.2[2]																				
"	2	CL				36.4	23.4	13.0	94.5	18.6	103.2					2.92	6.0														
"	2								94.3	18.5	103.0													28	0.19		79.0				1.93×10^{-6}
"	2								93.5	18.3	102.1																				

REMARKS:

[1]OMC From Compaction Test, ASTM D-698.

[2]Max. DD From Compaction Test, ASTM D-698.

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TABLE 3

SUMMARY OF ENGINEERING PROPERTIES USED IN DESIGN

	Brown Silty Clay	Soft Silt	Weathered Sandstone	Compacted Fill
Dry Unit Weight - PCF	108	95	---	108[1]
Moisture Content - %	20	15	---	15[2]
Total Unit Weight - PCF	130	110	145	124
Liquid Limit - %	30	23	---	30
Plasticity Index - %	11	2	---	11
Unified Soil Classification	CL	ML	---	CL
Total Stress Strength Parameters -				
Friction Angle-Deg.	0	0	40	9
Shear Strength-PSF	2000	700	4000	1350
Effective Stress Strength Parameters -				
Friction Angle-Deg.	---	---	---	29
Shear Strength-PSF	---	---	---	215
Compression Index	---	0.15	---	---[3]
Void Ratio	---	0.74	---	---
Permeability-cm/sec.	$5x10^{-8}$	---	---	$5x10^{-8}$

[1]95% of the maximum dry density as determined from ASTM D-698.

[2]Optimum moisture content determined from ASTM D-698.

[3]Estimated fill compression of 1% of original height.

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TABLE 4

DAM INSPECTION AND MAINTENANCE MATRIX

ITEM INSPECTED	FREQUENCY			
	ANNUAL BY DAM OWNER	FIVE YEAR BY ENGINEER	DURING FIRST GROWING SEASON	AFTER HEAVY RAINFALLS
Earthwork Embankment	X	X		
Emergency Spillway	X	X		X
CMP Overflow	X	X		
Ground Cover	X	X	X	
Bottom Ash Filter	X	X		
A-1 Dam Toe of Slope	X	X		
Riprap	X	X		
Removal of Brush and Trees	X	X		
Report to State		X		
Statement to State	X			

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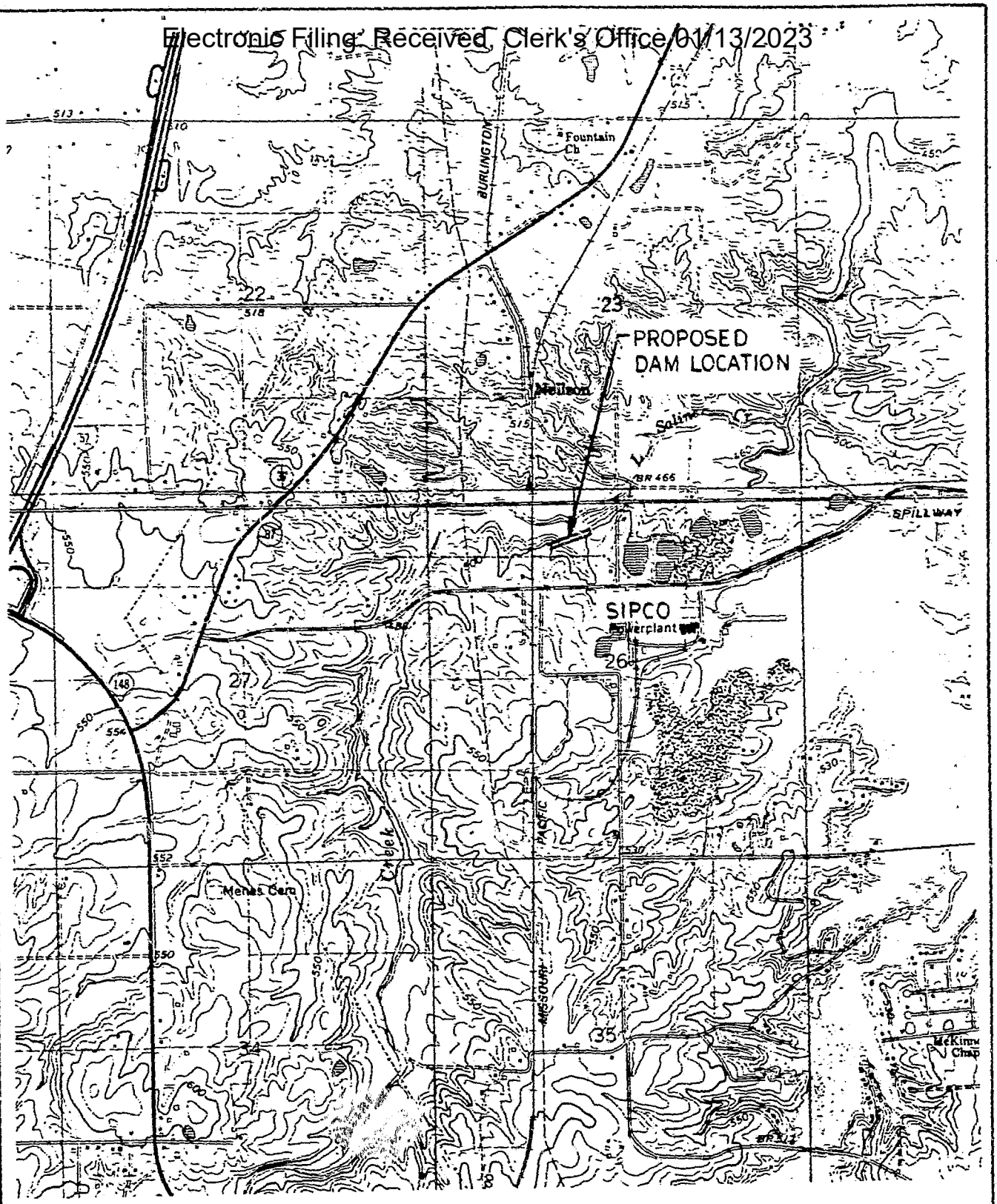

SOUTHERN ILLINOIS POWER COOP.	BECHTEL
SITE LOCATION MAP	16240
	FIGURE 1

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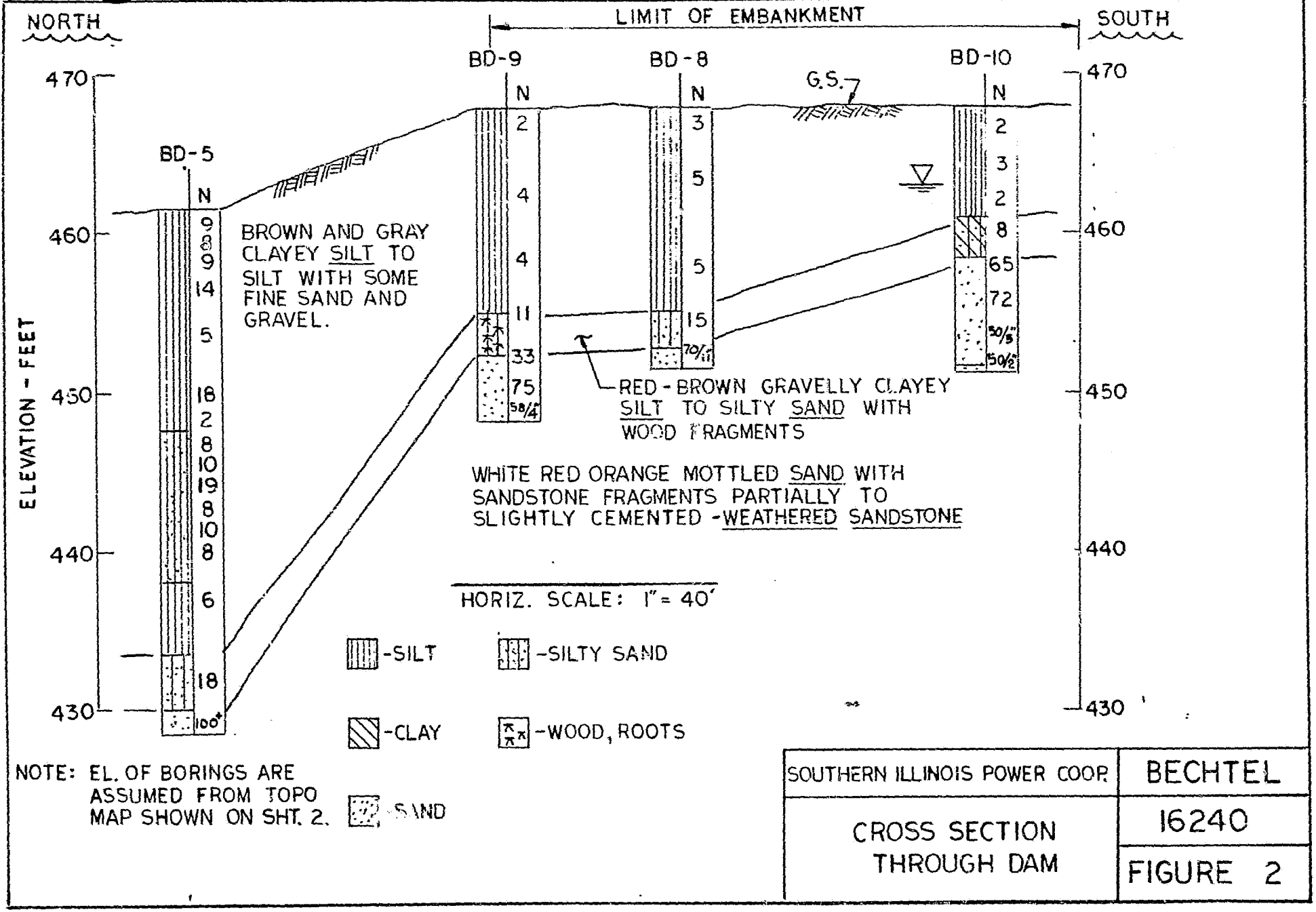

NOTE: EL. OF BORINGS ARE ASSUMED FROM TOPO MAP SHOWN ON SHT. 2.

SOUTHERN ILLINOIS POWER COOP.	BECHTEL
CROSS SECTION THROUGH DAM	16240
	FIGURE 2

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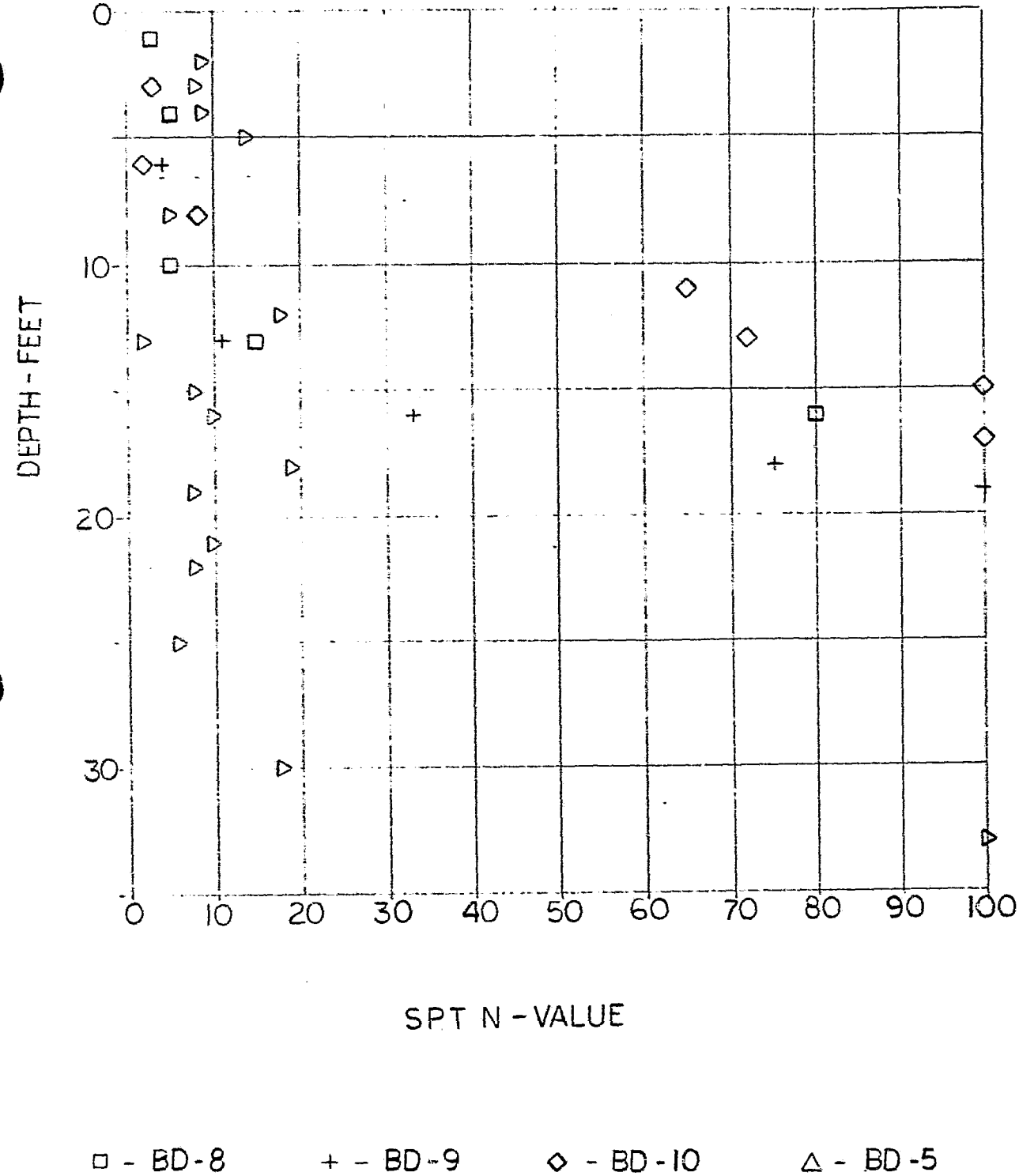

SOUTHERN ILLINOIS POWER COOP.	BECHTEL
STANDARD PENETRATION RESISTANCE OF SOFT SILT	16240
	FIGURE 3

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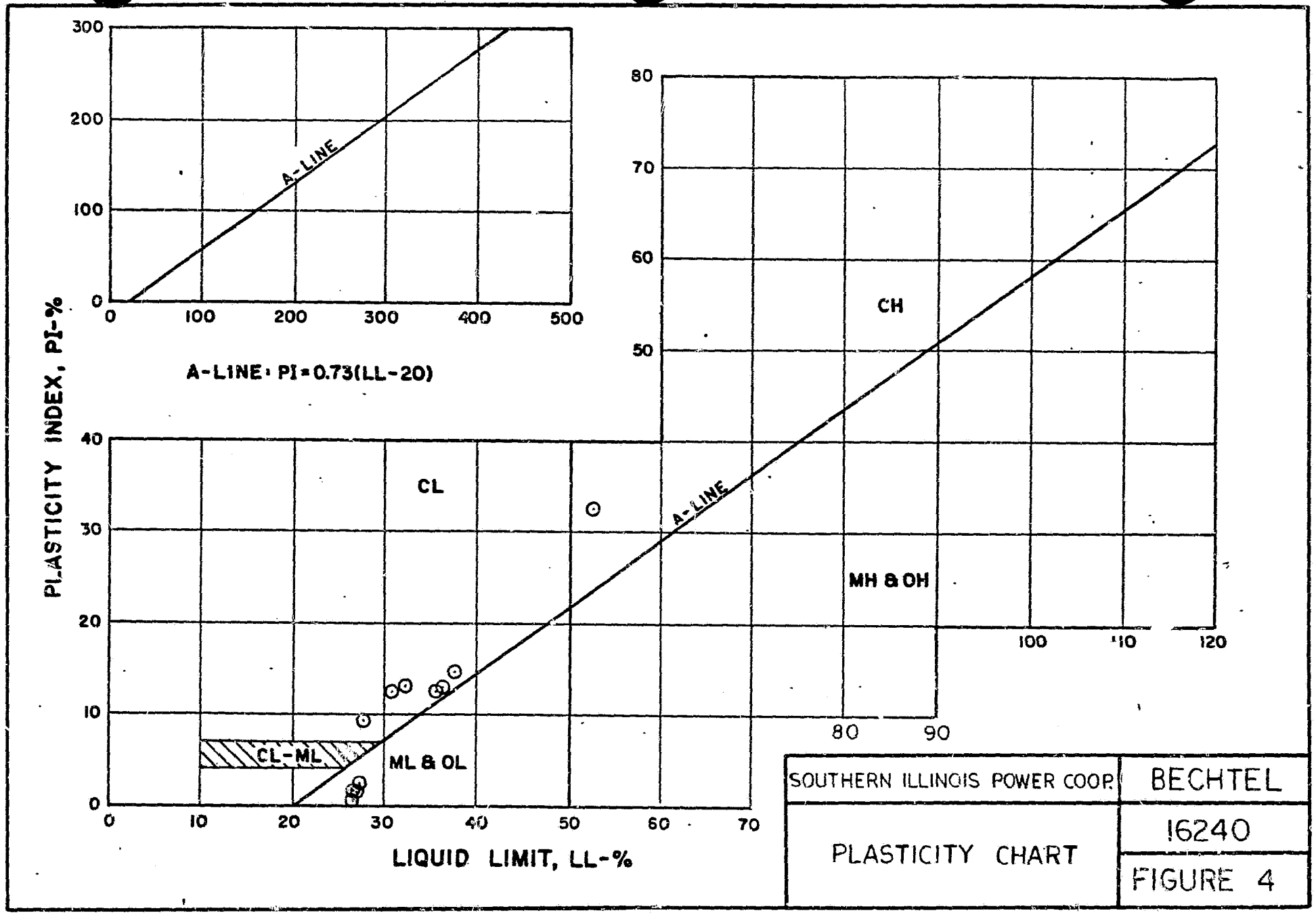

SOUTHERN ILLINOIS POWER COOP.	BECHTEL
PLASTICITY CHART	16240
	FIGURE 4

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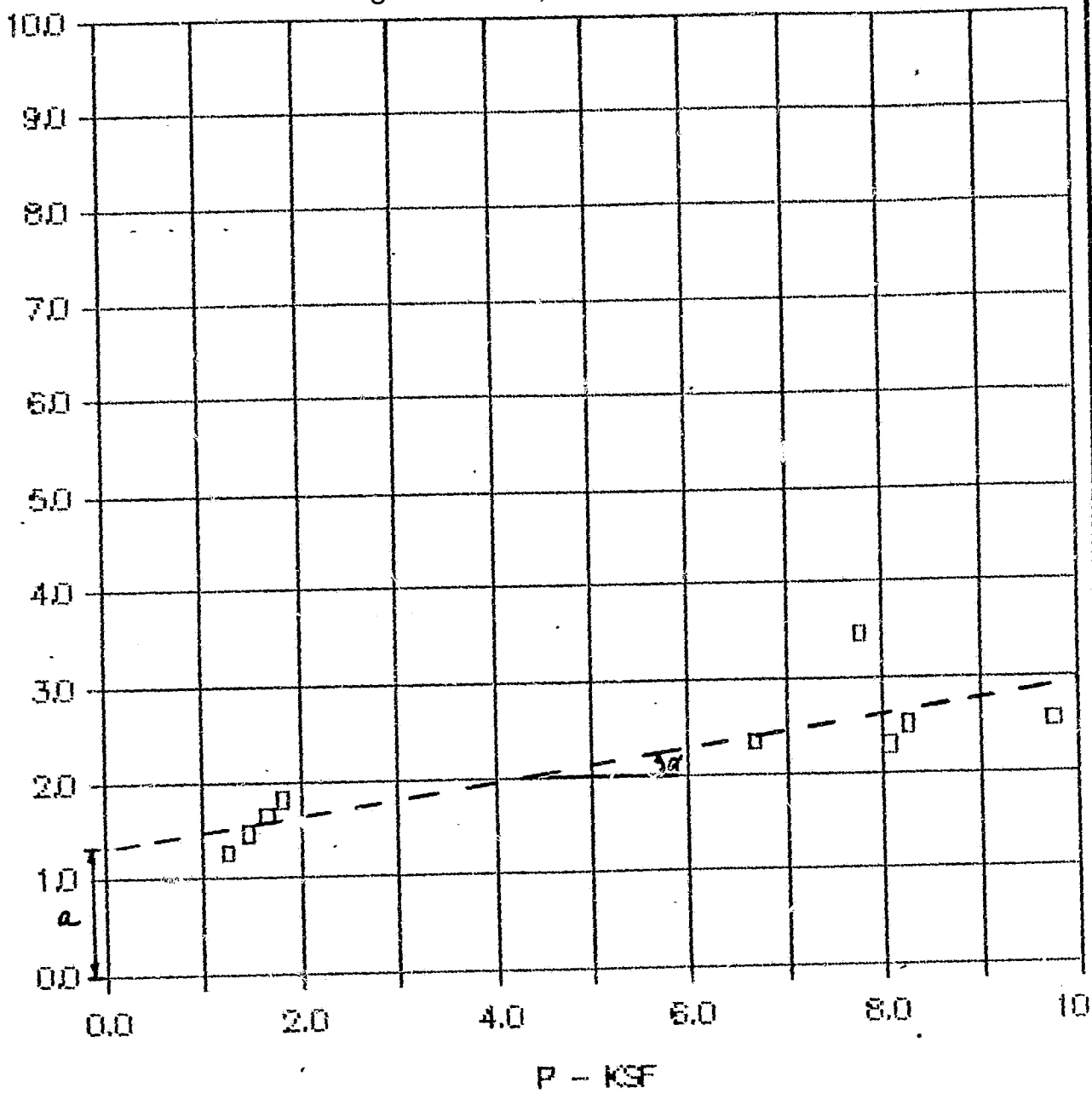

$P = \frac{\sigma_1 + \sigma_3}{2}$, $Q = \frac{\sigma_1 - \sigma_3}{2}$

SIN ϕ = TAN α

$C = a/\cos\phi$

SOUTHERN ILLINOIS POWER COOP.	BECHTEL
P-Q DIAGRAM - UU TESTS	16240
	FIGURE 5

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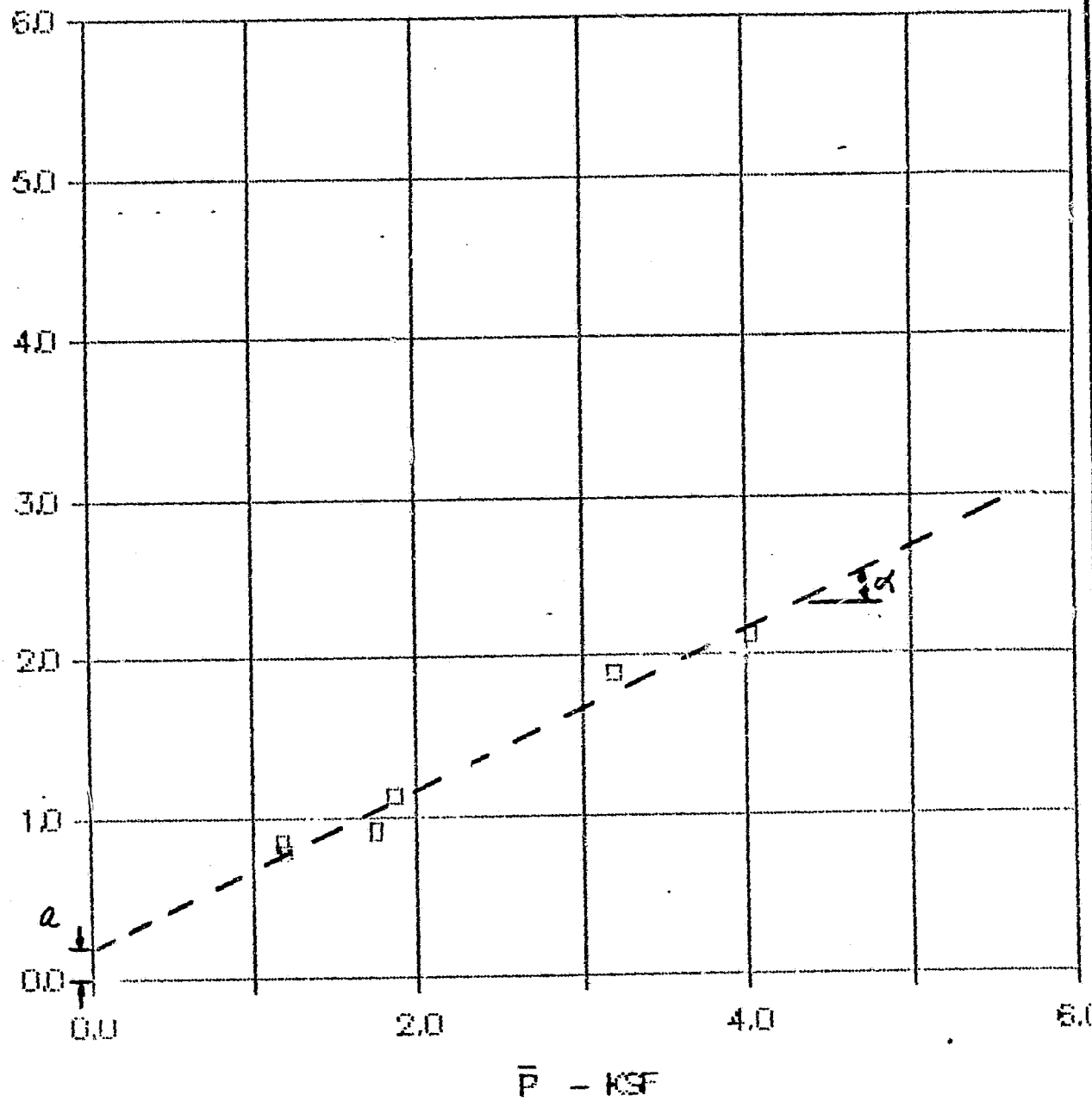

$\bar{P} = \frac{\bar{\sigma}_1 + \bar{\sigma}_3}{2}$, $Q = \frac{\sigma_1 - \sigma_3}{2}$

$\sin \bar{\phi} = \tan \alpha$

$\bar{c} = a / \cos \bar{\phi}$

SOUTHERN ILLINOIS POWER COOP.	BECHTEL
$\bar{P}$-Q DIAGRAM - CU TESTS	16240
	FIGURE 6

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ATTACHMENT A

S 2 1 9 0 0 6 2 1 5 8

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Illinois Department of Transportation
Division of Water Resources
2300 South Dirksen Parkway/Springfield, Illinois/62764

November 29, 1984

Mr. Richard Myott - Assistant to Manager
Southern Illinois Power Co-operative
Rural Route #4
P. O. Box 311
Marion, Illinois 62959

RE: Proposed Fly Ash Disposal Pond B-3

Dear Mr. Myott:

We have completed our review of your preliminary design report for the proposed fly ash and scrubber sludge disposal pond B-3 and have the following comments:

1. It appears from the submitted material that the proposed structure (disposal pond settling pond combination) is a small-sized class III structure. As such the total (principal and emergency) spillway should be designed to pass the 100-year storm with appropriate freeboard. Furthermore, the principal spillway should be designed to pass the 25-year storm before the emergency spillway begins to function.

2. Since the settling pond is an integral part of the disposal pond, we will analyze the disposal pond and settling pond as one system. Therefore, your final design report will need to include detailed plans and designed calculations for the proposed settling pond.

3. The submitted geotechnical methods of analyses appear to be adequate.

If you have any comments or questions regarding these matters, feel free to contact Bryan Martindale or me at 217/782-3863.

Sincerely,

Martin J. Stralow

Martin J. Stralow, P.E.
Chief, Dam Safety Section

MJS:BTM:edc

ATTACHMENT B

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Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-0610

Southern Illinois Power Cooperative, Inc.
Marion Station - Proposed Fly Ash and Scrubber Sludge Disposal Pond
Preliminary Report - Review Letter

January 7, 1984

Richard Myott
Assistant to Manager
Southern Illinois Power Cooperative
Route 4, Box 311
Marion, Illinois 62959

Dear Mr. Myott:

A review has been completed of the Preliminary Design Report for the subject project dated November 20, 1984. We find after reviewing the report that the following items should be considered prior to submitting the final application documents:

1. The Agency will require the proposed fly ash and scrubber sludge disposal pond have a liner. The Agency will require clay liners to be a minimum of 3 feet thick and exhibit a maximum permeability of 1.0×10^{-7} cm/sec. The permeability of the remolded sample BP-4 does not meet this criteria and therefore we recommend the use of tighter clay soils or an alternative liner material.

2. The Agency will require application forms WPC-PS-1, Schedule J and Schedule N be submitted with your application.

3. The Boring Location Diagram found in the Preliminary Design Report indicates a stream channel change; however, no channel change is indicated on the Plan and Sections Sheet. Please clarify this discrepancy.

We shall await receipt of satisfactory final engineering plans and application for Permit. We have enclosed the necessary application forms.

Should you have any questions or comments regarding the above, please contact Gary Cima of my staff at the above telephone number and address.

Very truly yours,

Timothy R. Kluge, P.E., Manager
Industrial Unit, Permit Section
Division of Water Pollution Control

TRK:GC/maw/0045E/2

Enclosure

cc: Records Unit
Regional Office 7
Permit Section

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ATTACHMENTS C, D AND E

(ATTACHED AT BACK OF REPORT)

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ATTACHMENT F

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-1

Project Name: Flyash Containment Lagoon Date of Boring: September 10, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 461.9							
Clayey SILT, brown	TS	1-AU				8	
Clayey SILT, brown, damp	2½	2-AU				13	
Clayey SILT, dark brown mottled brown, damp	5	3-AU				19	
Clayey SILT, dark brown mottled brown, moist							
Clayey SILT with trace sand and small gravel, dark brown, moist	7½	4-AU				24	
Silty CLAY with sandstone fragments, reddish-brown to brown, moist	8	5-AU				16	
Silty CLAY with trace sand, dark brown, moist	10	6-AU				22	
Silty CLAY with sand and gravel, brown, moist	12½	7-AU				18	
Silty CLAY with fine sand or weathered sandstone, yellow-brown, moist	15	8-AU				11	
SANDSTONE, brown							
End of Boring							
Auger refusal @ (-) 16.5 feet							
Boring dry upon completion							
30 pound bag sample obtained							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-2 ✓

Project Name: Flyash Containment Lagoon — Date of Boring: September 10, 1983

Site: Marion, Illinois — Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL. 492.6							
Clayey SILT, light brown	TS	1-AU				---	
Silty CLAY, brown, damp	2½	2-AU				12	
	5	3-AU				13	
Silty CLAY with trace sand and small gravel or pebbles, reddish-brown, moist	7½	4-AU				15	
	10	5-AU				15	
Weathered SANDSTONE, light brown to white, dry		6-AU				9	
	12½						
End of Boring							
Auger refusal @ (-) 12.5 feet							
Boring dry upon completion							
30 pound bag sample obtained							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-3 ✓

Project Name: Flyash Containment Lagoon Date of Boring: September 7, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 507.7							
Clayey SILT, brown	TS	1-AU				6	
	2½	2-AU				18	
Clayey SILT, brown, moist	5	3-AU				22	
	7½	4-AU				17	LL=32.2 PL=19.2 PI=13.0
	10	5-AU				18	
		6-AU				15	
Clayey SILT, little sand and gravel, brown, moist	12½	7-AU				15	24 hour
		8-AU				23	
Silty CLAY, trace fine sand, brown mottled gray, moist, medium plastic	15						LL=52.4 ✓ PL=20.0 PI=32.4
		9-ST				25.8	γ_d=103.3 pcf ✓
Clayey SILT with some sand, trace gravel, brown mottled gray, moist to wet	17½	10-AU				19	
		11-AU				21	
Clayey SILT, trace to little sand and gravel, brown, moist	20	12-AU				23	
End of Boring Auger refusal @ (-) 20.0 feet Boring dry upon completion 30 pound bag sample obtained							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-4

Project Name: Flyash Containment Lagoon Date of Boring: September 7, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL. 506.9							
Clayey SILT, brown	TS	1-AU				11	
	2½	2-AU				19	
Clayey SILT, brown, damp	5	3-AU				19	
		4-AU				19	
Silty CLAY, trace sand, brown, damp	7½	5-AU				17	
		6-AU				14	
Silty CLAY, little sand and gravel, rusty, moist	10	AU				15	
		-AU				11	▼
Silty CLAY little sand, more gravel, brown, moist	12½	9-AU				11	24 hours
		10-AU				16	
Silty CLAY trace sand, gray brown, moist	15	11-AU				15	
Silty SAND, brown mottled gray, moist							▼
Clayey SILT, sand and gravel, wet	17½	12-AU				16	0 hours
Silty CLAY, brown mottled gray, moist	20	13-AU				15	
End of Boring Auger refusal @ (-) 20.0 feet 30 pound bag sample obtained							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-5

Project Name: Flyash Containment Lagoon Date of Boring: September 14, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 473.8							
Clayey SILT, brown	TS	1-AU				22	
Clayey SILT, little sand and pebbles brown							24 hours ▼
SANDSTONE	2½	2-AU				18	
End of Boring							
Auger refusal @ (-) 2.5 feet							
Boring dry upon completion							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-6

Project Name: Flyash Containment Lagoon Date of Boring: September 10, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 499.7							
Clayey SILT, brown	TS	1-AU				10	
Silty CLAY, brown, damp							
Silty CLAY, reddish-brown, damp	2½	2-AU				17	
Silty CLAY with some sand and gravel, reddish-brown, damp	5	3-AU				15	
	7½	4-AU				17	
Silty CLAY with traces of sand to weathered sandstone, yellow-brown to brown, damp	10	5-AU				13	
Fine SAND with little gravel and some silty clay, gray, moist		6-AU				10	
	12½	7-AU				12	
End of Boring							
Auger refusal @ (-) 12.5 feet							
Boring dry upon completion							
30 pound bag sample obtained							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-7

Project Name: Flyash Containment Lagoon Date of Boring: September 10, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 507.4							
Clayey SILT to Silty CLAY, brown	TS	1-AU				13	
	2½	2-AU				20	
Silty CLAY, brown, moist, firm	5	3-AU				19	LL=27.6 PL=18.4 PI= 9.2
Silty CLAY with sand and gravel, reddish-brown, moist	7½	4-AU				15	
Silty CLAY with sand and gravel, yellow-brown, moist	10	5-AU				19	
		6-ST				15.7	γ_d=118.7 pcf
Silty CLAY with fine sand, brown mottled gray, moist							
Weathered SANDSTONE	12½	7-AU			3.5	13	
End of Boring							
Auger refusal @ (-) 12.5 feet							
30 pound bag sample obtained							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-8 ✓

Project Name: Flyash Containment Lagoon Date of Boring: September 7, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE El 506.2							
Clayey SILT, brown	TS	1-AU				9	
Clayey SILT trace of sand, brown, moist	2½	2-AU				20	
		3-AU				21	
	5						LL=30.8 PL=18.5 PI=12.3
Silty CLAY with trace sand, brown mottled gray and black, moist		5-ST				20.7	γ_d=106.4 pcf
	7½	6-AU				13	
		7-AU				12	
Silty CLAY, brown mottled gray, slightly moist	10	8-AU				11	
Clayey SILT with trace sand and gravel, brown, moist	12½	9-AU				12	
Weathered SANDSTONE, brown		10-AU				9	
End of Boring Auger refusal @ (-) 13.0 feet Boring dry upon completion 30 pound bag sample obtained							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-9

Project Name: Flyash Containment Lagoon — Date of Boring: September 7, 1983

Site: Marion, Illinois — Project No: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
504.0 EL 16 SURFACE							
Clayey SILT, brown	TS	1-AU				10	
Silty CLAY with trace sand, brown, moist	2½	2-AU				12	
Silty CLAY and sand, red, moist	5	3-AU				10	
Weathered SANDSTONE, brown, damp	7½	4-AU				12	
		5-AU				4	
End of Boring							
Auger refusal @ (-) 8.5 feet							
Boring dry upon completion							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BP-10

Project Name: Flyash Containment Lagoon — Date of Boring: September 7, 1983

Site: Marion, Illinois — Project No 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 488.7							
Clayey SILT, brown	TS	1-AU				6	
Clayey SILT with some sand and gravel, brown, slightly moist	2½	2-AU				4	
Silty CLAY with some sand, rust, moist	5	3-AU				11	
		4-AU				3	
End of Boring							
Auger refusal @ (-) 5.0 feet							
Boring dry upon completion							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-1

Project Name: Flyash Containment Lagoon Date of Boring: September 14, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	q_u	q_p	M_c	REMARKS
SURFACE EL 488.7							
Clayey SILT, brown		1-AU	5	---	---	9	
Silty CLAY with little sand, brown mottled gray and black, moist, very stiff to stiff		2-SS	26	3.4	4.5+	13	
		3-SS	30	---	4.5+	12	
Silty CLAY with some sand, brown mottled gray and black, moist, stiff	5	4-SS	14	3.0	3.5	18	24 hours ▼
		5-SS	15	1.3	2.0	17	LL=35.6 PL=23.3
Weathered SHALE, brown with layers of gray, moist, hard		6-SS	50/3"	---	3.0	3	PI=12.3
End of Boring							
Auger refusal @ (-) 8.5 feet							
Boring dry upon completion							
NOTE: large rocks present from 3.0 to 6.0 feet							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-2

Project Name: Flyash Containment Lagoon
Site: Marion, Illinois
Date of Boring: September 14, 1983
Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE El 488.4							
Clayey SILT, brown		1-AU	12	---	---	10	
Clayey SILT with little sand and gravel, brown, dry, medium dense		2-SS	44	---	4.5+	8	
SAND and GRAVEL with some silty clay, light brown, slightly moist, very dense		3-SS	50/6"	---	---	3	
	5						
End of Boring							
Auger refusal @ (-) 4.0 feet Mc 4							
Boring dry upon completion							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-3

Project Name. Flyash Containment Lagoon — Date of Boring: September 14, 1983

Site Marion, Illinois — Project No. 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE El 462.9							
Clayey SILT, brown		1-AU	14	---	---	5	
		2-SS	33	---	---	6	
		3-SS	50/4½"	---	---	16	
	5	4-SS	50/6"	---	---	17	
SAND and SANDSTONE FRAGMENTS with trace clayey silt, gray and rust, slightly moist, dense to very dense		5-SS	50/½"	---	---	5	
		6-SS	50/4½"	---	---	5	
		7-SS	77	---	---	---	▼
	10	8-SS		---	---	6	24 hours
SANDSTONE, brown to light brown, fine to medium grained, hard, fractured with some clay seams, upper material appears weathered, well cemented	15	D_B	NX Core 69.3% recovery				RQD=7.2
SANDSTONE, with shale seams, gray streaked dark gray, hard, laminated fine grained, well cemented	20	D_B	NX Core 93.0% recovery				RQD=61.0%
End of Boring Auger refusal @ (-) 12.0 feet Boring dry upon completion							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-4

Project Name. Flyash Containment Lagoon — Date of Boring September 13, 1983

Site: Marion, Illinois — Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 461.6							
Clayey SILT to SILT with trace organics, brown slightly moist, slightly compact		1-AU	6	---	---	8	
		2-SS	6	---	1.8	7	
		3-SS	6	---	---	14	
	5	4-SS	5	---	1.8	19	
Clayey SILT with trace sand, brown mottled gray and black, moist, slightly compact		5-SS	6	---	1.5	18	
		6-SS	6	---	2.0	23	
SILT, gray, moist to wet, slightly compact		7-SS	4	---	0.5	28	
	10						
	15	8-SS	6	---	---	28	
Clayey SILT and SAND with some gravel, brown, wet, slightly compact to very dense							
	20	9-SS	100/3"	---	---	20	
SANDSTONE, gray, dry, hard	25	10-SS	50/3"	---	---	5	
End of Boring Auger refusal @ (-) 25.0 feet							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-4A

Project Name: Flyash Containment Lagoon Date of Boring: September 13, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE El 451.1							
	5						
	10						
	15						
	20						
SANDSTONE with shale seams, laminated, gray streaked dark gray, hard, well cemented	25	D_B	NX Core 88.1% recovery				RQD=57.6%
End of Boring Core taken at a 10.0 foot offset from BD-4							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-5

Project Name Flyash Containment Lagoon — Date of Boring September 12, 1983

Site Marion, Illinois — Project No 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 461.6							
Clayey SILT to SILT, brown, damp, medium dense		1-AU	9	---	2.3	9	
		2-SS	8	---	---	9	
		3-SS	9	---	2.0	10	
	5	4-SS	14	---	1.3	14	
		5-SS	5	---	---	30	
Clayey SILT with some sand, gray, wet, very loose	10	6-ST					
		7-SS	18	---	---	21	
		8-SS	2	0.2	0.3	---	▼
Clayey SILT to SILT with trace sand, gray, wet, medium dense		9-SS	8	---	---	30	0 hours
	15	10-SS	10	---	---	---	
Clayey SILT with some sand & gravel, brown mottled gray, moist, dense		11-SS	19	1.2	1.8	14	
Clayey SILT to SILT with trace sand, gray mottled brown, moist, medium dense		12-SS	8	1.1	1.0	21	
	20	13-SS	10	---	1.0	24	
Clayey SILT with trace sand and gravel, brown mottled gray, moist, medium dense		14-SS	8	0.9	1.0	24	
	25						
Clayey SILT to SILT, gray, moist, slightly compact		15-SS	6	0.5	0.8	29	
SANDSTONE and clayey silt with some sand, gray and brown, moist to wet, dense to very dense	30	16-SS	18	---	---	20	
		17-SS	100/1"	---	---	12	
End of Boring Hole offset 5' and redrilled Shelby Tubes obtained at (-) 20.0 to 22.0' and 22.0 to 24.0'							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-6

Project Name: Flyash Containment Lagoon Date of Boring September 12, 1983

Site Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 486.6							
Clayey SILT, brown		1-AU	19	---	4.5+	8	
Clayey SILT, sand, brown, damp, hard		2-SS	30	---	4.5+	9	
SAND with little clayey silt, brown damp		3-SS	60	---	---	9	
	5	4-SS	52	---	4.5+	11	▼
Clayey SILT with sand & gravel, brown, damp hard or very dense		5-SS	53	---	---	4	
SAND, fine to medium, white, damp, very dense		6-SS	102	---	---	4	24 hours
Weathered SANDSTONE, light brown, damp, very dense		7-SS	100	---	---	5	
	10						
End of Boring							
Auger refusal @ (-) 9.0 feet							
Boring dry upon completion							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-7

Project Name: Flyash Containment Lagoon Date of Boring: September 14, 1983

Site: Marion, Illinois Project No.: 025-35034

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE EL 462.7							
Clayey SILT, brown		1-AU	8	---	---	9	
		2-SS	7	---	---	17	
		3-SS	4	---	2.0	18	
	5	4-SS	4	1.0	1.5	18	
		5-SS	5	0.9	1.0	25	
Clayey SILT to SILT with trace sand, brown, moist to wet, slightly compact to medium dense		6-SS	9	0.9	0.8	24	
		7-SS	10	---	2.0	23	
	10						
							▼
Clayey SILT to SILT with little sand, brown, wet, medium dense	15	8-SS	12	---	0.5	22	0 hours
SAND and Clayey SILT, brown, saturated, slightly compact	20	9-SS	5	---	---	23	
SAND and GRAVEL with some clayey silt, gray, wet, dense to very dense	25	10-SS	18	---	4.5+	---	
	30	11-SS	57	---	2.8	13	
Weathered SHALE with some sand, gray, slightly moist, hard							
	35	12-SS	50/1"	---	---	18	
End of Boring Auger refusal @ (-) 35.0 feet							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-8

Project Name: Dam B-3 - Lake of Egypt Date of Boring: March 29, 1985

Site: Marion, Illinois Project No.: 025-55008

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE ≈EL 465							
Clayey SILT with organic matter, gray and brown, wet, loose		1-SS	3		0.4	39	
		2-ST			1.5	29	100% Recovery
		3-SS	5		0.6	30	0 hours ▼
	5	4-ST	No Recovery				
Clayey SILT to SILT, trace organics, brown, moist, slightly compact		5-ST			0.7	31	100% Recovery
	10	6-SS	5		0.4	29	
		7-SS	15		0.8	20	
SAND with clayey silt, brown, moist, very dense	15	8-SS	50/5"			9	
End of Boring							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-9

Project Name: Dam B-3 - Lake of Egypt Date of Boring: March 29, 1985

Site: Marion, Illinois Project No.: 025-55008

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE ± El 463							
Clayey SILT to SILT, little organic matter, brown, moist, loose		1-SS	2			26	
		2-ST				26	90% Recovery
	5	3-SS	4		0.3	30	▼ 0 hours
		4-ST				33	90% Recovery
Clayey SILT to SILT, trace sand and organics, gray, moist to wet, loose	10	5-SS	4		0.8	30	
		6-SS	11			35	
SAND and Clayey SILT, with some cemented fragments, brown, moist, very stiff	15	7-SS	33			7	
		8-SS	75			11	
SANDSTONE, gray		9-SS	58/4½"			11	
End of Boring Auger refusal @ (-) 19 5 feet							

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Professional Service Industries, Inc.

RECORD OF SUBSURFACE EXPLORATION

Boring BD-10

Project Name: Dam B-3 - Lake of Egypt Date of Boring: March 28, 1985

Site: Marion, Illinois Project No.: 025-55008

DESCRIPTION	DEPTH	SAMPLE	N	Q_u	Q_p	M_c	REMARKS
SURFACE ± EL 465						36	
Clayey SILT with some organic matter, gray and brown, wet, soft		1-SS	2			27	
		2-SS	3			26	
Clayey SILT to SILT, little fine sand, brown, moist to wet, loose	5	3-SS	2			37	
Medium SAND with sandstone fragments, brown, wet, slightly compact		4-SS	8			19	
	10	5-SS	65			15	
SAND with some Silty Clay, brown, moist, very dense - some cemented fragments		6-SS	58			9	▼
SANDSTONE, gray to brown, damp, very dense	15	7-SS	50/5"			26	0 hours
End of Boring							
Auger refusal @ (-) 16.5 feet							
N @ (-) 16.5' = 50/2¼"							

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GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch O.D. split-spoon.

Qu: Unconfined compressive strength, TSF

Qp: Penetrometer value, unconfined compressive strength, TSF

Mc: Water content, %

LL: Liquid limit, %

PI: Plasticity Index, %

δ d: Natural dry density, PCF

▼: Apparent groundwater level at time noted after completion.

DRILLING AND SAMPLING SYMBOLS

SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
AU: Auger Sample.
DB: Diamond Bit.
CB: Carbide Bit.
WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

TERM (NON-COHESIVE SOILS)	STANDARD PENETRATION RESISTANCE
Very Loose	0 - 2
Loose	2 - 4
Slightly Compact	4 - 8
Medium Dense	8 - 16
Dense	16 - 26
Very Dense	Over 26

TERM (COHESIVE SOILS)	Qu - (TSF)
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in. +	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

5 - 8 - 21 - 0 0 0 6 - 5 2 1

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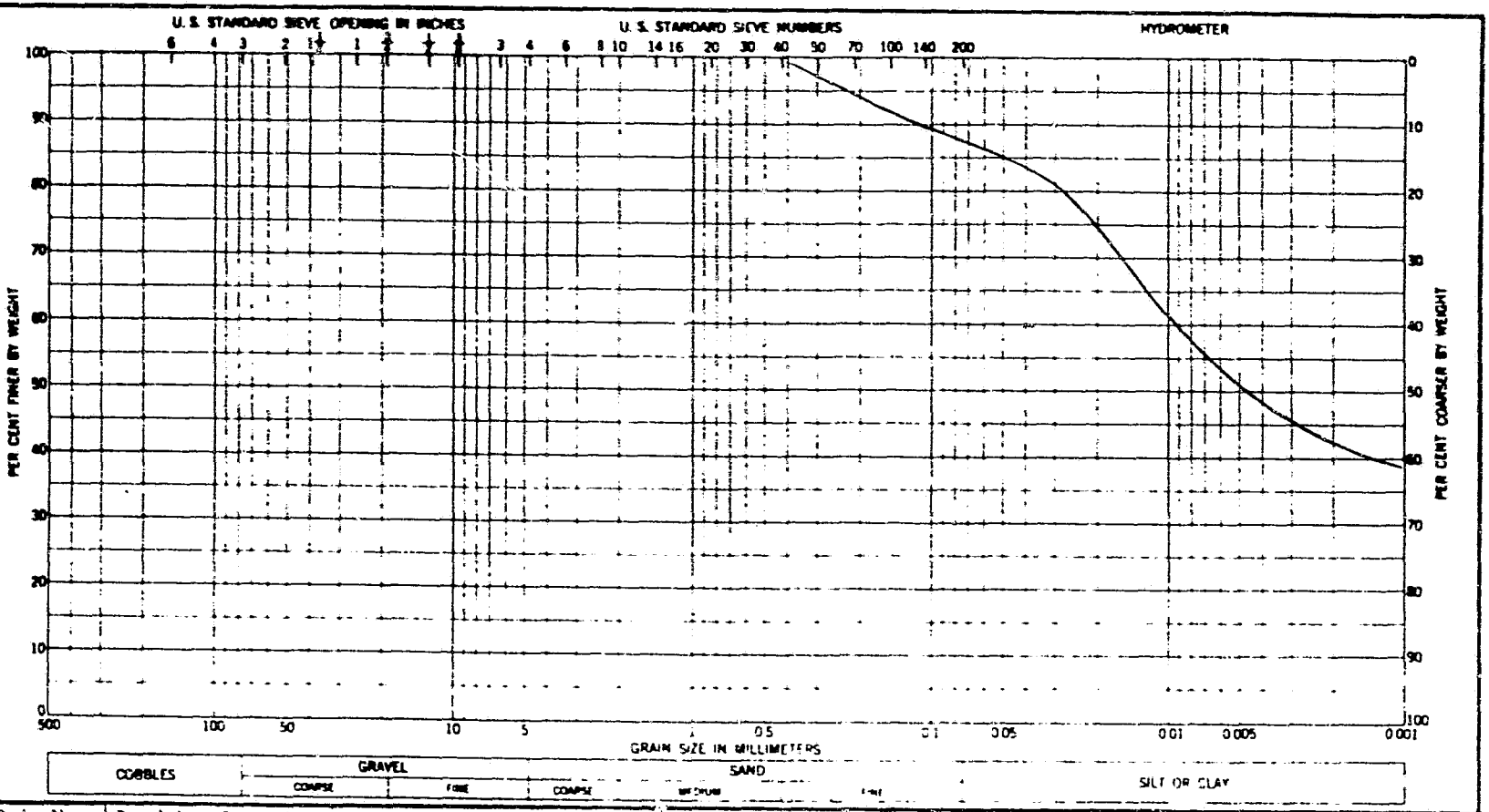

Boring No	Sample No	Elev or Depth	Classification	Nat W	LL	PL	PI
BP-3	8-AU	15'	Silty CLAY with little sand, brown mottled gray	23	52.4	20.0	32.4

CH

REPORT OF SOIL ANALYSIS

Project: Flyash Containment Lagoon
Marion, Illinois
A&H [illegible] 025-35034
[illegible] September 1983

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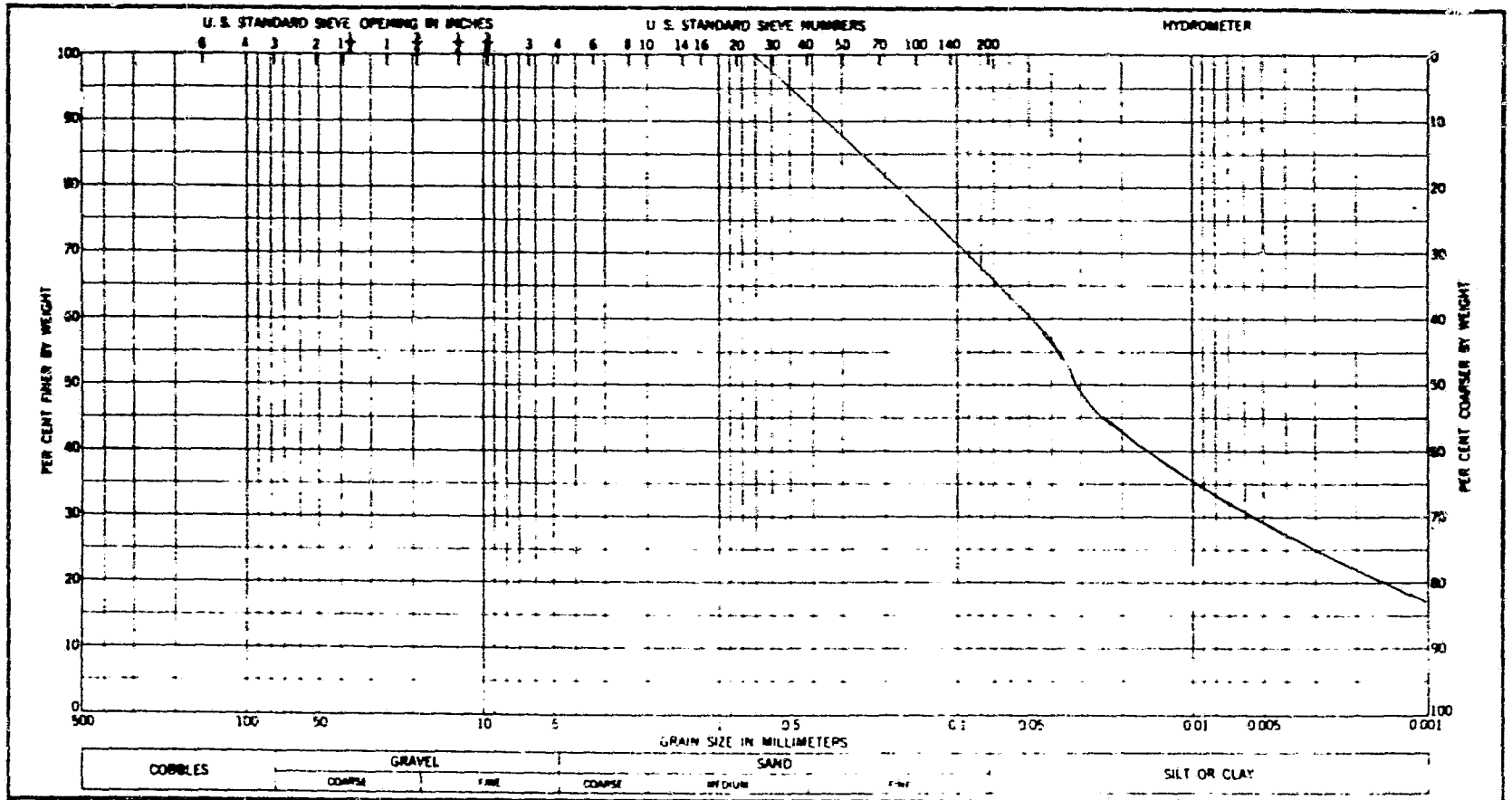

Boring No	Sample No	Elev or Depth	Classification	Nat w %	LL	PL	PI
BP-4	Bulk 4	0-20'	Silty CLAY with some sand, brown mottled gray				

Project: Flyash Containment Lagoon
Marion, Illinois

A&H Proj. No. 025-35034
Date: September 1983

REPORT OF SOIL ANALYSIS

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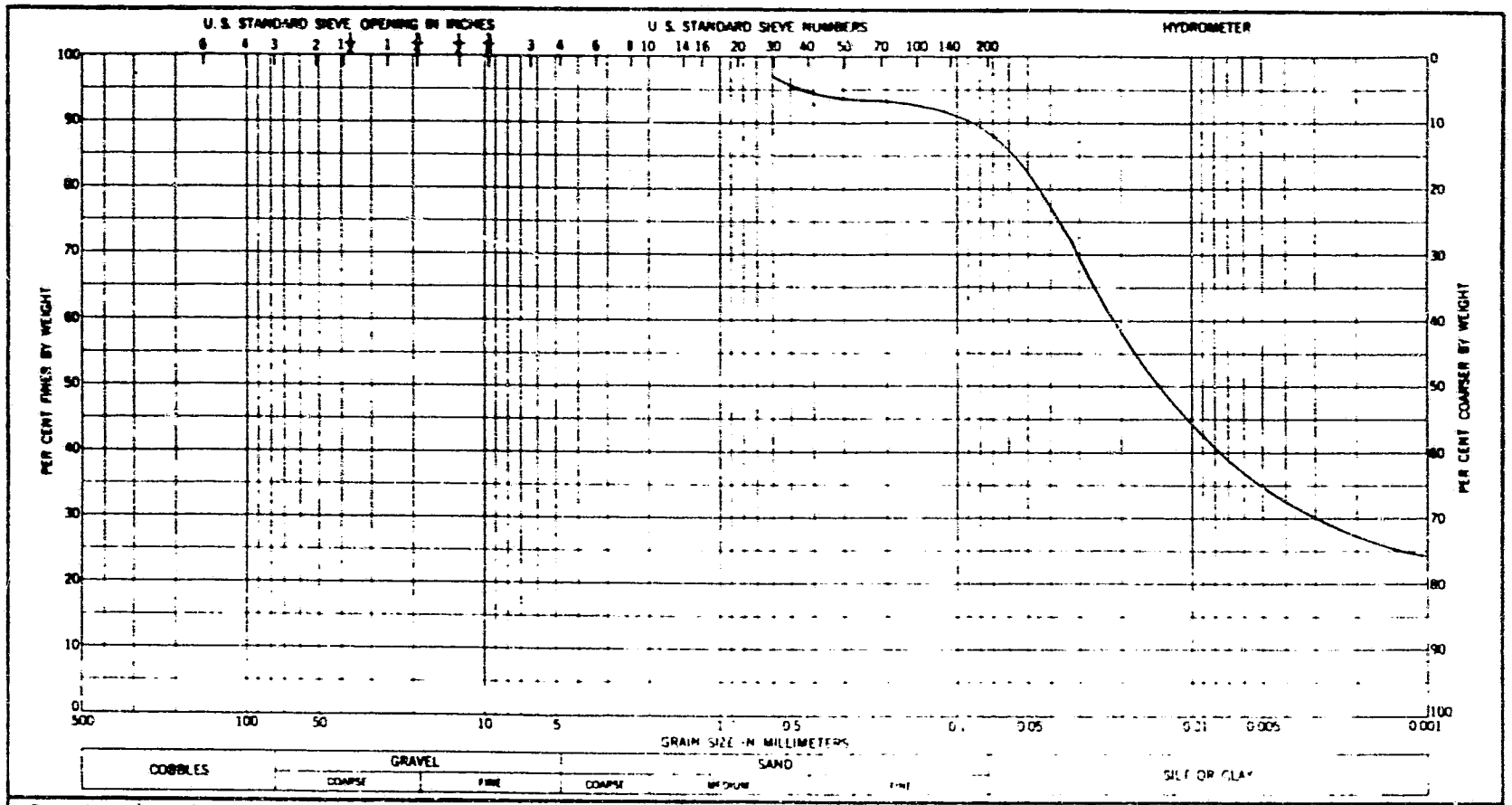

Boring No	Sample No	Elev or Depth	Classification
BP-8	Bulk 8	0-13'	Silty CLAY with little sand, brown

Proj: Flyash Containment Lagoon
Marion, Illinois
025-35034
September 1983

REPORT OF SOIL ANALYSIS

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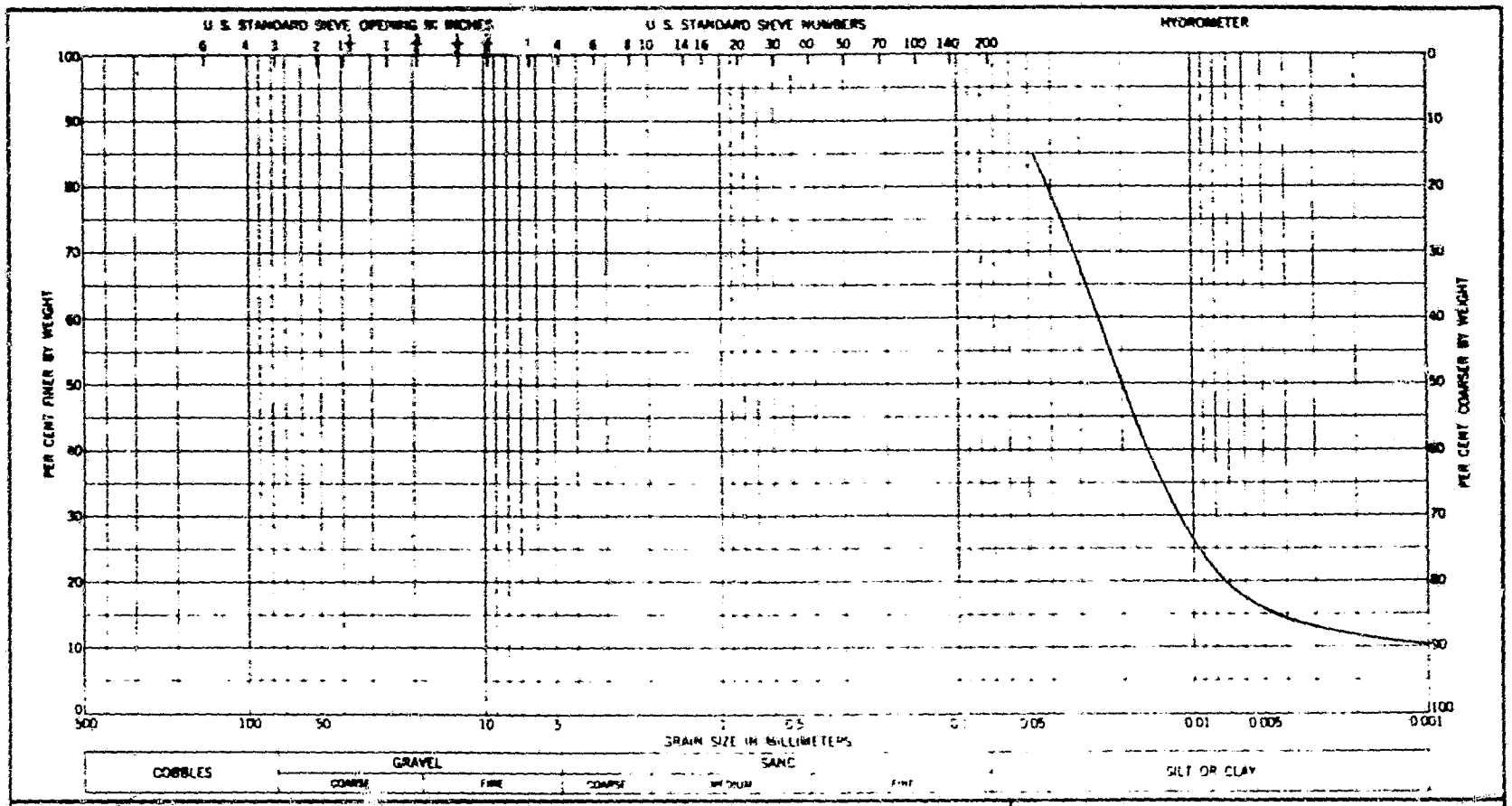

Boring No.	Sample No.	Elev. or Depth	Classification	Nat. w	L.	P.
BD-5	8-SS	12½'	Clayey SILT to SILT with trace sand, gray	22		

Project: Flyash Containment Lagoon
Marion, Illinois
ARM[illegible]: 025-35034
Date: September 1983

REPORT OF SOIL ANALYSIS

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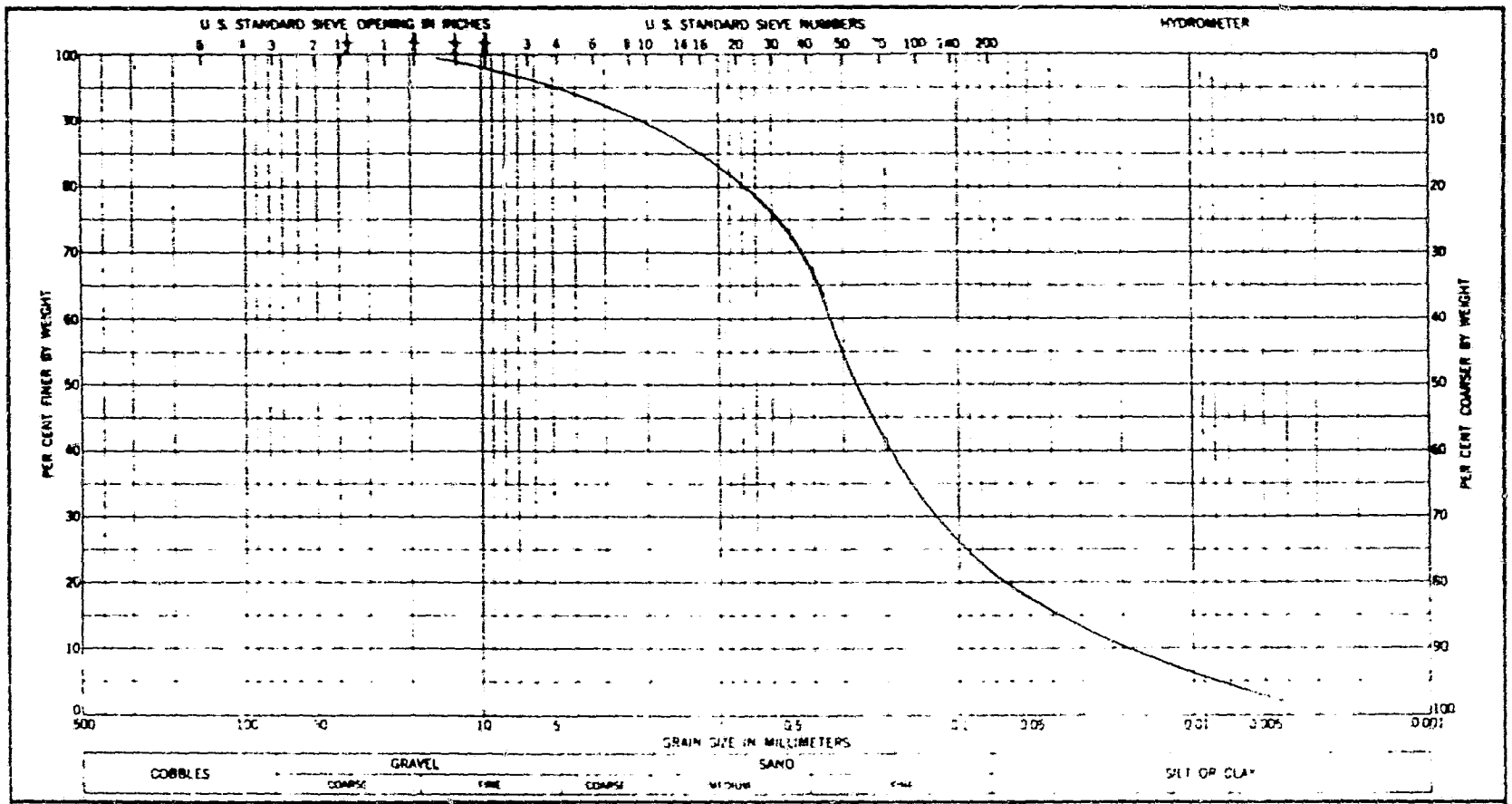

Boring No	Sample No	Elev. or Depth	Classification	Nat. W			Project: Flyash Containment Lagoon
BD-7	10-SS	25'	SAND and GRAVEL with some clayey silt	16			Marion, Illinois
							Project No. 025-35034
							Date: September 1983

REPORT OF SOIL ANALYSIS

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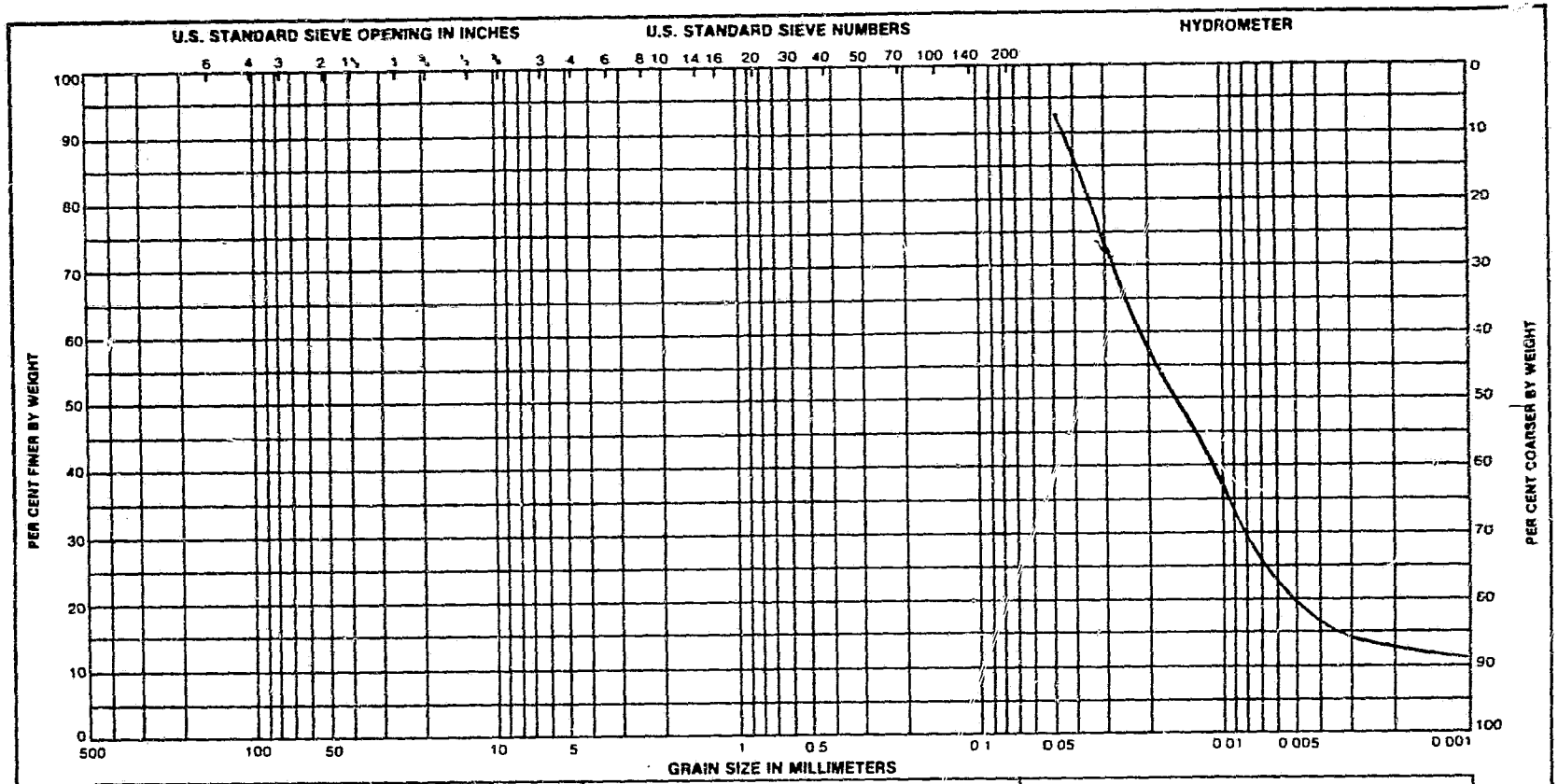

Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI	Project
								Southern Illinois Power Coop
BD-8	2-ST	1½'-3'	Clayey SILT, brown (ML)	29	26.5	24.8	1.7	Dam B-3 - Lake of Egypt
								Marion, Illinois

REPORT OF SOIL ANALYSIS

File No. 025-55008

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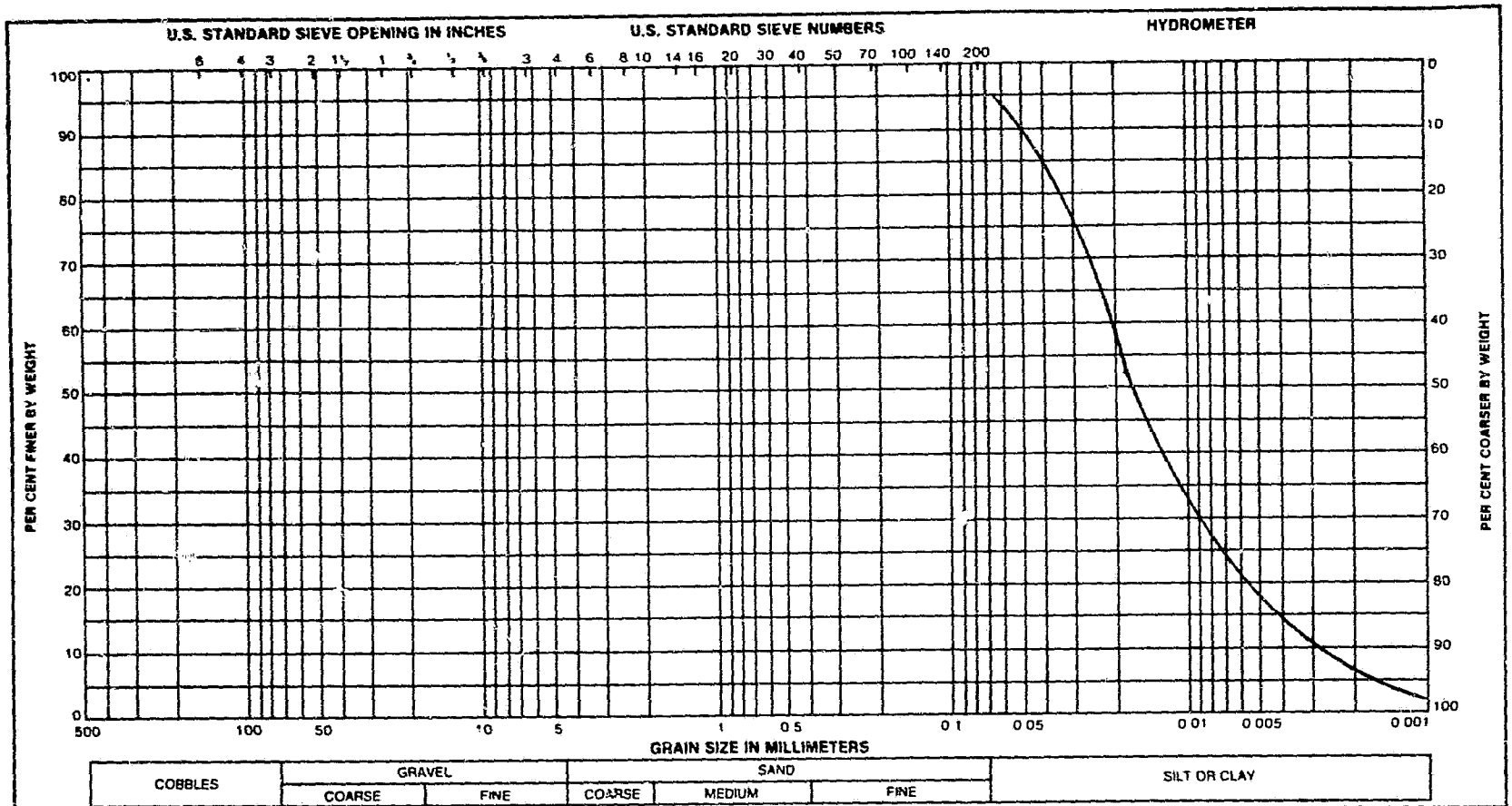

Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI
BD-8	5-ST	7'-9'	Clayey SILT, brown (ML)	31	26.8	25.4	1.4

Project: Southern Illinois Power Coop
Dam B-3 - Lake of Egypt
Marion, Illinois

File No. 025-55008

REPORT OF SOIL ANALYSIS

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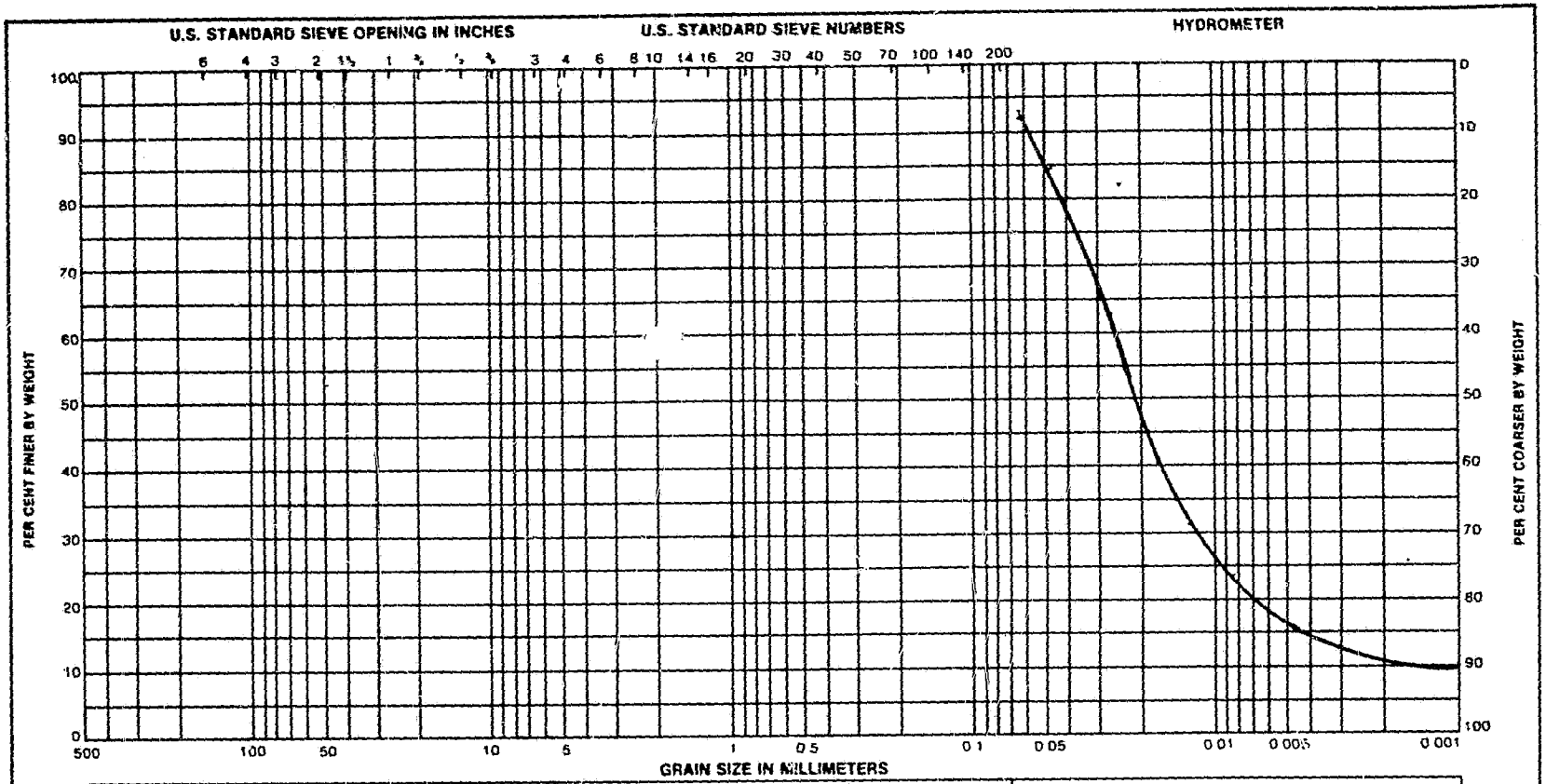

Boring No.	Sample No.	Elev. or Depth	Classification	Nat'l %	LL	PL	PI	Project
BD-9	2-ST	3'-5'	Clayey SILT, brown (ML)	26	27.4	25.2	2.2	Southern Illinois Power Coop Dam B-3 - Lake of Egypt Marion, Illinois

REPORT OF SOIL ANALYSIS

File No. 025-55008

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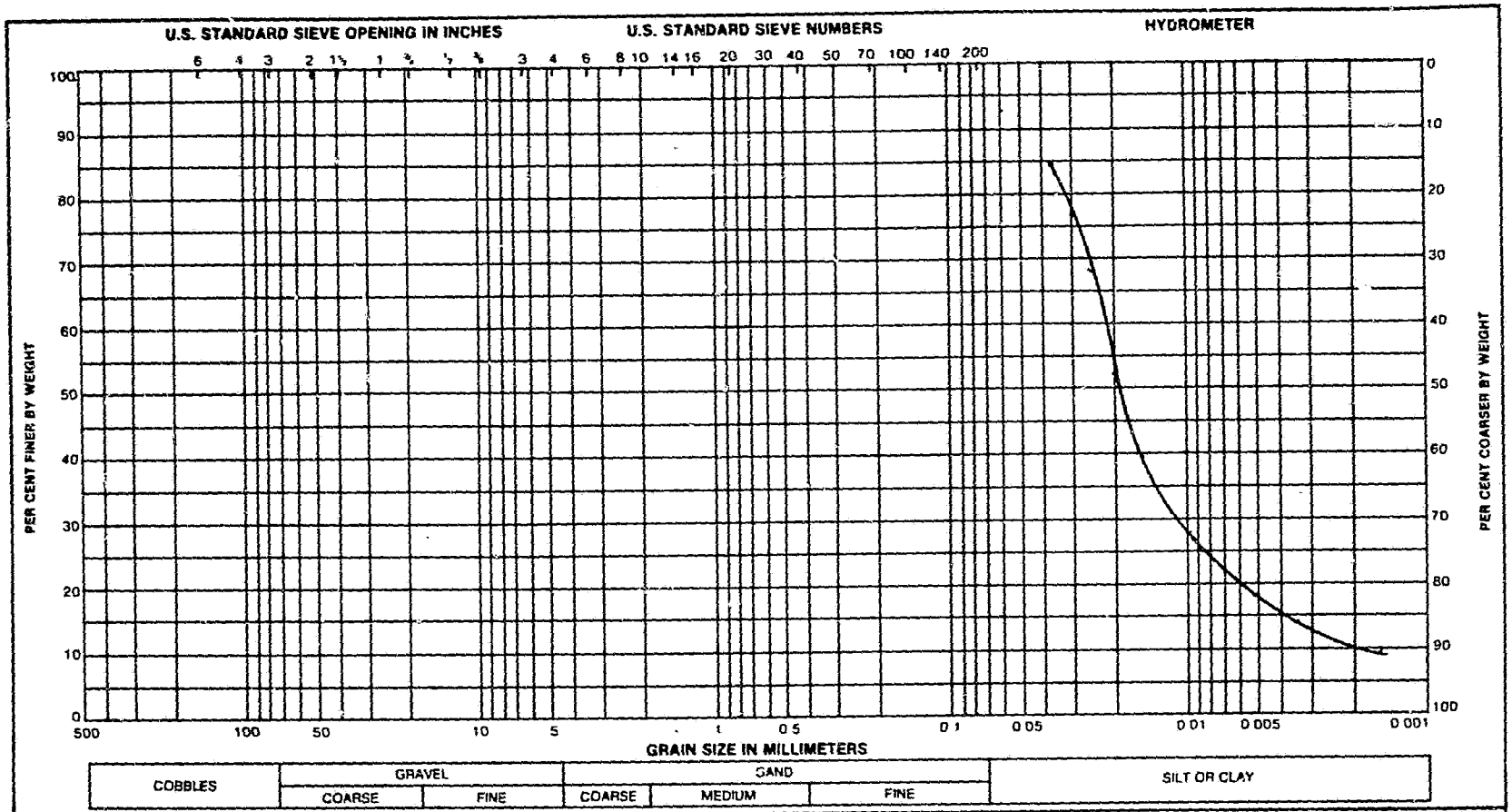

Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI
BD-9	4-ST	7'-9'	Clayey SILT, gray (ML)	33	26.5	25.9	0.6

Project: Southern Illinois Power Coop
Dam B-3 - Lake of Egypt
Marion, Illinois

REPORT OF SOIL ANALYSIS

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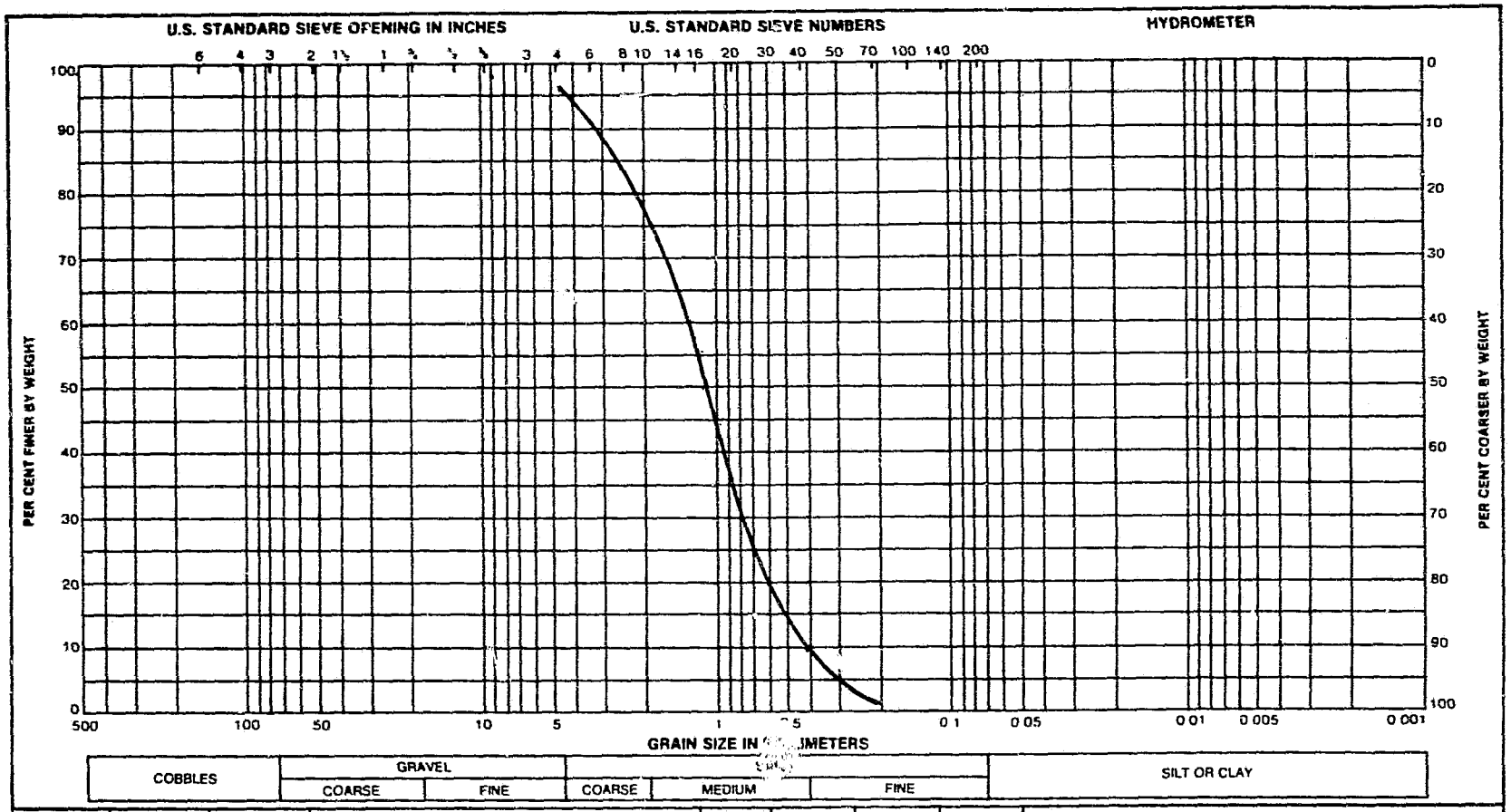

Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI	Project
								Southern Illinois Power Coop
	Bag		Bottom Ash	5.1				Dam B-3 - Lake of Egypt
								Marion, Illinois

REPORT OF SOIL ANALYSIS

File No. 025-55008

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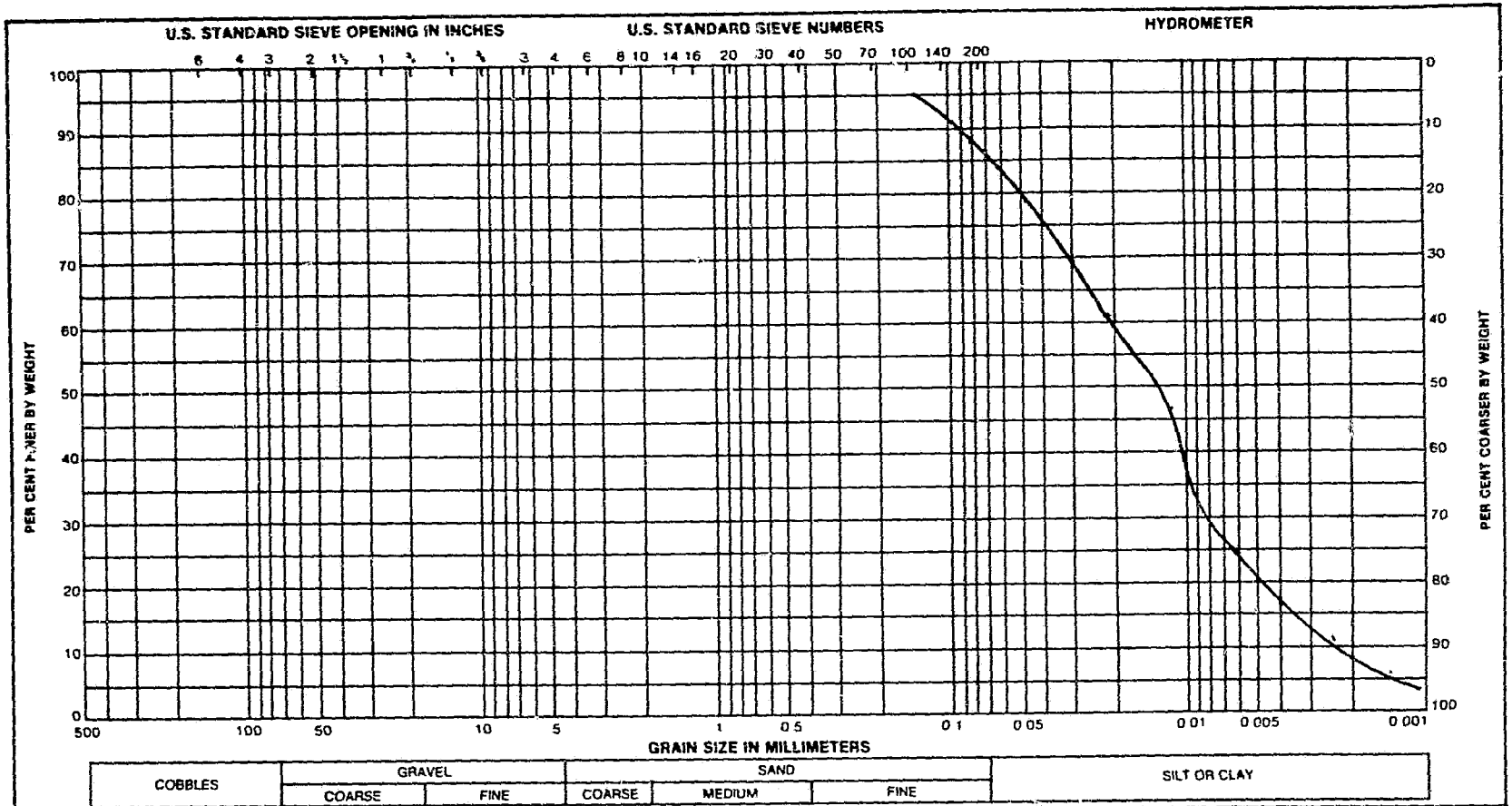

Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI
Jar	#1		30% Fly Ash and Sludge	12.5			

Project:
Southern Illinois Power Coop
Dam B-3 - Lake of Egypt
Marion, Illinois

REPORT OF SOIL ANALYSIS

File No 025-55008

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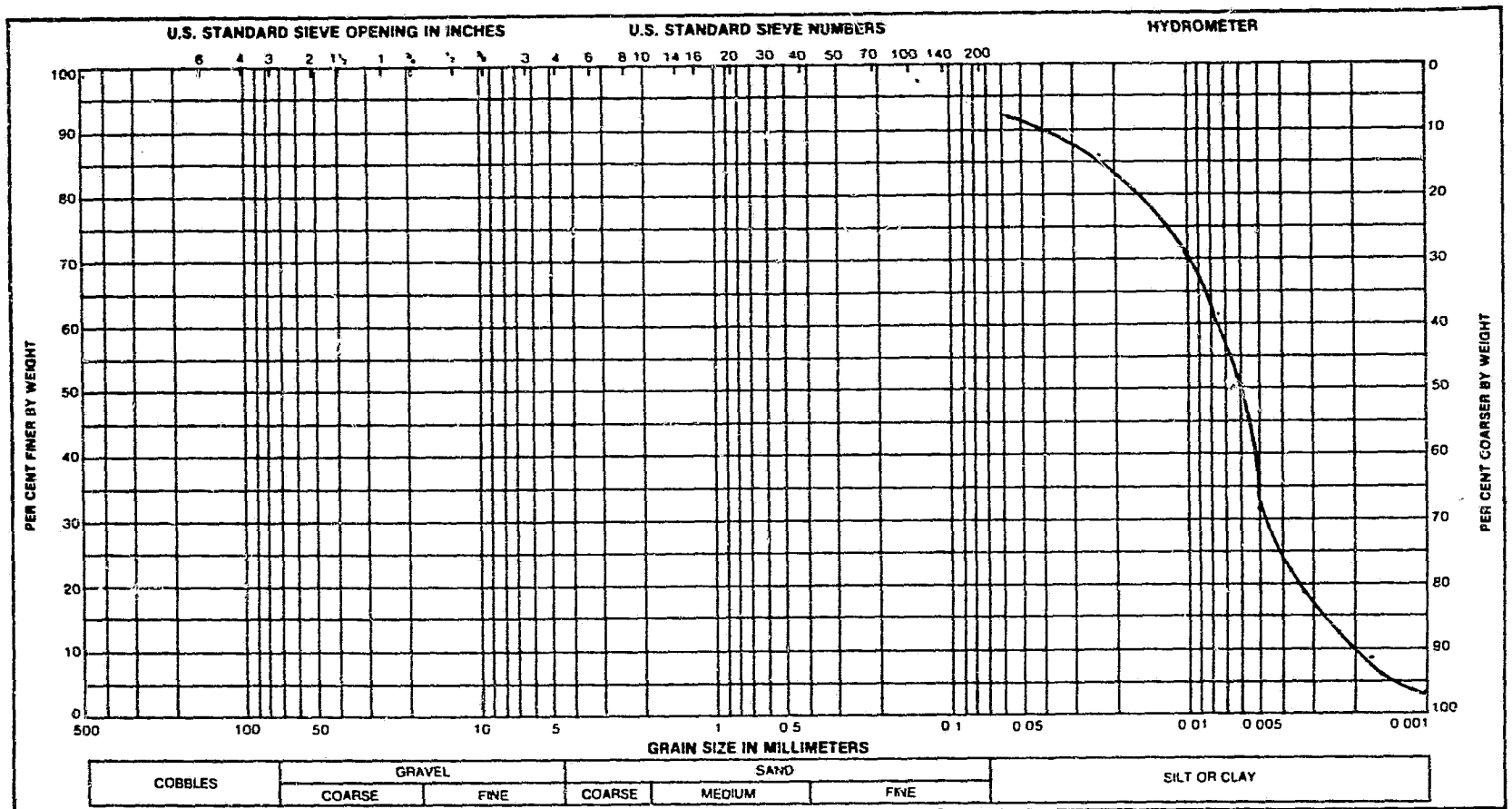

Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI	Project
								Southern Illinois Power Coop
Jar	#2		20% Fly Ash and Sludge	86.1				Dam B-3 - Lake of Egypt
								Marion, Illinois

REPORT OF SOIL ANALYSIS

File No 025-55008

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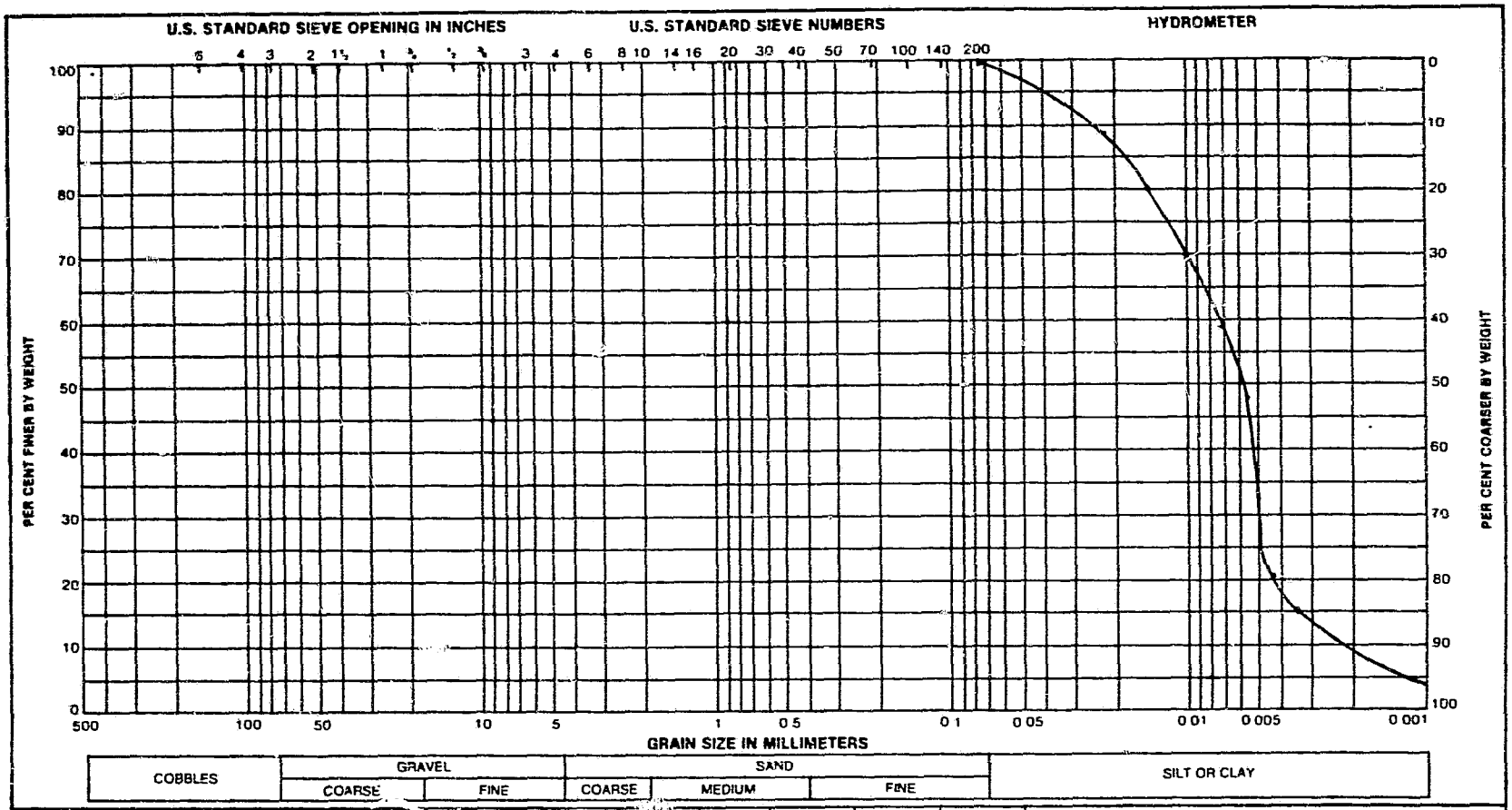


Boring No.	Sample No.	Elev. or Depth	Classification	Nat w %	LL	PL	PI
Jar	#3		Sludge	98.0			

Project: Southern Illinois Power Coop
Dam B-3 - Lake of Egypt
Marion, Illinois

REPORT OF SOIL ANALYSIS

File No. 025-55008

Professional Service Industries, Inc.
A & H Engineering Division

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

TESTED FOR Southern Illinois Power Coop
RR #4 Box 255
Marion, Illinois 62959

DATE September 1983

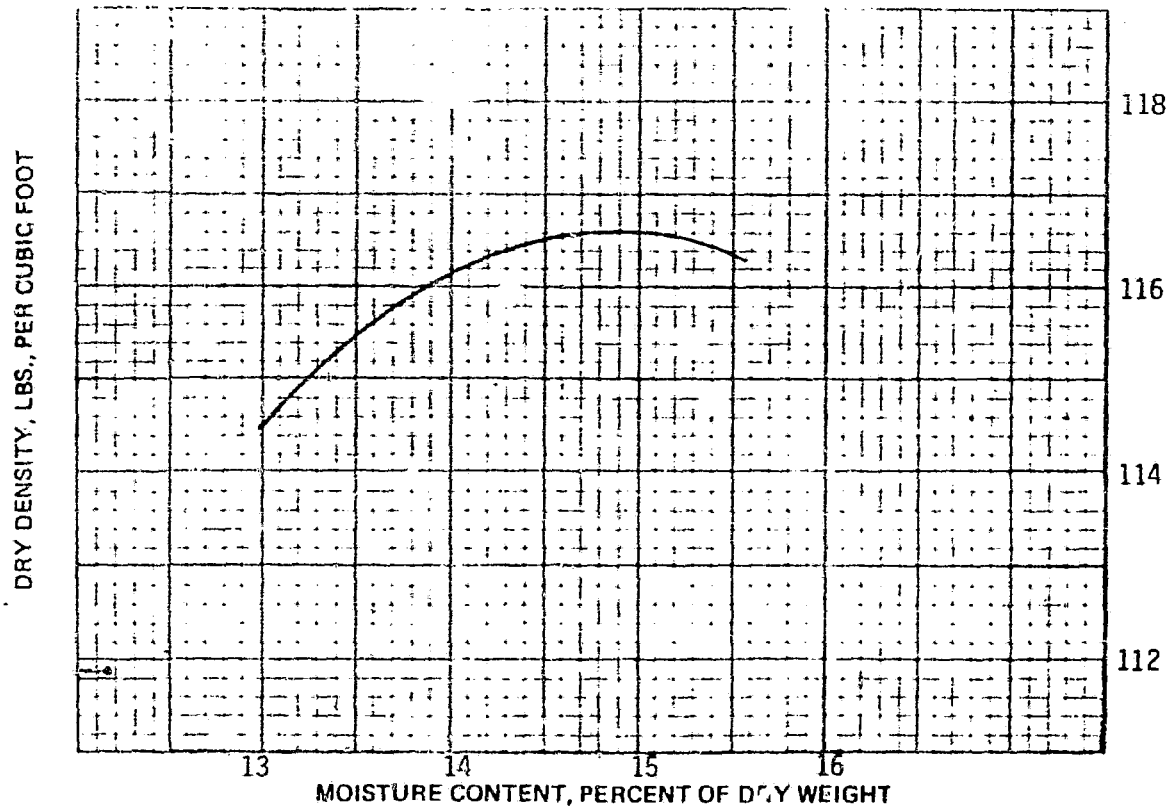
PROJECT Flyash Containment Lagoon

OUR REPORT NO. 025-35034

TEST DATA

Visual Classification: Silty CLAY with little sand and gravel, brown
Sample Identification Number: 1
Method of Test: ASTM D-698 (Standard)
Sample Source: Borrow Pit Boring #4
Test Results:

Maximum Dry Density	116.6	lbs/ft³
Optimum Moisture Content	14.9	%



621 West Industrial Park Road • Carbondale, IL 62901 • Phone: 618/549-5341

Respectfully submitted,

Professional Service Industries, Inc.
A & H Engineering Division

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

TESTED FOR Southern Illinois Power Coop
RR #4 Box 255
Marion, Illinois 62959

DATE September 1983

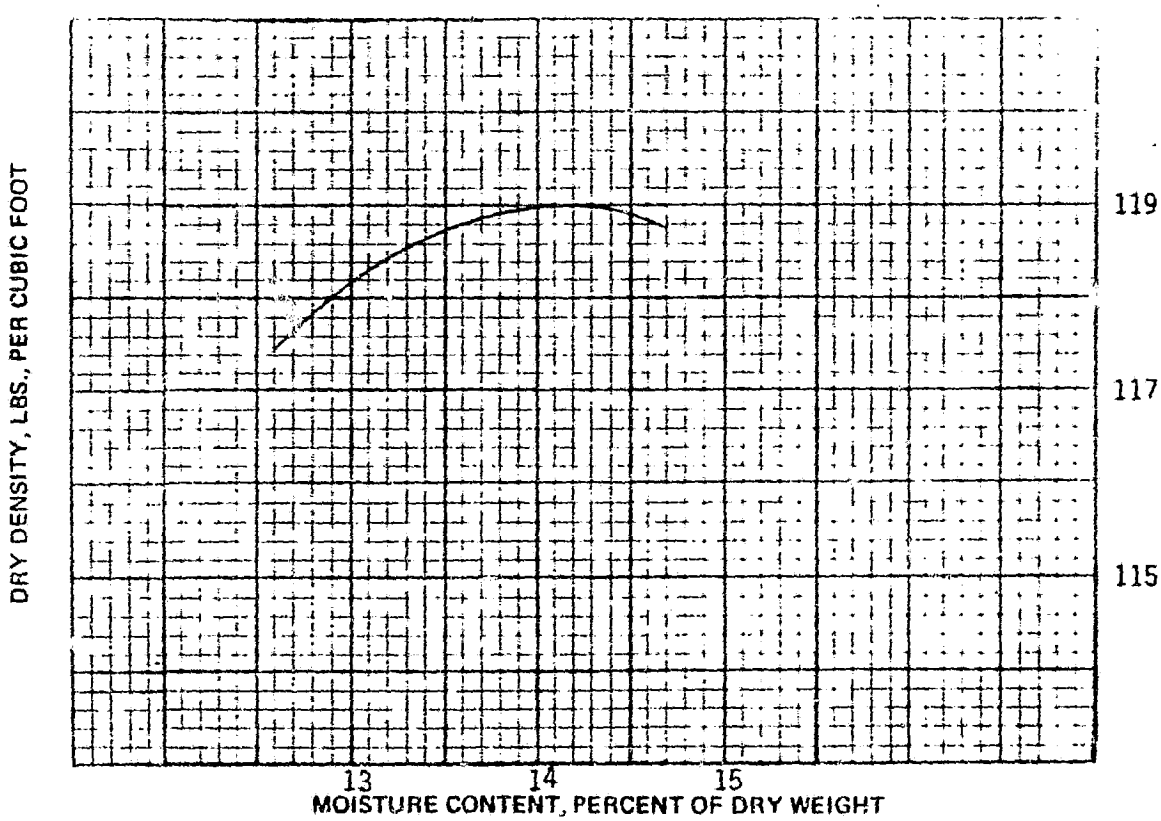
PROJECT Flyash Containment Lagoon

OUR REPORT NO. 025-35034

TEST DATA

Visual Classification: Silty CLAY with little sand, brown mottled gray
Sample Identification Number: 2
Method of Test: ASTM D-698 (Standard)
Sample Source: Borrow Pit Boring BP-8
Test Results:

Maximum Dry Density	119.0	lbs/ft³
Optimum Moisture Content	14.3	%



Respectfully submitted,

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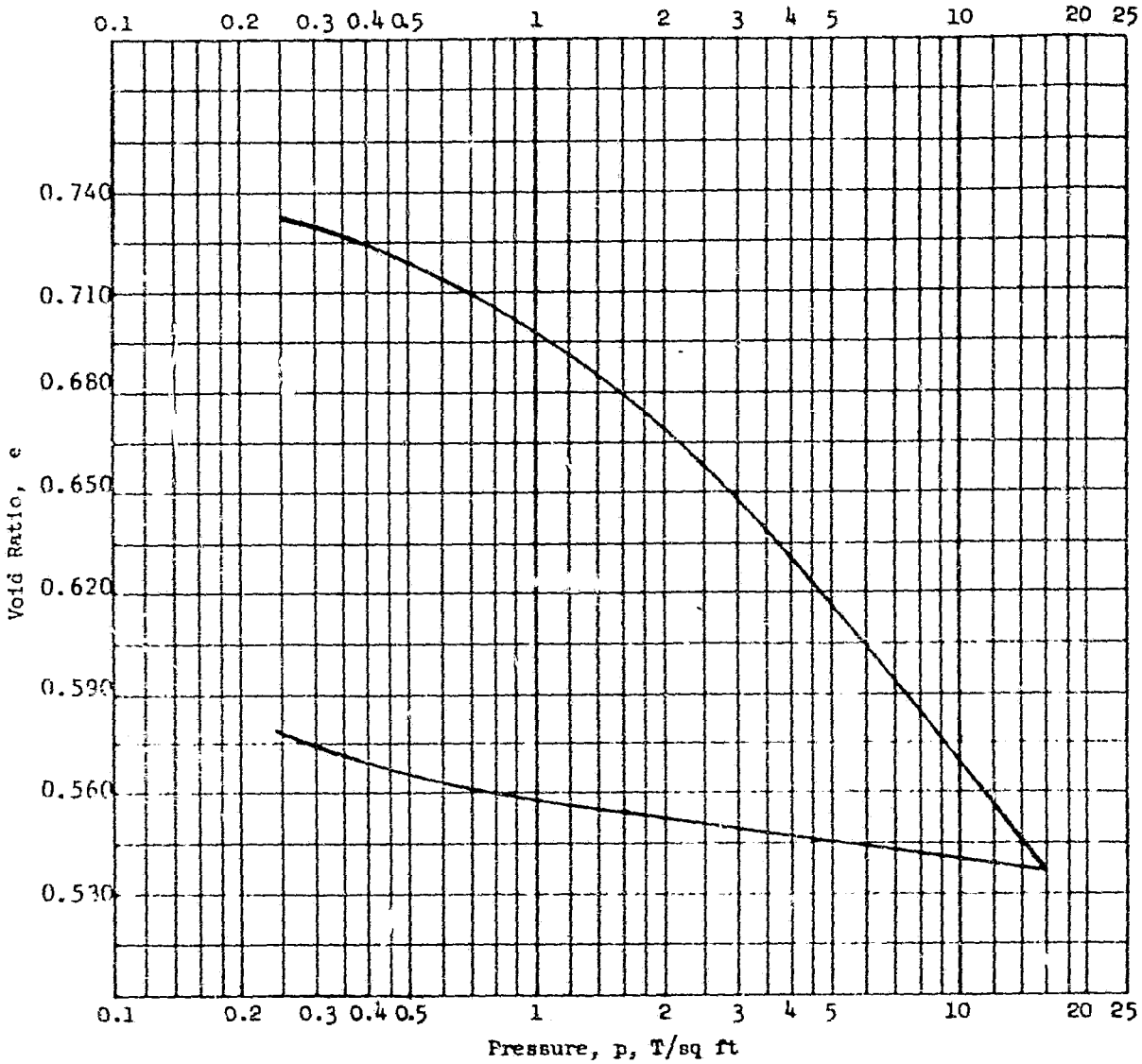

Type of Specimen 3" Dia. Shelby Tube		Before Test		After Test	
Diam 2.5 in.	Ht 1.0 in.	Water Content, w_o	22.0 %	w_f	20.1 %
Overburden Pressure, Po	T/sq ft	Void Ratio, e_o	0.74	e_f	0.562
Preconsol. Pressure, P_c	2.1 T/sq ft	Saturation, S_o	80.1 %	S_f	92.0 %
Compression Index, C_c	0.15	Dry Density, γ_d	96.7 lb/ft^3		
Classification		k_{20} at e_o =	× 10$^-$ cm/sec		
LL	G_s				
PL	D_{10}				

Project Flyash Containment Lagoon

Marion, Illinois

Area

Boring No. BD-5 | Sample No.

Depth 9'-11' | Date 10-4-83

El

CONSOLIDATION TEST REPORT

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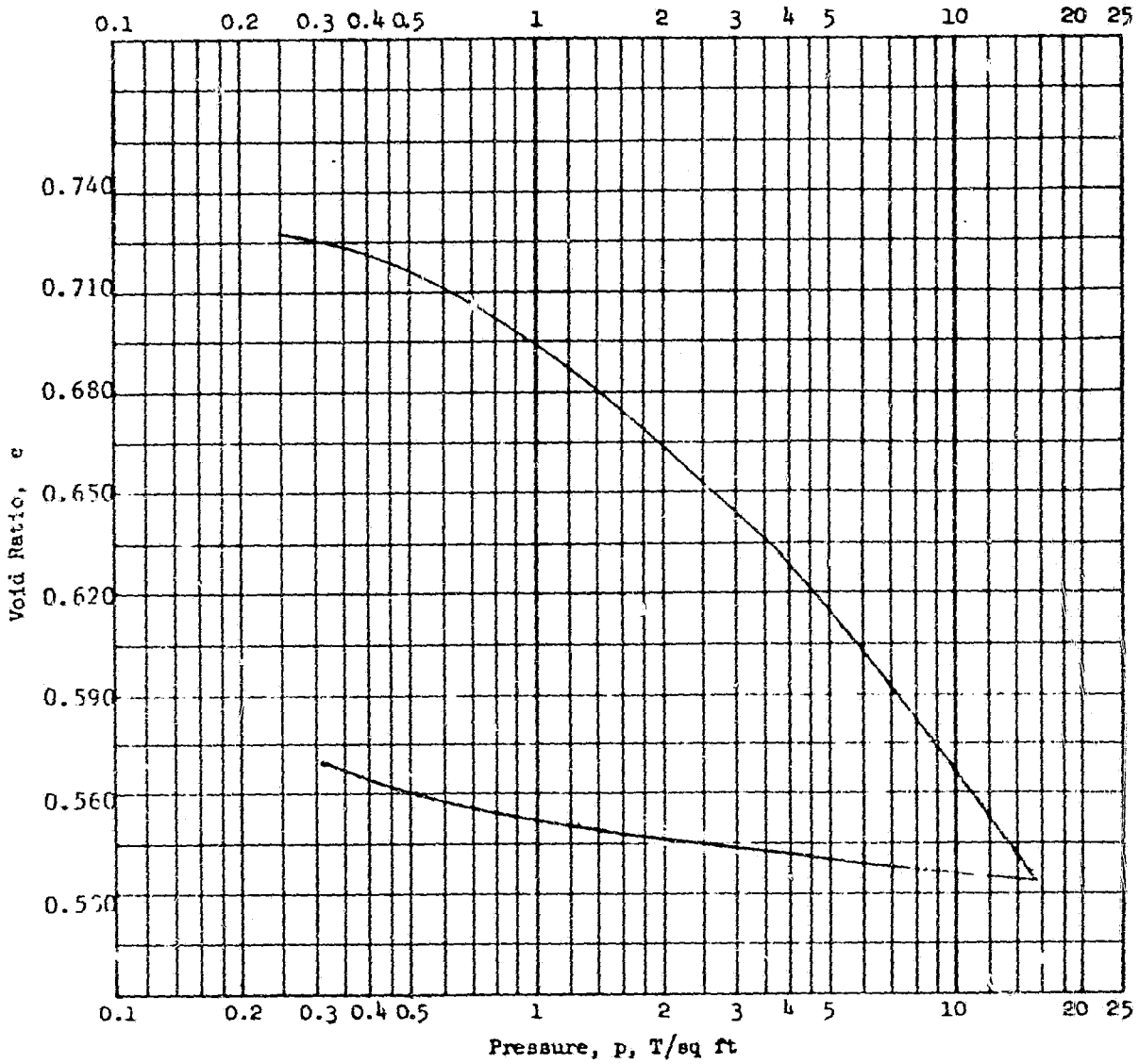

Type of Specimen 3" Dia. Shelby Tube		Before Test		After Test	
Diam 2.50 in.	Ht 1.0 in.	Water Content, w_o	20.7 %	w_f	16.2 %
Overburden Pressure, p_o -- T/sq ft		Void Ratio, e_o	0.74	e_f	0.559
Preconsol. Pressure, p_c 1.5 T/sq ft		Saturation, S_o	76.0 %	S_f	84.2 %
Compression Index, C_c 0.12		Dry Density, γ_d	97.1 lb/ft^3		
Classification		k_{20} at e_o =	x 10^{-} cm/sec		
LL	G_s	Project Flyash Containment Lagoon			
PL	D_{10}	Marion, Illinois			
		Area			
		Boring No. BD-5	Sample No.		
		Depth 22'-24' El	Date 10-4-83		

CONSOLIDATION TEST REPORT

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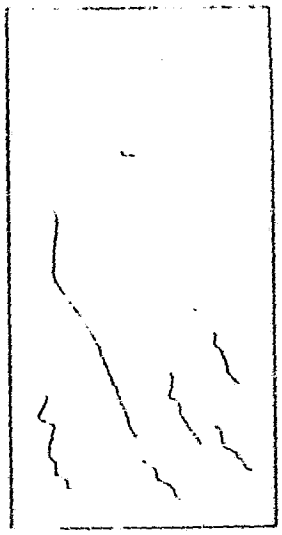
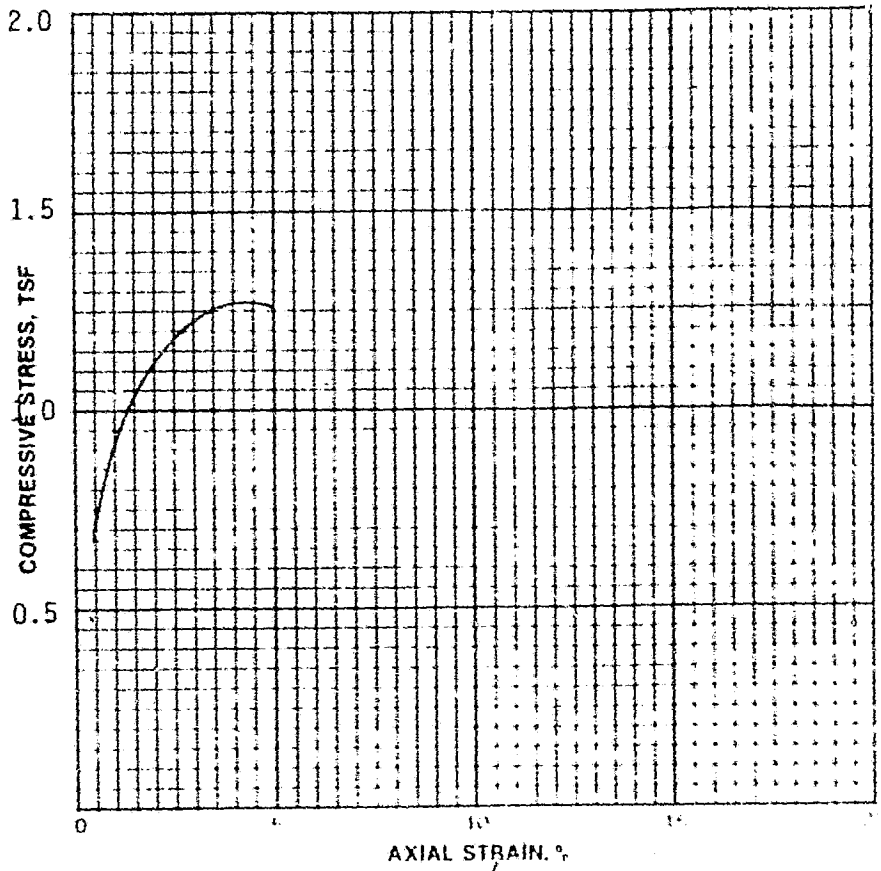
Professional Service Industries

FAILURE SKETCHES





☐ Controlled stress

☒ Controlled strain

Boring No		BP-4
Sample No		
Depth, Ft		0'-20'
Type of specimen		Remolded
Initial specimen diameter, in		2.8
Initial specimen height, in		5.6
Initial	Water content %	13.7
	Void ratio	----
	Saturation, %	----
	Dry density, pcf	110.6
Time to failure, min		3.6
Unconfined compressive strength, tsf		1.27
Undrained shear strength, tsf		.64
Classification		Silty CLAY with some sand
LL	PL	PI	G_s

PROJECT NAME: Flyash Containment Lagoon
Southern Illinois Power Plant
Marion, Illinois

UNCONFINED COMPRESSION T

PROJECT NO	DATE
025-35034	October 1983

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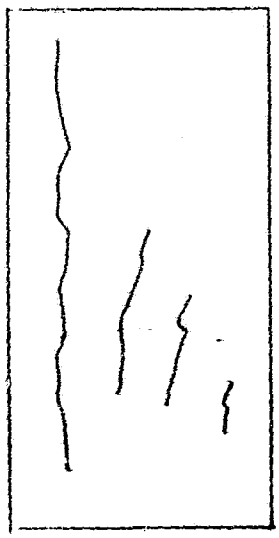
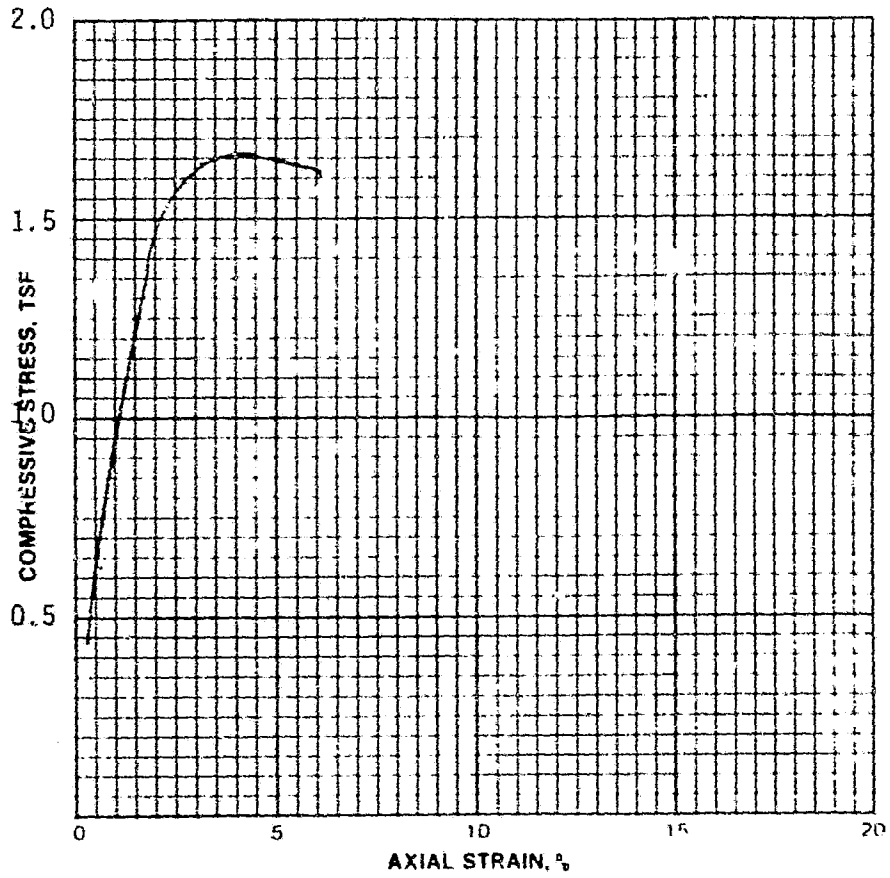
Professional Service Industries

FAILURE SKETCHES





☐ Controlled stress

☒ Controlled strain

Boring No.		BP-8
Sample No.		Bulk #8
Depth, Ft.		0'-13'
Type of specimen		Remolded
Initial specimen diameter, in.		2.80
Initial specimen height, in.		5.60
Initial	Water content %	15.5
	Void ratio	----
	Saturation, %	----
	Dry density, pcf	112.2
Time to failure, min.		3.1
Unconfined compressive strength, tsf		1.66
Undrained shear strength, tsf		.83
Classification	Silty CLAY with little sand	

LL	PL	PI	G_s

PROJECT NAME: Flyash Containment Lagoon
Southern Illinois Power Plant
Marion, Illinois

UNCONFINED COMPRESSION TEST

PROJECT NO: 025-35034

DATE: October 1983

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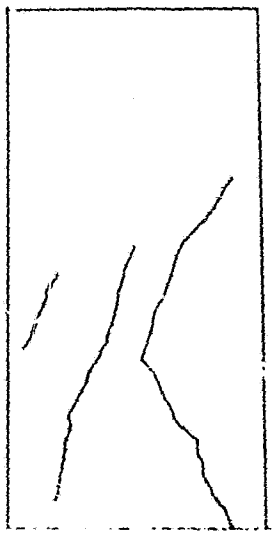
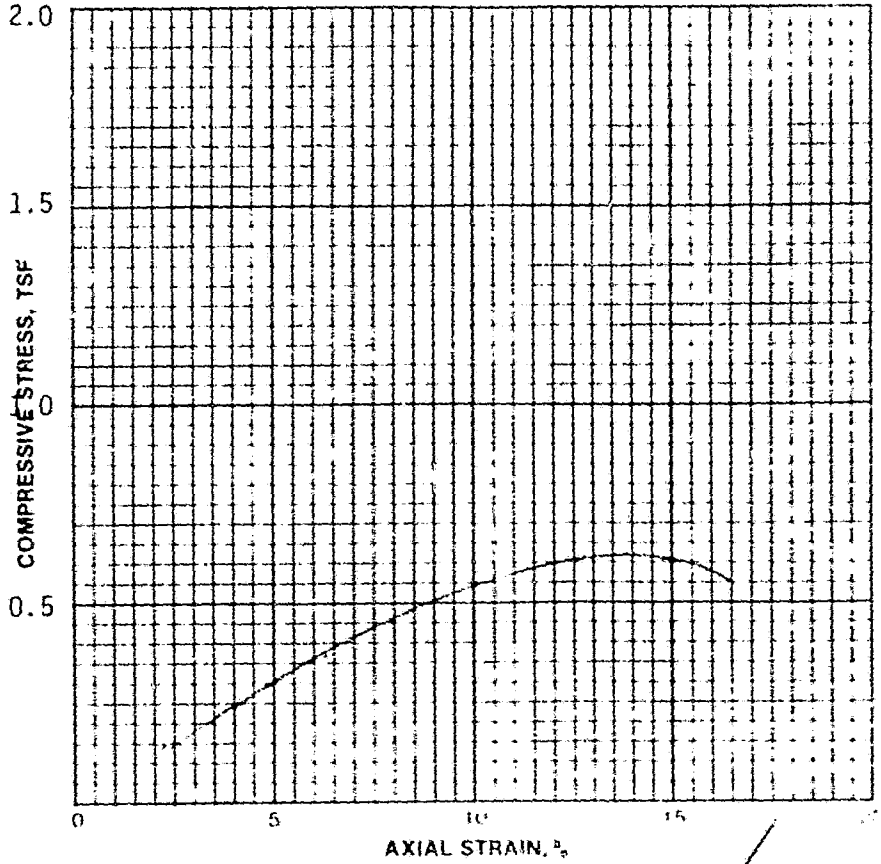
Professional Service Industries

FAILURE SKETCHES





☐ Controlled stress

☒ Controlled strain

Boring No		B0-5
Sample No		6-ST
Depth, Ft		9'-10'
Type of specimen		Shelby Tube
Initial specimen diameter, in		2.8
Initial specimen height, in		5.6
Initial	Water content %	29.4
	Void ratio	----
	Saturation, %	----
	Dry density, pcf	89.8
Time to failure, min.		12.5
Unconfined compressive strength, tsf		.62
Undrained shear strength, tsf		.31
Classification	Clayey SILT with some sand	
LL	PL	PI	G_s

PROJECT NAME: Flyash Containment Lagoon
Southern Illinois Power Plant
Marion, Illinois

UNCONFINED COMPRESSION TEST

PROJECT NO: 025-35034

DATE: October 1983

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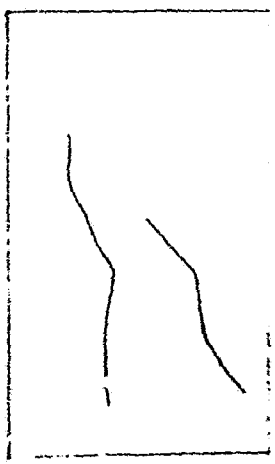
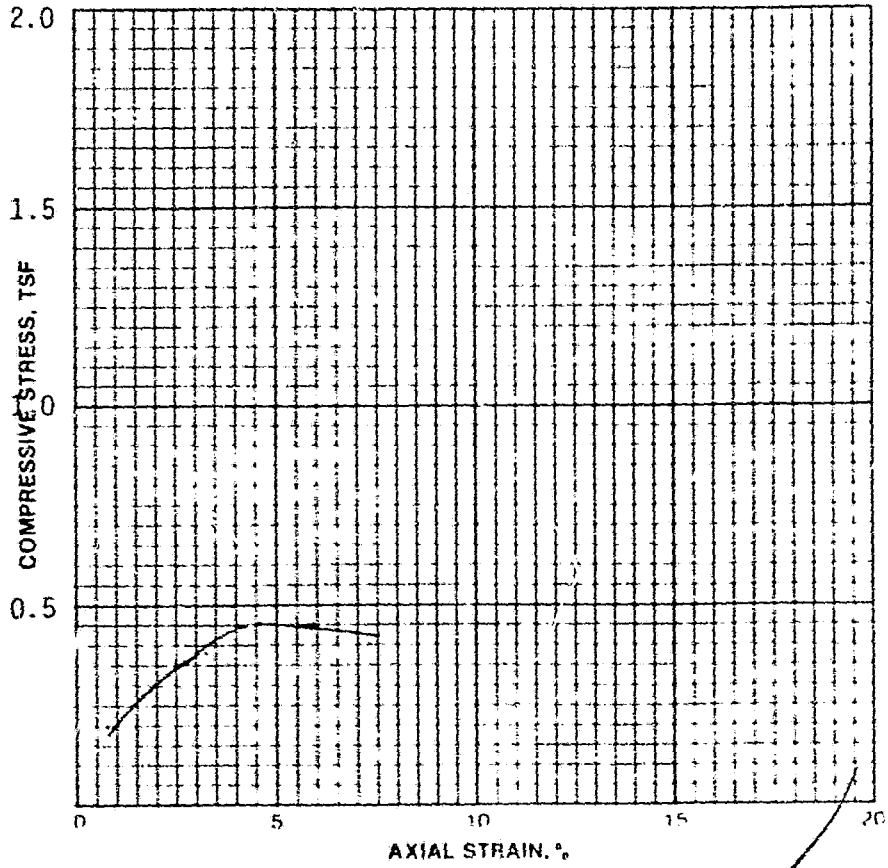
Professional Service Industries

FAILURE SKETCHES





☐ Controlled stress

☒ Controlled strain

Boring No		BD-5
Sample No		None
Depth, Ft		21½'-22'
Type of specimen		Shelby Tube
Initial specimen diameter, in.		2.8
Initial specimen height, in		4.76
Initial	Water content %	22.0
	Void ratio	----
	Saturation, %	----
	Dry density, pcf	105.7
Time to failure, min		3.6
Unconfined compressive strength, tsf		.45
Undrained shear strength, tsf		.22
Classification	Clayey SILT to SILT	
LL	PL	PI	G_s

PROJECT NAME: Flyash Containment Lagoon
Southern Illinois Power Plant
Marion, Illinois

UNCONFINED COMPRESSION TEST

PROJECT NO: 025-35034

DATE: October 1983

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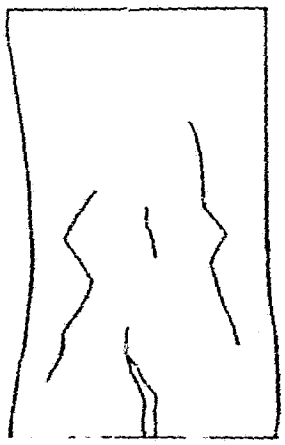
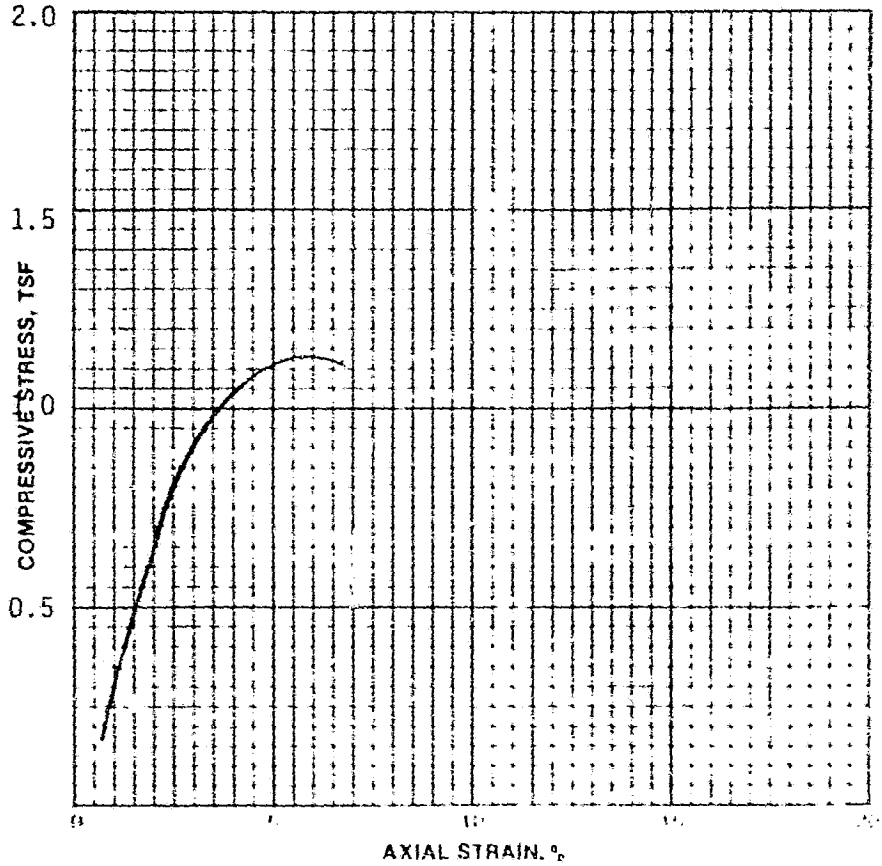
Professional Service Industries

FAILURE SKETCHES





[ ] Controlled strain

[X] Controlled strain

Boring No		B0-5
Sample No		None
Depth, Ft		23'-24'
Type of specimen		Shelby Tube
Initial specimen diameter, in.		2.80
Initial specimen height, in.		4.62
Initial	Water content %	20.7
	Void ratio	----
	Saturation, %	----
	Dry density, pcf	108.9
Time to failure, min.		4.5
Unconfined compressive strength, tsf		1.14
Undrained shear strength, tsf		.57
Classification		Clayey SILT to SILT
LL	PL	PI	G_s

PROJECT NAME: Flyash Containment Lagoon
Southern Illinois Power Plant
Marion, Illinois

UNCONFINED COMPRESSION TEST

PROJECT NO	DATE
025-35034	October 1983

5219000220207

Electronic Filing: Received, Clerk's Office 01/13/2023

45

Professional Service Industries, Inc.
A & H Engineering Division

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

TESTED FOR: Southern Illinois Power Coop
Route #4 Box 311
Marion, Illinois 62959
Attn: Mr. Richard Myott

PROJECT: Dam B-3 Lake of Egypt
Marion, Illinois

DATE: April 1985

OUR REPORT NO.: 025-55008

TEST DATA

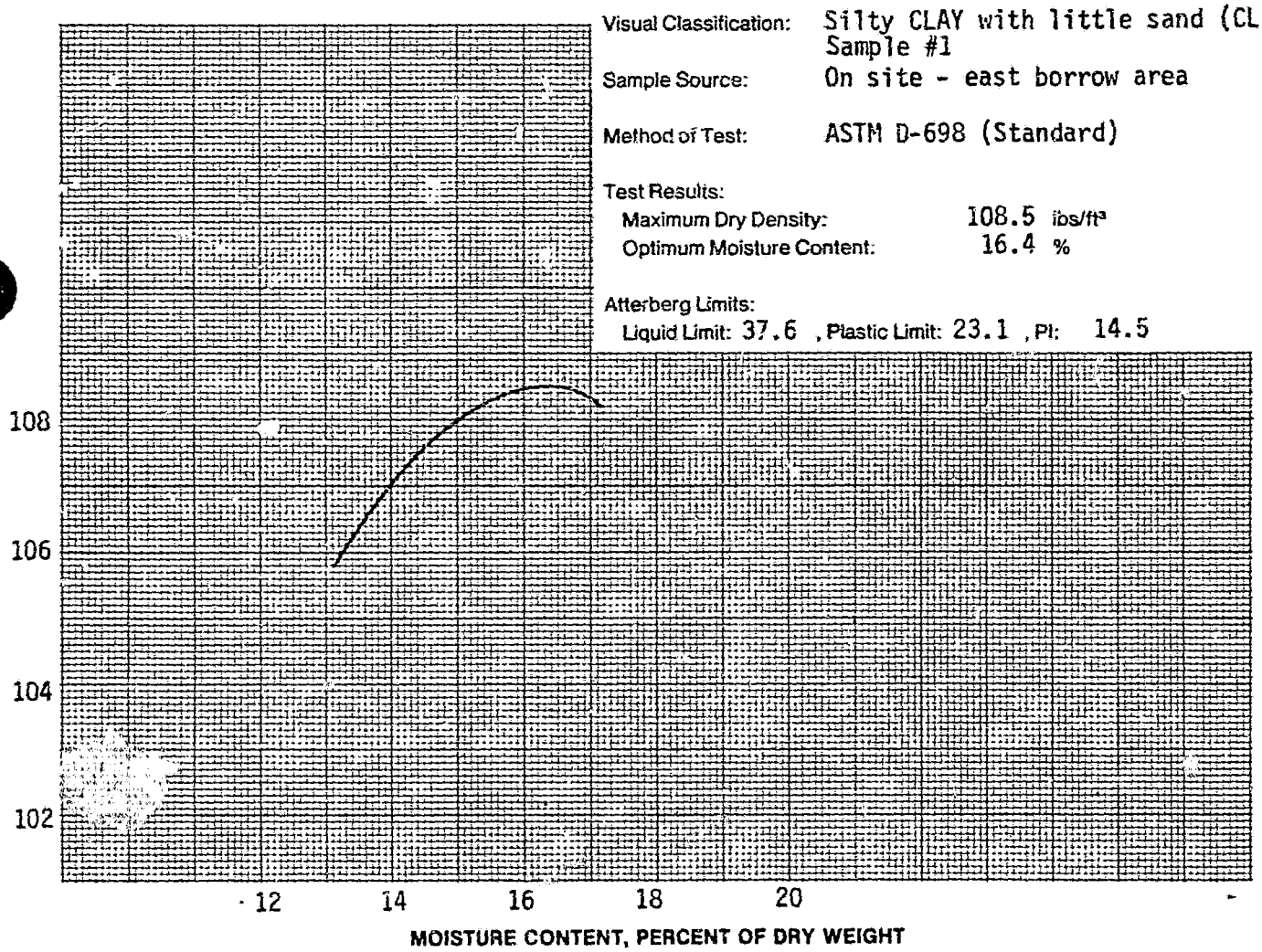
Visual Classification: Silty CLAY with little sand (CL)
Sample #1

Sample Source: On site - east borrow area

Method of Test: ASTM D-698 (Standard)

Test Results:
Maximum Dry Density: 108.5 lbs/ft³
Optimum Moisture Content: 16.4 %

Atterberg Limits:
Liquid Limit: 37.6 , Plastic Limit: 23.1 , PI: 14.5

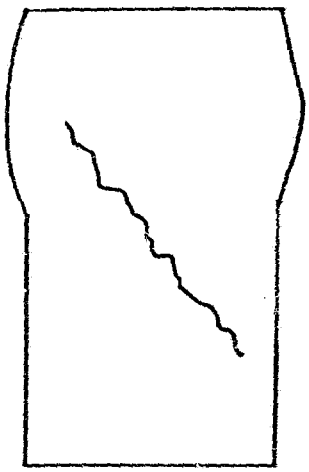


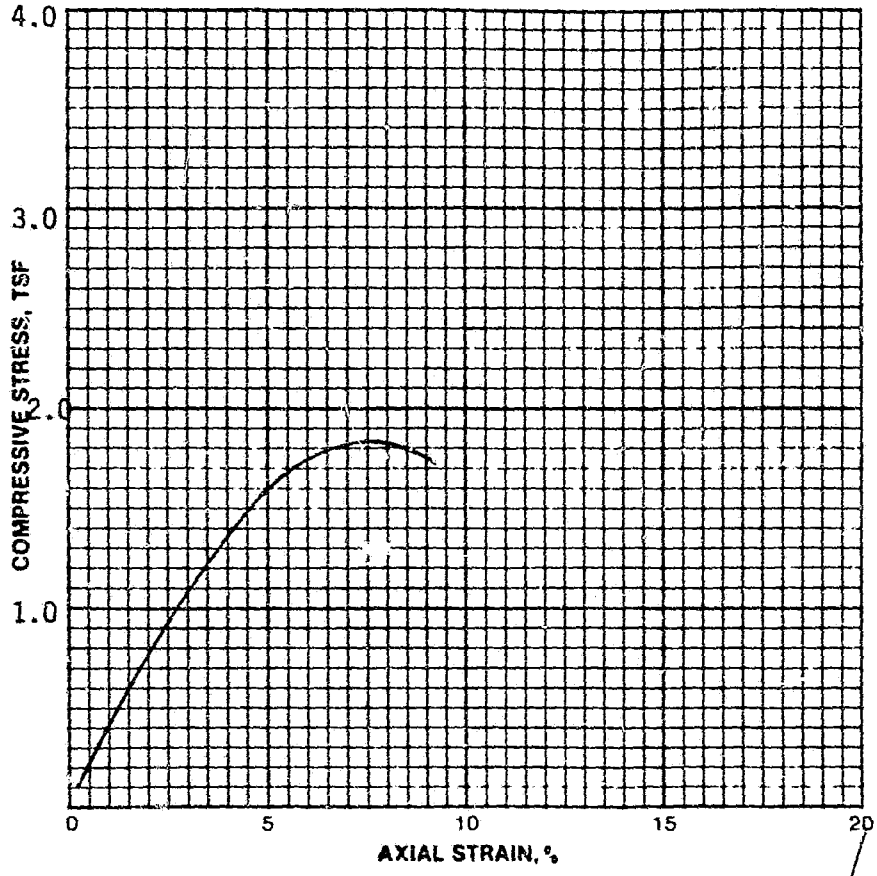
Respectfully submitted,
Professional Service Industries, Inc.

Electronic Filing: Received, Clerk's Office 01/13/2023

Professional Service Industries

FAILURE SKETCHES





☐ Controlled stress

☒ Controlled strain

Boring No.		---
Sample No.		Proctor Sample #1
Depth, Ft.		---
Type of specimen		Remolded
Initial specimen diameter, in.		2.8"
Initial specimen height, in		5.40"
Initial	Water content %	17.9%
	Void ratio	---
	Saturation, %	---
	Dry density, pcf	104.9 pcf
Time to failure, min.		3.6
Unconfined compressive strength, tsf		1.82
Undrained shear strength, tsf		.91
Classification		Silty CLAY

LL 37.6	PL 23.1	PI 14.5	G_s ---

PROJECT NAME

Boring B-3
Lake of Egypt
Marion, Illinois

UNCONFINED COMPRESSION TEST

PROJECT NO	DATE
025-55008	April 1985

TRIAXIAL RESULTS

PROCTOR SAMPLE #1

Electronic Filing: Received, Clerk's Office 01/13/2023

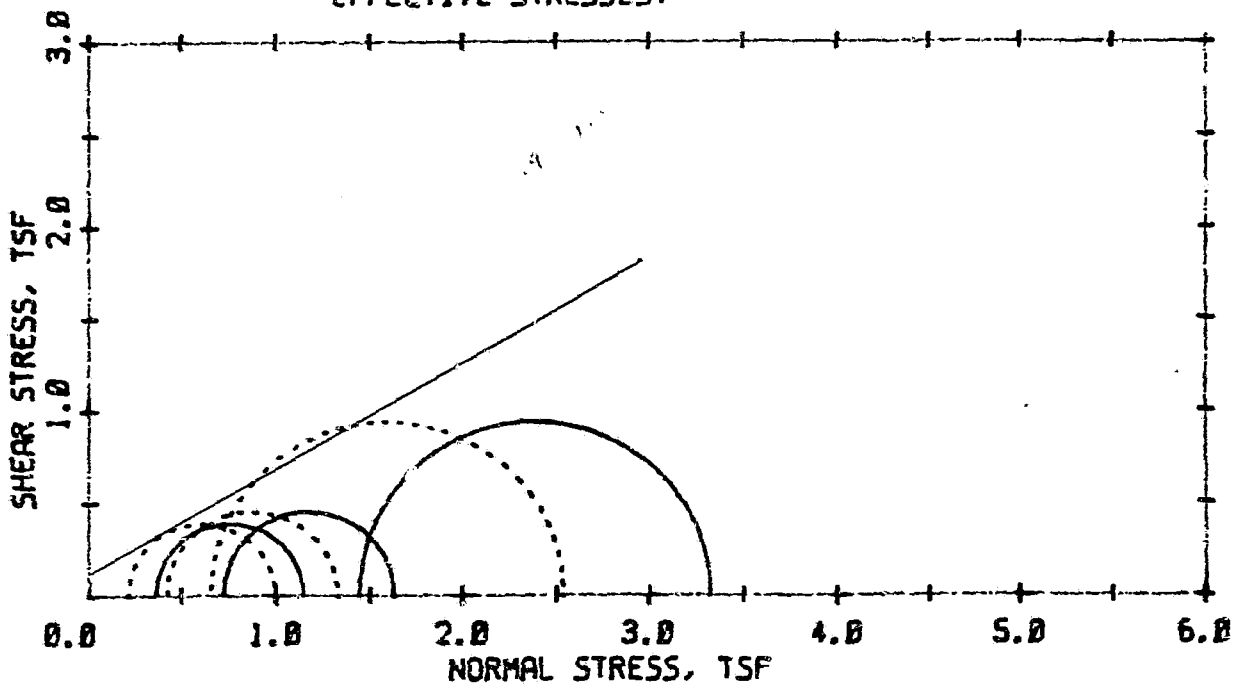
CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST

MOHR DIAGRAM

FAILURE CRITERIA: $(\sigma_1 - \sigma_3)_{MAX}$

TOTAL STRESSES: ——————

EFFECTIVE STRESSES: .....

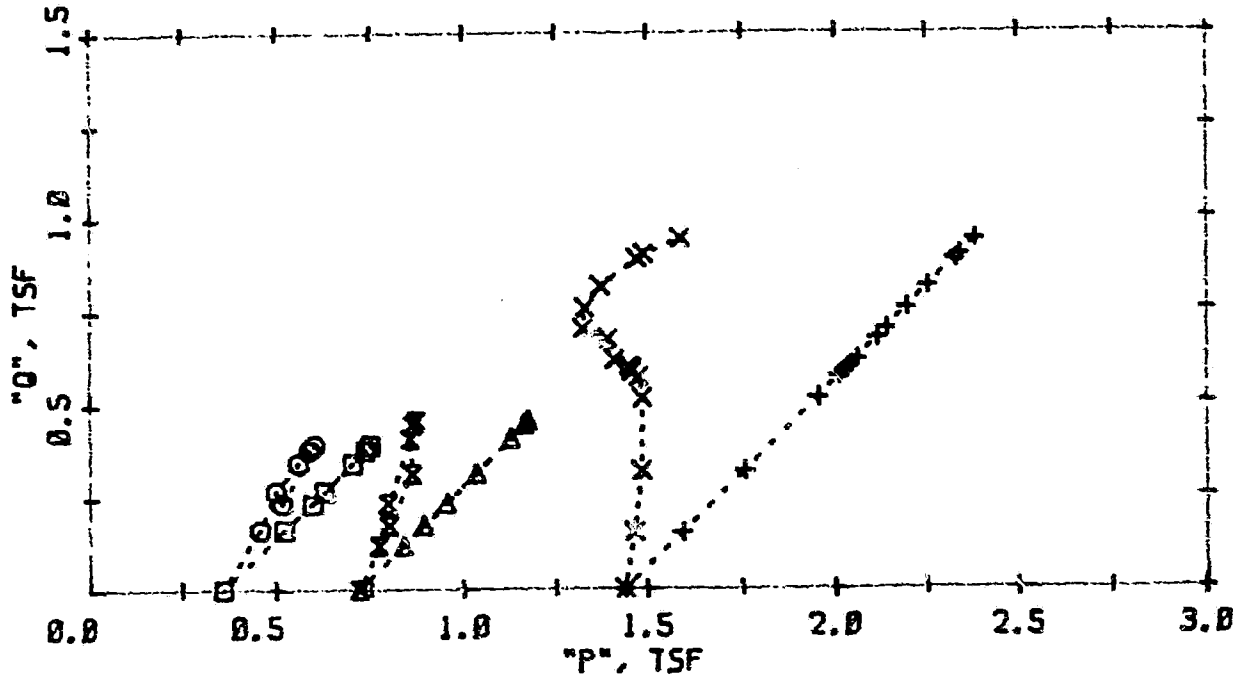


TEST NO.	101	102	103
BORING			
SAMPLE	#1	#1	#1
σ_3, TSF	0.36	0.72	1.44

FIGURE

Electronic Filing: Received, Clerk's Office 01/13/2023

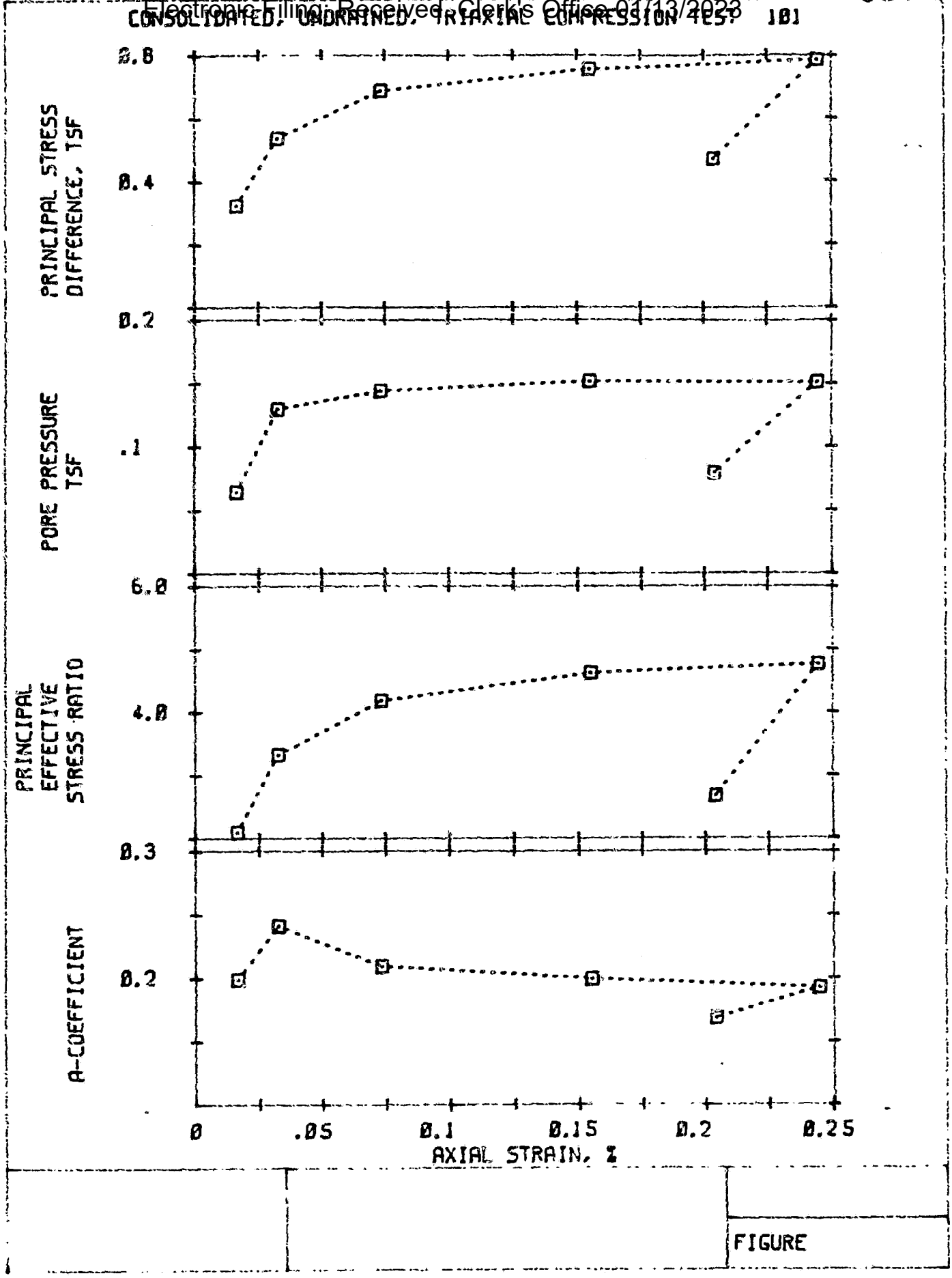
CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST
"P-Q" DIAGRAM



TEST NO.	101	102	103
BORING			
SAMPLE	#1	#1	#1
σ_3, TSF	0.36	0.72	1.44
TOTAL STRESS	□	Δ	+
EFF. STRESS	○	⧖	×

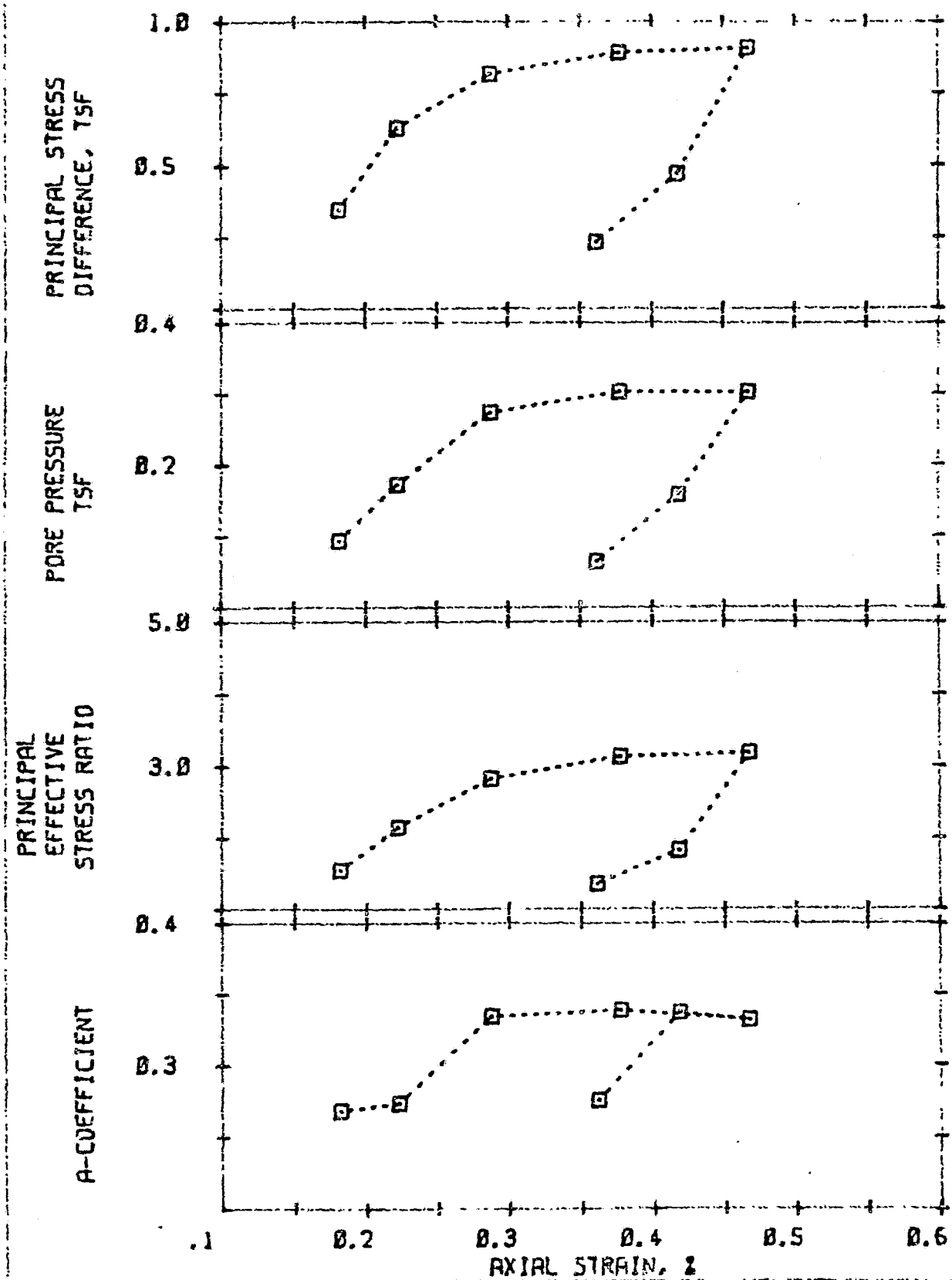
FIGURE

Electronic Filing: Received, Clerk's Office: 01/13/2023



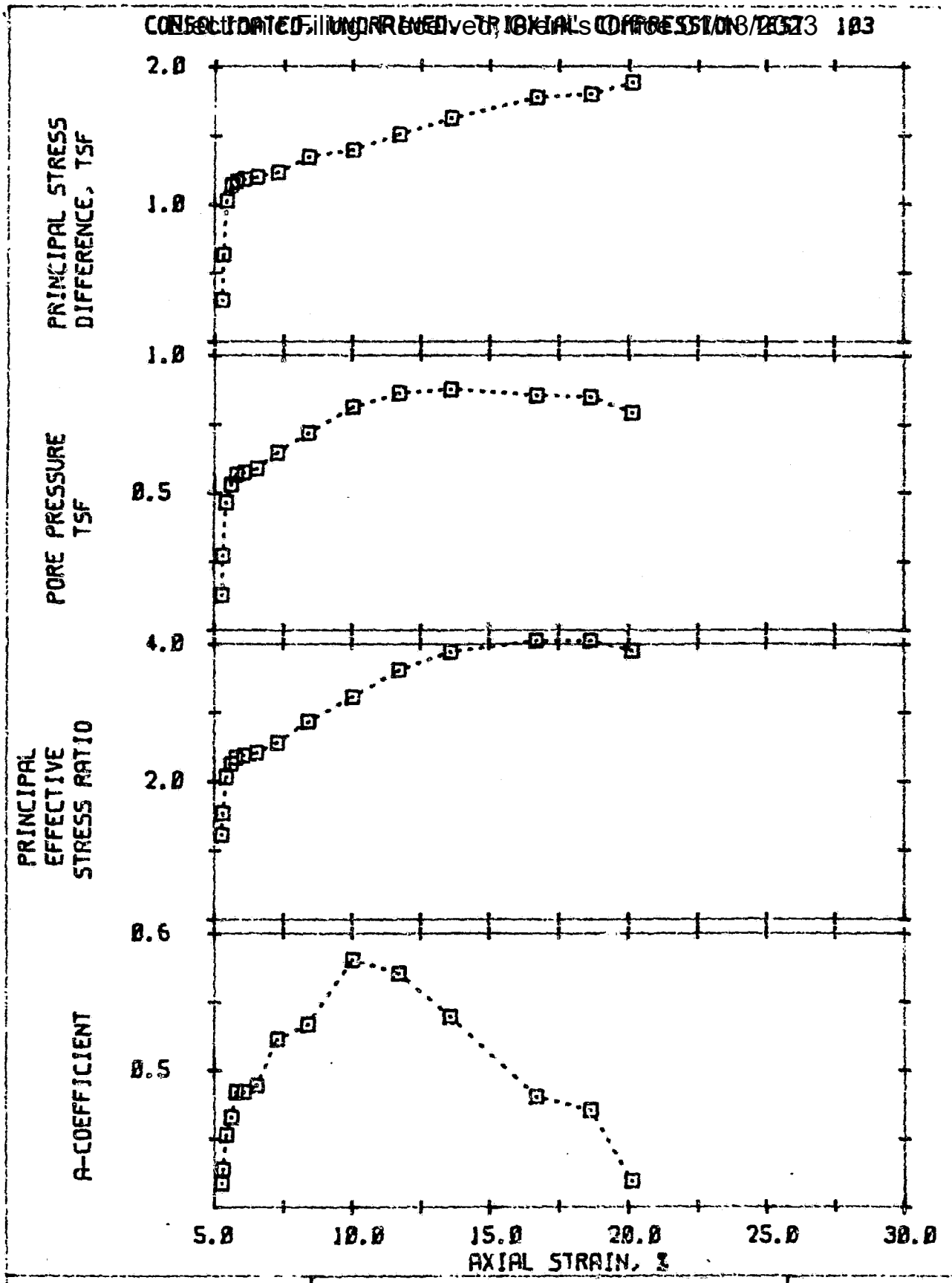
FIGURE

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION 102
Received, Clerk's Office 5/10/2023



FIGURE

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST



FIGURE

CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST NO. 101

SUMMARY OF TEST DATA

Boring
Sample #1
Depth, ft.

Tested By/Date BR 4/10/85
Calc. By/Date BR 4/11/85
Check. By/Date _____

CLASSIFICATION:
SILTY CLAY WITH LITTLE SAND (CL).

Liquid Limit	37.6
Plastic Limit	23.1
Plasticity Index	14.5
Specific Gravity (Estimated)	2.70
Specimen Compacted	
Optimum Moisture Content, %	
Maximum Density, pcf	108.5

SPECIMEN DATA:

	Before Test
Height, in.	6.130
Diameter, in.	2.950
Hgt./Dia. Ratio	2.08
Volume, cc	686.59
Weight, gm.	1346.00
Bulk Density, pcf	122.3
Dry Density, pcf	102.9
Water Content, %	18.9
Percent Compaction	94.8
Saturation, %	80

INITIAL TEST PRESSURES:

Effective Confining Pressure, tsf	0.36
Back Pressure, tsf	3.24
Cell Pressure, tsf	3.60

B-Coefficient .9
Due to Consolidation: Change in Height, in. -0.004

INSTRUMENT CONSTANTS:

Deformation, in./div.	0.001
Load, kg./div.	0.406
Pore Pressure, psi/div.	1.0

Avg. Rate of Strain .049 %/min.
Change in Volume, cc -2.00

MEASURED DATA: COMPUTED RESULTS:

Axial Def. Read. div	Load Read. div	Pore Press. Read. div	Axial Strain %	Prin. Stress Diff. tsf	Pore Press. tsf	Eff. Minor Prin. Stress tsf	Eff. Major Prin. Stress tsf	Eff. Stress Ratio	A-Coeff.	p tsf	p' tsf	q tsf
1.0	34.5	45.9	0.0	0.33	0.06	0.30	0.62	2.10	0.20	0.52	0.46	0.16
2.0	57.0	46.8	0.0	0.54	0.13	0.23	0.77	3.33	0.24	0.63	0.50	0.27
4.5	73.0	47.0	0.1	0.69	0.14	0.22	0.90	4.18	0.21	0.70	0.56	0.34
9.5	80.5	47.1	0.2	0.76	0.15	0.21	0.97	4.63	0.20	0.74	0.59	0.38
15.0	83.5	47.1	0.2	0.77	0.15	0.21	0.99	4.76	0.19	0.75	0.60	0.39
12.5	50.0	46.1	0.2	0.47	0.08	0.28	0.75	2.68	0.17	0.60	0.52	0.24

Electronic Filing: Received, Clerk's Office 01/13/2023

CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST NO. 102

SUMMARY OF TEST DATA

Boring
Sample #1
Depth, ft.

Tested By/Date BR 4/10/85
Calc. By/Date BR 4/11/85
Check. By/Date

CLASSIFICATION:
SILTY CLAY WITH LITTLE SAND (CL).

Liquid Limit	37.6
Plastic Limit	23.1
Plasticity Index	14.5
Specific Gravity (Estimated)	2.70
Specimen Compacted	
Optimum Moisture Content, %	
Maximum Density, pcf	108.5

SPECIMEN DATA:

	Before Test
Height, in.	6.130
Diameter, in.	2.950
Ht./Dia. Ratio	2.08
Volume, cc	686.59
Weight, gm.	1346.00
Bulk Density, pcf	122.3
Dry Density, pcf	102.9
Water Content, %	18.9
Percent Compaction	94.8
Saturation, %	80

INITIAL TEST PRESSURES:

Effective Confining Pressure, tsf	0.72
Back Pressure, tsf	3.24
Cell Pressure, tsf	3.96
B-Coefficient	.9
Due to Consolidation: Change in Height, in.	-0.003

INSTRUMENT CONSTANTS:

Deformation, in./div.	0.001
Load, kg./div.	0.406
Pore Pressure, psi/div.	1.0
Avg. Rate of Strain	.064 %/min.
Change in Volume, cc	-0.50

MEASURED DATA: COMPUTED RESULTS:

Axial Def. Read. div	Load Read. div	Pore Press. Read. div	Axial Strain %	Prin. Stress Diff. tsf	Pore Press. tsf	Eff. Minor Prin. Stress tsf	Eff. Major Prin. Stress tsf	Eff. Stress Ratio	A-Coeff.	p tsf	p' tsf	q tsf
5.0	37.0	46.3	0.1	0.35	0.09	0.63	0.97	1.56	0.27	0.89	0.80	0.17
7.5	67.0	47.4	0.1	0.63	0.17	0.55	1.18	2.15	0.27	1.04	0.86	0.32
11.5	87.0	48.8	0.2	0.82	0.27	0.45	1.27	2.83	0.33	1.13	0.86	0.41
17.0	95.0	49.2	0.3	0.89	0.30	0.42	1.31	3.14	0.34	1.17	0.86	0.45
22.5	97.0	49.2	0.4	0.91	0.30	0.42	1.33	3.18	0.33	1.18	0.87	0.46
19.5	50.0	47.2	0.3	0.47	0.16	0.56	1.03	1.84	0.34	0.95	0.80	0.23
16.0	25.0	45.9	0.3	0.24	0.08	0.66	0.89	1.36	0.28	0.84	0.77	0.12

Electronic Filing: Received, Clerk's Office 01/13/2023

CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION NO. 103

SUMMARY OF TEST DATA

Boring
Sample #1
Depth, ft.

Tested By/Date SR 3/10/85
Calc. By/Date 3/11/85
Check. By/Date _____

CLASSIFICATION:
SILTY CLAY WITH LITTLE SAND (CL)

Liquid Limit	37.6
Plastic Limit	23.1
Plasticity Index	14.5
Specific Gravity (Estimated)	2.70
Specimen Compacted	
Optimum Moisture Content, %	
Maximum Density, pcf	108.5

SPECIMEN DATA:

	Before Test
Height, in.	6.130
Diameter, in.	2.950
Hgt./Dia. Ratio	2.08
Volume, cc	686.59
Weight, gm.	1346.00
Bulk Density, pcf	122.3
Dry Density, pcf	102.9
Water Content, %	18.9
Percent Compaction	94.8
Saturation, %	80

INITIAL TEST PRESSURES:

Effective Confining Pressure ,tsf	1.44
Back Pressure, tsf	3.24
Cell Pressure, tsf	4.68

INSTRUMENT CONSTANTS:

Deformation, in./div.	0.001
Load, kg./div.	0.406
Pore Pressure, psi/div.	1.0

B-Coefficient .9
Due to Consolidation: Change in Height, in. 0.008

Avg. Rate of Strain .094 %/min.
Change in Volume, cc 4.50

MEASURED DATA: COMPUTED RESULTS:

Axial Def. Read. div	Load Read. div	Pore Press. Read. div	Axial Strain %	Prin. Stress Diff. tsf	Pore Press. tsf	Eff. Minor Prin. Stress tsf	Eff. Major Prin. Stress tsf	Eff. Stress Ratio	A-Coeff.	p tsf	p' tsf	q tsf
17.5	33.0	46.8	0.3	0.31	0.13	1.31	1.62	1.24	0.42	1.60	1.47	0.16
19.5	68.0	48.8	0.3	0.64	0.27	1.17	1.81	1.55	0.43	1.76	1.49	0.32
27.0	110.0	51.5	0.4	1.03	0.47	0.97	2.00	2.06	0.45	1.96	1.49	0.52
38.0	122.0	52.4	0.6	1.14	0.53	0.91	2.05	2.26	0.47	2.01	1.48	0.57
49.0	125.5	52.9	0.8	1.17	0.57	0.87	2.05	2.35	0.48	2.03	1.46	0.59
66.5	127.5	53.0	1.1	1.19	0.58	0.86	2.05	2.38	0.48	2.03	1.46	0.59
95.0	130.0	53.2	1.5	1.21	0.59	0.85	2.06	2.42	0.49	2.04	1.45	0.60
141.0	134.5	54.0	2.3	1.24	0.65	0.79	2.03	2.56	0.52	2.06	1.41	0.62
210.0	148.2	55.0	3.4	1.35	0.72	0.72	2.07	2.87	0.53	2.11	1.39	0.67
309.0	156.3	56.3	5.0	1.40	0.81	0.63	2.03	3.23	0.58	2.14	1.33	0.70
412.5	172.0	57.0	6.7	1.51	0.86	0.58	2.09	3.63	0.57	2.20	1.33	0.76
528.5	189.0	57.2	8.6	1.63	0.88	0.56	2.19	3.90	0.54	2.25	1.38	0.81
718.0	214.0	56.9	11.7	1.78	0.86	0.58	2.36	4.05	0.48	2.33	1.47	0.89
837.0	221.5	56.8	13.7	1.80	0.85	0.59	2.39	4.05	0.47	2.34	1.49	0.90
928.0	236.0	56.0	15.1	1.89	0.79	0.65	2.54	3.91	0.42	2.38	1.59	0.94

Electronic Filing: Received, Clerk's Office 01/13/2023

Electronic Filing: Received, Clerk's Office 01/13/2023

Professional Service Industries, Inc.
A & H Engineering Division

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

TESTED FOR: Southern Illinois Power Coop
Route #4 Box 311
Marion, Illinois 62959
Attn: Mr. Richard Myott

PROJECT: Dam B-3 Lake of Egypt
Marion, Illinois

DATE: April 1985

OUR REPORT NO.: 025-55008

TEST [illegible]

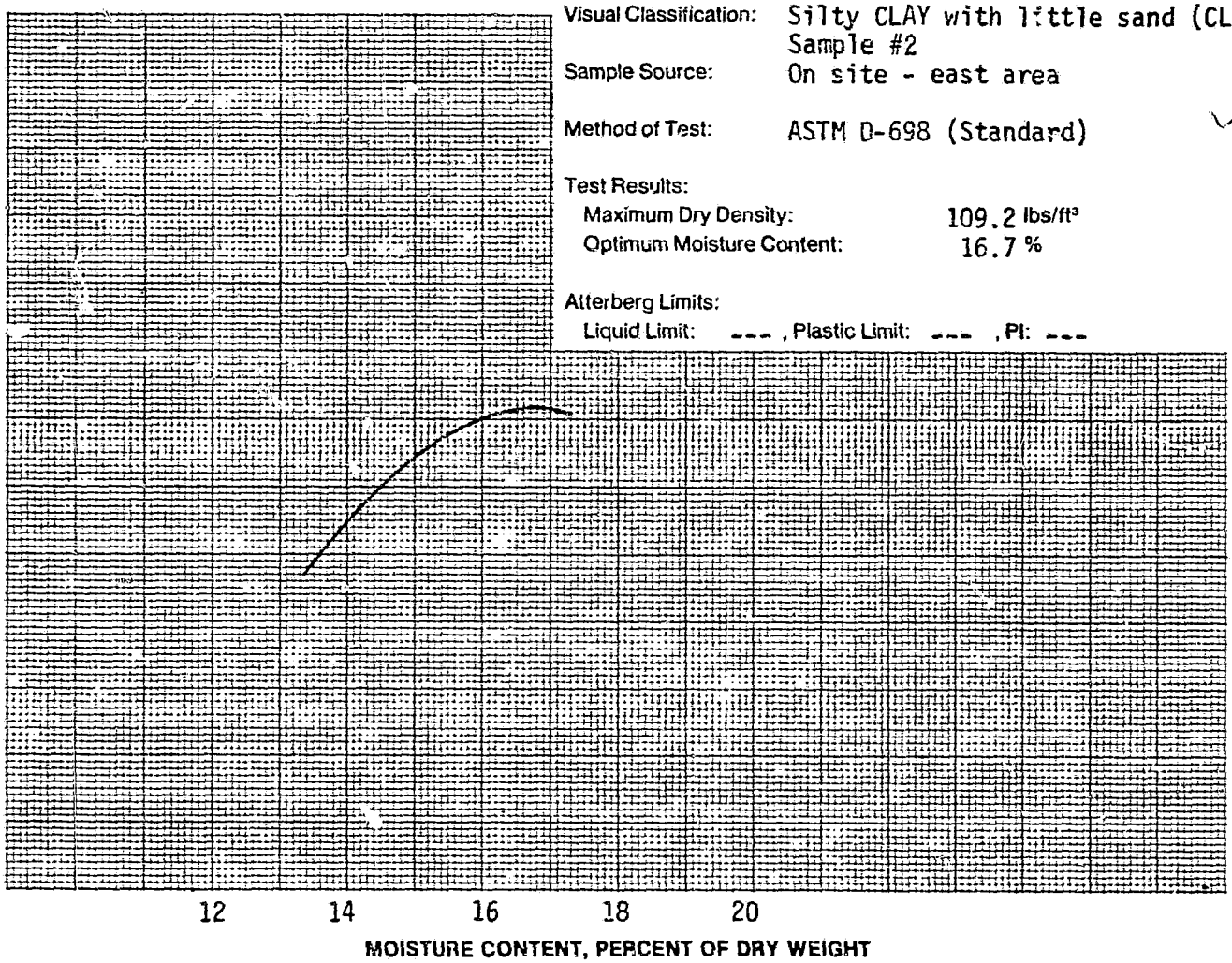
Visual Classification: Silty CLAY with little sand (CL)
Sample #2

Sample Source: On site - east area

Method of Test: ASTM D-698 (Standard)

Test Results:
Maximum Dry Density: 109.2 lbs/ft³
Optimum Moisture Content: 16.7 %

Atterberg Limits:
Liquid Limit: ---, Plastic Limit: ---, PI: ---

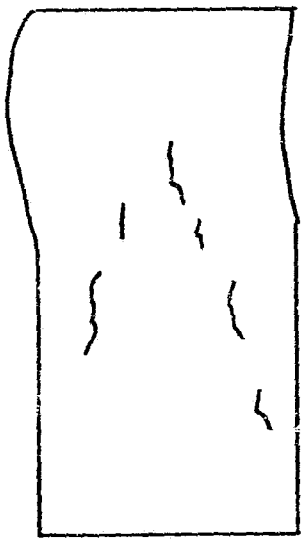


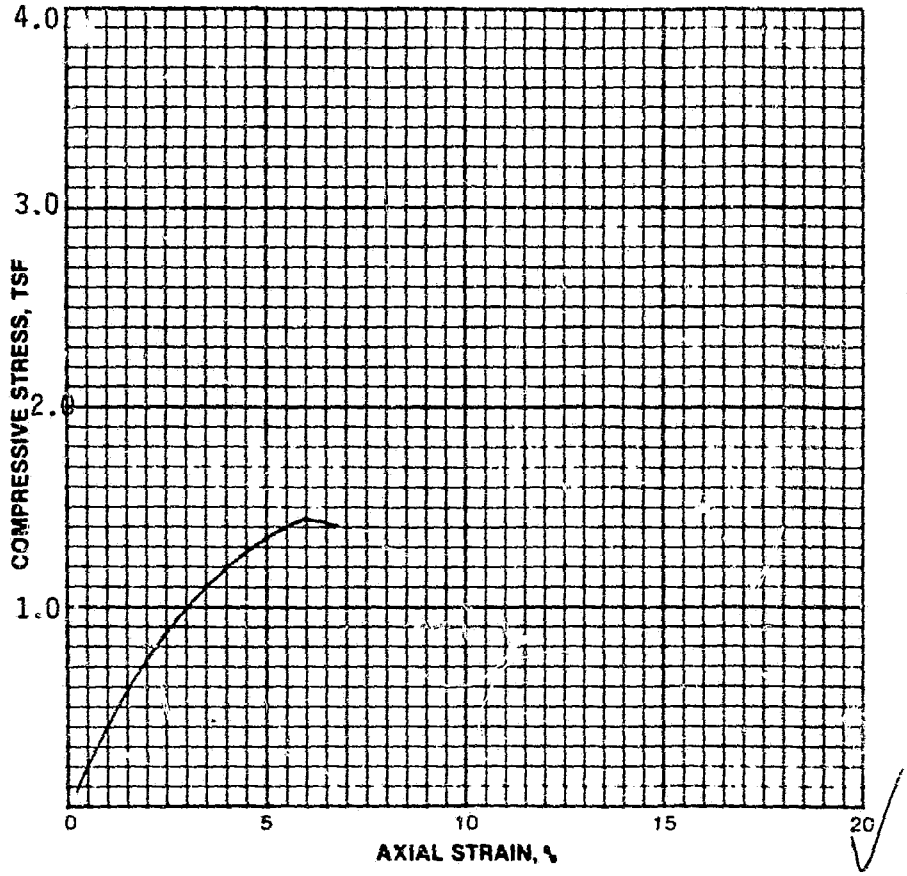
Respectfully submitted,
Professional Service Industries, Inc.

Electronic Filing: Received, Clerk's Office 01/13/2023

Professional Service Industries

FAILURE SKETCHES





☐ Controlled stress

☒ Controlled strain

Boring No.		---
Sample No.		Proctor Sample #2
Depth, Ft.		---
Type of specimen		Remolded
Initial specimen diameter, in.		2.8"
Initial specimen height, in.		5.6"
Initial	Water content %	18.6%
	Void ratio	---
	Saturation, %	---
	Dry density, pcf	103.2 pcf
Time to failure, min.		3.2
Unconfined compressive strength, tsf		1.46
Undrained shear strength, tsf		.78
Classification		Silty CLAY

LL 36.4	PL 23.4	PI 13.0	G_s ---

PROJECT NAME

Dam B-3
Lake of Egypt
Marion, Illinois

UNCONFINED COMPRESSION TEST

PROJECT NO. 025-55008

DATE April 1985

TRIAXIAL RESULTS

PROCTOR SAMPLE #2

Electronic Filing: Received, Clerk's Office 04/13/2023

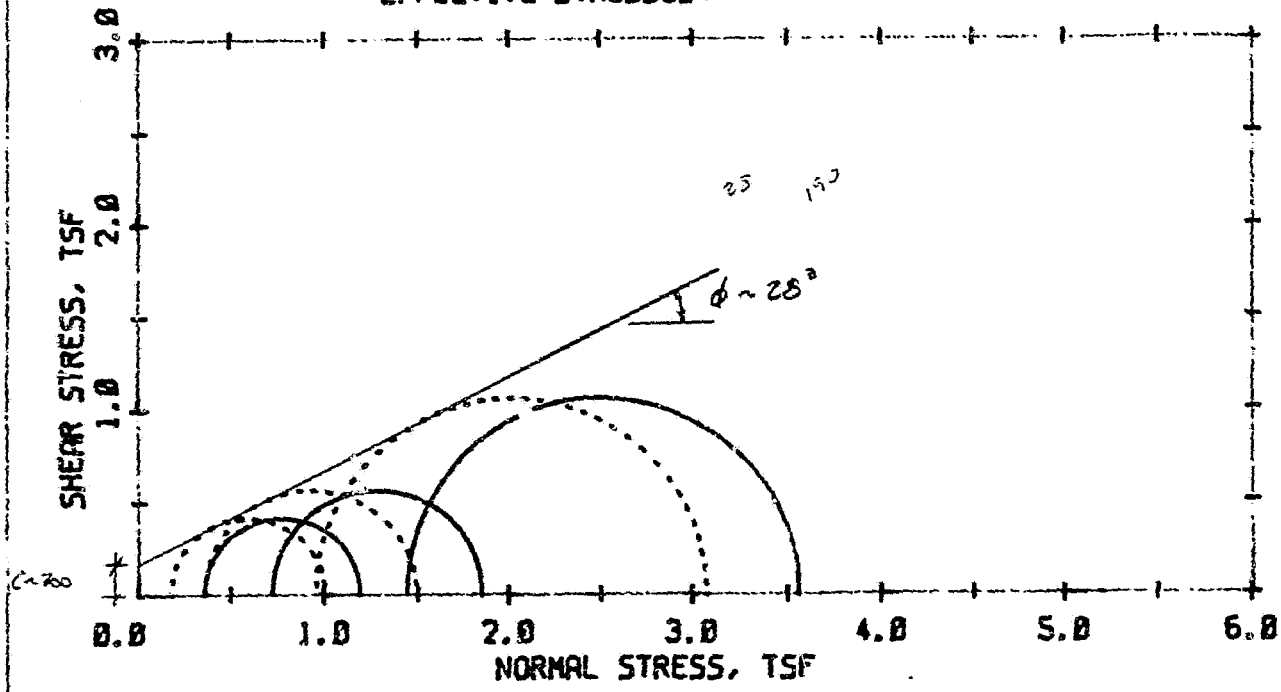
CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST

MOHR DIAGRAM

FAILURE CRITERIA: $(\sigma_1 - \sigma_3)_{MAX}$

TOTAL STRESSES: ————

EFFECTIVE STRESSES: .....

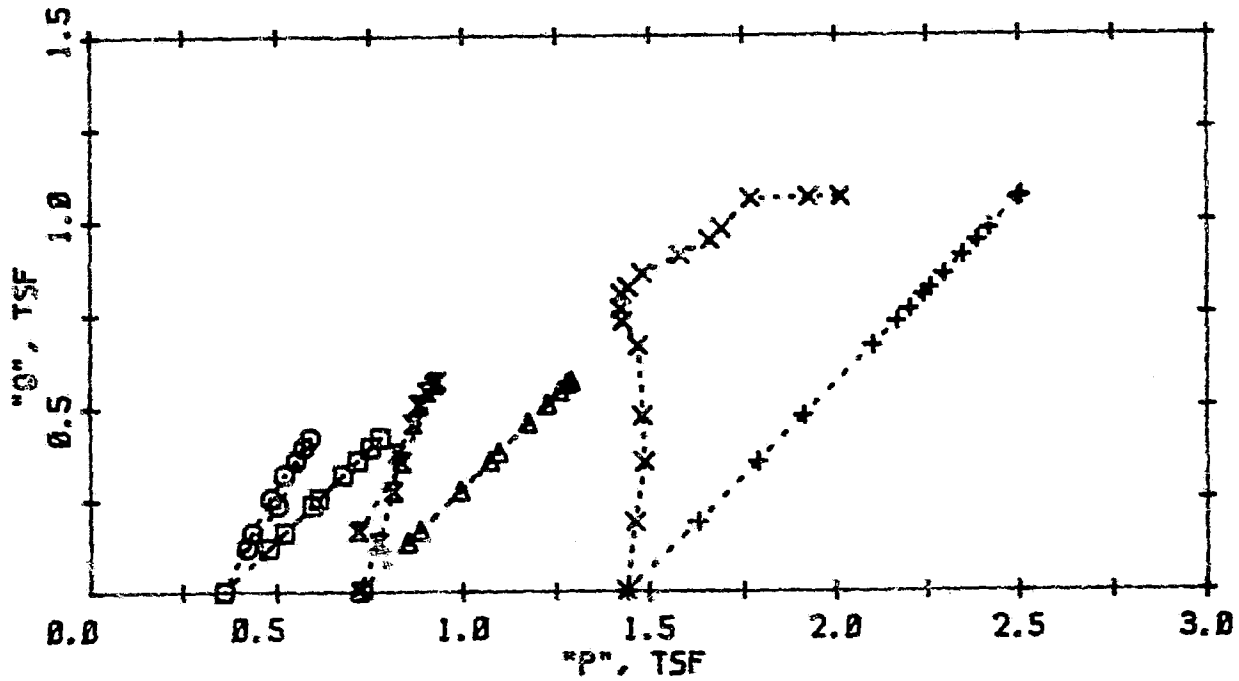


TEST NO.	201	202	203
BORING			
SAMPLE	#2	#2	#2
σ_3, TSF	0.36	0.72	1.44

FIGURE

Electronic Filing: Received, Clerk's Office 01/13/2023

CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST
"P-Q" DIAGRAM

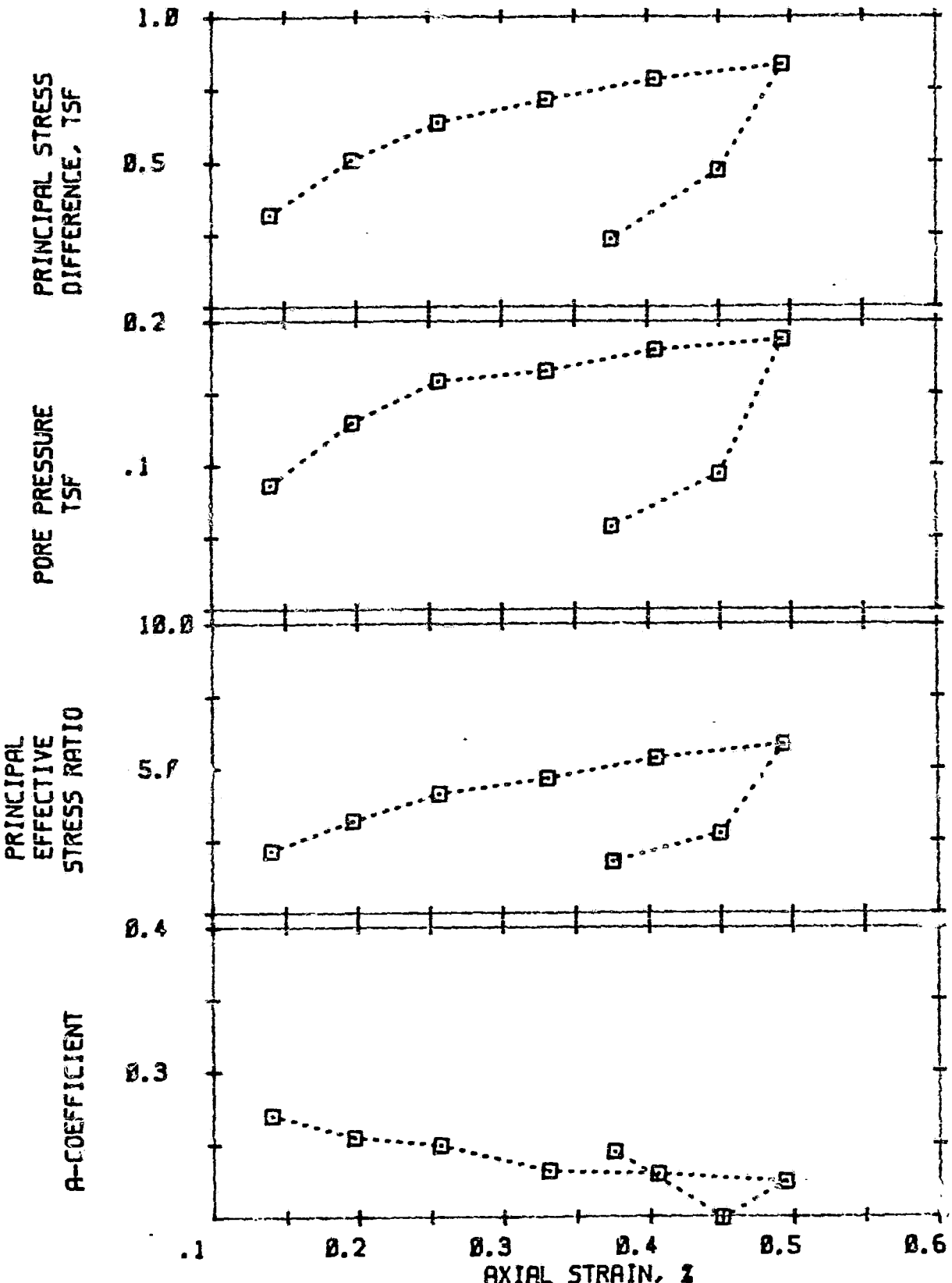


TEST NO.	201	202	203
BORING			
SAMPLE	#2	#2	#2
σ_3, TSF	0.36	0.72	1.44
TOTAL STRESS	□	△	+
EFF. STRESS	○	⧖	×

FIGURE

CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

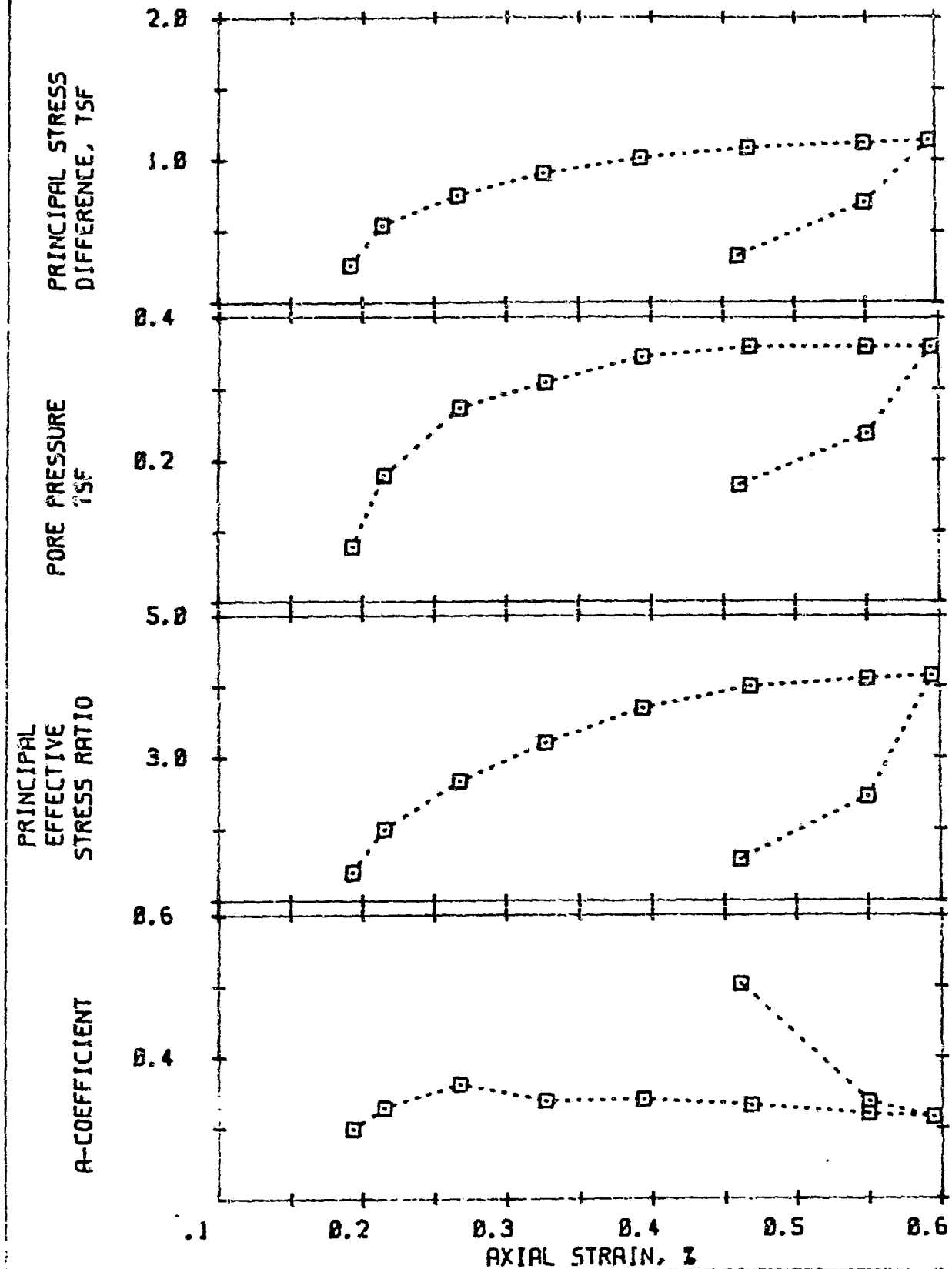
Received, Clerk's Office 5/19/2023



FIGURE

Electronic Filing Received, Clerk's Office 01/13/2023 202

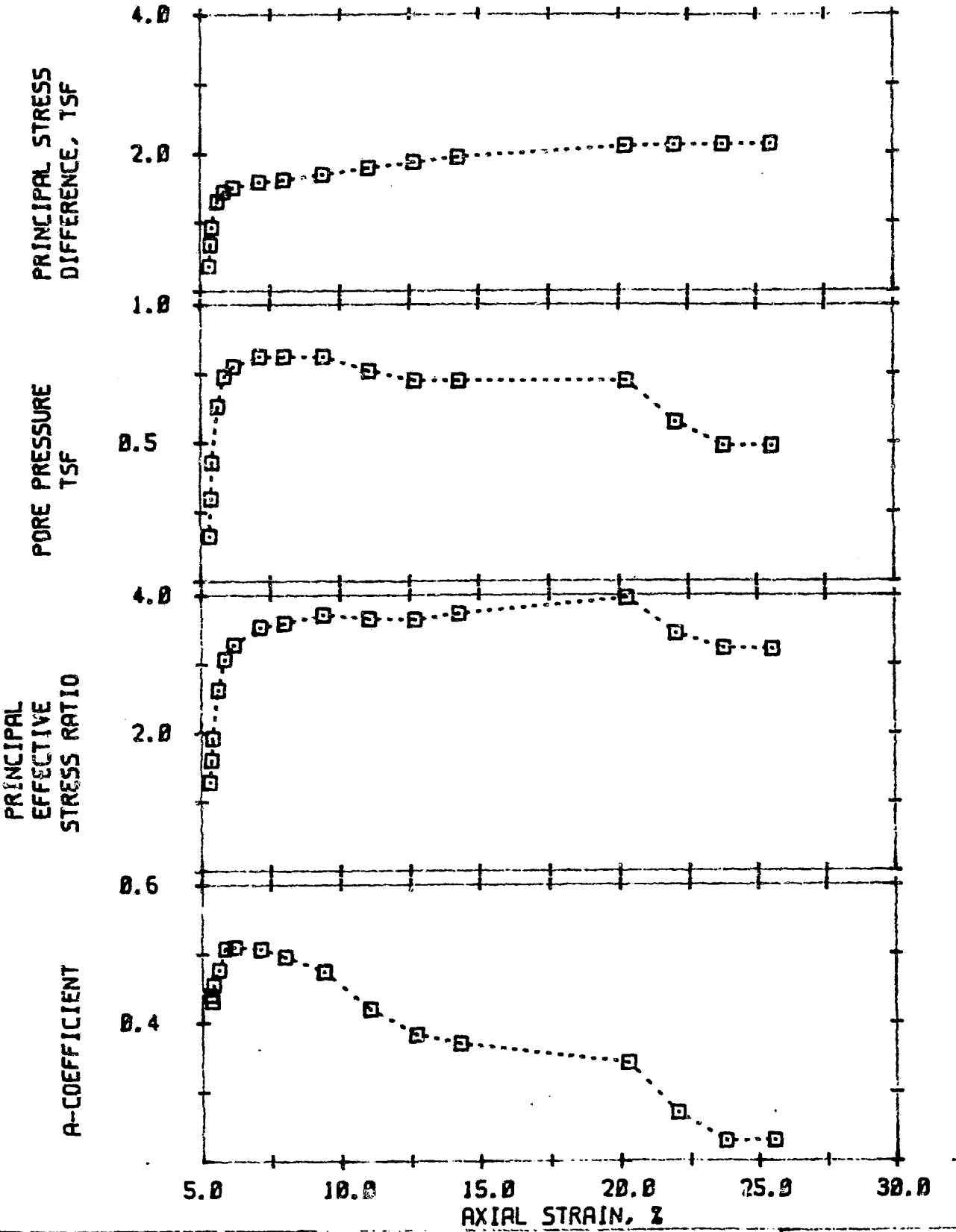
CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST



FIGURE

Electronic Filing: Received, Clerk's Office: 01/13/2023

CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST 203



FIGURE

Electronic Filing: Received, Clerk's Office 01/13/2023

CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST NO. 201

SUMMARY OF TEST DATA

Boring
Sample #2
Depth, ft.

Tested By/Date BR 4/07/85
Calc. By/Date BR 4/25/85
Check. By/Date BK 5-16-85

CLASSIFICATION:
SILTY CLAY WITH
LITTLE SAND (CL)

Specific Gravity 2.70
(Estimated)
Specimen Compacted
Optimum Moisture Content, %
Maximum Density, pcf 109.2

SPECIMEN DATA:

	Before Test
Height, in.	6.720
Diameter, in.	2.950
Hgt./Dia. Ratio	2.28
Volume, cc	752.67
Weight, gm.	1472.00
Bulk Density, pcf	122.0
Dry Density, pcf	103.0
Water Content, %	18.5
Percent Compaction	94.3
Saturation, %	79

INITIAL TEST PRESSURES:

Effective Confining Pressure ,tsf	0.36
Back Pressure, tsf	3.24
Cell Pressure, tsf	3.60

B-Coefficient .96
Due to Consolidation: Change in Height, in. 0.000

INSTRUMENT CONSTANTS:

Deformation, in./div.	0.001
Load, kg./div.	0.406
Pore Pressure, psi/div.	1.0

Avg. Rate of Strain .0657 %/min.
Change in Volume, cc 2.00

MEASURED DATA:

COMPUTED RESULTS:

Axial Def. Read. div	Load Read. div	Pore Press. Read. div	Axial Strain %	Prin. Stress Diff. tsf	Pore Press. tsf	Eff. Minor Prin. Stress tsf	Eff. Major Prin. Stress tsf	Eff. Stress Ratio	A-Coeff.	p tsf	p' tsf	q tsf
2.7	34.0	46.2	0.0	0.32	0.09	0.27	0.59	2.17	0.27	0.52	0.43	0.16
6.5	54.0	46.8	0.1	0.51	0.13	0.23	0.74	3.21	0.25	0.61	0.48	0.25
10.5	67.5	47.2	0.2	0.64	0.16	0.20	0.84	4.15	0.25	0.68	0.52	0.32
15.5	76.0	47.3	0.2	0.71	0.17	0.19	0.91	4.68	0.23	0.72	0.55	0.36
20.5	83.5	47.5	0.3	0.78	0.18	0.18	0.96	5.36	0.23	0.75	0.57	0.39
26.5	89.0	47.6	0.4	0.84	0.19	0.17	1.01	5.84	0.22	0.78	0.59	0.42
23.5	50.0	46.3	0.3	0.47	0.09	0.27	0.74	2.76	0.20	0.59	0.50	0.23
18.5	25.0	45.8	0.3	0.24	0.06	0.30	0.54	1.78	0.25	0.48	0.42	0.12

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CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST NO. 202

SUMMARY OF TEST DATA

Boring
Sample #2
Depth, ft.

Tested By/Date BR 4/11/85
Calc. By/Date BR 4/15/85
Check. By/Date BAR 4-16-85

CLASSIFICATION:
SILTY CLAY WITH LITTLE SAND (CL)

Specific Gravity 2.70 (Estimated)
Specimen Compacted
Optimum Moisture Content, %
Maximum Density, pcf 109.2

SPECIMEN DATA:

	Before Test
Height, in.	6.720
Diameter, in.	2.950
Hgt./Dia. Ratio	2.28
Volume, cc	752.67
Weight, gm.	1472.00
Bulk Density, pcf	122.0
Dry Density, pcf	103.0
Water Content, %	18.5
Percent Compaction	94.3
Saturation, %	79

INITIAL TEST PRESSURES:
Effective Confining Pressure, tsf 0.72
Back Pressure, tsf 3.24
Cell Pressure, tsf 3.96

INSTRUMENT CONSTANTS:
Deformation, in./div. 0.001
Load, kg./div. 0.406
Pore Pressure, psi/div. 1.0

B-Coefficient .96
Due to Consolidation: Change in Height, in. 0.003

Avg. Rate of Strain .429 %/min.
Change in Volume, cc 8.00

MEASURED DATA:

Axial Def. Read. div	Load Read. div	Pore Press. Read. div
13.0	28.0	46.1
14.5	58.0	47.5
18.0	80.0	48.8
22.0	97.0	49.3
26.5	108.0	49.8
31.5	115.5	50.0
37.0	120.0	50.0
40.0	121.5	50.0
37.0	75.0	48.3
31.0	35.0	47.3

COMPUTED RESULTS:

Axial Strain %	Prin. Stress Diff. tsf	Pore Press. tsf	Eff. Minor Prin. Stress tsf	Eff. Major Prin. Stress tsf	Eff. Stress Ratio	A-Coeff.	p tsf	p' tsf	q tsf
0.2	0.26	0.08	0.64	0.90	1.41	0.30	0.85	0.77	0.13
0.2	0.55	0.18	0.54	1.09	2.01	0.33	0.99	0.81	0.27
0.3	0.75	0.27	0.45	1.20	2.69	0.36	1.10	0.82	0.38
0.3	0.91	0.31	0.41	1.32	3.22	0.34	1.18	0.87	0.46
0.4	1.01	0.35	0.37	1.39	3.71	0.34	1.23	0.88	0.51
0.5	1.08	0.36	0.36	1.44	4.01	0.33	1.26	0.90	0.54
0.6	1.13	0.36	0.36	1.49	4.13	0.32	1.28	0.92	0.56
0.6	1.14	0.36	0.36	1.50	4.16	0.32	1.29	0.93	0.57
0.6	0.70	0.24	0.48	1.19	2.46	0.34	1.07	0.83	0.35
0.5	0.33	0.17	0.55	0.88	1.59	0.50	0.88	0.72	0.16

Electronic Filing: Received, Clerk's Office 01/13/2023

CONSOLIDATED, UNDRAINED TRIAXIAL COMPRESSION

SUMMARY OF TEST DATA

Boring
Sample #2
Depth, ft.

Tested By/Date BR 4/12/85
Calc. By/Date BR 4/15/85
Check. By/Date BK 4-16-85

CLASSIFICATION:
SILTY CLAY WITH
LITTLE SAND (CL)

Specific Gravity 2.70
(Estimated)
Specimen Compacted
Optimum Moisture Content, %
Maximum Density, pcf 109.2

SPECIMEN DATA:

	Before Test
Height, in.	6.720
Diameter, in.	2.950
Hgt./Dia. Ratio	2.28
Volume, cc	752.67
Weight, gm.	1472.00
Bulk Density, pcf	122.0
Dry Density, pcf	103.0
Water Content, %	18.5
Percent Compaction	94.3
Saturation, %	79

INITIAL TEST PRESSURES:
Effective Confining Pressure ,tsf 1.44
Back Pressure, tsf 3.24
Cell Pressure, tsf 4.68

B-Coefficient .96
Due to Consolidation: Change in Height, in. 0.006

INSTRUMENT CONSTANTS:
Deformation, in./div. 0.001
Load, kg./div. 0.406
Pore Pressure, psi/div. 1.0

Avg. Rate of Strain .085 %/min.
Change in Volume, cc 16.50

MEASURED DATA: COMPUTED RESULTS:

Axial Def. Read. div	Load Read. div	Pore Press. Read. div	Axial Strain %	Prin. Stress Diff. tsf	Pore Press. tsf	Eff. Minor Prin. Stress tsf	Eff. Major Prin. Stress tsf	Eff. Stress Ratio	A-Coeff.	p tsf	p' tsf	q tsf
23.5	40.0	47.3	0.3	0.38	0.17	1.27	1.65	1.29	0.44	1.63	1.46	0.19
26.3	74.5	49.2	0.4	0.70	0.30	1.14	1.84	1.62	0.43	1.79	1.49	0.35
29.5	101.0	51.0	0.4	0.95	0.43	1.01	1.96	1.94	0.46	1.91	1.48	0.47
43.0	141.5	53.8	0.6	1.33	0.63	0.81	2.13	2.64	0.48	2.10	1.47	0.66
59.0	156.0	55.3	0.9	1.46	0.74	0.70	2.16	3.09	0.51	2.17	1.43	0.73
81.5	163.5	55.8	1.2	1.52	0.78	0.66	2.19	3.30	0.51	2.20	1.42	0.76
145.0	173.5	56.3	2.2	1.60	0.81	0.63	2.23	3.56	0.51	2.24	1.43	0.80
203.5	179.0	56.3	3.0	1.64	0.81	0.63	2.26	3.61	0.50	2.26	1.44	0.82
296.5	190.0	56.3	4.4	1.71	0.81	0.63	2.34	3.73	0.48	2.30	1.48	0.86
407.0	204.5	55.6	6.1	1.81	0.76	0.68	2.49	3.68	0.42	2.35	1.58	0.91
518.0	217.5	55.1	7.7	1.89	0.73	0.71	2.61	3.66	0.38	2.39	1.66	0.95
625.0	229.0	55.1	9.3	1.96	0.73	0.71	2.67	3.75	0.37	2.42	1.69	0.98
1027.0	265.0	55.1	15.3	2.12	0.73	0.71	2.83	3.97	0.34	2.50	1.77	1.06
1147.0	272.0	53.0	17.1	2.13	0.58	0.86	2.99	3.46	0.27	2.50	1.93	1.06
1263.0	278.0	51.8	18.8	2.13	0.49	0.95	3.08	3.24	0.23	2.50	2.01	1.06
1383.0	284.0	51.8	20.6	2.13	0.49	0.95	3.08	3.24	0.23	2.50	2.01	1.06

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Professional Service Industries, Inc.
A & H Engineering Division

TESTED FOR: Southern Illinois Power Coop
RR #4 Box 255
Marion, Illinois 62959

PROJECT: Flyash Containment Lagoon
Marion, Illinois

DATE: October 1983

OUR REPORT NO: 025-35034

RESULTS OF UNCONSOLIDATED - UNDRAINED (UU) RESULTS OF SHEAR TEST

	Sample Source	Sample Type	Dry Density	Moisture Content	Confining Stress,psf	Failure Stress,psf	Deviator Stress Failure-Confining	Failure Strain
(1)	BP-4	Remolded	111.6 pcf	15.0%	4,320	9,020	4,700	4.4
	BP-4	Remolded	114.3 pcf	15.0%	5,760	10,360	4,600	8.6%
(2)	BP-8	Remolded	114.3 pcf	14.3%	4,320	11,220	6,900	3.4%
	BP-8	Remolded	110.1 pcf	14.3%	5,760	10,760	5,000	2.1%
	BP-8	Remolded	111.4 pcf	14.3%	7,200	12,300	5,100	2.9%

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Professional Service Industries, Inc.
A & H Engineering Division

TESTED FOR: Southern Illinois Power Coop
RR #4 Box 255
Marion, Illinois 62959

PROJECT: Fly Ash Containment Lagoon
Marion, Illinois

DATE: October 1983

OUR REPORT NO: 025-35034

RESULTS OF PERMEABILITY TESTING

Sample Identification:	BP-4
Sample Type:	Remolded
Visual Classification:	Brown Silty CLAY, trace sand
Natural Moisture Content:	13.7
Remolded Dry Density:	111.4 pcf
Permeability:	K= 7.4 x 10^{-7} cm/sec
Sample Identification:	BP-8
Sample Type:	Remolded
Visual Classification:	Brown Silty CLAY, trace sand
Natural Moisture Content:	15.5%
Remolded Dry Density:	113.1 pcf
Permeability:	K= 9.4 x 10^{-8} cm/sec

621 West Industrial Park Road • Carbondale, IL 62901 • Phone: 618/549-5341

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Professional Service Industries, Inc.
A & H Engineering Division

TESTED FOR: Southern Illinois Power Coop
Route #4 Box 311
Marion, Illinois 62959
Attn: Mr. Richard Myott

PROJECT: Dam B-3 Lake of Egypt
Marion, Illinois

DATE: April 1985

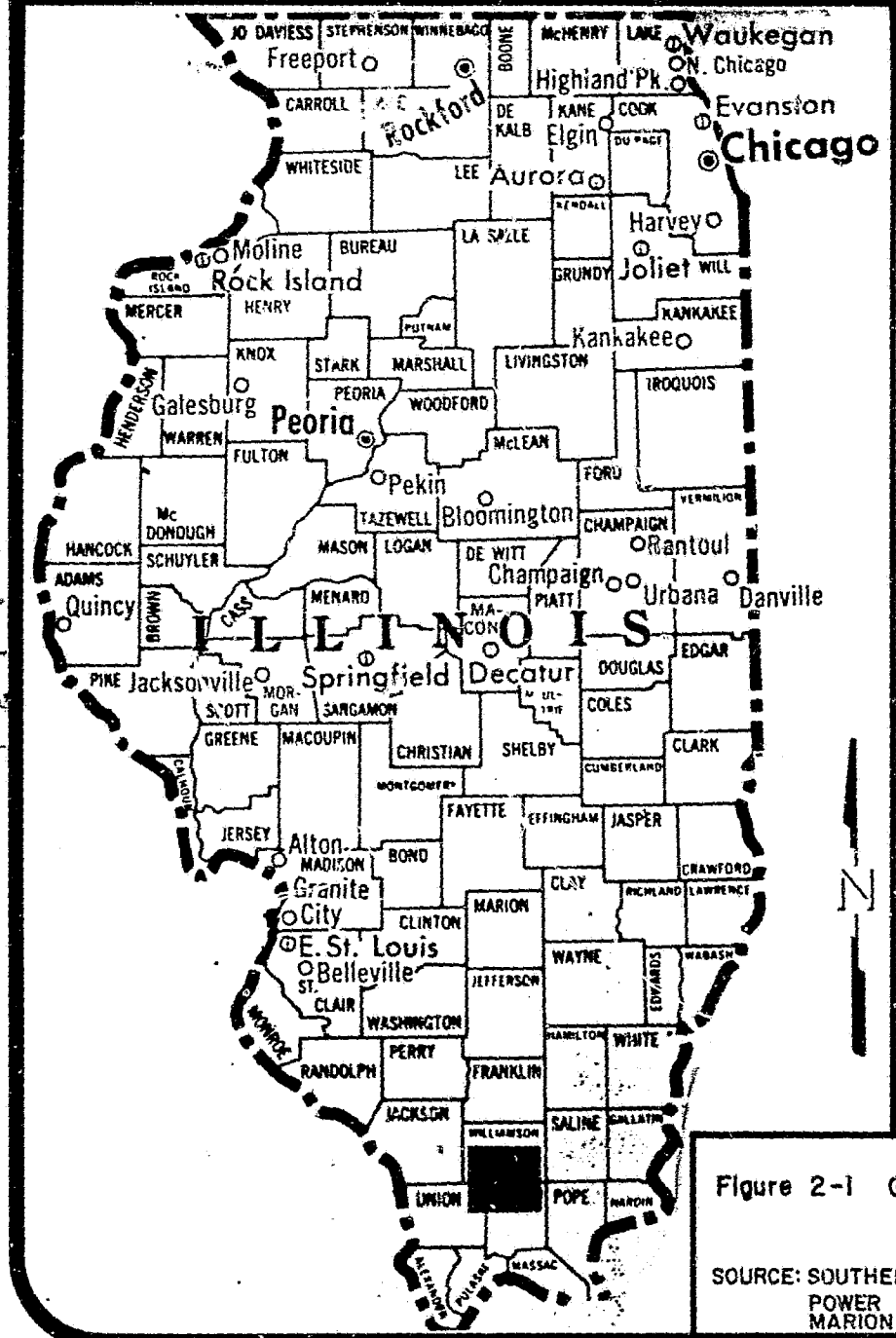
OUR REPORT NO.: 025-55008

RESULTS OF PERMEABILITY TESTING

Sample Identification:	Proctor Sample #1
Sample Type:	Remolded
Visual Classification:	Brown Silty CLAY, little sand
Moisture Content:	18.2%
Remolded Dry Density:	104.3 pcf
Permeability:	5.84×10^{-8} cm/sec

Sample Identification:	Proctor Sample #2
Sample Type:	Remolded
Visual Classification:	Brown Silty CLAY, little sand
Moisture Content:	18.3
Remolded Dry Density:	102.1 pcf
Permeability:	1.93×10^{-8} cm/sec

R2019000223



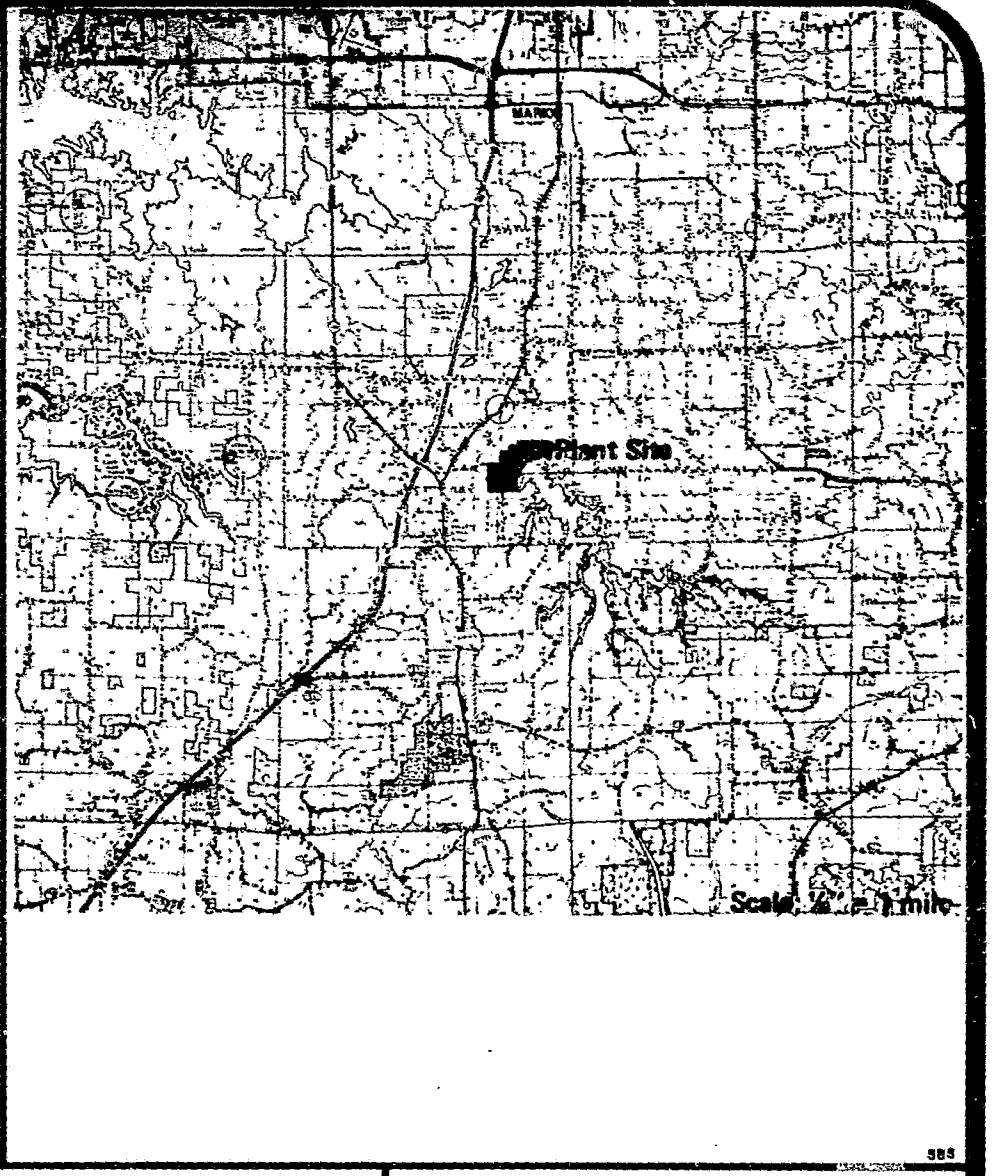


Figure 2-1 General Location Map
Marion Station

SOURCE: SOUTHERN ILLINOIS POWER CO-OP INC. MARION, ILL. 1980

SOUTHERN ILLINOIS POWER CO-OPERATIVE, INC.

NPDES PERMIT IL0004316

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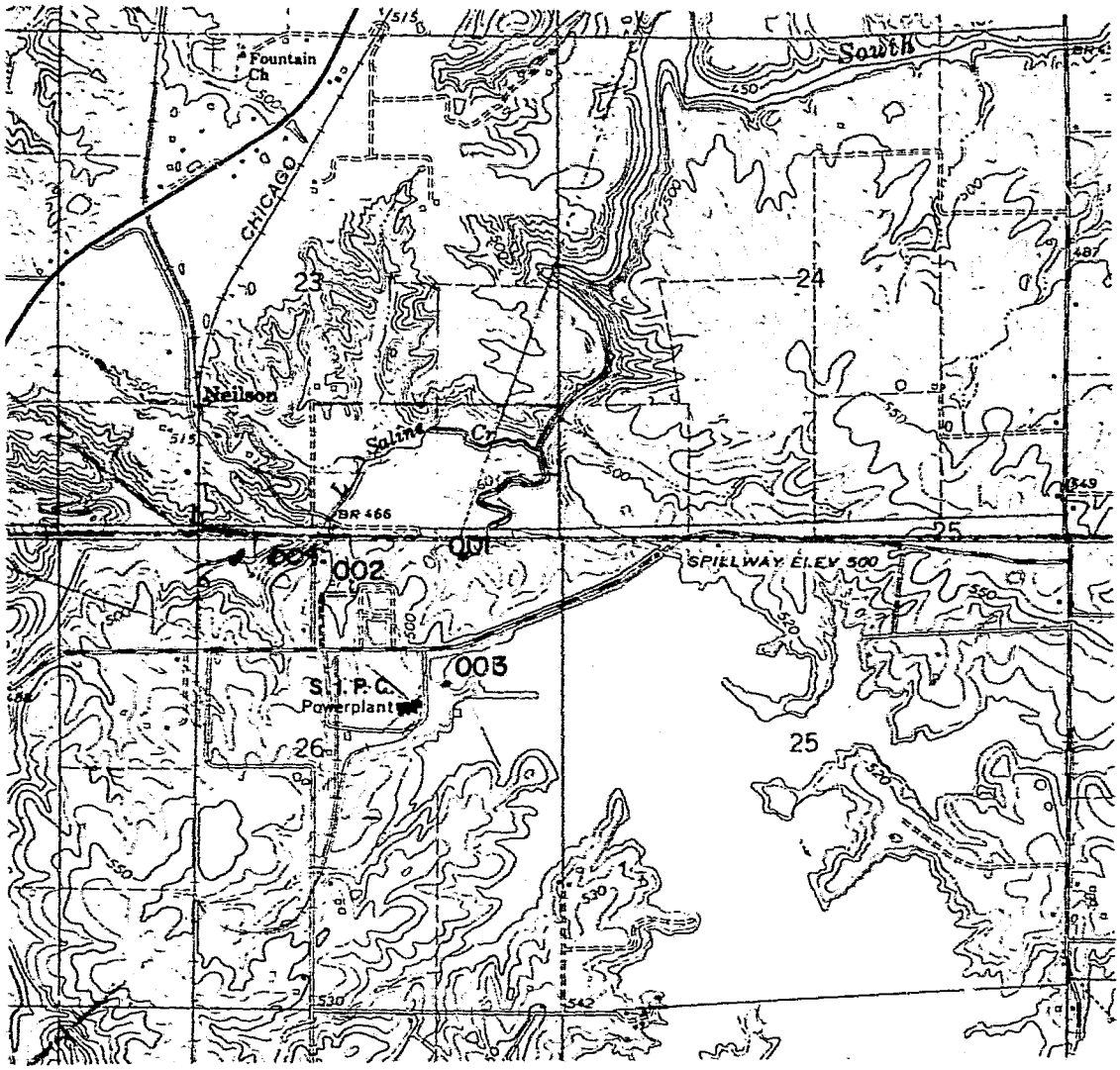

Figure - TOPOGRAPHICAL MAP OF AREA ADJACENT TO MARION STATION

SOURCE: SOUTHERN ILLINOIS POWER CO-OP INC. MARION, ILL.

SOUTHERN ILLINOIS POWER CO-OPERATIVE, INC.

NPDES PERMIT
IL 0004316

Electronic Filing: Received, Clerk's Office 01/13/2023

R 2 1 9 0 0 2 2 3 5

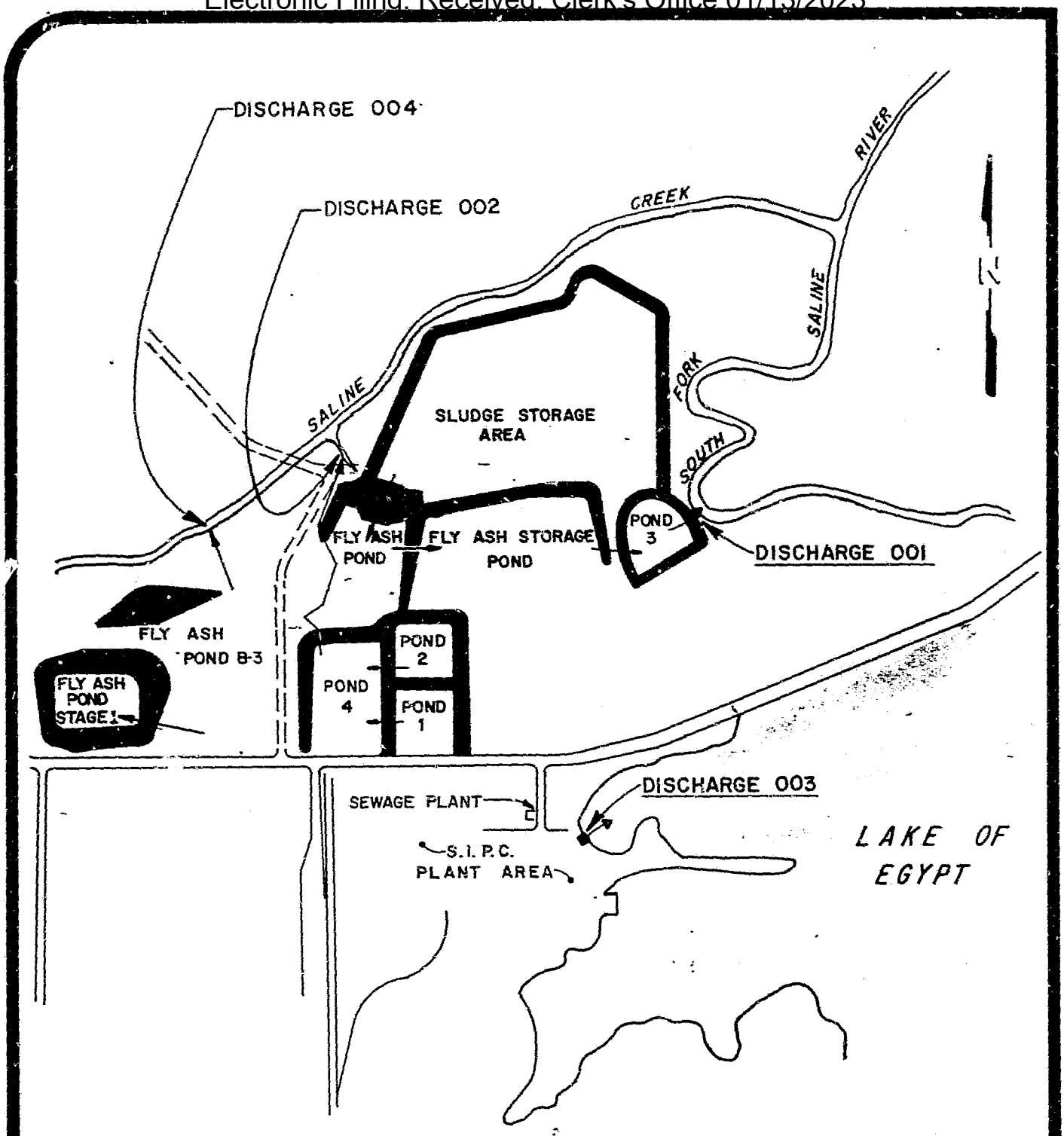

Figure – MAP SHOWING OUTFALLS - MARION STATION

SOURCE: SOUTHERN ILLINOIS POWER CO-OP INC. 1980
MARION, ILL.

SOUTHERN ILLINOIS POWER CO-OPERATIVE, INC.
NPDES PERMIT
IL0004316

Electronic Filing: Received, Clerk's Office 01/13/2023

SOUTHERN ILLINOIS POWER CO-OPERATIVE

Route 4 • Box 311
Marion, Illinois 62959

Telephone
(618) 964-1448

December 17, 1985

0052-86 FB SAK

RECEIVED
DEC 18 1985
Environmental Protection Agency
Division of Water Pollution Control
Permit Section-Springfield
State of Illinois

Mr. T. R. Kluge, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706

Dear Mr. Kluge:

Southern Illinois Power Cooperative
Marion Generating Plant
Proposed Fly Ash Pond

In response to your October 28, 1985 letter, we have revised Section 11 of the Technical Specification for Fly Ash Pond (16240-CP-102) to more clearly indicate the required activities in the pond area to provide for the continuity of the clay soils. The revised specification is enclosed for your use, shown as Rev. 1.

As discussed by Mr. Lloyd Young of Bechtel with your Mr. A. Keller on November 19, 1985, and yourself on November 21, 1985, we plan to have a geotechnical engineer inspect the bottom and side slopes of the pond to define those areas with pervious soils. As described in Section 11 of the specification, these areas will be undercut and then backfilled with compacted clay. Compacted clay will be tied into the natural soils to form a seal. The compaction and testing criteria are included in the specification and are in accordance with your recommendation. We have included specific reference to the testing frequency per the request of your October 28, 1985 letter. This combination of natural clays and compacted clay blanket will provide the continuous liner in the pond area.

As also discussed by Mr. Young, we offer to notify you when the inspection and any remedial work in the pond bottom is planned to be done. If you would like to be notified so a member of your department can observe the work, please let me know.

2119600223

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If any additional information regarding the design or construction of the Fly Ash Pond is needed, please contact me.

Very truly yours,

Richard Myott, Manager
Support Systems Department

RM:LWY:ist

Enclosure

2190052237

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Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-0610

Southern Illinois Power Cooperative
Marion Generating Station - Proposed Fly Ash/Scrubber
Sludge Disposal Pond - LOG #3032-85
Denial

November 26, 1985

Richart Myott, Manager
Support Systems Department
Southern Illinois Power Cooperative
Route 4, Box 311
Marion, Illinois 62959

Gentlemen:

This Agency has reviewed your Application for Permit and the supporting documents for the subject project which were received on August 29, 1985. This Agency must deny the permit for this project for the following reasons.

Sections 12 and 39 of the Environmental Protection Act prohibit the Agency from issuing a permit for any facility which would threaten, cause or allow the discharge of contaminants which might cause or tend to cause water pollution in Illinois, Section 39 of the Act requires an applicant to submit proof to the Agency that the proposed facility will not cause a violation of the Act or Subtitle C, Chapter I.

In addition to the above cited Sections of the Act, the permit application does not fulfill the requirements of 35 Ill. Admin. Code 309.241.

The following information, clarification or corrections must be provided for us to complete our technical review and are to be considered specific reasons why the Act and Subtitle C, Chapter I will not be met:

1. In the document "Technical Specification for Fly Ash Pond" on page 13 under "Pond Preparation" item 11, we request the specifications clearly indicate that the entire pond area both bottom and side slopes be lined with a minimum of three feet of compacted or in situ clay soils to form a seal exhibiting a maximum permeability of 1 * 10-7 cm/sec. Clay soils should be placed in maximum nine inch lifts and compacted to at least 95% of maximum dry density in accordance with ASTM D698. All unsuitable material shall be excavated and removed.

2. We request the specifications contain a statement requiring density testing of the pond bottom and side seal clay liner by the contractor similar to the specifications found at page nine, item 9-A, 4, and page eleven, item 9-A, 13.

The Agency will be pleased to re-evaluate your permit application on receipt of your written request and the necessary information and documentation to correct or clarify the deficiencies noted above. The revised application will be considered filed on the date that the Agency receives your written request.

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If you have any questions about this denial of your application or need any additional information concerning Agency requirements, please contact Gary Cima, who may be reached at the telephone number and address shown above.

Very truly yours,

Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

TGM:GC:sf/2918e,3-4

cc: Records Unit
Permit Section

5219000239

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SOUTHERN ILLINOIS POWER
CO-OPERATIVE

Route 4 • Box 311
Marion, Illinois 62959

Telephone
(618) 964-1448

August 26, 1985

3032-85

RECEIVED
AUG 29 1985
Environmental Protection Agency
WPC—Permit Log In

Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706

Attention: Mr. Timothy Kluge

Re: Proposed fly ash and scrubber sludge disposal Pond B-3

Dear Mr. Kluge:

Attached for your review are 1) the final design report for our proposed fly ash and scrubber sludge disposal pond and 2) the technical specifications for the pond.

We have also attached application forms WPC-PS-1, Schedule J and Schedule N.

This pond is the next stage in our handling of fly ash/scrubber sludge from the Marion Steam Plant.

After your review, please issue us a combination construction/ operation permit.

If you have any questions or comments, please contact us.

Very truly yours,

Richard Myott
Support Systems Department Manager

RM/ms

Attachments

cc w/ attachments: Illinois Department of Transportation
Division of Water Resources
2300 S. Dirksen Parkway
Springfield, IL 62764
Attention: Mr. Martin Stralow

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EXHIBIT

YY

W1990551676A SOUTHERN ILLINOIS POWER COOP /0675 16 IL0004316 T

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INFORMATION TO BE CONTAINED ON NPDES MICROFILM JACKET

OWNERSHIP CODE: PRI FACILITY TYPE: 0

1. DIVISION CODE 4

2. FIPS COUNTY CODE 199

3. CITY/TOWNSHIP CODE 055

4. GOVERNING BODY CODE 1676A

5. PERMITTEE NAME (FILE SUBJECT)

SOUTHERN ILLINOIS POWER COOP / 0675

6. FILE DIVISION 16

7. NPDES NUMBER IL0004316

1973000773

OTHER INFORMATION NECESSARY FOR CROSS-REFERENCING

8. GOVERNING BODY NAME
SOUTHERN ILLINOIS POWER CO-OP

F/S/P CODE

10. DATE IDENTIFIED IN THE FIELD REFERS TO:

A. PERMIT ISSUE DATE 06-30-75

B. PERMIT CANCELLATION DATE

C. NO PERMIT REQUIRED DATE

11. PERMIT EXPIRATION DATE 06-25-80

Electronic Filing: Received, Clerk's Office 01/13/2023

FORM APPROVED
OMB NO. 49-R 0408

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

APPLICATION FOR PERMIT TO DISCHARGE OR WORK IN NAVIGABLE WATERS AND THEIR TRIBUTARIES

NPDES# IL 0004316

SECTION I. GENERAL INFORMATION

1. State	Application Number (to be assigned by Corps of Engineers)			
	072	OYE	2	000658
IL	Div.	Dist.	Type	Sequence No.

2. Name of applicant and title of signing official

Southern Illinois Power Cooperative
L. Thomas Clevenger, General Manager

3. Mailing address of applicant

Southern Illinois Power Cooperative
Post Office Box 143
Marion, Illinois 62959

RECEIVED
APR 22 1974
ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
PERMIT SECTION - SPRINGFIELD
STATE OF ILLINOIS

4. Name, address, telephone number and title of applicant's authorized agent for permit application coordination and correspondence.

L. Thomas Clevenger
Southern Illinois Power Cooperative
Post Office Box 143
Marion, Illinois 62959
Phone: AC 618 993-2966

IL 0004316

NOTE TO APPLICANT: Refer to the pamphlet entitled "Permits for Work and Structures in and for Discharges or Deposits into Navigable Waters" before attempting to complete this form.

Required Information

a. All information contained in this application will, upon request, be made available to the public for inspection and copying. A separate sheet entitled "Confidential Answers" must be used to set out information which is considered by the applicant to constitute trade secrets or commercial or financial information of a confidential nature. The information must clearly indicate the item number to which it applies. Confidential treatment can be considered only for that information for which a specific written request for confidentiality has been made on the attached sheet. However, in no event will identification of the contents and frequency of a discharge be recognized as confidential or privileged information.

b. The applicant shall furnish such supplementary information as is required by the District Engineer in order to evaluate fully an application.

c. If additional space is needed for a complete response to any item on this form, attach a sheet entitled "Additional Information." Indicate on that sheet the item numbers to which answers apply.

d. Drawings required by items 20 and 21 should be attached to this application. Other papers which must be attached to this application include, if applicable, copies of a water quality certification or a written communication which describes water quality impact (see Item 22 and Item 10 of Section II below), the additional information sheet(s) in "c" above, and the confidential information sheet described in "a" above.

Fees

If any discharge or deposit is involved, an application fee of $100 must be submitted with this application. An additional $50 is required for each additional point of discharge or deposit.

Signature

a. If a discharge is involved, an application submitted by a corporation must be signed by the principal executive officer of that corporation or by an official of the rank of corporate vice president or above who reports directly to such principal executive officer and who has been designated by the principal executive officer to make such applications on behalf of the corporation. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor. Other signature requirements are discussed in the pamphlet.

b. If no discharge is involved, an application may be signed by the applicant or his authorized agent.

Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate.

K J Holt, President
Signature of Applicant

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and wilfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or representations, or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

FOR CORPS OF ENGINEERS USE ONLY

Acronym name of applicant: SOUTHERN ILLINOIS POWER COOP

Are discharge structures: Major? ☐ Minor? ☐ N/A? ☒

Date received, form not complete	04 JUN 71	Date sent to EPA, form not complete	— — — — — —
Date received, form complete but without certificate	— — — — — —		
Date received, form complete	— — — — — —	Date sent to EPA, NOAA, D/I, AEC, FPC in complete form	— — — — — —
Date of Cert./Ltr.	— — — — — —		
	day mo yr		day mo yr

Electronic Filing: Received, Clerk's Office 01/13/2023

5. Date: Nov 27 (mo / day / yr)

(Office use only) IL- 072 - OYE - 2 - 000658

6. Check type of application: a. Original [X] b. Revision [ ]

7. Number of original application

8. Name of facility where discharge or construction will occur.

Southern Illinois Power Cooperative
Electrical Generation Plant

9. Full mailing address of facility named in item 8 above.

Southern Illinois Power Cooperative
Post Office Box 143
Marion, Illinois 62959

10. Names and mailing addresses of all adjoining property owners whose property also adjoins the waterway.

Roy Staton, Rt.5, Marion, Ill. 62959
Herb Borum, Rt.3, Creal Springs, Ill.
Wendell Hilliard, 415E. Marion, Marion, Ill.
Walter Fozard, 204 E. Marion, Marion, Il
Inez Montgomery, Rt.5, Marion, Ill.
Joe Cox, Rt.5, Marion, Ill.
Roy E. Pyle, Rt.1, Brazil, Ind.
Ross Montgomery, Rt.5, Marion, Ill.
Theodore Heyde, 206 N. Market, Marion, Ill.
Lula & Ronald Masterson, Rt.5, Marion, Ill.

11. Check to indicate the nature of the proposed activity:
a. Dredging [X] b. Construction [X] c. Construction with Discharge [X] b. Discharge only [ ]

12. If activity is temporary in nature, estimate its duration in months.

N/A

If application is for a discharge:

13. List intake sources

Source	Estimated Volume in Million Gallons Per day or Fraction Thereof
Municipal or private water supply system	1.728
Surface water body	
Ground water	
Other	

14. Describe water usage within the plant

Type	Estimated Volume in Million Gallons Per day or Fraction Thereof
Cooling water	
Boiler Feed water	.0144
Process water	
Sanitary system*	.006
Other ash sluice water	1.707

15. List volume of discharges or losses other than into navigable waters.

Type	Estimated Volume in Million Gallons Per day or Fraction Thereof
Municipal waste treatment system	
Surface containment	
Underground disposal	
Waste Acceptance firms	
Evaporation	
Consumption	

NONE

* Indicate number employees served per day: 37

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If structures exist, or dredging, filling or other construction will occur, the precise location of the activity must be described.

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a. Name the corporate boundaries within which the structures exist or the activity will occur.

State	County	City or Town
15. Illinois	17. Williamson	18. N/A

b. Name of waterway at the location of the activity

19. South Fork of Saline River & Saline Creek

20. Maps and sketches which show the location and character of each structure or activity, including any and all outfall devices, dispersive devices, and non-structural points of discharge, must be attached to this application.

21. For construction or work in navigable waters for which a separate permit is sought under 33 U.S.C. 403, the character of each structure must be fully shown on detailed plans to be submitted with this application. Note on the drawings those structures for which separate discharge information (Section II of this form) has been submitted.

22. List all approvals or denials granted by Federal, interstate, State or local agencies for any structures, construction, discharges or deposits described in this application.

	Type of document	Id. No.	Date	Issuing Agency
Apprv.	Construction & Operation Permit	1969-EB-707	9-6-69	State of Illinois Sanitary Water Board
Apprv.	Construction & Operation Permit	1970-EB-355	6-1-70	State of Illinois Sanitary Water Board

23. Check if facility existed or was lawfully under construction prior to April 3, 1970. [X]

24. If dredging or filling will occur:

State the type of materials involved, their volume in cubic yards, and the proposed method of measurement.

N/A

25. Describe the proposed method of instrumentation which will be used to measure the volume of any solids which may be deposited and to determine its effect upon the waterway.

N/A

26. State rates and periods of deposition described in Item 25.

N/A

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SECTION II. PLANT PROCESS AND DISCHARGE DESCRIPTION

1. Discharge described below is a. Present [X] b. Proposed new or changed [ ]

2. Implementation schedule [ ]

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Name of corporate boundaries within which the point of discharge is located.

3. State: Illinois

4. County: Williamson

5. City or Town: N/A

6. Discharge Serial No.: 001

State the precise location of the point of discharge.

7. Latitude 3 3 Degrees; 3 7 Min; 3 0 Sec.

8. Longitude 8 8 Degrees; 5 7 Min; 2 0 Sec.

9. Name of waterway at the point of discharge: Saline Creek

10. Has application for water quality certification or description of impact been made? If so, give date:

Date (mo / day / yr)	Check if certificate is attached to form	Name Issuing Agency
— — / — — / — —	[ ]	Not made Copy sent to State

11. Narrative description of activity (include terms of general 4-digit Standard Industrial Classification, and specific manufacturing process).

a. Electric companies and systems

b. (1) Steam generation of electricity using coal as fuel.
(a) Ash residue from fired coal is sluiced into pond 3 in case of an emergency in pond 4.
(b) Water run off from ash storage piles in case of rain is also collected in Pond 3.
(c) Water in pond 3 is tested daily when being used and treated with lime if acidity is too high.
(d) This discharge is not used except in an emergency. Normally it is not used but once or twice per year and then for one or two days at a time.

12. Standard industrial classification number.	13. Principal product.	14. Amount of principal product produced per day.
SIC 491	Electricity	80 megawatts

15. Principal raw material.	16. Amount of principal raw material consumed per day.	17. Number of batch discharges per day.
N/A	N/A	N/A

18. Average gallons per batch discharge.	19. Date discharge began.	20. Date discharge will begin.
N/A	Sept. (mo) 6 (day) 1969 (yr)	— — (mo) N/A (day) — — (yr)

21. Describe waste abatement practices.

1. Water is collected in Pond 3, tested daily when running, treated with lime if necessary.

ESEPAR
ESEGRE
EMERGE
OMONIT
PSEDIM
CNEUTR
WDISCH

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22. PHYSICAL DESCRIPTION OF INTAKE WATER AND DISCHARGE

Intake / Discharge

(Office use only) IL- 072 - OYE - 2 - 000658

Discharge Serial No. 001

Parameter and (Code)	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	AVERAGE (DAILY) (3)	MINIMUM (OPERATING YEAR) (4)	MAXIMUM (OPERATING YEAR) (5)	SAMPLE FREQUENCY (6)	CONTINUOUS MONITORING (7)
Flow (Gallons per day) 00056	1,728,000	1,728,000	1,538,000	579,466	1,728,000	dyly	ABs
pH 00400	6.8 -7.2	6.8-7.2	7.00	6.8	7.2	wkly	Abs
Temperature (Winter) (°F) 74028	40°- 57°	40°-57°	48°	40°	57	wkly	Abs
Temperature (Summer) (°F) 74027	76 - 91	76 - 91	82	76	91	wkly	Abs

23. DISCHARGE CONTENTS

PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT
Color 00080		X	Aluminum 01105	X		Nickel 01067	?	
Turbidity 00070	X		Antimony 01097	?		Selenium 01147		X
Radioactivity 74050		X	Arsenic 01002		X	Silver 01077		X
Hardness 00900	X		Beryllium 01012		X	Potassium 00937	X	
Solids 00500	X		Barium 01007		X	Sodium 00929	X	
Ammonia 00610	X		Boron 01022		X	Titanium 01152		X
Organic Nitrogen 00605	?		Cadmium 01027		X	Tin 01102		X
Nitrate 00620	X		Calcium 00916	X		Zinc 01092	X	
Nitrite 00615		X	Cobalt 01037		X	Algicides 74051		X
Phosphorus 00665	?		Chromium 01034		X	Oil and Grease 00550		X
Sulfate 00945	X		Copper 01042	X		Phenols 32730		X
Sulfide 00745	X		Iron 01045	X		Surfactants 38260		X
Sulfite 00740		X	Lead 01051		X	Chlorinated Hydrocarbons 74052		X
Bromide 71370	?		Magnesium 00927	X		Pesticides 74053		X
Chloride 00940	X		Manganese 01055		X	Fecal Streptococci Bacteria 74054		X
Cyanide 00720		X	Mercury 71900		X	Coliform Bacteria 74056		X
Fluoride 00951		X	Molybdenum 01062		X			

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24a. Have all known hazardous or potentially hazardous substances which may enter your discharge been identified?

[X] Yes [ ] No

24b. If yes, have steps been taken to insure that there exists no possibility of any such known hazardous or potentially hazardous substance entering this discharge?

[X] Yes [ ] No

25. Remarks.

a. Gas chlorine is injected at intake to prevent growth of algae As needed.

b. The analysis of this discharge when used is essentially the same as 002, so Parts a & b for 001 would be the same as for 002.

The information above completes the basic reporting requirements which are required of all applicants. Those applicants whose discharge results from an activity included within any of the Standard Industrial Classification Code (SIC Code) categories listed below must complete Part A of this form as well.

CRITICAL INDUSTRIAL GROUPS

SIC	098	FISH HATCHERIES, FARMS, AND PRESERVES
SIC	10–14	DIVISION B — MINING
SIC	201	MEAT PRODUCTS
SIC	202	DAIRY PRODUCTS
SIC	203	CANNED PRESERVED FRUITS, VEGETABLES (EXCEPT SEAFOODS, SIC 2031 AND 2036)
SIC	2031, 2036	CANNED AND CURED FISH AND SEAFOODS; FRESH OR FROZEN PACKAGED FISH AND SEAFOODS
SIC	204	GRAIN MILL PRODUCTS
SIC	206	SUGAR
SIC	207	CONFECTIONARY AND RELATED PRODUCTS
SIC	208	BEVERAGES
SIC	209	MISCELLANEOUS FOOD PREPARATIONS AND KINDRED PRODUCTS
SIC	22	TEXTILE MILL PRODUCTS
SIC	23	APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS AND SIMILAR MATERIALS.
SIC	242	SAWMILLS AND PLANING MILLS
SIC	2432	VENEER AND PLYWOOD
SIC	2491	WOOD PRESERVING
SIC	26	PAPER AND ALLIED PRODUCTS
SIC	281	INDUSTRIAL INORGANIC AND ORGANIC CHEMICALS (EXCEPT SIC 2818)
SIC	2818	INDUSTRIAL ORGANIC CHEMICALS
SIC	282	PLASTICS MATERIALS AND SYNTHETIC RESINS, SYNTHETIC RUBBER, SYNTHETIC AND OTHER MAN-MADE FIBERS, EXCEPT GLASS
SIC	283	DRUGS
SIC	284	SOAP, DETERGENTS, AND CLEANING PREPARATIONS, PERFUMES, COSMETICS, AND OTHER TOILET PREPARATIONS
SIC	285	PAINTS, VARNISHES, LACQUERS, ENAMELS, AND ALLIED PRODUCTS
SIC	2871	FERTILIZERS
SIC	2879	AGRICULTURAL PESTICIDES, AND OTHER AGRICULTURAL CHEMICALS, NOT ELSEWHERE CLASSIFIED
SIC	2891	ADHESIVES AND GELATIN
SIC	2892	EXPLOSIVES
SIC	29	PETROLEUM REFINING AND RELATED INDUSTRIES
SIC	3011, 3069	TIRES AND INNER TUBES; FABRICATED RUBBER PRODUCTS, NOT ELSEWHERE CLASSIFIED
SIC	3079	MISCELLANEOUS PLASTICS PRODUCTS
SIC	311	LEATHER TANNING AND FINISHING
SIC	32	STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
SIC	331	BLAST FURNACES, STEEL WORKS, AND ROLLING AND FINISHING MILLS
SIC	332	IRON AND STEEL FOUNDRIES
SIC	333, 334	PRIMARY SMELTING AND REFINING OF NONFERROUS METALS; SECONDARY SMELTING AND REFINING OF NONFERROUS METALS
SIC	336	NONFERROUS FOUNDRIES
SIC	347	COATING, ENGRAVING, AND ALLIED SERVICES
SIC	35	MACHINERY, EXCEPT ELECTRICAL
SIC	36	ELECTRICAL MACHINERY EQUIPMENT, AND SUPPLIES
SIC	37	TRANSPORTATION EQUIPMENT (EXCEPT SHIP BUILDING AND REPAIRING, SIC 3731)
SIC	3731	SHIP BUILDING AND REPAIRING
SIC	491	ELECTRIC COMPANIES AND SYSTEMS
SIC	493	COMBINATION COMPANIES AND SYSTEMS

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PART A

(Note: Submission of Part A is required of all applicants whose processes are listed on page 3 above.)

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Discharge Serial No.
001

INFORMATION REQUIRED OF SPECIFIED INDUSTRIES

PARAMETER AND CODE	Intake: (DAILY AVG. CONCENTRATION) UNTREATED INTAKE WATER (1)	Intake: (DAILY AVG. CONCENTRATION) TREATED INTAKE WATER (2)	Discharge: MAXIMUM CONCENTRATION PER PROCESS UNIT (3)	Discharge: MAXIMUM POUNDS PER DAY (4)	Discharge: DAILY AVG. CONCENTRATION (5)	Discharge: AVERAGE POUNDS PER DAY (6)	Discharge: SAMPLE TYPE (7)	Discharge: SAMPLE FREQUENCY (8)	Discharge: METHOD OF ANALYSIS (9)	Discharge: CONTINUOUS MONITORING (10)	(11)
ALKALINITY (as $CaCO_3$) 00410		40mgl	40	1.92	57.6	40mgl	512.66	MO	dyly	Astm	No
B.O.D. 5-DAY 00310		A	A								
CHEMICAL OXYGEN DEMAND (C.O.D.) 00340		A	A								
TOTAL SOLIDS 00500		80mgl	80	3.84	1152	80mgl	1025	Gravi metric	wkly	Astm	No
TOTAL DISSOLVED SOLIDS 70300		60	60	288	864	60mgl	786	"	"	"	
TOTAL SUSPENDED SOLIDS 00530		20	20	96	288	20mgl	256	"	"	"	No
TOTAL VOLATILE SOLIDS 00505		0	0	0	0	0	0				
AMMONIA (as N) 00610		.3ppm	.3ppm	1.44	4.32	.3mgl	3.85	tij	"	"	
KJELDAHL NITROGEN 00625		A	A								
NITRATE (as N) 00620		A	A								
PHOSPHORUS TOTAL (as P) 00665		A	A								

Pond 4

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PART B. DISCHARGE DESCRIPTION

(Note: Submission of Part B is required of all applicants who are also required to submit Part A. Only those parameters specifically indicated in the instructions are to be reported by a particular industry)

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Discharge Serial No. 001

B-1. PHYSICAL AND BIOLOGICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-1)

Intake	Discharge						
PARAMETER AND CODE	(1) UNTREATED INTAKE WATER	(2) TREATED INTAKE WATER	(3) AVERAGE (DAILY)	(4) MINIMUM (OPERATING YEAR)	(5) MAXIMUM (OPERATING YEAR)	(6) SAMPLE FREQUENCY	(7) CONTINUOUS MONITORING
COLOR 00080	A	A		X			
SPECIFIC CONDUCTANCE 00095	120	165u/mho	130	120	165	wkly	ABS
TURBIDITY 00070	A	A		X			
FECAL STREPTOCOCCI BACTERIA 74054	360/100 ml	0	0	X	0	yrly	ABS
FECAL COLIFORM BACTERIA 74055	28/100ml	0	0	X	0	yrly	ABS
TOTAL COLIFORM BACTERIA 74056	100 382/ ml	0	0	X	0	yrly	ABS

Remarks - Gaseous Chlorine is added to intake water to prevent sliming.

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PART B

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Discharge Serial No.

001

B-2. CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	(1) UNTREATED INTAKE WATER	(2) TREATED INTAKE WATER	(3) MAXIMUM CONCENTRATION	(4) MAXIMUM POUNDS PER DAY PER PROCESS UNIT	(5) MAXIMUM POUNDS PER DAY	(6) DAILY AVG. CONCENTRATION	(7) AVERAGE POUNDS PER DAY	(8) SAMPLE TYPE	(9) SAMPLE FREQUENCY	(10) METHOD OF ANALYSIS	(11) CONTINUOUS MONITORING
ACIDITY (as $CaCO_3$) 00435	0	0									
TOTAL ORGANIC CARBON (T.O.C.) 00680	A	A									
TOTAL HARDNESS 00900	W										
NITRITE (as N) 00615	W										
ORGANIC NITROGEN 00605	A	A									
PHOSPHORUS-ORTHO (as P) 70507	A	A									
SULFATE 00945	W										
SULFIDE 00745	A	A									
SULFITE 00740	A	A									
BROMIDE 71870	W										

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PART B

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Discharge Serial No.
001

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	MAXIMUM CONCENTRATION (3)	MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	MAXIMUM POUNDS PER DAY (5)	DAILY AVG. CONCENTRATION (6)	AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
CHLORIDE 00940	3	3	8	115	115	8	102				
CYANIDE 00720	A	A									
FLUORIDE 00951	W										
ALUMINUM-TOTAL 01105	W										
ANTIMONY-TOTAL 01097	W										
ARSENIC-TOTAL 01002	W										
BARIUM-TOTAL 01007	W										
BERYLLIUM-TOTAL 01012	W										
BORON-TOTAL 01022	W										
CADMIUM-TOTAL 01027	W										

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Discharge Serial No.
001

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	(1) UNTREATED INTAKE WATER	(2) TREATED INTAKE WATER	(3) MAXIMUM CONCENTRATION	(4) MAXIMUM POUNDS PER DAY PER PROCESS UNIT	(5) MAXIMUM POUNDS PER DAY	(6) DAILY AVG. CONCENTRATION	(7) AVERAGE POUNDS PER DAY	(8) SAMPLE TYPE	(9) SAMPLE FREQUENCY	(10) METHOD OF ANALYSIS	(11) CONTINUOUS MONITORING
CALCIUM-TOTAL 00916	W										
CHROMIUM-TOTAL 01034	W <50	<50	<50								
COBALT-TOTAL 01037	W										
COPPER-TOTAL 01042	W <50	<50	<50								
IRON-TOTAL 01045	100	100	200	1440	1440	1282	1282				
LEAD-TOTAL 01051	W										
MAGNESIUM-TOTAL 00927	W										
MANGANESE-TOTAL 01055	W										
MERCURY-TOTAL 71900	W										
MOLYBDENUM-TOTAL 01062	W										

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Discharge Serial No.
001

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	(1) UNTREATED INTAKE WATER	(2) TREATED INTAKE WATER	(3) MAXIMUM CONCENTRATION	(4) MAXIMUM POUNDS PER DAY PER PROCESS UNIT	(5) MAXIMUM POUNDS PER DAY	(6) DAILY AVG. CONCENTRATION	(7) AVERAGE POUNDS PER DAY	(8) SAMPLE TYPE	(9) SAMPLE FREQUENCY	(10) METHOD OF ANALYSIS	(11) CONTINUOUS MONITORING
NICKEL-TOTAL 01067	W <50	<50	<50								
POTASSIUM-TOTAL 00937	3.1	3.1	3.8	10	10	9	9				
SELENIUM-TOTAL 01147	A										
SILVER-TOTAL 01077	A										
SODIUM-TOTAL 00929	11	11	5.0	72	72	64	64				
THALLIUM-TOTAL 01059	A										
TIN-TOTAL 01102	A										
TITANIUM-TOTAL 01152	A										
ZINC-TOTAL 01092	<50	<50	<50								
OIL AND GREASE 00550	A										

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PART B

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Discharge Serial No.

001

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake			Discharge								
PARAMETER AND CODE	(1) UNTREATED INTAKE WATER	(2) TREATED INTAKE WATER	(3) MAXIMUM CONCENTRATION	(4) MAXIMUM POUNDS PER DAY	(5) MAXIMUM POUNDS PER DAY PER PROCESS UNIT	(6) DAILY AVG. CONCENTRATION	(7) AVERAGE POUNDS PER DAY	(8) SAMPLE TYPE	(9) SAMPLE FREQUENCY	(10) METHOD OF ANALYSIS	(11) CONTINUOUS MONITORING
PHENOLS 32730	W <1	<1	<1								
SURFACTANTS 38260	A	A	A								
ALGICIDES* 74051	A		A								
CHLORINATED HYDRO-CARBONS* (EXCEPT PESTICIDES) 74052	A		A								
PESTICIDES* 74053	A		A								

*Name specific compound(s) and fill in the required data for each. Use extra blanks at the end of the form and the "Remarks" space as necessary.

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PART B

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Discharge Serial No.

001

B-3. RADIOACTIVE PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-3)

	Intake	Discharge					
PARAMETER AND CODE	(1) UNTREATED INTAKE WATER	(2) TREATED INTAKE WATER	(3) AVERAGE (DAILY)	(4) MINIMUM (OPERATING YEAR)	(5) MAXIMUM (OPERATING YEAR)	(6) SAMPLE FREQUENCY	(7) CONTINUOUS MONITORING
ALPHA-TOTAL 01501				X			
ALPHA COUNTING ERROR 01502		0		X			
BETA-TOTAL 03501		0		X			
BETA COUNTING ERROR 03502		0		X			
GAMMA-TOTAL 05501		0		X			
GAMMA COUNTING ERROR 05502		0		X			
TRITIUM-TOTAL 07000				X			
TRITIUM COUNTING ERROR 07001				X			

B-4. REMARKS

Not a nuclear plant.

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SECTION F - PLANT PROCESS AND DISCHARGE DESCRIPTION

1. Discharge described below is — a. Present [x] b. Proposed new or changed [ ]
2. Implementation schedule [ ] N/A
(Office use only) IL- 072 - OYE - 2 - 000658

Name of corporate boundaries within which the point of discharge is located.

3. State	4. County	5. City or Town	6. Discharge Serial No.
Illinois	Williamson	N/A	002

7. Latitude 37 Degrees: 37 Min: 30 Sec.
8. Longitude 88 Degrees: 57 Min: 20 Sec.

9. Name of waterway at the point of discharge: Saline Creek

10. Has application for water quality certification or description of impact been made? If so, give date:
Date: ___ mo ___ day ___ yr
Check if certificate is attached to form [ ]
Name Issuing Agency: Not made copy sent to State

11. Narrative description of activity (include terms of general 4-digit Standard Industrial Classification, and specific manufacturing process).

a. Electric companies and systems

b. (1) Steam generation of electricity using coal as fuel.
(a) Ash residue from fired coal is sluiced into settling ponds.
(b) Water run off from settling ponds overflows to pond #4.
(c) Boiler blow down from boiler operations runs to pond #4.
(d) Coal storage rain run off runs to pond #4.

12. Standard industrial classification number.	13. Principal product.	14. Amount of principal product produced per day.
SIC 491	Electricity	80 megawatts

15. Principal raw material.	16. Amount of principal raw material consumed per day.	17. Number of batch discharges per day.
N/A	N/A	N/A

18. Average gallons per batch discharge.	19. Date discharge began.	20. Date discharge will begin.
N/A	Oct. (mo) 9 (day) 70 (yr)	N/A (mo) (day) (yr)

21. Describe waste abatement practices.

1. Water is collected in pond 4 and released when it meets State standards through discharge controlled by valve.

ESEPAR
ESEGRE
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22. PHYSICAL DESCRIPTION OF INTAKE WATER AND DISCHARGE

Intake / Discharge

(Office use only) IL- 072 - OYE - 2 - 000658

Discharge Serial No. 002

Parameter and (Code)	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	AVERAGE (DAILY) (3)	MINIMUM (OPERATING YEAR) (4)	MAXIMUM (OPERATING YEAR) (5)	SAMPLE FREQUENCY (6)	CONTINUOUS MONITORING (7)
Flow (Gallons per day) 00056	1,728,000	1,728,000	1,538,000	579,466	1,728,000	dyly	Abs
pH 00400	6.8-7.2	6.8-7.2	7.00	6.8	7.2	wkly	Abs
Temperature (Winter) (°F) 74028	40°-57°	40°-57°	48°	40°	57	wkly	Abs
Temperature (Summer) (°F) 74027	76 - 91	76 - 91	82	76	91	wkly	Abs

23. DISCHARGE CONTENTS

PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT	PARAMETER	PRESENT	ABSENT
Color 00080		X	Aluminum 01106	X		Nickel 01067	?	
Turbidity 00070	X		Antimony 01097	?		Selenium 01147		X
Radioactivity 74050		X	Arsenic 01002		X	Silver 01077		X
Hardness 00900	X		Beryllium 01012		X	Potassium 00937	X	
Solids 00500	X		Barium 01007		X	Sodium 00929	X	
Ammonia 00610	X		Boron 01022		X	Titanium 01152		X
Organic Nitrogen 00605	?		Cadmium 01027		X	Tin 01102		X
Nitrate 00620	X		Calcium 00916	X		Zinc 01092	X	
Nitrite 00615		X	Cobalt 01037		X	Algicides 74051		X
Phosphorus 00665	?		Chromium 01034		X	Oil and Grease 00550		X
Sulfate 00945	X		Copper 01042	X		Phenols 32730		X
Sulfide 00745	X		Iron 01045	X		Surfactants 38260		X
Sulfite 00740		X	Lead 01051		X	Chlorinated Hydrocarbons 74052		X
Bromide 71870	?		Magnesium 00927	X		Pesticides 74053		X
Chloride 00940	X		Manganese 01055		X	Fecal Streptococci Bacteria 74054		X
Cyanide 00720		X	Mercury 71900		X	Coliform Bacteria 74056		X
Fluoride 00951		X	Molybdenum 01062		X			

IL- 072 - OYE - 2 - 000092
002

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24a. Have all known hazardous or potentially hazardous substances in your plant been identified?

[X] Yes [ ] No

24b. If yes, have steps been taken to insure that there exists no possibility of any such known hazardous or potentially hazardous substance entering this discharge?

[X] Yes [ ] No

25. Remarks.

Gas chlorine is injected at intake to prevent growth of algae as needed.

The information above completes the basic reporting requirements which are required of all applicants. Those applicants whose discharge results from an activity included within any of the Standard Industrial Classification Code (SIC Code) categories listed below must complete Part A of this form as well.

CRITICAL INDUSTRIAL GROUPS

SIC	098	FISH HATCHERIES, FARMS, AND PRESERVES
SIC	10-14	DIVISION B — MINING
SIC	201	MEAT PRODUCTS
SIC	202	DAIRY PRODUCTS
SIC	203	CANNED PRESERVED FRUITS, VEGETABLES (EXCEPT SEAFOODS, SIC 2031 AND 2036)
SIC	2031, 2036	CANNED AND CURED FISH AND SEAFOODS; FRESH OR FROZEN PACKAGED FISH AND SEAFOODS
SIC	204	GRAIN MILL PRODUCTS
SIC	206	SUGAR
SIC	207	CONFECTIONARY AND RELATED PRODUCTS
SIC	208	BEVERAGES
SIC	209	MISCELLANEOUS FOOD PREPARATIONS AND KINDRED PRODUCTS
SIC	22	TEXTILE MILL PRODUCTS
SIC	23	APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS AND SIMILAR MATERIALS
SIC	242	SAWMILLS AND PLANING MILLS
SIC	2432	VENEER AND PLYWOOD
SIC	2491	WOOD PRESERVING
SIC	26	PAPER AND ALLIED PRODUCTS
SIC	281	INDUSTRIAL INORGANIC AND ORGANIC CHEMICALS (EXCEPT SIC 2818)
SIC	2818	INDUSTRIAL ORGANIC CHEMICALS
SIC	282	PLASTICS MATERIALS AND SYNTHETIC RESINS, SYNTHETIC RUBBER, SYNTHETIC AND OTHER MAN-MADE FIBERS, EXCEPT GLASS
SIC	283	DRUGS
SIC	284	SOAP, DETERGENTS, AND CLEANING PREPARATIONS, PERFUMES, COSMETICS, AND OTHER TOILET PREPARATIONS
SIC	285	PAINTS, VARNISHES, LACQUERS, ENAMELS, AND ALLIED PRODUCTS
SIC	2871	FERTILIZERS
SIC	2879	AGRICULTURAL PESTICIDES, AND OTHER AGRICULTURAL CHEMICALS, NOT ELSEWHERE CLASSIFIED
SIC	2891	ADHESIVES AND GELATIN
SIC	2892	EXPLOSIVES
SIC	29	PETROLEUM REFINING AND RELATED INDUSTRIES
SIC	3011, 3069	TIRES AND INNER TUBES; FABRICATED RUBBER PRODUCTS, NOT ELSEWHERE CLASSIFIED
SIC	3079	MISCELLANEOUS PLASTICS PRODUCTS
SIC	311	LEATHER TANNING AND FINISHING
SIC	32	STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
SIC	331	BLAST FURNACES, STEEL WORKS, AND ROLLING AND FINISHING MILLS
SIC	332	IRON AND STEEL FOUNDRIES
SIC	333, 334	PRIMARY SMELTING AND REFINING OF NONFERROUS METALS; SECONDARY SMELTING AND REFINING OF NONFERROUS METALS
SIC	336	NONFERROUS FOUNDRIES
SIC	347	COATING, ENGRAVING, AND ALLIED SERVICES
SIC	35	MACHINERY, EXCEPT ELECTRICAL
SIC	36	ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES
SIC	37	TRANSPORTATION EQUIPMENT (EXCEPT SHIP BUILDING AND REPAIRING, SIC 3731)
SIC	3731	SHIP BUILDING AND REPAIRING
SIC	491	ELECTRIC COMPANIES AND SYSTEMS
SIC	493	COMBINATION COMPANIES AND SYSTEMS

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PART A

(Note: Submission of Part A is required of all applicants whose processes are listed on page 3 above.)

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Discharge Serial No. 002

INFORMATION REQUIRED OF SPECIFIED INDUSTRIES

PARAMETER AND CODE	Intake: (1) DAILY AVG. CONCENTRATION UNTREATED INTAKE WATER	Intake: (2) DAILY AVG. CONCENTRATION TREATED INTAKE WATER	Discharge: (3) MAXIMUM CONCENTRATION PER PROCESS UNIT	Discharge: (4) MAXIMUM POUNDS PER DAY	Discharge: (5) DAILY AVG. CONCENTRATION	Discharge: (6) AVERAGE POUNDS PER DAY	Discharge: (7) SAMPLE TYPE	Discharge: (8) SAMPLE FREQUENCY	Discharge: (9) METHOD OF ANALYSIS	Discharge: (10) CONTINUOUS MONITORING	(11)
ALKALINITY (as $CaCO_3$) 00410		40mgl	40	1.92	576	40mgl	512.66	MO	dyly	Astm	No
B.O.D. 5-DAY 00310		A	A								
CHEMICAL OXYGEN DEMAND (C.O.D.) 00340		A	A								
TOTAL SOLIDS 00500		80mgl	80	3.84	1152	80mgl	1025	Gravi metric	wkly	Astm	No
TOTAL DISSOLVED SOLIDS 70300		60	60	288	864	60mgl	786	"	"	"	
TOTAL SUSPENDED SOLIDS 00530		20	20	96	288	20mgl	256	"	"	"	No
TOTAL VOLATILE SOLIDS 00505		0	0	0	0	0	0				
AMMONIA (as N) 00610		.3ppm	.3ppm	1.44	4.32	.3mgl	3.85	tij	"	"	
KJELDAHL NITROGEN 00625		A	A								
NITRATE (as N) 00620		A	A								
PHOSPHORUS TOTAL (as P) 00665		A	A								

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PART B DISCHARGE DESCRIPTION

(Note: Submission of Part B is required of all applicants who are also required to submit Part A. Only those parameters specifically indicated in the instructions are to be reported by a particular industry)

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IL-072 - OYE - 2 - 000658

Discharge Serial No.
002

B-1. PHYSICAL AND BIOLOGICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-1)

PARAMETER AND CODE	Intake: (1) UNTREATED INTAKE WATER	Intake: (2) TREATED INTAKE WATER	Discharge: (3) AVERAGE (DAILY)	Discharge: (4) MINIMUM (OPERATING YEAR)	Discharge: (5) MAXIMUM (OPERATING YEAR)	Discharge: (6) SAMPLE FREQUENCY	Discharge: (7) CONTINUOUS MONITORING
COLOR 00080	A	A		X			
SPECIFIC CONDUCTANCE 00095	120	165 u/mho	130	120	165	wkly	ABS
TURBIDITY 00070	A	A		X			
FECAL STREPTOCOCCI BACTERIA 74054	100 360/ ml	0	0	X	0	yrly	ABS
FECAL COLIFORM BACTERIA 74055	28/100ml	0	0	X	0	yrly	ABS
TOTAL COLIFORM BACTERIA 74056	100 382/ ml	0	0	X	0	yrly	ABS

Remarks - Gaseous Chlorine is added to intake water to prevent sliming

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PART B

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IL- 072 - OYE - 2 - 000658

Discharge Serial No.
002

B-2. CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	MAXIMUM CONCENTRATION (3)	MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	MAXIMUM POUNDS PER DAY (5)	DAILY AVG. CONCENTRATION (6)	AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
ACIDITY (as $CaCO_3$) 00435	0	0									
TOTAL ORGANIC CARBON (T.O.C.) 00680	A	A									
TOTAL HARDNESS 00900	W										
NITRITE (as N) 00615	W										
ORGANIC NITROGEN 00605	A	A									
PHOSPHORUS-ORTHO (as P) 70507	A	A									
SULFATE 00945	W										
SULFIDE 00745	A	A									
SULFITE 00740	A	A									
BROMIDE 71970	W										

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PART B

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IL- 072 - OYE - 2 - 000658

Discharge Serial No.

002

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	MAXIMUM CONCENTRATION (3)	MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	MAXIMUM POUNDS PER DAY (5)	DAILY AVG. CONCENTRATION (6)	AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
CHLORIDE 00940	3	3	8	115	115	8	102				
CYANIDE 00720	A	A									
FLUORIDE 00951	W										
ALUMINUM-TOTAL 01105	W										
ANTIMONY-TOTAL 01097	W										
ARSENIC-TOTAL 01002	W										
BARIUM-TOTAL 01007	W										
BERYLLIUM-TOTAL 01012	W										
BORON-TOTAL 01022	W										
CADMIUM-TOTAL 01027	W										

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Discharge Serial No.
002

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	MAXIMUM CONCENTRATION (3)	MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	MAXIMUM POUNDS PER DAY (5)	DAILY AVG. CONCENTRATION (6)	AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
CALCIUM-TOTAL 00916	W										
CHROMIUM-TOTAL 01034	W <50	<50	<50								
COBALT-TOTAL 01037	W										
COPPER-TOTAL 01042	W <50	<50	<50								
IRON-TOTAL 01045	100	100	200	1440	1440	1282	1282				
LEAD-TOTAL 01051	W										
MAGNESIUM-TOTAL 00927	W										
MANGANESE-TOTAL 01055	W										
MERCURY-TOTAL 71900	W										
MOLYBDENUM-TOTAL 01062	W										

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PART B

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Discharge Serial No. 002

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake	Discharge										
PARAMETER AND CODE	(1) UNTREATED INTAKE WATER	(2) TREATED INTAKE WATER	(3) MAXIMUM CONCENTRATION	(4) MAXIMUM POUNDS PER DAY PER PROCESS UNIT	(5) MAXIMUM POUNDS PER DAY	(6) DAILY AVG. CONCENTRATION	(7) AVERAGE POUNDS PER DAY	(8) SAMPLE TYPE	(9) SAMPLE FREQUENCY	(10) METHOD OF ANALYSIS	(11) CONTINUOUS MONITORING
NICKEL-TOTAL 01067	W <50	<50	<50								
POTASSIUM-TOTAL 00937	3.1	3.1	3.8	10	10	9	9				
SELENIUM-TOTAL 01147	A										
SILVER-TOTAL 01077	A										
SODIUM-TOTAL 00929	11	11	5.0	72	72	64	64				
THALLIUM-TOTAL 01059	A										
TIN-TOTAL 01102	A										
TITANIUM-TOTAL 01152	A										
ZINC-TOTAL 01092	<50	<50	<50								
OIL AND GREASE 00550	A										

PART C

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IL-072 - OYE - 2 - 000658

Discharge Serial No.

002

B-2. (cont.) CHEMICAL PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-2)

Intake		Discharge										
PARAMETER AND CODE	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	MAXIMUM CONCENTRATION (3)	MAXIMUM POUNDS PER DAY PER PROCESS UNIT (4)	MAXIMUM POUNDS PER DAY (5)	DAILY AVG. CONCENTRATION (6)	AVERAGE POUNDS PER DAY (7)	SAMPLE TYPE (8)	SAMPLE FREQUENCY (9)	METHOD OF ANALYSIS (10)	CONTINUOUS MONITORING (11)
PHENOLS 32730	W <1	<1	<1								
SURFACTANTS 38260	A	A	A								
ALGICIDES* 74051	A		A								
CHLORINATED HYDRO-CARBONS* (EXCEPT PESTICIDES) 74052	A		A								
PESTICIDES* 74053	A		A								

*Name specific compound(s) and fill in the required data for each. Use extra blanks at the end of the form and the "Remarks" space as necessary.

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PART B

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IL- 072 - 0YE - Z - 000658

Discharge Serial No.
002

B-3. RADIOACTIVE PARAMETERS OF INTAKE WATER AND DISCHARGE (See Table B-3)

	Intake	Discharge						
PARAMETER AND CODE	UNTREATED INTAKE WATER (1)	TREATED INTAKE WATER (2)	AVERAGE (DAILY) (3)	MINIMUM (OPERATING YEAR) (4)	MAXIMUM (OPERATING YEAR) (5)	SAMPLE FREQUENCY (6)	CONTINUOUS MONITORING (7)
ALPHA-TOTAL 01501				X			
ALPHA COUNTING ERROR 01502		0		X			
BETA-TOTAL 03501		0		X			
BETA COUNTING ERROR 03502		0		X			
GAMMA-TOTAL 05501		0		X			
GAMMA COUNTING ERROR 05502		0		X			
TRITIUM-TOTAL 07000				X			
TRITIUM COUNTING ERROR 07001				X			

B-4. REMARKS

Not a nuclear plant.

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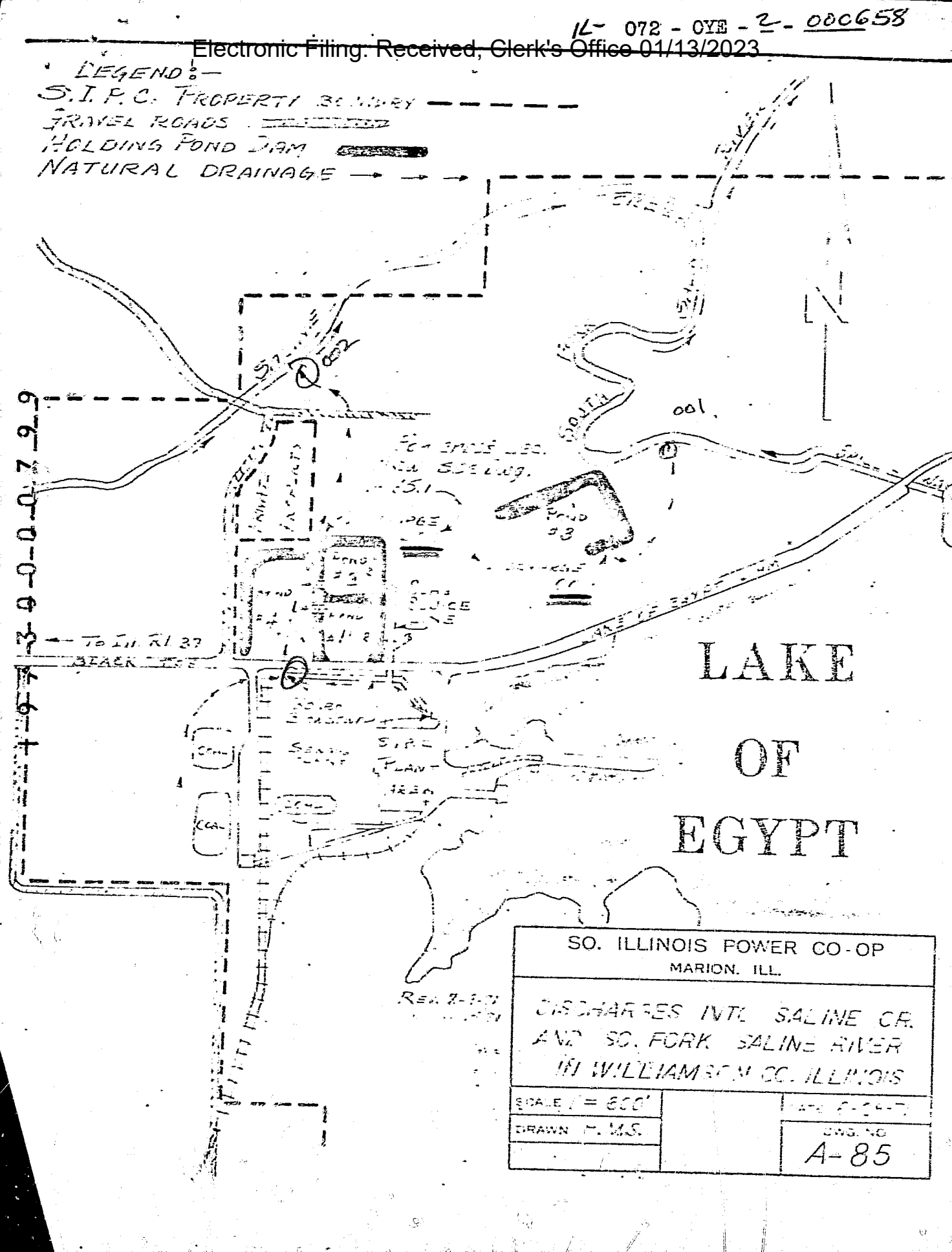

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TECHNICAL INFORMATION MEMO

FACILITY NAME Southern Illinois Power Coop.

IEPA LOG #NPDES 440-74 USEPA APPLICATION # IL 0004316

DISCHARGE # 001, 002 7 DAY 10 YEAR LOW FLOW RECEIVING STREAM 0 MGD

DESIGN AVERAGE FLOW _____ MGD; ACTUAL AVERAGE FLOW 2 MGD

PARAMETER	CURRENT CONCENTRATION	INTERIM REQUIREMENT	FINAL REQUIREMENT	FED EFF GUIDELINES	ILLINOIS W.Q.S.	ILL EFF STDS
Total Sus. Solids	20		15			
Total Diss. Solids	60		750			
IRON	1.4 ?		2.0			
TEMP 003	60-90		60-90			

PRESENT FACILITY Lagoon

PROPOSED UPGRADING TO BE PROVIDED NONE

STATUS OF GRANT APPLICATION AND PROPOSED UPGRADING NONE

COMMENTS (SEE BACK)

1973000800

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

2200 Churchill Road
Springfield, Illinois
62706
Phone: 217-782-6171

June 4, 1974

Dr. Richard H. Briceland, Director

SOUTHERN ILLINOIS POWER COOPERATIVE

Draft NPDES Permit
USEPA Application #IL 0004316
Illinois Log #NPDES 440-74

Mr. A. H. Manzardo
U. S. Environmental Protection Agency
Region V
1 North Wacker Drive
Chicago, Illinois 60606

COPY

Dear Mr. Manzardo:

Attached is the proposed NPDES permit drafted by the Illinois Environmental Protection Agency for the subject discharge.

The Agency has drafted those permit conditions that, if met, will result in compliance with Illinois Environmental Protection Act requirements, Illinois Pollution Control Board effluent and water quality limitations as set forth in Chapter 3, and any adopted federal effluent limitations and guidelines.

The Agency has provided, where necessary, a schedule for achieving compliance that with applicable state and federal requirements which will, if followed, achieve compliance at the earliest reasonable date. No attempt has been made to incorporate federal guidelines still in a proposed stage on the date of this letter.

If the final NPDES permit is to be issued as drafted by this Agency, this letter may be considered, after the 30 day notice period has expired, final certification that the discharge will comply with the presently effective requirements of Sections 301, 302, 306 and 307 of the FWPCA Act of 1972. However, if the NPDES permit to be issued is changed prior to issuance, or if there is a public hearing or significant public comment concerning the proposed permit, the Agency will require that the U.S. Environmental Protection Agency forward such changes or public input so that this information may be used in a re-evaluation of our position on certification.

Very truly yours,

DIVISION OF WATER POLLUTION CONTROL

William H. Busch

William H. Busch
Manager
Permit Section

WHB:JAM:dh
cc: EPA-Region V
Southern Ill. Power Coop.

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Permit No.
Application No. IL 0004316
Illinois Log #NPDES 440-74

DRAFT

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq; the "Act"), the Southern Illinois Power Cooperative is authorized by the United States Environmental Protection Agency, Region V, to discharge from a facility located near Marion, Illinois to receiving waters named the South Fork of the Saline River and the Lake of Egypt in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II and III hereof.

This permit shall become effective on the date of issuing authority's signature.

This permit and the authorization to discharge shall expire at midnight, October 31, 1978. Permittee shall not discharge after the above date of expiration. In order to receive authorization to discharge beyond the above date of expiration, the permittee shall submit such information, forms, and fees as are required by the Agency authorized to issue NPDES permits no later than 180 days prior to the above date of expiration.

Signed this _____.

_____
Director, Enforcement Division

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS FINAL

During the period beginning with the effective date of this permit and lasting until October 31, 1978 the permittee is authorized to discharge from outfall serial number 001. Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS mg/l Daily Avg./Daily Max.	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
FLOW (MGD)		Daily*	
Total Suspended Solids	15	Daily*	24 hr. comp
Total Dissolved Solids	750**	Daily*	24 hr. comp
Iron	2.0	Daily*	24 hr. comp

*During periods of discharge

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DRAFT

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS FINAL

During the period beginning with the effective date of this permit and lasting until October 31, 1978 the permittee is authorized to discharge from outfall serial number 002. Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS mg/l Daily Avg./Daily Max.	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
FLOW (MGD)		Daily*	
Suspended Solids	15	Daily*	24 hr. comp
BOD	4	Weekly*	24 hr. comp
Iron	2.0	Daily*	24 hr. comp

*During periods of discharge

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS FINAL

During the period beginning with the effective date of this permit and lasting until October 31, 1978 the permittee is authorized to discharge from outfall serial number 003*. Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS mg/l Daily Avg./Daily Max.	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
FLOW (MGD)		Daily	
Temperature	***	Daily	Grab

*Outfall serial number 003 denotes the cooling water discharge

The pH shall not be less than 6 nor greater than 9 and shall be monitored at the same frequency as suspended solids.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: in the effluent sewer immediately prior to discharge to the receiving stream.

PART II MANAGEMENT REQUIREMENTS (STANDARD CONDITIONS-See Attached)

PART III OTHER REQUIREMENTS (SPECIAL CONDITIONS-See Below)

**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

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DRAFT

***Discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving stream to violate the following thermal limitations:

A) Maximum temperature rise above natural temperature must not exceed 5°F.

B) Water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3°F. (Main river temperatures are temperatures of those portions of the river essentially similar to and following the same thermal regime as the temperatures of the main flow of the river.)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Other Waters (°F)	60°	60°	60°	90°	90°	90°	90°	90°	90°	90°	90°	60°

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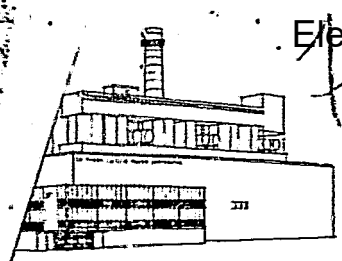

SOUTHERN ILLINOIS POWER CO-OP.

P. O. BOX 143 • MARION, ILLINOIS 62959 • AREA CODE 618 993-8123

#440-74

July 10, 1974

Mr. Al Manzardo
Chief, Permit Branch Region 5
U. S. Environmental Protection Agency
1 North Wacker Drive
Chicago, Illinois 60606

Dear MR. Manzardo:

Upon reviewing Mr. William H. Busch's letter of May 7, 1974, we feel that we can comply with all the parameters as set forth by Mr. Busch; however, having operated this waste water discharge system for approximately three years, we feel that the suspended solids parameter should be raised to 25 milligrams per liter.

Operational records on this system are filed with Mr. E. C. Bennett, Mgr., EPA, Division of Water Pollution Control, Operator Certification Division in Springfield, Illinois. The records indicate we control these discharges nearer to 20 milligrams per liter than 15, and this is the reason for the above request change in the suspended solids parameter.

Very truly yours,

Have discussed this w/ Mr Stafford

Carl M. Stafford
Plant Engineer

CMS/ms

cc: Mr. William H. Busch, Mgr.
Permit Section
Illinois EPA
2200 Churchill Road
Springfield, Illinois 62706

Mr. Armen Asaturians
EPA
2204 West Main Street
Marion, Illinois 62959

1973000805

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BM
440-74

Permit No.: IL 0004316

Application No.:
IL 072 0YE 2 000658

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM
(Section 402, Federal Water Pollution Control Act, As Amended)

JOINT PUBLIC NOTICE

PROPOSED NPDES PERMIT TO DISCHARGE INTO NAVIGABLE WATERS

U. S. Environmental Protection Agency
Region V, Permit Branch
230 South Dearborn Street
Chicago, Illinois 60604
312-353-1475

Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706
217-525-6171

Joint Public Notice No.: 5II-1244

Joint Public Notice Issued on:
May 21, 1975

Name and Address of Applicant:

Southern Illinois Power Cooperative
Post Office Box 143
Marion, Illinois 62959

Name and Address of Facility where Discharge Occurs:

Southern Illinois Power Cooperative
Electrical Generation Plant-Marion Station
Williamson County, Illinois

Receiving Water: Lake of Egypt, Saline Creek, and South Fork of the Saline River
Classification: General Use

The above named applicant has applied for an NPDES Permit to discharge into the designated receiving water and requested State Certification of said discharge. The permit will be issued by the U. S. Environmental Protection Agency for a term of not more than 5 years.

This facility is a 105 MW electric generating plant consisting of three coal and "gob" refuse fired stream units. Approximately 130 MGD of non-contact condenser cooling water is discharge through outfall 003 into the Lake of Egypt. The Lake of Egypt is an impoundment with a surface area of 2,250 acres and a volum 41,500 acre feet. An average of 1.538 MGD is discharge from Ash Pond #4 through outfall 002 to Saline Creek. This discharge consists of ash sluice water, boiler blowdown, sanitary waste treatment plant effluent, and coal pile runoff. Ash Pond #3 is used as an emergency back-up to Ash Pond #4 with a possible discharge of 1,538 MGD to the South Fork of the Saline River. This discharge consists of ash sluice water and run off from ash storage piles.

All discharges are to be monitored for flow. Discharges 001 and 002 are to be monitored and limited for suspended solids, total dissolved solids, oil and grease, total iron, and pH. The discharge from the sanitary waste treatment plant is to be monitored and limited for BOD_5, suspended solids, and fecal coliform. The condenser cooling water 001 is to be monitored and limited for temperature and chlorine.

RECEIVED
MAY 21 1975
ENVIRONMENTAL PROTECTION AGENCY
DIV. OF WATER POLLUTION CONTROL
RECORDS UNIT — SPRINGFIELD
STATE OF ILLINOIS

Form PN/IL-1 (7/30/74)

N 3415-1

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L9730008007

Date: MAY 21 1975

Permit No.: IL 0004316

TENTATIVE DETERMINATION

On the basis of preliminary staff review and application of applicable standards and regulations, the Regional Administrator of the U. S. Environmental Protection Agency proposes to issue a permit for the discharger subject to certain effluent limitations and special conditions. The State, after review of all the comments and objections, also proposes to issue a certification pursuant to Section 401 of the Federal Water Pollution Control Act, as amended, provided that the applicant's waste treatment facilities have the demonstrated capability of producing an effluent discharge that will be in compliance with the Illinois Environmental Protection Act and applicable regulations of the Illinois Pollution Control Board. State Certification will not be necessary if the NPDES Permit issuing authority is granted to the State prior to issuance.

PROCEDURES FOR THE FORMULATION OF FINAL DETERMINATION

A. Comment Period

The proposed determinations to issue an NPDES Permit and the Illinois Environmental Protection Agency to issue certification are tentative. Interested persons are invited to submit written comments on the proposed permit. Comments should be submitted in person or by mail no later than 30 days from the date of this Joint Public Notice. Deliver or mail all comments to:

Mrs. Carolyn Cates
Region V, Permit Branch
U. S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

All comments received no later than 30 days from the date of this Joint Public Notice will be considered in the formulation of final determinations. Copies of all comments received will be transmitted to the State for consideration in connection with the State's certification of the proposed permit.

B. Public Hearing

The Regional Administrator shall hold a public hearing if there is a significant degree of public interest in the proposed permit. Public notice of such a hearing will be circulated in at least one newspaper in the geographical area of the discharge and to those persons on the EPA mailing list at least 30 days prior to the hearing. Any person may request a public hearing within 30 days of the date of this public notice by submitting a request to the Regional Hearing Clerk at the address given below.

C. Adjudicatory Hearing

Any person who wishes an adjudicatory hearing must submit, within 10 days of receipt of the issued permit, a request for an adjudicatory hearing to consider the issued permit and its conditions. If the request is granted, any

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Date: MAY 21 1975

Permit No.: IL 0004316

person may submit a request to be a party to such a hearing within 30 days after issuance of the public notice of the hearing. All requests for either an adjudicatory hearing or to be a party shall be submitted to:

Mrs. Janet Mason
Regional Hearing Clerk
Region V
U. S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

Requests for an adjudicatory hearing and requests to be a party to such a hearing shall be filed in accordance with the procedures specified in 40 CFR 125.36 (b). In accordance with the regulations, any request for an adjudicatory hearing must contain proposed conditions which the requester believes to be required in the permit to carry out the provisions of the Act.

Final issuance of the permit following an adjudicatory hearing will be in accordance with 40 CFR 125.36.

GENERAL INFORMATION

The application and joint public notice numbers should appear next to the U.S. EPA address on the envelope and on each page of any submitted comments.

The application, proposed permit including proposed effluent limitations, special conditions, comments received, and other documents are available for inspection and may be copied at a cost of 20 cents per page at the U. S. Environmental Protection Agency at anytime between 9:30 a.m. and 3:30 p.m., Monday through Friday. Copies of the Joint Public Notice and Fact Sheet are available at no charge at the address shown above for the Illinois Environmental Protection Agency and the U. S. Environmental Protection Agency.

Unless a public hearing is scheduled, the U. S. Environmental Protection Agency will issue final determinations in a timely manner after the expiration of the public comment period. Please bring the foregoing to the attention of persons whom you know would be interested in this matter.

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Permit No.: IL 0004316

Application No.:
IL 072 OYE 2 000658

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM
(Section 402, Federal Water Pollution Control Act, as amended)

FACT SHEET

PROPOSED NPDES PERMIT TO DISCHARGE INTO NAVIGABLE WATERS

U. S. Environmental Protection Agency
Region V, Permit Branch
230 South Dearborn, 13th Floor
Chicago, Illinois 60604
312/353-1475

Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706
217-525-6171

Joint Public Notice No.: 5II-1244

Joint Public Notice Issued on:
May 21, 1975

Name and Address of Applicant:

Southern Illinois Power Cooperative
Post Office Box 143
Marion, Illinois 62959

Name and Address of Facility where Discharge Occurs:

Southern Illinois Power Cooperative
Electrical Generation Plant-Marion Station
Williamson County , Illinois

Receiving Water: Lake of Egypt, Saline Creek, and the South Fork of the Saline River
Classification Code: General Use

I. LOCATION OF DISCHARGE

The above named applicant has applied for an NPDES permit, which will be issued by the U. S. Environmental Protection Agency or other NPDES issuing authority, to discharge into the designated receiving water. A description and/or sketch of the location of the discharge is appended as Attachment I.

II. DESCRIPTION OF EXISTING DISCHARGE

A quantitative description of the existing discharge in terms of significant effluent parameters is appended as Attachment II.

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III. Tentative Determinations

A. The U. S. Environmental Protection Agency has examined the application and has made the tentative determination to issue the permit subject to certain effluent limitations and other mandatory conditions and subject to State certification.

B. The effluent limitations in the proposed permit are appended as Attachment IIIa.

C. The schedule of compliance for meeting the proposed effluent limitations is appended as Attachment IIIb.

D. The other special conditions in the proposed permit may include, but are not necessarily limited to: monitoring, recording, and reporting discharges; limiting discharges of oil, hazardous substances, collected solids, visible floating solids, foams, and effluent batch discharges; planning for electric power failure and spill prevention and containment; and prohibiting bypass of treatment facilities. Persons wishing further information about the special conditions may contact the U. S. Environmental Protection Agency.

IV. Procedures for the Formulation of Final Determinations

A. Interested persons are invited to submit written comments upon the proposed discharge. Comments should be submitted in person or by mail no later than 30 days after the joint public notice of this application is issued. Deliver or mail all comments to:

Mrs. Carolyn Cates

U. S. Environmental Protection Agency
Region V, Permit Branch
230 South Dearborn, 13th Floor
Chicago, Illinois 60604

The application and joint public notice numbers should appear next to the above address on the envelope and on each page of any submitted comments. All comments received no later than 30 days after the joint public notice is issued will be considered in the formulation of final determinations. The U. S. Environmental Protection Agency or other NPDES authority will issue final determinations in a timely manner after the expiration of the public comment period.

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B. If written comments indicate a significant public interest in the application, the Regional Administrator shall hold a public hearing on the application. If held, the public hearing will be designed to collect relevant information pertaining to the application in an orderly and expeditious manner. Public notice of a public hearing will be circulated at least 30 days in advance of such event. The public hearing will be held within the State where the discharge occurs. After the public hearing, the Regional Administrator will formulate his final determination. Further information regarding the conduct and nature of the public hearings concerning discharge permits may be obtained by contacting the U. S. Environmental Protection Agency.

Any person who wishes an adjudicatory hearing must submit, within 10 days of receipt of the issued permit, a request for an adjudicatory hearing to consider the issued permit and its conditions. If the request is granted, any person may submit a request to be a party to such a hearing within 30 days after issuance of the public notice of the hearing. All requests for adjudicatory hearings that meet the requirements of 40 CFR 125.36 (c)(1)(i) and (ii), published at 39 Federal Register 27081 (July 24, 1974) shall be granted. Adjudicatory hearings will be held pursuant to 40 CFR 125.36. Adjudicatory hearings will consider specific contested issues of fact relating to the permit and will be conducted in conformance with procedures established in the Administrative Procedure Act (5 U.S.C. § 551 et seq.). Questions of law will be referred for decision to the Assistnat Administrator for Enforcement and General Counsel, pursuant to 40 CFR § 125.36 (m), published at 39 FR 27083.

Requests for a public hearing should: state the name and address of the person requesting the hearing and of any person represented at the hearing by the requester; identify the interest in the proposed permit of the requester and of any person represented by him; state the reasons for the request; state the issues proposed to be considered at the hearing; and state the position of the requester on the issues to be considered at the hearing. Requests for an adjudicatory hearing shall meet all the above specified procedures for requesting a public hearing and also shall include an agreement by the requester to subject himself, or if a corporation to subject its employees, to examination and cross-examination upon the request of the presiding officer.

Requests for adjudicatory hearings shall also include proposed terms and conditions which, in the judgment of the requester, would be required to carry out the intendment of the Act.

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C. Persons wishing further information may contact the U. S. Environmental Protection Agency. Copies of the application, proposed permit including proposed effluent limitations, special conditions, comments received, and other documents are available for inspection and may be copied at a cost of 20 cents per page.

V. USE CLASSIFICATION, WATER QUALITY STANDARDS, AND EFFLUENT LIMITATIONS

The receiving water is classified for General Use

The following water quality standards and effluent standards and limitations were applied to the discharge:

The Illinois Water Pollution Regulations and
The Stream ELectric Power Generating Plant Effluent Guidelines

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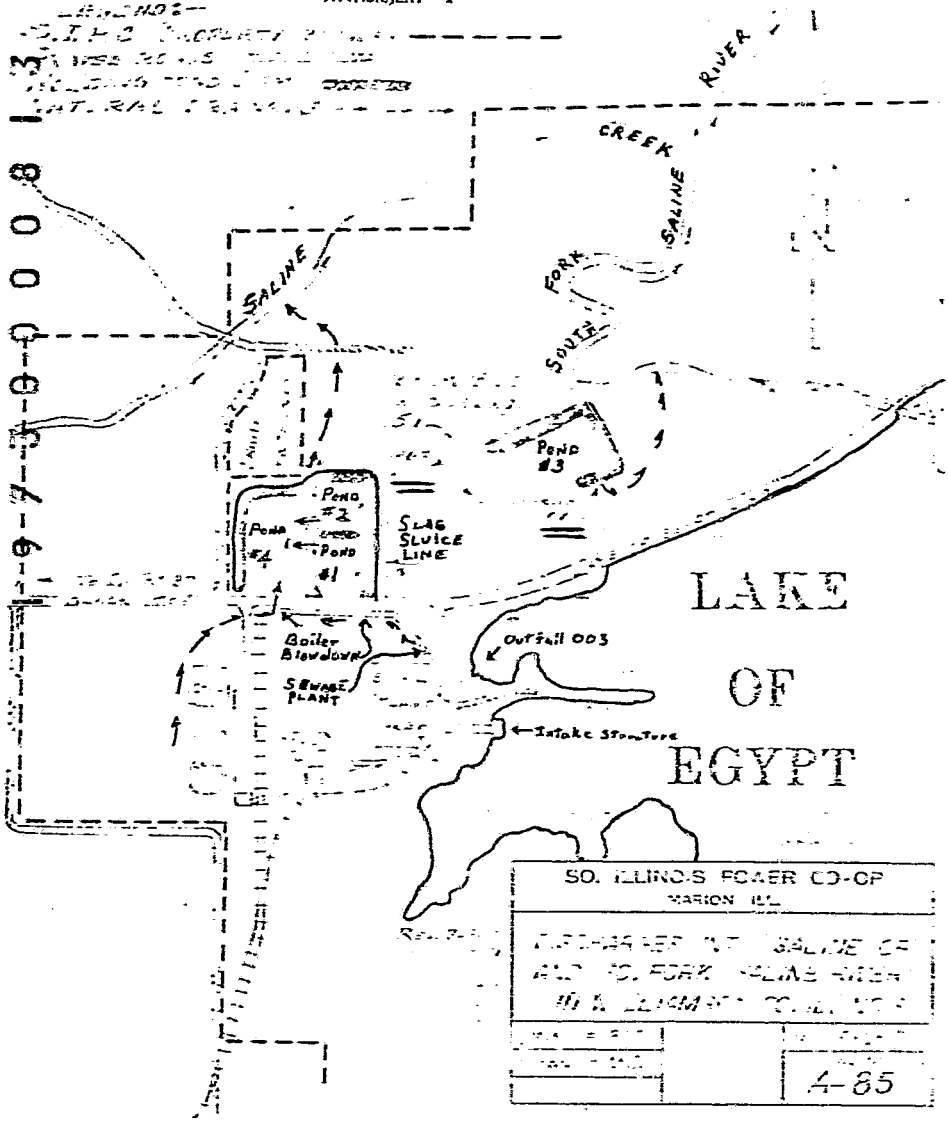
Permit No, IL 0004516

ATTACHMENT I



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ATTACHMENT II

Description of Existing Discharge

Discharges 001 & 002 – Ash Pond Discharges

Parameter	Value
Flow, Average	1.538 MGD
Total Suspended Solids	9 mg/l
Total Dissolved Solids	135 mg/l
Oil and Grease	Not available
Iron	.2 mg/l
BOD_5	< 5 mg/l
Fecal Coliform	28/100 ml

Discharge 003 – Condenses Cooling Water

Parameter	Value
Flow, Average	130 MGD
Temperature ΔT	$15^{o}F$

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ATTACHMENT IIIa

Proposed Effluent Limitations

Discharges 001 and 002 – Ash Pond Discharges

Parameter	Maximum Limits
Oil and Grease	15 mg/l
Total Suspended Solids	15 mg/l
Total Dissolved Solids	750 above background
Iron (total)	2.0 mg/l
pH	6.0 – 9.0 S.U.

Discharge 002 –Sanitary Waste Treatment Plant Effluent

Parameter	Maximum Limits
BOD_5	30 mg/l
Total Suspended Solids	30 mg/l
Fecal Coliform	400/100 ml

Discharge 003 – Non-Contact Condenser Cooling Water

Parameter	Maximum Limits
Temperature	*
Chlorine	0.2 mg/l

There shall be no discharge of debris from intake screen washing operations.

Liquid discharges from miscellaneous waste collection sumps, yard drains and excess run-off from coal storage areas shall be diverted to ash settling basins or comparable settling facilities for treatment prior to discharge.

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ATTACHMENT IIIa (cont.)

*Discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving water to violate the following thermal limitations:

a. Maximum temperature rise above natural temperature must not exceed 5 °F at the edge of the mixing zone.

b. Water temperature at representative locations outside the mixing zone in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by 3 °F:

JAN	FEB	MAR	APR	JUN	JUL	AUG	SEP	OCT	NOV	DEC
60	60	60	90	90	90	90	90	90	90	60
15.6	15.6	15.6	32.2	32.2	32.2	32.2	32.2	32.2	32.2	15.6

c. The mixing zone shall not extend over more than 26 acres.

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ATTACHMENT IIIb

Schedule of Compliance

Ash Pond Discharges and Sanitary Waste Treatment Plant

Progress Report Submitted by	September 30, 1975
Attain Operational Level by	June 30, 1976

Chlorine Reduction

Progress Report Submitted by	December 31, 1975
Attain Operational Level by	June 30, 1976

Thermal Discharge

Preliminary Plans Submitted by	December 31, 1975
Final Plans Submitted by	March 31, 1976
Commence Construction by	June 30, 1976
Progress Report Submitted by	December 31, 1976
Complete Construction by	May 31, 1977
Attain Operational Level by	June 30, 1977

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PROPOSED
SUBJECT TO REVISION

Permit No. IL 0004316

Application No. IL 072 OYE 2 000658

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq; the "Act"),

SOUTHERN ILLINOIS POWER COOPERATIVE

is authorized by the United States Environmental Protection Agency, Region V,

to discharge from a facility located at Electrical Generation Plant-Marion Station, Williamson County, Illinois

to receiving waters named Saline Creek, the South Fork of the Saline River, and the Lake of Egypt.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit and the authorization to discharge shall expire at midnight, June 30, 1980 . Permittee shall not discharge after the above date of expiration. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information, forms, and fees as are required by the Agency authorized to issue NPDES permits no later than 180 days prior to the above date of expiration.

This permit shall become effective 30 days from this date of signature.

Signed this

Director, Enforcement Division

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date of this permit and lasting until June 30, 1976 the permittee is authorized to discharge from outfall(s) serial number(s) 001 Discharge from Ash Pond #3

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure	when sampling
Oil and Grease	-	-	-	15 mg/l	Daily*	Grab
Total Suspended Solids	-	-	-	25 mg/l	Daily*	Grab
Total Dissolved Solids	-	-	-	750 mg/l**	Daily*	Grab
Iron (total)	-	-	-	2.0 mg/l	Daily*	Grab

*During periods of discharge
**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspended solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): In the effluent sewer immediately prior to discharge to the South Fork of the Saline River.

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Permit No. IL 0004316

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning July 1, 1976 and lasting until June 30, 1980 the permittee is authorized to discharge from outfall(s) serial number(s) 001 Discharge from Ash Pond #3.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	
Oil and Grease	-	-	-	15 mg/1	Daily *	Grab
Total Suspended Solids	-	-	-	15 mg/1	Daily *	Composite
Total Dissolved Solids	-	-	-	750 mg/1**	Daily *	Composite
Iron	-	-	-	2.0 mg/1	Daily *	Composite

*During periods of discharge.

**Total dissolved solids shall not be increased more than 750 mg/1 above background concentration levels and in no case shall the concentration of 1000 mg/1 be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspendedsolids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): In the effluent sewer immediately prior to discharge to the South Fork of the Saline River.

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Permit No. IL 0004316

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning the effective date of this permit and lasting until June 30, 1976 the permittee is authorized to discharge from outfall(s) serial number(s) 002 Discharge from Ash Pond #4

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure	when sampling
Oil and Grease	-	-	-	15 mg/l	Daily*	Grab
Total Suspended Solids	-	-	-	25 mg/l	Daily*	Grab
Total Dissolved Solids	-	-	-	750 mg/l**	Daily*	Grab
Iron (total)	-	-	-	2.0 mg/l	Daily*	Grab

*During periods of discharge

**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspended solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): In the effluent sewer immediately prior to discharge to Saline Creed.

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Permit No. IL 0004316

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning July 1, 1976 and lasting until June 30, 1980 the permittee is authorized to discharge from outfall(s) serial number(s) 002. Discharge from Ash Pond #4

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	Daily Max	Other Units (Specify) Daily Avg	Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure	when sampling
Oil and Grease	-	-	-	15 mg/l	Daily*	Grab
Total Suspended Solids	-	-	-	15 mg/l	Daily*	Grab
Total Dissolved Solids	-	-	-	750 mg/l**	Daily*	Grab
Iron (total)	-	-	-	2.0 mg/l	Daily*	Grab

*During periods of discharge

**Total dissolved solids shall not be increased more than 750 mg/l above background concentration levels and in no case shall the concentration of 1000 mg/l be exceeded in the receiving stream.

The pH shall not be less than 6.0 nor greater than 9.0 and shall be monitored at the same frequency as the suspended solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): In the effluent sewer immediately prior to discharge to Saline Creek.

P3H/S-5

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Permit No. IL 0004316

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning the effective date of this permit and lasting until June 30, 1976 the permittee is authorized to discharge from outfall(s) serial number(s) 002 Sanitary Waste Treatment Plant Effluent

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	
BOD_5				30 mg/l	Monthly	Grab
Total Suspended Solids				30 mg/l	Monthly	Grab
Fecal Coliform Organisms/100 ml	-	-	-	-	Monthly	Grab

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer prior to mixing with any other discharge.

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

6. During the period beginning July 1, 1976 and lasting until June 30, 1980 the permittee is authorized to discharge from outfall(s) serial number(s) 002 Sanitary Waste Treatment Plant Effluent

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Measure when sampling	
BOD_5	-	-	-	30 mg/l	Monthly	Grab
Total Suspended Solids	-	-	-	30 mg/l	Monthly	Grab
Fecal Coliform *			200 per 100ml	400 per 100ml	Weekly	Grab

* A residual chlorine value not to exceed 0.75 mg/l may be substitued for the effluent limitation on fecal coliform bacteria.
In using the fecal coliform count, the geometric mean of the fecal coliform bacteria value for effluent samples collected is a period of 30 consecutive days shall not exceed 200 per 100 milliliters. The geometric mean of these values for effluent samples collected in a period of seven consecutive days shall not exceed 400 per 100 milliliters.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): in the effluent sewer prior to mixing with any other discharge.

P3/5-7

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning the effective date of this permit and lasting until June 30, 1977 the permittee is authorized to discharge from outfall(s) serial number(s) 003 Non-Contact Condenser Cooling Water

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Continuous	
Temperature °C (°F)*	-	-	-	-	Continuous	
Waste Heat Rejection Rate-KJ/hr (BTU/hr)			-	-	Monthly Maximum	
Plant Capacity Factor (%Capacity)		-	-	-	Monthly Average	
Total Chlorine Residual		-	-	-	Weekly	Grab
Duration of Chlorination		-	-	-	Monthly Report	
Frequency of Chlorination		-	-	-	Monthly Report	

*Intake and Discharge

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): In the effluent sewer immediately prior to discharge to the Lake of Egypt.

P3 4/5-8

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

8. During the period beginning July 1, 1977 and lasting until June 30, 1980 the permittee is authorized to discharge from outfall(s) serial number(s) 003 Non-Contact Condenser Cooling Water

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS kg/day (lbs/day) Daily Avg	kg/day (lbs/day) Daily Max	Other Units (Specify) Daily Avg	Other Units (Specify) Daily Max	MONITORING REQUIREMENTS Measurement Frequency	Sample Type
Flow-M^3/Day (MGD)	-	-	-	-	Continuous	
Temperature °C (°F)*					Continuous	
Waste Heat Rejection Rate KJ/hr (BTU/hr)		-	-	-	Monthly Maximum	
Plant Capacity Factor (%Capacity		-	-	-	Monthly Average	
Total Chlorine Residual		-	-	0.2 mg/l**	Weekly	Grab
Duration of Chlorination		-	-	-	Monthly Report	
Frequency of Chlorination		-	-	-	Monthly Report	

*Intake & Discharge, see A.9.

**The release of total chlorine residual shall be limited to two hour per day for this facility.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): In the effluent sewer immediately prior to discharge to the Lake of Egypt.

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

9. Thermal Discharge Limitations and Monitoring

After July 1, 1977, discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving water to violate the following thermal limitations:

a. Maximum temperature rise above natural temperature must not exceed 5°F at the edge of the mixing zone.

b. Water temperature at representative locations outside the mixing zone in the lake shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by 3°F:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
60	60	60	90	90	90	90	90	90	90	90	60
15.6	15.6	15.6	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	15.6

c. The mixing zone shall not extend over more than 26 acres.

In addition, the permittee shall perform the following thermal monitoring:

(1) The permittee shall determine the 2.8°C (5°F) contour, the contour of the applicable monthly maximum and the areas within these contours at 3 month intervals for a period of one year after the effective date of this permit. The results of these determinations shall be reported to the Regional Administrator and the Illinois Environmental Protection Agency on a quarterly basis.

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10. After June 30, 1976 there shall be no discharge of debris from intake screen washing operations.

11. After June 30, 1976 liquid discharges from miscellaneous waste collection sumps, yard drains and excess run-off from coal storage areas shall be diverted to ash settling basins or comparable settling facilities for treatment prior to discharge.

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B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results obtained during the previous three months shall be summarized and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on October 28, 1975 . Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

U. S. Environmental Protection Agency
Region V, Enforcement Division
ATTN: Chief, Compliance Section
230 South Dearborn
Chicago, Illinois 60604

Environmental Protection Agency
State of Illinois
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

534.5-12

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3. Definitions

a. "Daily Average" Discharge

1. Weight Basis - The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit the daily average discharge shall be determined by the summation of the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

2. Concentration Basis - The "daily average" concentration means the arithmetic average (weighted by flow value) of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during the calendar day.

b. "Daily Maximum" Discharge

1. Weight Basis - the "daily maximum" discharge means the total discharge by weight during any calendar day.

2. Concentration Basis - the "daily maximum" concentration means the daily determination of concentration for any calendar day.

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4. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report From (EPA No. 3320-1). Such increased frequency shall also be indicated.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

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C. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Ash Pond Discharges and Sanitary Waste Treatment Plant:

Progress Report	September 30, 1975
Attainment of Operational Level	June 30, 1976

Chlorine Reduction

Progress Report	December 31, 1975
Attainment of Operational Level	June 30, 1976

Thermal

Preliminary Plans	December 31, 1975
Final Plans	March 31, 1976
Commencement of Construction	June 30, 1976
Progress Report	December 31, 1976
Completion of Construction	May 31. 1977
Operational Level Attained	June 30, 1977

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or non-compliance. In the latter case, the notice shall include the cause of non-compliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

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PART II

A. MANAGEMENT REQUIREMENTS

1. Change in Discharge

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

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4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. Bypassing

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if no date for implementation appears in Part I,

b. Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of one or more of the primary sources of power to the wastewater control facilities.

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B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any changes in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

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a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. Toxic Pollutants

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

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9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

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PART III

OTHER REQUIREMENTS

1. Intake Structures

Within 30 days of the receipt of the permit and the determination of the Regional Administrator, the permittee shall submit to the Regional Administrator and the Illinois Environmental Protection Agency for approval the design for an intake monitoring program to document the effects of the present intake on the various species and life stages of fish. Such a monitoring program shall include, but not be limited to, a tabulation of all fish trapped by the present intake structure. This tabulation shall be performed every fourth day unless the permittee justifies some alternative schedule to the Regional Administrator and the Illinois Environmental Protection Agency within thirty (30) days after the receipt of the permit and determination of the Regional Administrator. The tabulation shall begin within sixty (60) days after the receipt of the permit and determination of the Regional Administrator and end within twelve (12) months of the commencement of tabulation and shall include the number, weight, length, and species of each fish entrapped. Such monitoring data shall be submitted quarterly with other reports.

The permittee shall submit a final report to the Regional Administrator and to the Illinois Environmental Protection Agency by no later than October 28, 1976 providing proposals for measures to be taken by the permittee to meet the requirements of Section 316(b) of the Act for the best cooling water intake technology available. Development of the report shall be guided by the "Development Document for Best Technology Available for Minimizing Adverse Environmental Impact for Cooling Water Intake Structures", as proposed by the U.S. EPA.

This report shall be evaluated with regard to Section 316(b) of the Act. As a result of this evaluation, the Regional Administrator may modify the permit in accordance with Part II B4 to establish an implementation schedule to insure compliance with Section 316(b).

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2. Additional Reporting of Monitoring to Illinois Environmental Protection Agency

Monitoring results obtained during the previous three months shall be summarized and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first quarterly report is due October 28, 1975. The signed reports required herein, shall be submitted to the State at the following address:

Environmental Protection Agency
State of Illinois
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

3. This Permit incorporates all applicable provisions of the Illinois Environmental Protection Act and of the Rules and Regulations of the Illinois Pollution Control Board, as if they were set forth herein. All such provisions shall become conditions of this Federal NPDES permit granted to you as provided by Section 401(a) of the Federal Water Pollution Control Act Amendments of 1972.

This permit is specifically for the listed pollutants to be discharged from the designated outfalls only. Discharge of pollutants added in other than trace amounts or discharged from an undesignated outfall is not permitted.

4. Transformer Fluids

There shall be no discharge of polychlorinated biphenyl transformer fluids.

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MAP

SEE

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FILM

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EXHIBIT

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F/S/P INSPECTION REPORTS
MICROFILM JACKET INFORMATION

1. DIVISION CODE N

2. FIPS COUNTY CODE 199

3. CITY/TOWNSHIP CODE 860

4. GOVERNING BODY CODE 1676A

5. NAME (FILE SUBJECT)

SOUTHERN IL POWER COOP-MARION - 1974

6. FILE DIVISION 01

7. F/S/P CODE B-1525-4

CROSS-REFERENCE INFORMATION

8. GOVERNING BODY NAME

SOUTHERN ILLINOIS POWER COOP

9. NPDES NUMBER IL0004316

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

2200 Churchill Road
62706
Springfield, Illinois
Phone: #618-997-4371

March 25, 1974

Reply To:
2209 West Main Street
Marion, Illinois 62959

WILLIAMSON COUNTY -- SOUTHERN ILLINOIS POWER COOPERATIVE
Survey Report

Southern Illinois Power Cooperative
P.O. Box 143
Marion, Illinois 62959

Gentlemen:

In accordance with the provisions of the Illinois Environmental Protection Act, a surveyoof tne Southern Illinois Power Cooperative waste treatment facilities was conducted on February 21, 1974, by Engineer John Gordon, representing this Agency. Tnis letter will confirm and augment verbal comments made to Mr. Carl Stafford at the time of this survey.

We are pleased to note from our representative's report that the waste treatment facilities were in normal operation at the time of this survey.

We wish to remind you of your responsibility to file permit applications with the U.S. Environmental Protection Agency under Section 402 of the Federal Water Pollution Control Act Amendments of 1972. Questions and requests for applications for the National Pollutant Discharge Elimination System (NPDES) Permit Program should be directed to:

United States Environmental Protection Agency
Region V
1 North Wacker Drive
Chicago, Illinois 60606

If you have any questions regarding the contents of this letter or the Water Pollution Regulations, feel free to contact this office at 2209 West Main Street, Marion, Illinois.

Very truly yours,

ENVIRONMENTAL PROTECTION AGENCY

Murl G. Teske
Environmental Protection Engineer
Field Operations Section - D W P C

JAG/ah
3-20-74

cc: DWPC-Records Unit ✓
Region V

ENGINEERING SURVEY NOTES ON THE SOUTHERN ILLINOIS POWER COOP.

SEWAGE TREATMENT AND INDUSTRIAL WASTE TREATMENT FACILITIES

DATE OF SURVEY: February 21, 1974

INTERVIEWED: Mr. Carl Stafford, Operator & Plant Superintendent

POPULATION: 13 P.E.

CODING: Unknown

* * * * * * *

G E N E R A L

Domestic sewage is treated by means of a septic tank and recirculating sand filter, followed by effluent chlorination. Industrial waste is treated by a series of lagoons. All facilities and equipment was in good operating condition and in normal operation at the time of this survey.

* * * * * * *

F I N D I N G S

Sewage Treatment Facility:

Sewage treatment is provided by two 2,750 gallon septic tanks for primary settling and primary treatment. From this point, flow passes into a dosing chamber equipped with a 32 gpm pump for dosing the sand filter. Only one pump is provided, but Mr. Stafford indicated that a standby pump is kept on hand at all times in case this one would break down.

Recirculating Sand Filter:

A 12' X 26' recirculating sand filter is provided for secondary and tertiary treatment. The filter is equipped with wooden dosing troughs, and the entire system is fenced to keep out unauthorized personnel. The effluent from the sand filter is recirculated partially back through the filter and partially to the chlorine contact tank. A diaphragm-type pump chlorinator is used for effluent disinfection. Mr. Stafford indicated that HTH powder is used, which is mixed into solution and then fed into the contact tank. Flow from the entire system is measured by counting the cycles that the pump runs. Mr. Stafford indicated that the plant averages approximately 640 gpd. All the equipment at the sewage treatment plant was in normal operation and good working order at the time of this survey. Mr. Stafford indicated that the sand filter has recently been cleaned.

Operator Certification & Testing:

Mr. Carl Stafford is the plant's operator and is in charge of all wastewater and water treatment at the Southern Illinois Power Coop. Mr. Stafford is the power plant superintendent and an engineer and is quite capable of handling this facility.

All the required tests are run at the laboratory at the power plant, and monthly operation reports are submitted regularly.

Industrial Waste Treatment Facilities:

The power plant wastewater and sewage treatment plant effluent is treated by a series of four settling ponds or lagoons located due north of the power plant area. See attached map dated 2/19/70. These ponds as numbered on the map, will be referred to as Pond #1, #2, #3, or #4.

Ponds #1 & #2:

Slurry mixture of bottom ash and fly ash is discharged to this pond where it is settled out and then removed with an end loader. This pond is square in shape and is of unknown size. This pond is used alternately with Pond #2, which is of the same size. Whenever one pond becomes full of settled slag material, discharge from the power plant is diverted to the other pond. Whenever these ponds are cleaned (#1 or #2), they are dewatered to Pond #4. At present, the State Highway Department uses this slag for roads during icy or slick conditions to help prevent accidents. As mentioned previously, Pond #1 and Pond #2 are of identical size and are used alternately to handle the wastes generated from they cyclone burners located at the power plant.

Pond #3:

This pond is also a slag-fly ash settling pond and has approximately 53,000 yards^3 of capacity. The slag stockpile material located north of the plant will wash into this pond during rainfall. The fly ash or slag material stockpile is of varying depth; however, it has become larger through the years. Surface water runoff through and across this material results in the production of an acid-type waste, which discharges to this #3 pond. This pond has an occasional discharge; however, Mr. Stafford indicated that a close watch is kept on this pond, and when it becomes full to a point where there will be a discharge, then tests are ran on the contents, and a hydrated lime mixture is added to raise the pH and settle out iron material within the water. After the lime slurry is added and the quality of the pond is acceptable, the pond is then drained.

Pond #4:

Pond #4 receives final effluent from the sewage treatment plant and drainage from the coal storage yard. Pond #4 also receives discharge from Pond #1 or Pond #2 depending on which one is being used at the time. This pond also has an occasional discharge; however, Mr. Stafford indicated that tests are run whenever the pond reaches an overflow; and if treatment is needed, the water is treated before discharge. All the lagoon dikes around all four lagoon cells were in good shape and were all well maintained.

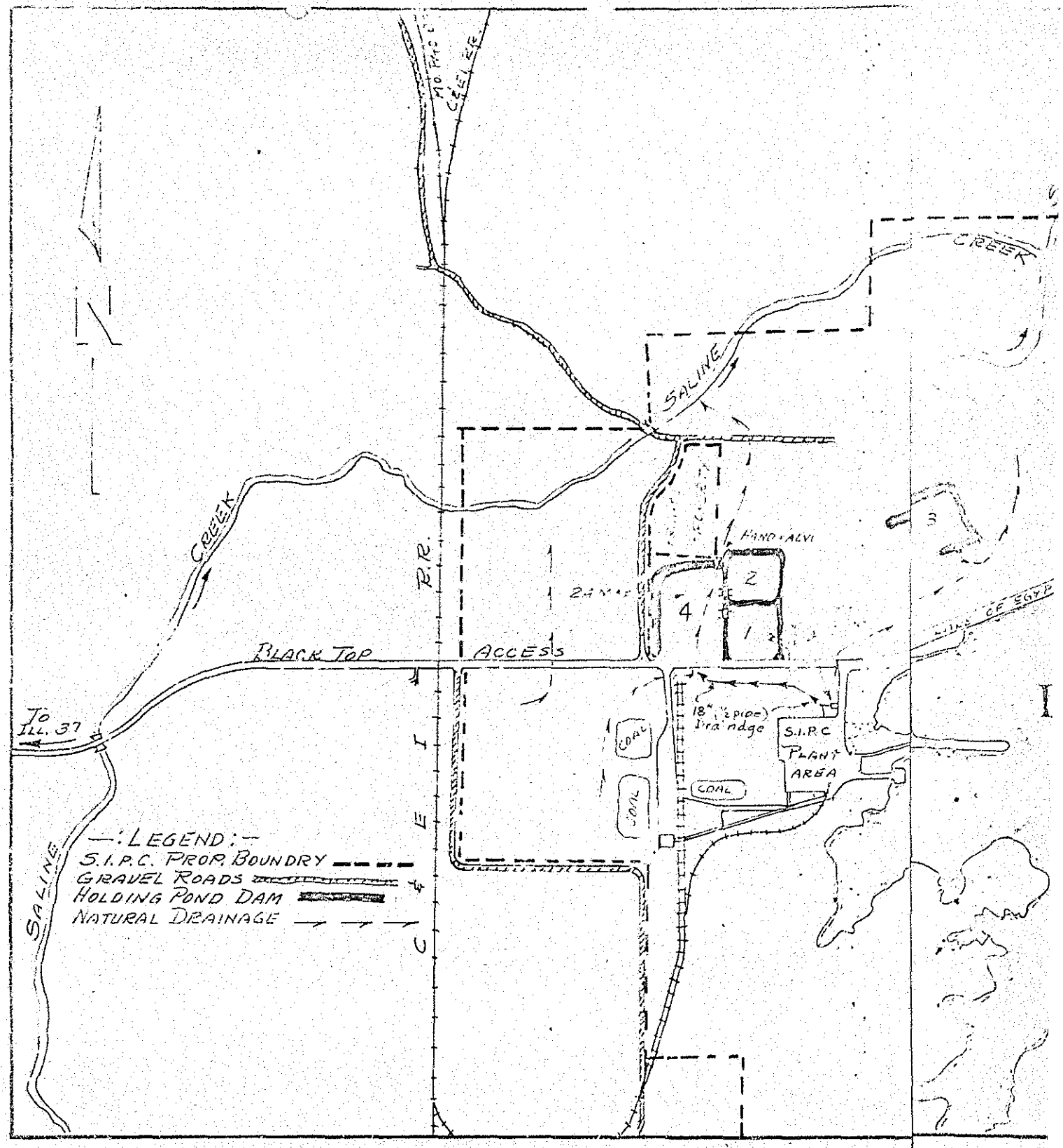
CONCLUSIONS & RECOMMENDATIONS

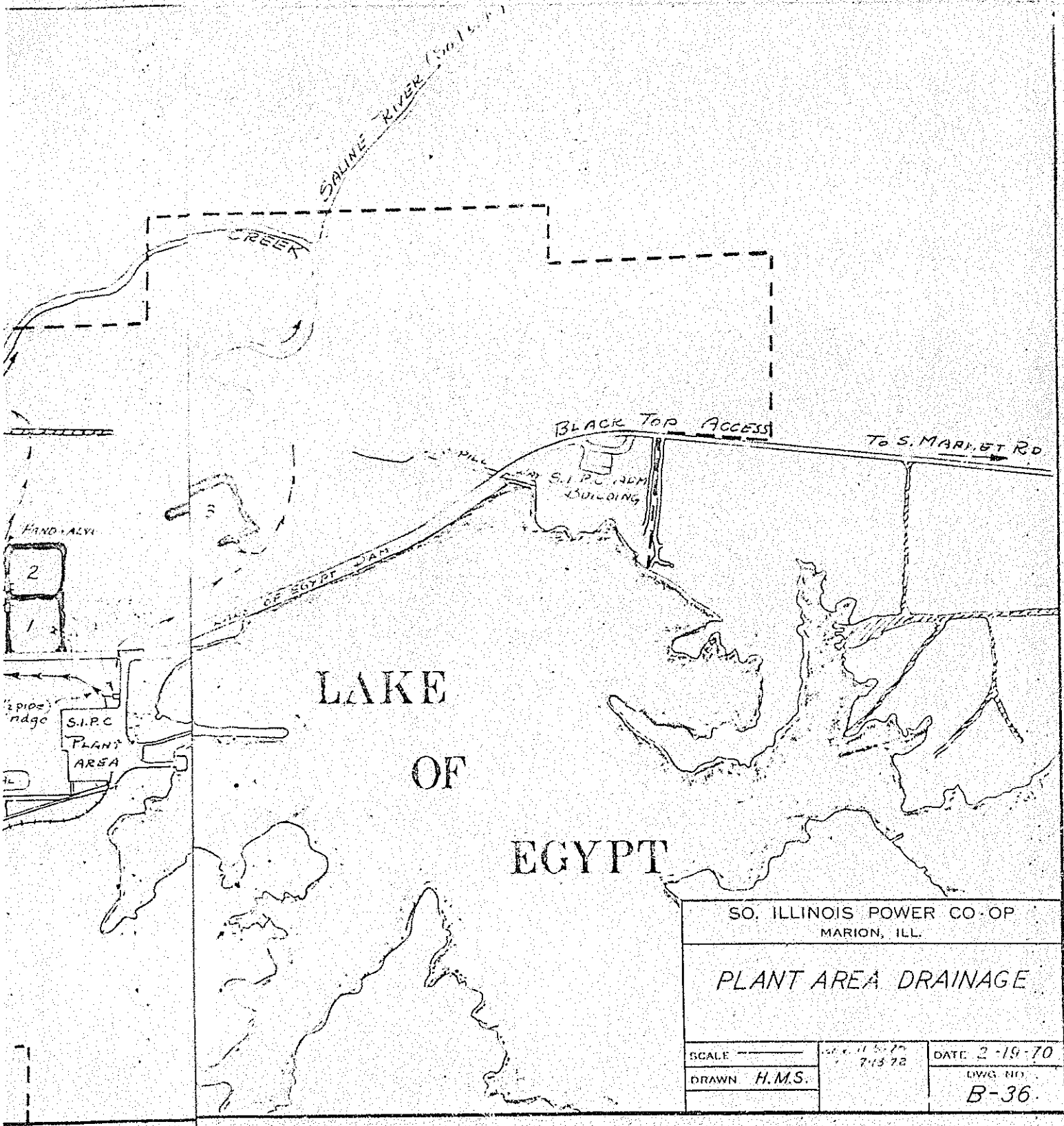
The sewage treatment facilities, as well as the industrial waste water treatment facilities, were in normal operation and were well maintained at the time of this visit. All the required tests are run, and all facilities are well maintained.

Therefore, no recommendations will be made at this time.

John A. Gordon
Environmental Protection Engineer

JAG/ah
3-14-74


CREEK
SALINE
CREEK
R.R.
BLACK TOP ACCESS
To ILL. 37
SALINE
18" (½ pipe) Drainage
S.I.P.C. PLANT AREA
COAL
COAL
COAL
2
4
1
—: LEGEND :—
S.I.P.C. PROP. BOUNDRY
GRAVEL ROADS
HOLDING POND DAM
NATURAL DRAINAGE



SO. ILLINOIS POWER CO-OP
MARION, ILL.

PLANT AREA DRAINAGE

SCALE ——	7-13-72	DATE 2-19-70
DRAWN H.M.S.		DWG NO. B-36.