

2023 Annual Landfill Inspection Report

Landfill

**Northeastern Power Plant
Public Service Company of Oklahoma
Oologah, OK**

December 2023

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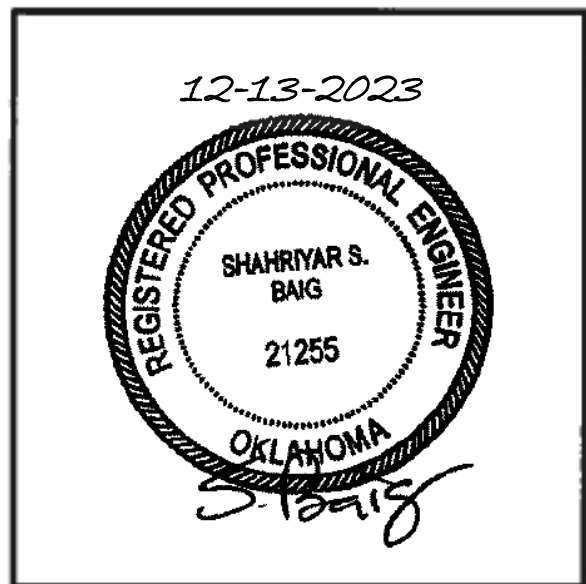
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DATE: 12/13/2023



I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of OAC § 252:517-13-5.

**2023 Annual Landfill Inspection Report
Northeastern Power Plant Landfill
Oologah, OK**

Table of Contents

1.0 Introduction.....4
2.0 Description of Landfill.....4
3.0 Review of Available Information (252:517-13-5 (b)(1)(A)).....5
4.0 Inspection (252:517-13-5 (b)(1)(B))5
 4.1 Changes in Geometry Since Last Inspection (252:517-13-5(b)(2)(A))5
 4.2 Volume (252:517-13-5(b)(2)(B))5
 4.3 Definitions of Observations and Deficiencies6
 4.4 Visual Inspection (252:517-13-5(b)(1)(B)).....7
 4.5 Changes that Effect Stability or Operation10
5.0 Summary of Findings10
 5.1 General Observations10
 5.2 Maintenance Items11
 5.3 Items to Monitor11
 5.4 Deficiencies (252:517-13-5(b)(5)).....11

LIST OF FIGURES

- Figure 1 – Site Location Map
- Figure 2 – Landfill Facility Map
- Figure 3 - Inspection Photograph Location Map (Landfill)
- Figure 4 - Inspection Photograph Location Map (Leachate Pond and Basin C)

ATTACHMENT

Inspection Photographs

2023 Annual Landfill Inspection Report Northeastern Power Plant Landfill Oologah, OK

1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of OAC 252:517-13-5 and to provide the Northeastern Plant an evaluation of the facility.

Shah Baig, P.E., AEP-Geotechnical Engineering and Greg Carter, AEP-Plant Engineering performed the 2023 inspection of the Landfill at the Northeastern Plant. Mike Berryhill, plant staff, was also present during the inspection. This report is a summary of the inspection and an assessment of the general condition of the facility. The inspection was performed on November 15, 2023. Weather conditions were good and the temperature was 71 degrees Fahrenheit, sunny, light breeze, and clear skies. There was no recorded precipitation over the seven days prior to the inspection.

2.0 DESCRIPTION OF LANDFILL

The Public Service Company of Oklahoma (PSO), 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. Figure 1 (Site Location Map) illustrates the location of the landfill with respect to the power plant, ash pond, and coalyard.

Overall, landfill was divided into the following components as a means of organizing the inspection and reporting. These components are shown on Figure 2 (Landfill Facility Map).

- Active Landfill Disposal Area (Cell 1)
- Inactive Landfill Areas (Cells 2, 3, and 4)
- Leachate Collection Pond
- Storm Water Drainage Ditches
- Perimeter Berm

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.

3.0 REVIEW OF AVAILABLE INFORMATION (252:517-13-5 (b)(1)(A))

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.

4.0 INSPECTION (252:517-13-5 (b)(1)(B))

4.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (252:517-13-5(b)(2)(A))

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 (252:517-13-5(b)(2)(B))

The total volume of CCR in the landfill as of the inspection date is estimated to be 1,713,999 cubic yards (1,707,623 in 2022 + 6,376 in 2023) based on the tonnage during reporting period August 2022 – November 2023 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, 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, etc.) where the current maintenance program has neglected to improve the condition. Usually, conditions that have been identified in the previous inspections, but have not been corrected.
- Excessive: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular 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 a landfill has developed a problem that could impact the structural integrity of the landfill. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage (Leachate Outbreak)
Leachate outbreak is the uncontrolled release of leachate from the landfill.
2. Displacement of the Embankment
Displacement of the embankment is large scale movement of part of the dam. Common signs of displacement are cracks, scraps, 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.

4.4 VISUAL INSPECTION (252:517-13-5(b)(1)(B))

A visual inspection of the Landfill was conducted to identify any signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included all structural elements of the landfill perimeter berms, temporary and final covers, drainage features, leachate pond, open cells, and appurtenances such as chimney drains etc.

Overall, the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions that are disrupting to the safe operation of the landfill. Figure 3-Inspection Photograph Location Map (Landfill), Figure 4-Inspection Photograph Location Map (Leachate Pond and Basin C) and Inspection Photographs are included in the report. Additional pictures taken during the inspection can be made available to the Owner upon request.

Inactive Landfill Disposal Areas

1. Landfill area (Cell 4) was already covered with temporary rainflap and wind defender at the time of inspection. Photographs No. 1-3 illustrate the condition of the landfill area Cell 4. The access road appeared in good condition with no sign of misalignment, settlement, or excessive erosion. The perimeter ditch was functioning as designed and the liner was intact and in good condition. The temporary rainflap and wind defender appeared in intact and good condition. Minor rutting at the access road was noticed (Photograph No. 4).

2. Cell 3 exterior south slope and access perimeter road (Photograph No. 5) appeared in good and stable condition. The access road appeared in good condition without any signs of settlement, misalignment, or excessive erosion.
3. Cell 3 area is illustrated in Photographs No. 5 and 6. This area is also covered with the rainflap and wind defender. The containment berm, access road and the geomembrane lined perimeter ditch appeared in good and stable condition. The perimeter berm and ditch are functioning as designed and the liner was intact. There were no observations of erosion or other unsatisfactory conditions of the Cell 3 areas.
4. The slope adjacent to the river is very steep and observation of the slope from the chain link fence indicated the slope was heavily vegetated with mature trees and small bushes (Photograph No. 7). A temporary weir is cut into the perimeter berm (Photograph No. 8) for stormwater management appeared in good functional condition.
5. Photographs No. 10 and 11 illustrates Cell 2 surface of the inactive disposal areas covered with temporary geomembrane (rainflap) and wind defender, access road, and perimeter berm. Overall, the condition of Cell 2 area appeared good.

Active Landfill Disposal Area

6. Photograph No. 11 illustrate typical condition of Cell 1 which is currently the active landfill disposal area. The surface appeared graded and free of ponding water. Temporary grades are maintained to direct runoff to the perimeter ditch to the north.
7. A temporary drainage channel is located at the north of Cell 1 boundary that let into the perimeter ditch (Photographs No. 12 and 13). The channel and the ditch is functioning, standing water and slightly overgrown vegetation was noticed in the ditch.

Storm Water Drainage Ditches

8. Overall, the perimeter ditches were in good condition and functioning as designed. The ditches are lined with geomembrane. No water ponding was observed.

9. The north and south perimeter ditches at the eastern, downstream end of the landfill consists of pipe box culverts (Photographs No. 14-18). These pipe box culverts were clear of any debris and indicated no obstruction to flow or standing water. The drainage structures are functioning as designed.

Leachate Collection Pond

10. Typical condition of the west dike and interior slope is illustrated in Photographs No. 19 and 20. The dike crest located adjacent to the landfill appeared in fair condition and the slope indicated minor erosion.

11. The north and the west dikes are illustrated in Photographs No. 21 and 22. A north conveyance channel is also illustrated in Photograph No. 22. Overall, the dikes and interior slopes appeared in good condition without any sign of significant erosion, settlement, or cracks.

Basin C

12. The splitter dike between the leachate pond and Basin C is illustrated in Photograph No. 23. The splitter dike appeared in good and stable condition without any settlement or misalignment.

13. The crest and interior slope of Basin C appeared in good condition (Photographs No. 24 and 25). The geosynthetic liner was in place, intact and in good condition without any tear or damage. The crest also used as haul road of the north dike appeared in good and stable condition. Photograph No. 24 illustrates the north discharge pipes from the landfill runoff and appeared to be functioning.

14. The runoff from the landfill is discharged into Basin C. Photograph No. 26 illustrates the inlets of the north discharge pipes and overflow discharge structure. At the time of inspection, the condition was dry and no water flowing from the pipes. The overflow discharge structure appeared in good, functional condition.

4.5 CHANGES THAT EFFECT STABILITY OR OPERATION (252:517-13-5(b)(2)(D))

Based on interviews with plant personnel and field observations there were no changes to the landfill since the last annual inspection that would affect the stability of the Landfill. CCR areas of the landfill (Cell 2, 3, and 4) were covered with geomembrane (Rainflap cover) and wind defender as part of the operations in order to prevent infiltration due to runoff.

5.0 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. All areas of the facility are maintained and in good condition.
- 2) The Plant is performing regular maintenance and inspections as required.
- 3) The north side drainage ditch at the east end shows excessive vegetation.
- 4) The repair of the south ditch subgrade at the box culvert apron location was completed.
- 5) Minor rutting was observed on the perimeter access road and leachate pond west slope.

5.2 MAINTENANCE ITEMS

The following specific maintenance items were identified during the visual inspection.

- 1) Clear excessive vegetation in the north side ditch.

- 2) Repair rutting at the access road and any significant erosion at the leachate pond slopes.

5.3 ITEMS TO MONITOR

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

5.4 DEFICIENCIES (252:517-13-5(b)(5))

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:

- 1) Uncontrolled seepage (leachate outbreak),
- 2) Displacement of the embankment,
- 3) Significant blockage of drainage features or drain pipes, or
- 4) Erosion, more than minor maintenance.

In general, routine inspections, monitoring and maintenance by plant personnel should continue. If you have any questions with regard to this report, please contact Shah Baig, P.E. at (Ph: 614-716-2241, email: sbaig@aep.com) or Bryan Brunton, P.E. (Ph: 614-716-3090, email: bwbrunton@aep.com).

LIST OF FIGURES

- ▶ Figure 1 – Site Location Map
- ▶ Figure 2 – Landfill Facility Map
- ▶ Figure 3 - Inspection Photograph Location Map (Landfill)
- ▶ Figure 4 - Inspection Photograph Location Map (Leachate Pond and Basin C)

Figure 1 – Site Location Map
Northeastern Landfill
Northeastern Plant, Oologah, OK

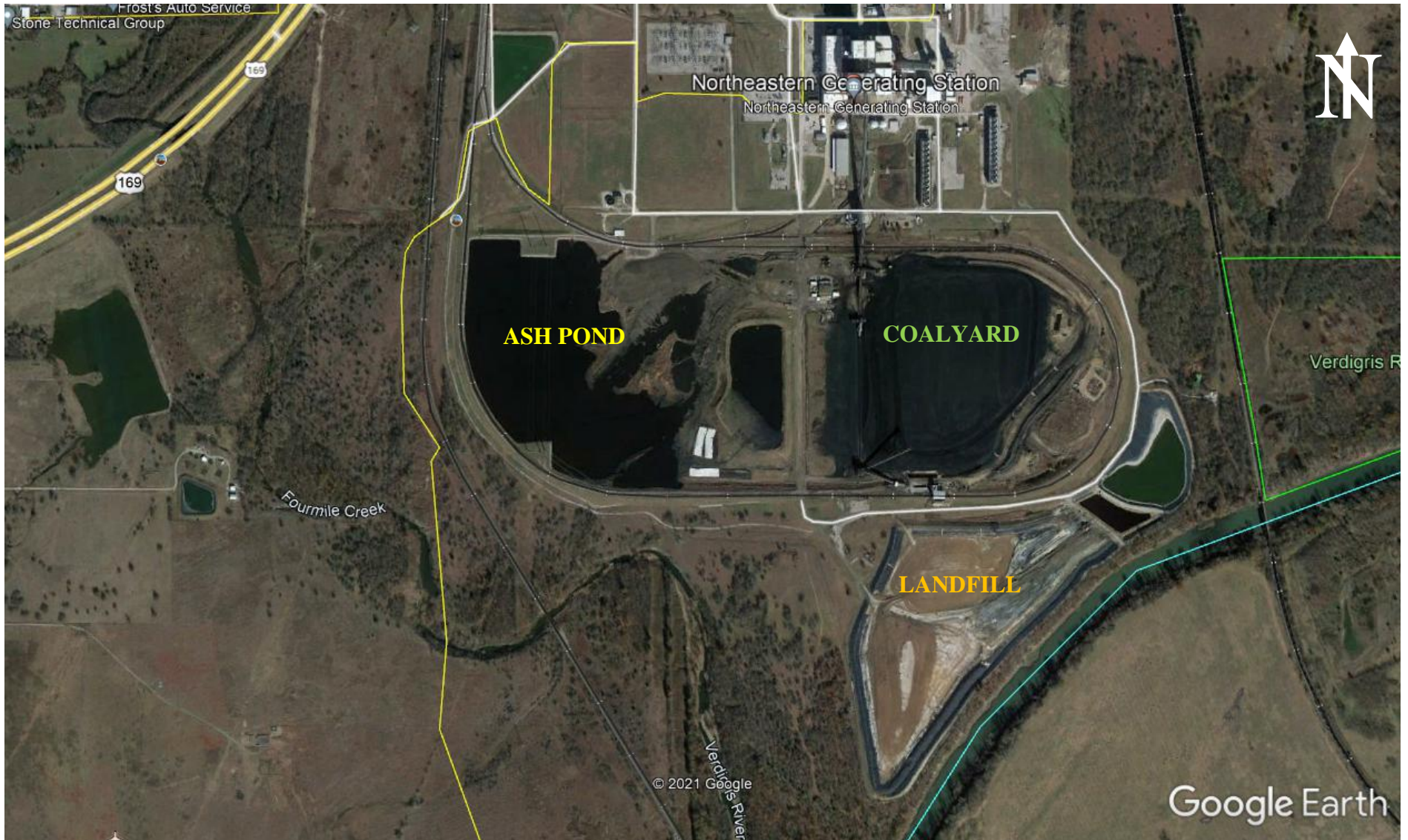


Figure 2 – Landfill Facility Map
Northeastern Landfill
Northeastern Plant, Oologah, OK

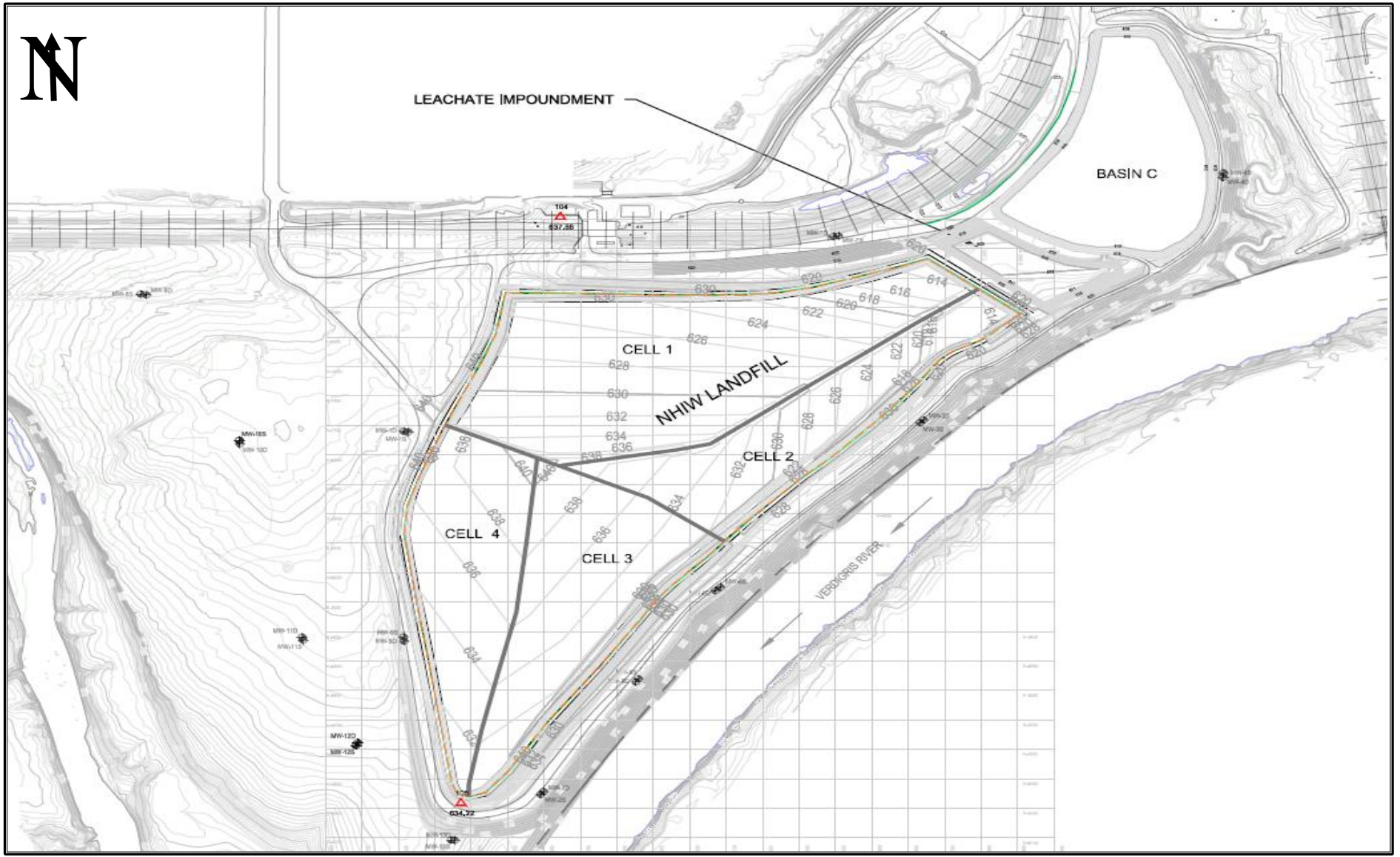


Figure 3 – Inspection Photograph Location Map
Northeastern Landfill
Northeastern Plant, Oologah, OK

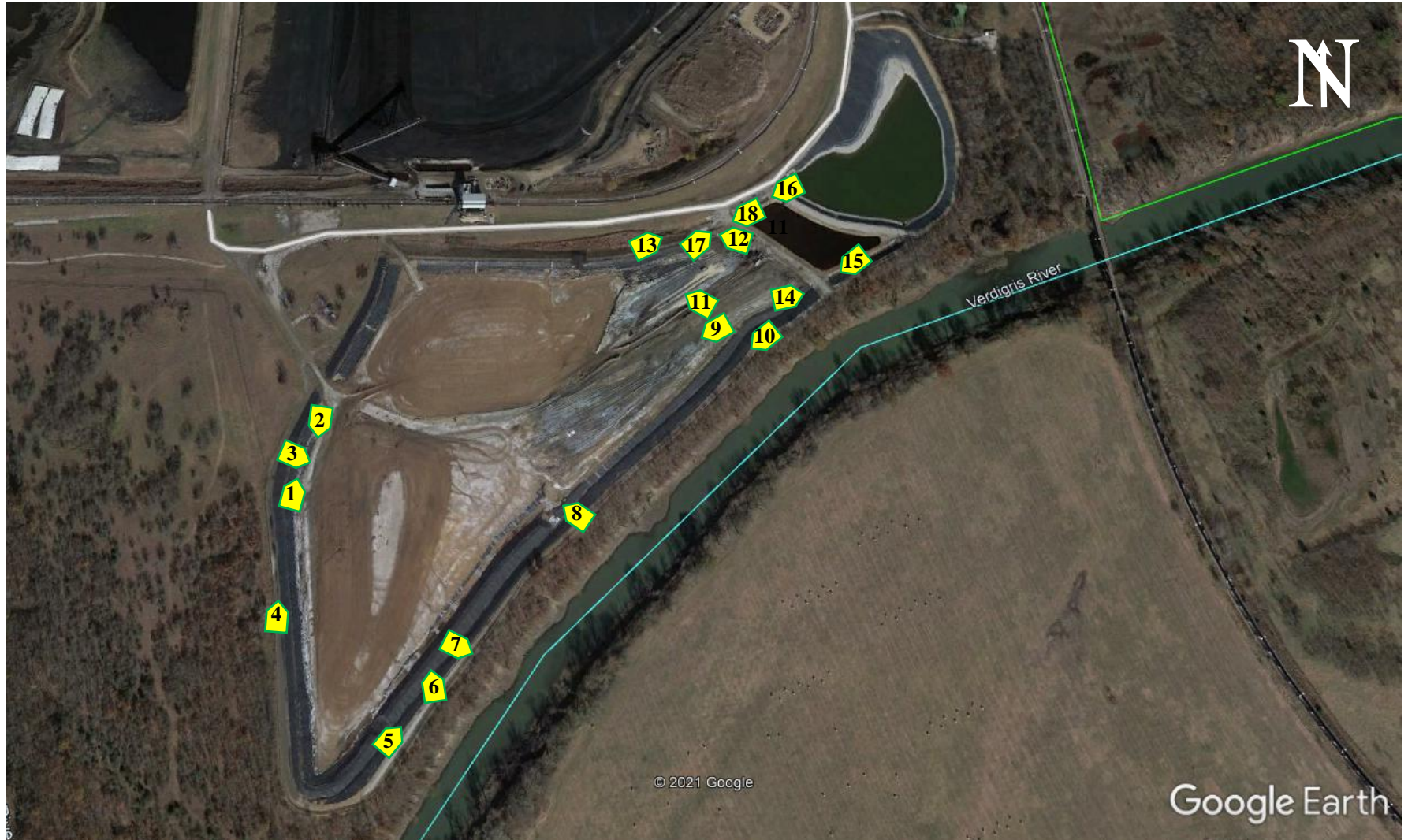


Figure 4 – Inspection Photograph Location Map
Northeastern Landfill Leachate Pond and Basin C
Northeastern Plant, Oologah, OK



ATTACHMENT

► Inspection Photographs

Photograph No. 1
Cell 4 berm and access
road (looking north).



Photograph No. 2
Cell 4 and berm (looking
south).



Photograph No. 3
Overall view of Cell 4.



Photograph No. 4
Minor erosion at the
access road.



Photograph No. 5
Cell 3 perimeter berm
and access road (looking
northeast).



Photograph No. 6
Overall view of Cell 3
with rainflap and wind
defender.



Photograph No. 7
Stability support berm slope adjacent to the river to the southeast side.



Photograph No. 8
Temporary stormwater control weir.



Photograph No. 9
Cell 2 area with rainflap and wind defender.



Photograph No. 10
Cell 2 access road and
perimeter berm.



Photograph No. 11
Overall view of Cell 1.



Photograph No. 12
Contact water channel of
Cell 1.



Photograph No. 13
Contact water ditch.



Photograph No. 14
South perimeter ditch pipe culvert inlet.



Photograph No. 15
South perimeter ditch pipe culvert outlet.



Photograph No. 16
North side ditch adjacent
to the leachate pond.



Photograph No. 17
North side ditch adjacent
to Cell 1.



Photograph No. 18
North ditch (looking
west).



Photograph No. 19
West dike of the leachate pond (looking northwest).



Photograph No. 20
Interior slope of the west dike, minor erosion.



Photograph No. 21
Interior slope of the east dike.



Photograph No. 22
North dike of the
leachate pond.



Photograph No. 23
Dike between the Basin
C and the leachate pond



Photograph No. 24
Interior slope of Basin C.



<p>Photograph No. 25 Overall condition of Basin C.</p>	 A wide-angle photograph of Basin C, a large water-filled containment area. The water is calm and reflects the clear blue sky. The far side of the basin is lined with a dark, impermeable liner and a concrete curb. A line of trees is visible in the background under a bright, clear sky.
<p>Photograph No. 26 Overflow discharge structure of Basin C.</p>	 A close-up photograph of the overflow discharge structure of Basin C. The structure is a concrete wall with a gate mechanism. The water level is high, reaching the top of the structure. The foreground shows the dark, impermeable liner of the basin, which appears to be in good condition. The background shows a grassy embankment and a line of trees under a clear blue sky.