Consulting
Engineers and
Scientists

GEI Consultants

Primary Bottom Ash Pond

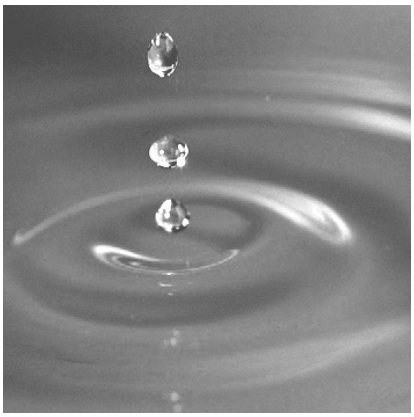
2024 Annual Dam and Dike Inspection Report

Flint Creek Plant, Gentry, Arkansas

Submitted to:
American Electric Power Service Corporation
1 Riverside Plaza
Columbus, OH 43215

Submitted by:
GEI Consultants, Inc.
3159 Voyager Drive
Green Bay, Wisconsin 54311
920.455.8200

December 12, 2024
Project 2305686
AEP Document ID: GEVR-24-040

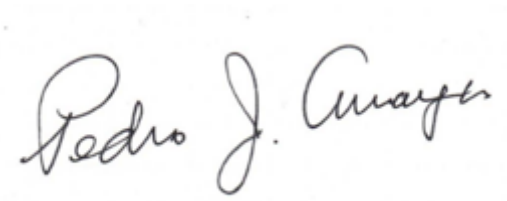


Pedro Amaya, PE
Senior Consultant

Jeff Piaskowski, PE
Senior Engineer

2024 Annual Inspection Report

Primary Bottom Ash Pond
Flint Creek Power Plant
AEP Document ID: GEVR-24-040



Signature

Pedro Amaya, PE
Senior Consultant
GEI Consultants, Inc.

December 12, 2024

Date

I certify, to the best of my knowledge, that the information provided in this report satisfies the requirements of 40 CFR 257.83(b).

Table of Contents

JRP

B:\Working\AEP\2305686 2024 Dam & Landfill Field Insps\08_FINAL INSPECTION REPORTS\07Flint Creek\Primary Bottom Ash Pond\DRAFT_2024 Flint Creek Bottom Ash Pond.docx

1. Introduction

GEI Consultants, Inc. was retained by AEP to implement the 2024 Annual Inspection and Maintenance Program at AEP facilities. As part of the program, GEI's Pedro Amaya, P.E. performed the 2024 inspection of the Primary Bottom Ash Pond at the Flint Creek Power Plant in general accordance with the requirements of 40 CFR 257.83. Mr. Greg Carter and Scott Carney were the AEP facility contacts, but Scott Carney did not participate in the annual inspection. This report was prepared by Pedro Amaya, PE and Jeff Piaskowski, PE of GEI and serves as a summary of the inspection and an assessment of the general conditions of the Primary Bottom Ash Pond at the Flint Creek Power Plant.

It should be noted that this annual inspection report is primarily for the Flint Creek Primary Bottom Ash Pond but some references to the adjacent Flint Creek Clearwater Pond are included for AEP's benefit.

The inspection was performed on November 7, 2024 with clear skies and temperatures that ranged between 48 and 68 degrees Fahrenheit. Approximately 6-inches of precipitation was recorded at the regional airport in Bentonville, Arkansas in the 7 days prior to the inspection.

The Flint Creek Power Plant is located near Gentry, Arkansas as shown on Figure 1 – Site Location Map. The facility arrangement is provided on Figure 2 – Facility Plan. The Primary Bottom Ash Pond and its appurtenances are shown on Figure 3 – Site Plan. The locations of items that should be addressed are provided on Figure 4 – Items to be addressed.

2. Description of Impoundment

The Flint Creek Primary Bottom Ash Pond was created with an 820-foot-long cross-valley dam on an unnamed tributary to Little Flint Creek. The Primary Bottom Ash Pond was used primarily for the settling and storage of bottom ash and is considered a coal combustion residuals (CCR) surface impoundment. In addition to bottom ash, it also receives stormwater runoff from the coal yard and the surrounding area which consists of agricultural land, plant site, and residential areas of the City of Gentry, and other plant waste streams. Flow from the reservoir discharges into the Flint Creek Clearwater Pond.

The Primary Bottom Ash Pond CCR materials have been removed and the closure of the CCR Surface Impoundment is contingent on groundwater monitoring results. AEP anticipates that the Flint Creek Primary Bottom Ash Pond will receive closure status in 2025 after acceptable groundwater monitoring results are recorded.

GENERAL INFORMATION

Dam or Reservoir:	Primary Bottom Ash Pond
Owner:	Southwestern Electric Power Company (SWEPCO)
Type of Dam:	Earth-Fill Structure
Date of Construction:	1978
Downstream Hazard:	Low

LOCATION

County:	Benton County
General Location:	Approximately 4.5 miles north of Siloam Springs, AR
Stream and Basin:	Unnamed tributary to Little Flint Creek

SIZE – PRIMARY DAM

Dam Crest Elevation:	1,155 feet
Dam Height:	45 feet
Water Surface Area:	24 acres (current elevation 1,145.9 feet)
Reservoir Volume:	485 acre-feet (elevation 1,145 feet)

3. Review of Available Information (257.83(b)(1)(i))

A review of available information regarding the status and condition of the Primary Bottom Ash Dam has been conducted. This includes files available in the operating record, such as design and construction information, previous periodic structural stability assessments, previous 7-day inspection reports, 30-day data collection reports, and previous annual inspections has been conducted. Based on the review of the data, no signs of actual or potential structural weakness or adverse conditions were noted.

4. Inspection (257.83(b)(1)(ii))

4.1 Changes in Geometry Since Last Inspection (257.83(b)(2)(i))

No modifications have been made to the geometry of the Primary Bottom Ash Pond since the last annual inspection.

The plant has made minor changes to the operations of the pond and the water level has been steady. The pond level is currently at an elevation 1,145.9 feet.

4.2 Instrumentation (257.83(b)(2)(ii))

There are four piezometers located along the crest of the dam as shown on Figure 3 – Site Plan. A review of readings since the last inspection and historical readings indicate the levels are consistent and respond to the fluctuation of the cooling lake level. The piezometers are more influenced by the level of the cooling lake than the elevation of the Primary Bottom Ash Pond. A spike was noticed in Piezometers A1-A3 in April 2023 and A4 in August 2023. Piezometers A1-A3 were damaged by construction equipment and were replaced in June 2023. Typically, the trend in the historical data between the piezometer reading, lake level, and pond levels are consistent. The maximum piezometer readings for the last two annual inspections are provided below in Table 1. The instrumentation data of the piezometer readings over the past several years is provided in Appendix A – Instrumentation Data.

TABLE 1 - INSTRUMENTATION DATA
(Primary Bottom Ash Pond)

Instrument	Type	Maximum Reading 2023 Inspection	Maximum Reading 2024 Inspection
A1	Piezometer	1152.0	1133.2
A2	Piezometer	1144.1	1132.6
A3	Piezometer	1143.3	1133.7
A4	Piezometer	1141.5	1141.8

Notes: The readings in 2024 are generally consistent with the readings in 2022 when the Primary Bottom Ash Pond was operating at normal conditions. See Appendix A for graph of Piezometer Data.

4.3 Impoundment Characteristics (257.83(b)(2)(iii, iv, v))

The data below is based on the original topography and 2004 hydrographic survey. The Primary Bottom Ash Pond water level is consistent during normal operations.

IMPOUNDMENT CHARACTERISTICS	
	Primary Bottom Ash Pond
Approximate **Minimum** depth (elevation) of impounded water since last annual inspection	0 ft. (1,113.0 feet msl)
Approximate **Maximum** depth (elevation) of impounded water since last annual inspection	33.0 ft. (1,146.0 feet msl)
Approximate **Present** depth of impounded water at the time of the inspection	32.9 ft. (1,145.9 feet msl)
Approximate **Minimum** depth (elevation) of CCR since last annual inspection	0 ft.
Approximate **Maximum** depth (elevation) of CCR since last annual inspection	0 ft.
Approximate **Present** depth (elevation) of CCR at the time of the inspection	0 ft.
Approximate Storage Capacity of impounding structure at the time of the inspection	771 ac-feet (at crest elevation)
Approximate volume of impounded water at the time of the inspection	123.8 ac-ft.
Approximate volume of CCR at the time of the inspection	0

4.4 Definitions of Visual Observations and Deficiencies

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity, or structure. The meaning of these terms is as follows:

Good: A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.

Fair/Satisfactory: A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.

Poor: A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.

Minor: A reference to an observed item (e.g. erosion, seepage, vegetation, cracks, concrete surface etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.

Significant: A reference to an observed item (e.g. erosion, seepage, vegetation, cracks, concrete surface etc.) where the current maintenance program has neglected to improve the condition. Usually, conditions that have been identified in previous inspections, but have not been corrected.

Excessive: A reference to an observed item (e.g. erosion, seepage, vegetation, cracks, concrete surface etc.) where the current maintenance condition is below or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or area being observed or which may be a concern from a structure safety or stability point of view.

This document also uses the definition of a "deficiency" as referenced in the CCR rule section §257.84(b)(5) Inspection Requirements for CCR Landfills. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, "Qualifications for Impoundment Inspection" CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not defined by deficiency are considered maintenance or items to be monitored.

A "deficiency" is some evidence that the CCR Unit has developed a problem that could impact its structural integrity. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage

   Uncontrolled seepage is an uncontrolled release from the unit.

2. Displacement of the Embankment

   Displacement of the embankment is large scale movement of part of the pond embankment. Common signs of displacement are cracks, scarps, bulges, depressions, sinkholes, and slides.

3. Blockage of Control Features

   Blockage of Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.

4. Erosion

   Erosion is the gradual movement of surface material by water, wind, or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

4.5 Visual Inspection (257.83(b)(1)(ii))

A visual inspection of the Primary Bottom Ash Pond was conducted to identify signs of distress or malfunction of the Primary Bottom Ash Pond and appurtenant structures. Specific items inspected included structural elements of the Primary Bottom Ash Pond upstream slope, downstream slope, crest, and drainage structures/features.

Overall, the facility is in good condition. The Primary Bottom Ash Pond is functioning as intended with no signs of structural weakness or conditions which are disrupting to its safe operation. Inspection photos are included in Attachment B - Photolog.

The downstream slope of the dam is in good condition. The riprap is compact and the vegetation is being maintained to 12-inches or less as shown in Photographs No. 1, No. 3, and No. 4.

The upstream slope of the dam is in good condition. The riprap is compact and the vegetation is being maintained to 12-inches or less as shown in Photographs No. 2, No. 5, and No. 10.

The spillway structures for the Primary Bottom Ash Pond and the adjacent Clearwater Pond are in good condition. No debris or blockages were observed that could restrict design flows as shown in Photographs No. 6 (Primary Bottom Ash Pond) and No. 8 (Clearwater Pond).

The crests for the Primary Bottom Ash Pond and the adjacent Clearwater Pond were generally in good condition, but minor rutting and potholes were observed in an isolated area on the Clearwater Pond Crest and should be addressed as shown in Photograph No. 7.

The Clearwater Pond tail race channel was in good condition. The vegetation was maintained to 12-inches or less and no debris or blockages were observed that could restrict design flows as shown in Photograph No. 9.

4.6 Changes that Effect Stability or Operation (257.83(b)(2)(vii))

Based on interviews with plant personnel and field observations there were no changes to the Primary Bottom Ash Pond since the last annual inspection that would affect the stability of the impounding structure.

5. Summary of Findings

5.1 General Observations

The Primary Bottom Ash Pond is generally in good condition. There were no signs of distress that would indicate possible instability, excessive settlement, misalignment, sloughing, or cracking of the dam.

The following general observations were identified during the visual inspection:

1. In general, the Primary Bottom Ash Pond is functioning as intended. The upstream slope, downstream slope, crest, and toe of slope are functioning as intended with no signs of structural weakness or conditions which are disrupting to its safe operation.

2. The plant personnel are performing regular maintenance as required. Vegetation is generally limited/maintained to 12-inches or less.

5.2 Maintenance Items

The following maintenance items are provided for consideration:

- Continue to check site drainage structures for debris/blockages to allow the unit to function as it was designed.

- Maintain the vegetation to 12-inches or less within 25-feet of the upstream and downstream toe of slopes.

5.3 Items to be Monitored

No items were identified to be monitored during the inspection.

5.4 Items to Addressed

- Item No. 7 – Address the pavement rutting/potholes on the Clearwater Pond Crest.

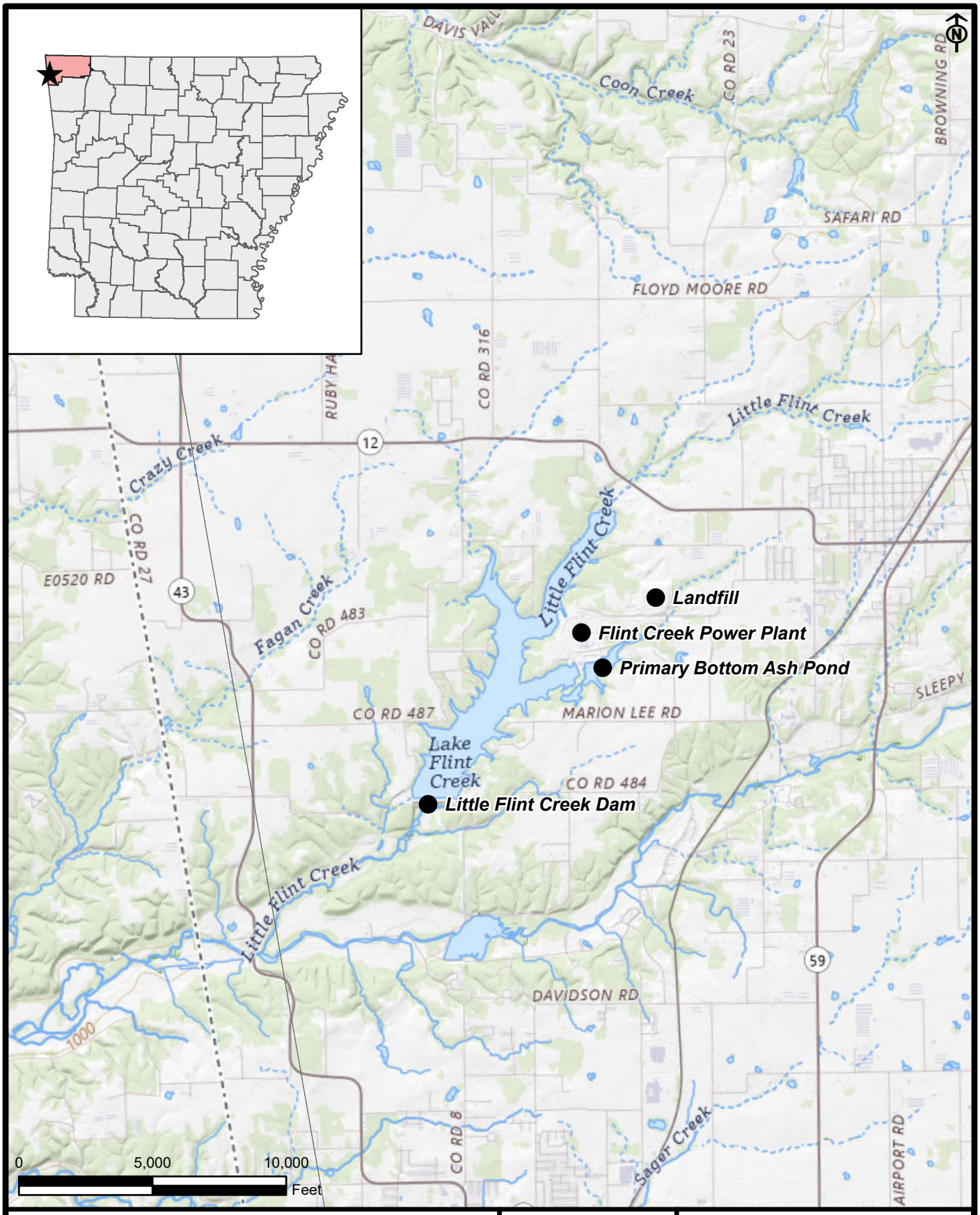
6. Deficiencies (257.83(b)(2)(vi))

There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during this inspection or during any of the periodic 7-day inspections. A deficiency is defined as either:

- uncontrolled seepage
- displacement of the embankment
- blockage of control features
- erosion, more than minor maintenance

If any of these conditions occur or if you have any questions with regard to this report, please contact Greg Carter at (903) 927-5896 or wgcarter@aep.com or Bryan Brunton at 614-716-3090 bwbrunton@aep.com.

Figure 1 – Site Location Map



2024 Annual Primary Bottom Ash Dam Inspection Report
Flint Creek Power Plant
Gentry, Arkansas

American Electric Power Service Corporation
Columbus, OH 43215

GEI Consultants

Project 2305686

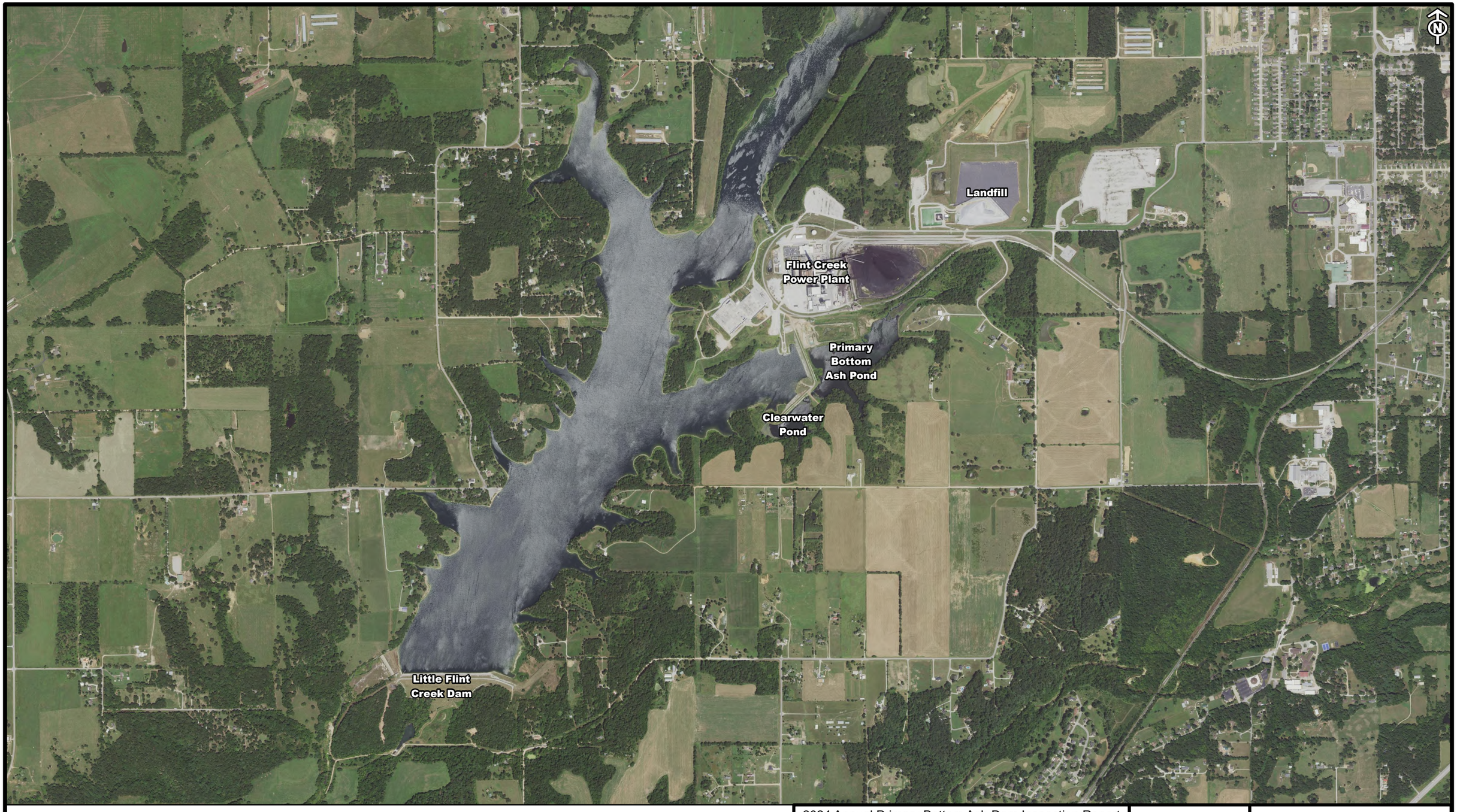
SITE LOCATION MAP

November 2024

Fig. 1

Path: B:\Working\AEP\2305686 2024 Dam & Landfill Field Insps\05_GIS\ArcGIS_Pro\2305686 2024 Dam & Landfill Field Insps.aprx

Figure 2 – Facility Plan



NOTES:

1. Aerial image obtained from USDA NAIP. Image captured spring of 2021.

2. Site conditions may change over time, accuracy is not guaranteed.

0 1,400 2,800 Feet

2024 Annual Primary Bottom Ash Dam Inspection Report
Flint Creek Power Plant
Gentry, Arkansas

American Electric Power Service Corporation
Columbus, OH 43215

GEI Consultants

Project 2305686

FACILITY PLAN

November 2024 Fig. 2

Path: B:\Working\AEP\2305686 2024 Dam & Landfill Field Insps\05_GIS\ArcGIS_Pro\2305686 2024 Dam & Landfill Field Insps.aprx

Figure 3 – Site Plan

LEGEND:

- General Observation
- Piezometer

NOTES:

1. Aerial image obtained from USDA NAIP. Image captured spring of 2021.

2. Points shown represent site conditions during time of inspection. Conditions may change overtime, accuracy is not guaranteed. Map should not be used for measurement.

0 240 480 Feet

2024 Annual Primary Bottom Ash Dam Inspection Report
Flint Creek Power Plant
Gentry, Arkansas

American Electric Power Service Corporation
Columbus, OH 43215

GEI Consultants

Project 2305686

SITE PLAN

December 2024 Fig. 3

Path: B:\Working\AEP\2305686 2024 Dam & Landfill Field Insps\05_GIS\ArcGIS_Pro\2305686 2024 Dam & Landfill Field Insps.aprx

Figure 4 – Items to be Addressed

LEGEND:

Repair

NOTES:

1. Aerial image obtained from USDA NAIP. Image captured spring of 2021.

2. Points shown represent site conditions during time of inspection. Conditions may change overtime, accuracy is not guaranteed. Map should not be used for measurement.

0 400 800 Feet

2024 Annual Primary Bottom Ash Dam Inspection Report
Flint Creek Power Plant
Gentry, Arkansas

American Electric Power Service Corporation
Columbus, OH 43215

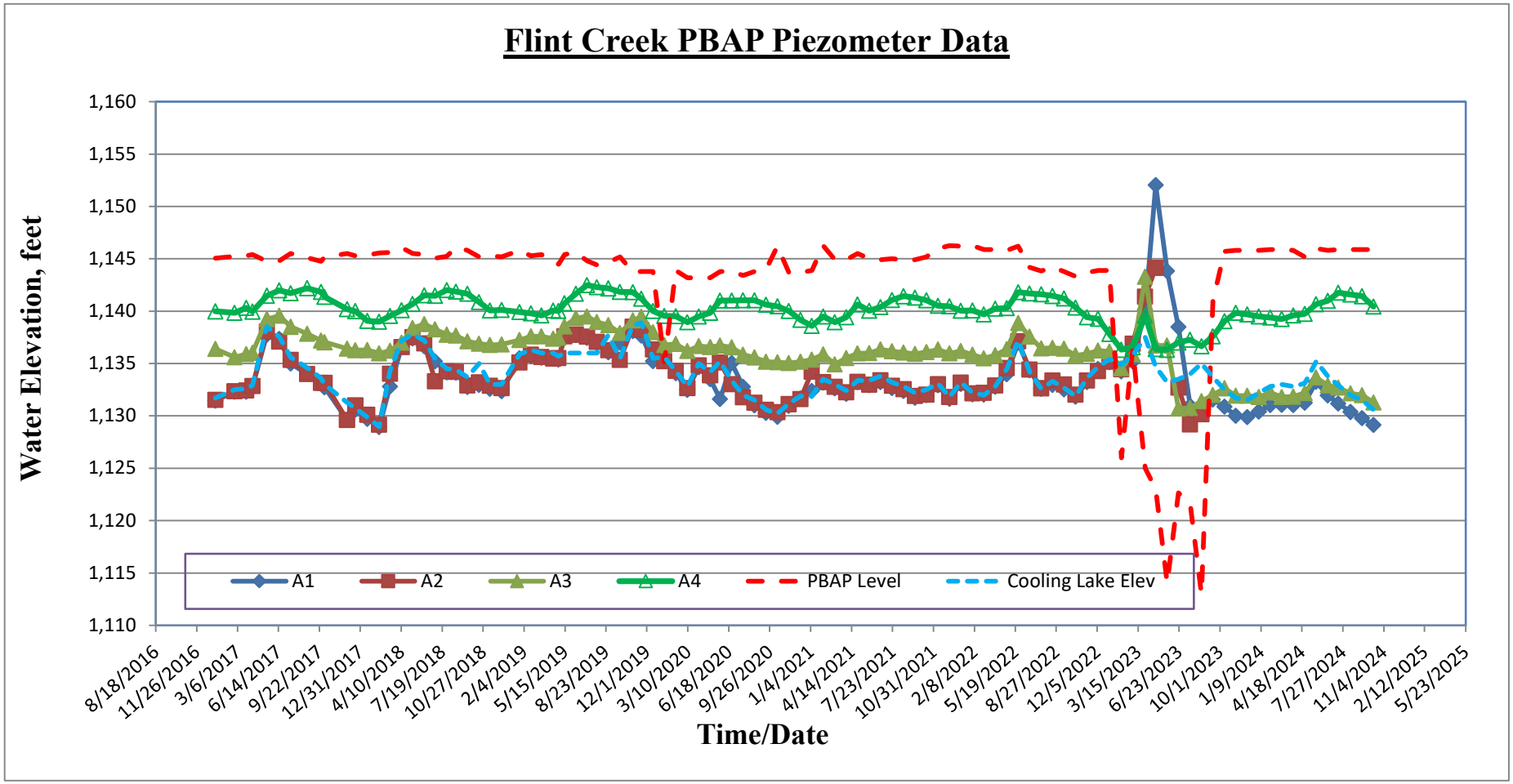
GEI Consultants

ITEMS TO BE ADDRESSED

Project 2305686 | November 2024 | Fig. 4

Path: B:\Working\AEP\2305686 2024 Dam & Landfill Field Insps\05_GIS\ArcGIS_Pro\2305686 2024 Dam & Landfill Field Insps.aprx

Appendix A – Instrumentation


Flint Creek PBAP Piezometer Data
Water Elevation, feet
1,160
1,155
1,150
1,145
1,140
1,135
1,130
1,125
1,120
1,115
1,110
A1
A2
A3
A4
PBAP Level
Cooling Lake Elev
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
8/23/2019
12/1/2019
3/10/2020
6/18/2020
9/26/2020
1/4/2021
4/14/2021
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024
7/27/2024
11/4/2024
2/12/2025
5/23/2025
Time/Date

Appendix B – Photolog

Photographic Log

Project: Flint Creek Primary Bottom Ash Pond Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 1	DATE: November 7, 2024 3:41 PM	LATITUDE: 36.25748981	LONGITUDE: -94.52105441
DIRECTION: 77°	SITE LOCATION: GENTRY, ARKANSAS		
DESCRIPTION: Primary Bottom Ash Pond Downstream Slope of Dam. Ground Cover, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

PHOTOGRAPH NO: 2	DATE: November 7, 2024 3:49 PM	LATITUDE: 36.25337997	LONGITUDE: -94.52473016
DIRECTION: 64°	SITE LOCATION: GENTRY, ARKANSAS		
DESCRIPTION: Primary Bottom Ash Pond. Upstream Slope of Dam. General Photo, Typical Conditions. Appr. water level 1145.9 ft msl.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log

Project: Flint Creek Primary Bottom Ash Pond Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 3	DATE: November 7, 2024 3:55 PM	LATITUDE: 36.25083427	LONGITUDE: -94.52396495
DIRECTION: 139°	SITE LOCATION: GENTRY, ARKANSAS		
DESCRIPTION: Clearwater Pond. Downstream Slope of Dam. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

PHOTOGRAPH NO: 4	DATE: November 7, 2024 3:57 PM	LATITUDE: 36.25082681	LONGITUDE: -94.52395919
DIRECTION: 262°	SITE LOCATION: GENTRY, ARKANSAS		
DESCRIPTION: Primary Bottom Ash Pond. Downstream Slope of Dam. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log

Project: Flint Creek Clearwater Pond Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 5	DATE: November 7, 2024 3:58 PM	LATITUDE: 36.25072779	LONGITUDE: -94.52379574
DIRECTION: 131°	SITE LOCATION: GENTRY, ARKANSAS		
DESCRIPTION: Clearwater Pond. Upstream Slope of Dam. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

PHOTOGRAPH NO: 6	DATE: November 7, 2024 3:59 PM	LATITUDE: 36.25054004	LONGITUDE: -94.5240929
DIRECTION: 136°	SITE LOCATION: GENTRY, ARKANSAS		
DESCRIPTION: Primary Bottom Ash Pond. Spillway area. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log

Project: Flint Creek Clearwater Pond Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 7	DATE: November 7, 2024 4:03 PM	LATITUDE: 36.25026084	LONGITUDE: -94.52465175
DIRECTION: 216°	SITE LOCATION: GENTRY, ARKANSAS		

DESCRIPTION:

Clearwater Pond Crest. Address road surface

PHOTO BY:

GEI CONSULTANTS, INC.

Photographic Log

Project: Flint Creek Clearwater Pond Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 8	DATE: November 7, 2024 4:06 PM	LATITUDE: 36.2494558	LONGITUDE: -94.52619861
DIRECTION: 138°	SITE LOCATION: GENTRY, ARKANSAS		

DESCRIPTION:

Clearwater Pond Spillway. General Photo, Typical Conditions. Approximate water elevation 1143.1 ft msl.

PHOTO BY:

GEI CONSULTANTS, INC.

PHOTOGRAPH NO: 9	DATE: November 7, 2024 4:12 PM	LATITUDE: 36.24946108	LONGITUDE: -94.52621235
DIRECTION: 237°	SITE LOCATION: GENTRY, ARKANSAS		

DESCRIPTION:

Clearwater Pond Tail Race Channel. General Photo, Typical Conditions.

PHOTO BY:

GEI CONSULTANTS, INC.

Photographic Log

Project: Flint Creek Primary Bottom Ash Pond Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 10	DATE: November 7, 2024 4:18 PM	LATITUDE: 36.25084588	LONGITUDE: -94.52368697
DIRECTION: 283°	SITE LOCATION: GENTRY, ARKANSAS		
DESCRIPTION: Primary Bottom Ash Pond. Upstream Slope of Dam. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			