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Landfill 2024 Annual Landfill Inspection Report

Northeastern Power Plant, Oologah, Oklahoma

Submitted to:

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

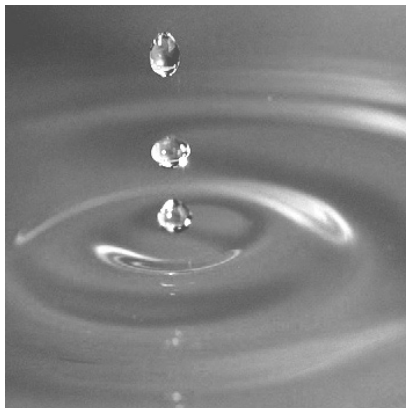
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December 2, 2024

Project 2305686

AEP Document ID: GEVR-24-037



Pedro Amaya, PE
Senior Consultant

John Trast, PE
Vice President

2024 Annual Inspection Report



Landfill
Northeastern Power Station
AEP Document ID: GEVR-24-037

A handwritten signature in black ink, appearing to read "John M. Trast", written over a horizontal line.

Signature

John M. Trast, PE, D.GE
Vice President
GEI Consultants, Inc.

December 2, 2024

Date



I certify, to the best of my knowledge, that the information provided in this report satisfies the requirements of 40 CFR 257.84(b).

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JRP

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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 landfill at the Northeastern Power Station in general accordance with the requirements of 40 CFR 257.84. Mr. Greg Carter and Mr. Bryan White were the AEP facility contacts. This report was prepared by Pedro Amaya, PE and John Trast, PE of GEI and serves as a summary of the inspection and an assessment of the general conditions of the landfill at the Northeastern Power Station.

The inspection was performed on November 6, 2024 with clear skies and temperatures that ranged between 45 and 70 degrees Fahrenheit. Approximately 7-inches of precipitation was recorded at the regional airport in Oklahoma City, Oklahoma in the 7 days prior to the inspection.

The Northeastern Power Station is located near Oologah, Oklahoma as shown on Figure 1 – Site Location Map. The facility arrangement is provided on Figure 2 – Facility Plan. The landfill 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 Landfill

The Northeastern Power Station is located at the junction of U.S. Highway 169 and Oklahoma highway 88, approximately 1 mile south of Oologah, Rogers County, Oklahoma. The onsite landfill is located southeast side of the power plant, adjacent to the Verdigris River.

The active landfill disposal area (Cell 1) is currently where waste is being placed. There were no disposal/operational activities taking place at the time of the inspection.

Inactive landfill areas (Cells 2, 3 and 4) consist of the remaining portions of the landfill. The intermediate liner system has a 2-foot thick protective cover. Inactive landfill areas were already covered with temporary geomembrane cover (rainflap) and wind defender at the time of inspection.

3. Review of Available Information (257.84(b)(1)(i))

A review of available information regarding the status and condition of the landfill has been conducted. This information includes files available in the operating record, such as design and construction information, previous 7-day inspection reports, and previous annual inspections. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions.

4. Inspection (257.84(b)(1)(ii))

4.1 Changes in Geometry Since Last Inspection (257.84(b)(2)(i))

No modifications have been made to the geometry of the landfill since the last annual inspection. The geometry of the landfill has remained essentially unchanged, except for the change in topography of the active disposal area.

4.2 Volume (257.84(b)(2)(ii))

The total volume of CCR in the landfill as of the inspection date is estimated to be 1,719,170 cubic yards (1,713,999 in 2023 + 5,171 in 2024) based on the tonnage during reporting period November 2023 – October 2024 and using conversion factor of 1 ton/cubic-yard).

4.3 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:

- Uncontrolled Seepage
Uncontrolled seepage is an uncontrolled release from the unit.
- 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.
- Blockage of Control Features
Blockage of Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.
- 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.

4.4 Visual Inspection (257.84(b)(1)(ii))

A visual inspection of the landfill was conducted to identify signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included structural elements of the landfill perimeter berms, temporary and final covers, side slopes, and drainage features.

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

The landfill active area was being operated appropriately. Material is being placed and compacted systematically in lifts to allow contact stormwater to be collected, treated, and discharged as appropriate. During the inspection, the operators had recently watered haul roads, as shown in Photograph No. 1 to control fugitive dust generated from the landfill operations.

The landfill Wind Defender® interim covers are in good condition as shown in Photograph No. 2.

The landfill perimeter berm is lined with a geomembrane and in good condition. No rips, tears, or deterioration were observed during the inspection of the landfill perimeter berms as shown in Photograph No. 3

The landfill perimeter ditch is in good condition. Some areas of the perimeter ditches are lined with an exposed geomembrane – No rips, tears, holes, or deterioration was observed on the exposed liner shown in Photograph No. 4, No. 6 and No.7. Other portions of the perimeter ditches are vegetated. The vegetation in these ditches was healthy and well maintained as shown in Photograph No. 16.

The landfill stormwater features are in satisfactory condition. Minor erosion was observed where one outfall channel meets with the landfill crest Wind Defender® interim cover as shown in Photograph No. 5. Additionally, the stormwater bypass ditch has minor blockage as shown in Photograph No. 8, near the splitter dike that exists between the leachate pond and the stormwater pond (Basin C). These observations are both minor but should be addressed. Other drainage features onsite were observed to be functioning as their design intended as shown in Photograph No. 7 and No. 10.

The landfill stormwater pond (Basin C) is in good condition. No rips, tears, holes, or deterioration was observed on the exposed liner and the vegetation along the upstream shoreline was maintained to 12-inches or less as shown in Photograph No. 13 and No. 14. The outfall structure was clear of any blockages as shown in Photograph No. 12. A wooded area with larger diameter timber exists beyond the toe of the downstream slope of the stormwater pond as shown in Photograph No. 15. AEP should consider maintaining the vegetation to 12-inches or less within 25-feet of the dike's toe of slope in accordance with internal Dam and Dike Maintenance Recommendations published in their Circular Letter.

The landfill leachate pond is in good condition. The shoreline is well maintained with no observed erosion, overgrown vegetation, or debris that could block drainage features as shown in Photograph No. 9 and No. 11.

4.5 Changes in Stability or Operation (257.84(b)(2)(iv))

Based on interviews with plant personnel and field observations there are no changes that affect the stability and operation of the landfill.

5. Summary of Findings

5.1 General Observations

The following general observations were identified during the visual inspection:

1. In general, the landfill is functioning as intended. Contact stormwater is collected and discharged to the leachate collection pond. Non-contract landfill stormwater bypasses the leachate collection pond and is managed by the stormwater runoff pond.
2. The Plant is performing regular maintenance and inspections as required. Vegetation is generally limited/maintained to 12-inches or less. Other erosion and sedimentation controls are in place and actively being maintained.
3. Minor erosion and minor blockage to a drainage feature we observed and should be addressed as presented in Section 5.4.

5.2 Maintenance Considerations

The maintenance items are provided for consideration:

- Continue to maintain minor erosion rills before they become significant. Focus maintenance efforts at tie-in locations where the Wind Defender® interim cover meets riprap outfall channels.
- Continue to check site culverts, ditches, outfall structures for debris/blockages to allow the site stormwater to flow as it was designed.
- Consider maintaining vegetation to 12-inches or less within 25-feet of the downstream toe of slope of the stormwater pond dike.

5.3 Items to be Monitored

No specific issues or areas were identified during the visual inspection as items to be monitored.

5.4 Items to be Addressed

The following items should be addressed to allow the landfill to operate as its design intended.

- Item 5 – Address the minor erosion where the Wind Defender® interim cover meets riprap outfall channel near the perimeter stormwater ditch.

- Item 8 – Address the minor culvert blockage that is backing up water along the splitter dike between the leachate collection pond and the stormwater runoff pond.

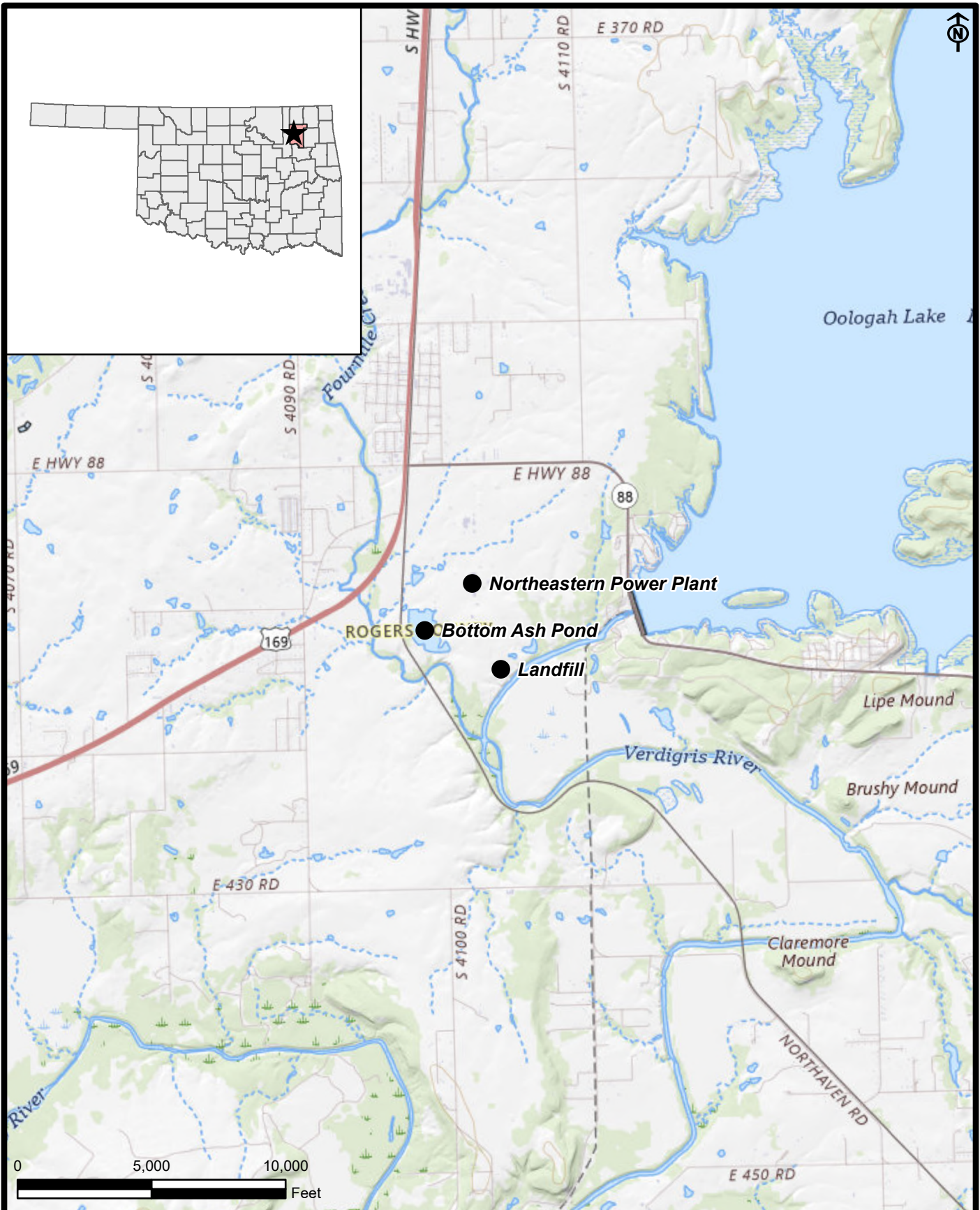
6. Deficiencies (257.84(b)(2)(iii))

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



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SITE LOCATION MAP

November 2024

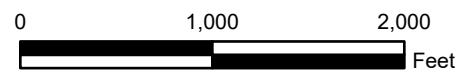
Fig. 1

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.



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FACILITY PLAN


November 2024

Fig. 2

Figure 3 – Site Plan

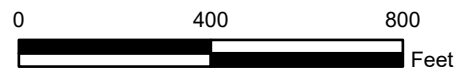


LEGEND:

 General Observation

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.



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SITE PLAN

November 2024

Fig. 3

Figure 4 – Items to be Addressed

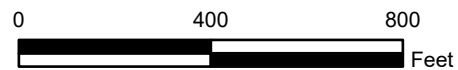


LEGEND:

● 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.



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ITEMS TO BE ADDRESSED

November 2024

Fig. 4


Appendix A – Photolog

Photographic Log



Project: Northeastern Landfill Inspection
Client: American Electric Power

GEI Project: 2305686

PHOTOGRAPH NO: 1	DATE: November 6, 2024 2:32 PM	LATITUDE: 36.41667306	LONGITUDE: -95.70003382
DIRECTION: 321°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill Active Area. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 2	DATE: November 6, 2024 2:42 PM	LATITUDE: 36.41652501	LONGITUDE: -95.6997586
DIRECTION: 77°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill Crest / Interim Cover. Photo shows installed rain flaps. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log



Project: Northeastern Landfill Inspection
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GEI Project: 2305686



PHOTOGRAPH NO: 3	DATE: November 6, 2024 2:49 PM	LATITUDE: 36.41580262	LONGITUDE: -95.7005845
DIRECTION: 63°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill Southeast Outboard Dike. General Photo, Typical Conditions of synthetic cover.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 4	DATE: November 6, 2024 2:54 PM	LATITUDE: 36.41302545	LONGITUDE: -95.69970382
DIRECTION: 312°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill South Toe of Slope. General Photo, Typical Conditions. Note Interim Textured 60 mil HDPE Synthetic Cover.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log



Project: Northeastern Landfill Inspection
Client: American Electric Power

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PHOTOGRAPH NO: 5	DATE: November 6, 2024 3:00 PM	LATITUDE: 36.4152248	LONGITUDE: -95.69742007
DIRECTION: 271°	SITE LOCATION: OOLOGAH, OKLAHOMA		
DESCRIPTION: Landfill Outlet Works / Drainage Feature. Address Minor Erosion and Geosynthetic Separation.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 6	DATE: November 6, 2024 3:05 PM	LATITUDE: 36.41712689	LONGITUDE: -95.69521548
DIRECTION: 148°	SITE LOCATION: OOLOGAH, OKLAHOMA		
DESCRIPTION: Landfill East Perimeter Drainage. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log



Project: Northeastern Landfill Inspection
Client: American Electric Power

GEI Project: 2305686



PHOTOGRAPH NO: 7	DATE: November 6, 2024 3:07 PM	LATITUDE: 36.41712554	LONGITUDE: -95.69517726
DIRECTION: 312°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill Northeast Perimeter Drainage / South Outlet Culvert. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 8	DATE: November 6, 2024 3:11 PM	LATITUDE: 36.41814372	LONGITUDE: -95.6936075
DIRECTION: 156°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill Leachate Impoundment. Perimeter Ditch, Address minor culvert debris / blockage.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log



Project: Northeastern Landfill Inspection
Client: American Electric Power

GEI Project: 2305686



PHOTOGRAPH NO: 9	DATE: November 6, 2024 3:15 PM	LATITUDE: 36.41814322	LONGITUDE: -95.69361628
DIRECTION: 184°	SITE LOCATION: OOLOGAH, OKLAHOMA		
DESCRIPTION: Landfill Leachate Impoundment. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 10	DATE: November 6, 2024 3:20 PM	LATITUDE: 36.41855375	LONGITUDE: -95.69497984
DIRECTION: 165°	SITE LOCATION: OOLOGAH, OKLAHOMA		
DESCRIPTION: Landfill Northeast Perimeter Stormwater Ditch. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log



Project: Northeastern Landfill Inspection
Client: American Electric Power

GEI Project: 2305686



PHOTOGRAPH No: 11	DATE: November 6, 2024 3:22 PM	LATITUDE: 36.41856553	LONGITUDE: -95.69502457
DIRECTION: 38°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill Leachate Impoundment. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH No: 12	DATE: November 6, 2024 3:23 PM	LATITUDE: 36.41861784	LONGITUDE: -95.69496813
DIRECTION: 317°		SITE LOCATION: OOLOGAH, OKLAHOMA	
DESCRIPTION: Landfill Stormwater Pond Basic C. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log



Project: Northeastern Landfill Inspection
Client: American Electric Power

GEI Project: 2305686



<p>PHOTOGRAPH No: 13</p>	<p>DATE: November 6, 2024 3:27 PM</p>	<p>LATITUDE: 36.41815068</p>	<p>LONGITUDE: -95.69335103</p>
<p>DIRECTION: 270°</p>		<p>SITE LOCATION: OOLOGAH, OKLAHOMA</p>	
<p>DESCRIPTION: Landfill Stormwater Pond Basin C. General Photo, Typical Conditions of Exposed Synthetic liner.</p>			
<p>PHOTO BY: GEI CONSULTANTS, INC.</p>			
<p>PHOTOGRAPH No: 14</p>	<p>DATE: November 6, 2024 3:33 PM</p>	<p>LATITUDE: 36.42039106</p>	<p>LONGITUDE: -95.69387416</p>
<p>DIRECTION: 70°</p>		<p>SITE LOCATION: OOLOGAH, OKLAHOMA</p>	
<p>DESCRIPTION: Landfill Stormwater Pond Basin C. General Photo, Typical Conditions.</p>			
<p>PHOTO BY: GEI CONSULTANTS, INC.</p>			

Photographic Log



Project: Northeastern Landfill Inspection
Client: American Electric Power

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PHOTOGRAPH No: 15	DATE: November 6, 2024 3:36 PM	LATITUDE: 36.42016853	LONGITUDE: -95.69240162
DIRECTION: 109°	SITE LOCATION: OOLOGAH, OKLAHOMA		
<p>DESCRIPTION:</p> <p>Landfill Stormwater Pond Basin C. Downstream Toe of Slope - General Photo, Typical Conditions.</p> <p>Consider maintaining vegetation to 12-inches or less within 25-feet of the downstream toe of slope.</p>			
<p>PHOTO BY:</p> <p>GEI CONSULTANTS, INC.</p>			
PHOTOGRAPH No: 16	DATE: November 6, 2024 3:41 PM	LATITUDE: 36.41822599	LONGITUDE: -95.69762745
DIRECTION: 4°	SITE LOCATION: OOLOGAH, OKLAHOMA		
<p>DESCRIPTION:</p> <p>Landfill North Perimeter Ditch. General Photo, Typical Conditions.</p> <p>Standing water due to 6-8 inches of rain that the site received in the week leading up to the annual inspection.</p>			
<p>PHOTO BY:</p> <p>GEI CONSULTANTS, INC.</p>			