



2024 Annual Landfill Inspection

Leland Olds Station Coal Combustion Residual Landfill



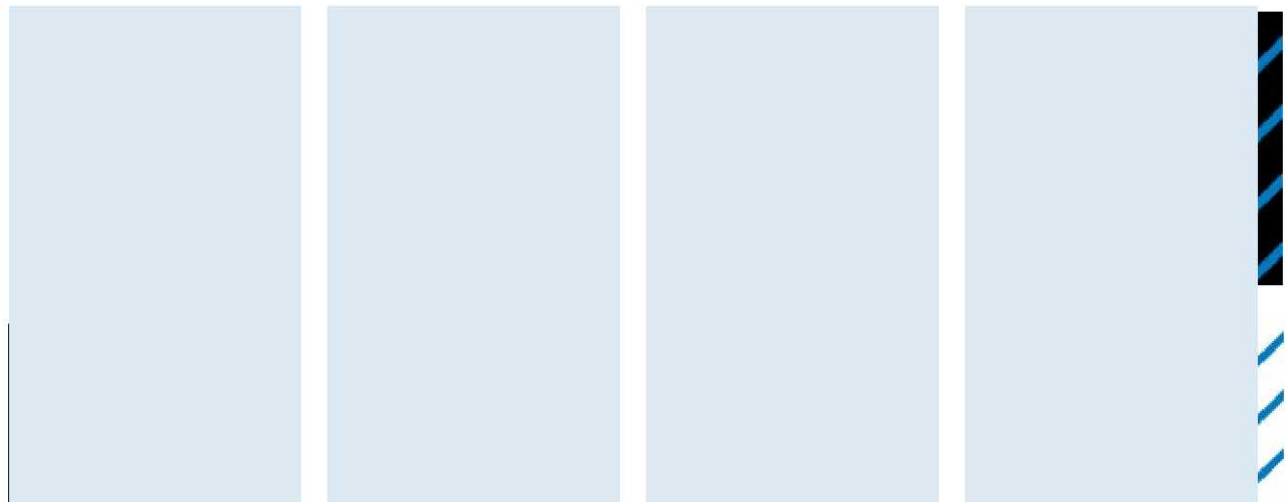
Prepared for
Basin Electric Power Cooperative

Prepared by
Barr Engineering Co.

January 2025

234 West Century Avenue
Bismarck, ND 58503
701.255.5460

barr.com





Certification

I hereby certify that I have examined the facility and, being familiar with the provisions of NDAC Title 33.1, Article 20, Chapter 08 and 40 CFR 257 Subpart D, attest that this Annual Landfill Inspection report has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and the requirements of NDAC 33.1-20-08-05-05 and 40 CFR § 257.84.

Kevin Solie
Barr Engineering Co.
ND Registration PE #: 9488



January 16, 2025
Date

2024 Annual Landfill Inspection

January 2025



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1 Introduction

In accordance with 40 CFR § 257.84(b)(2) and North Dakota Administrative Code (NDAC) 33.1-20-08-05-04, the purpose of this document is to fulfill the requirements for an Annual Inspection Report prepared by a Qualified Professional Engineer (QPE) to ensure the design, construction, operation, and maintenance of the Basin Electric Power Cooperative (Basin Electric) Leland Olds Station (LOS) landfill is consistent with recognized and generally accepted good engineering standards.

LOS operates two lignite-fired boilers, resulting in the production of coal combustion residuals (CCRs). CCRs are defined in 40 CFR § 257.53 (Definitions) as:

“CCR means fly ash, bottom ash, boiler slag, and flue gas desulfurization (FGD) materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.”

During 2024, a daily average of approximately 521 tons of FGD materials, fly ash, and boiler slag (oftentimes referred to as bottom ash) were hauled to and deposited in the LOS CCR landfill. Not all CCRs generated at LOS are managed in the landfill; significant amounts of boiler slag and fly ash are sold for beneficial use. The proportions of FGD, fly ash, and boiler slag produced at LOS are approximately 40%, 30% and 30% respectively. If CCR is not beneficially reused, the moisture-conditioned CCRs are transported by haul truck approximately 4.5 miles to the LOS Glenharold Mine Landfill (CCR landfill), where the CCRs are dumped, spread and compacted.

This report documents the annual landfill inspection performed by Kevin L. Solie, ND P.E. No. 9488 on November 18, 2024, as required by the NDAC and the federal CCR Rule. Other annual inspection duties, including a review of the available information regarding the status and condition of the CCR unit and storage capacity evaluations, were performed prior and following the on-site inspection. Mr. Solie is familiar with the facility and has made numerous visits over the past decade to the landfill.

2 Review of Existing Information

2.1 Facility File Review

The LOS Glenharold Mine Landfill, designated as 0143 by the North Dakota Department of Health (now known as the North Dakota Department of Environmental Quality (NDDEQ)) was first permitted for the disposal of CCRs in 1992. The landfill is located in an area of spoils left by the mining of the Hugel Lignite Bed. Disposal of CCRs at the site began in late 1992, within an area permitted for CCR disposal encompassing approximately 67.79 acres. A lateral expansion including eight future disposal cells encompassing 80.7 acres was approved by the NDDEQ in 2017. Cell 1, underlain by approximately 14.9 acres of composite landfill liner and a leachate collection system, began receiving CCRs in mid-2018. Cell 2 (A & B), encompassing 11.77 acres was certified and placed into service in early-2024.

At the beginning of 2024, the active disposal area encompassed approximately 62.25 acres in various stages of filling. Closure of 7.99 acres of the active area (except seeding cover) was completed in 2024, reducing the active area to approximately 54.26 acres. Approximately 57 acres of the landfill and surrounding area have undergone partial sequential closure through 13 previous landfill closure/capping projects (Basin Electric, 2024a).

The leachate collection system was jetted and inspected by a third-party vendor on October 15, 2024 and found to be in very good condition, with no defects noted. Routine maintenance was also performed on leachate collection system pumps and transducers.

2.2 Results of Weekly Inspections

During 2024, qualified individuals (generally the LOS Environmental Coordinator) conducted weekly inspections for any appearance of actual or potential structural weakness and other conditions which were disrupting or had the potential to disrupt the operation or safety of the CCR unit. Appearances of structural weakness may include, but are not limited to: (1) signs of piping and other internal erosion; (2) transverse, longitudinal, and desiccation cracking; (3) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions; (4) animal burrows; (5) excessive or lacking vegetative cover; and (6) slope erosion. Weekly inspection reports from January 2, 2024, through December 30, 2024, were reviewed as part of this annual inspection, and no deficiencies were found.

2.3 Results of Previous Annual Inspections

The annual inspection performed in December 2023 was reviewed as part of this annual inspection. The annual inspection documented the following visual observations and associated remedial activities:

- No deficiencies or releases were noted.
- No corrective measures were required.
- No recommendations other than normal regular maintenance items were noted.

The review of existing information confirmed that the design, construction, operation and maintenance of the landfill is consistent with recognized and generally accepted good engineering standards.

3 Onsite Inspection and Operational Review

An on-site inspection was performed by Kevin L. Solie, ND P.E. No. 9488 on November 18, 2024, to identify signs of distress or malfunction of the landfill. The visual inspection consisted of a review of the perimeter embankments, the active landfill face, final covered areas, leachate collection system appurtenances and the evaporation pond. All areas were readily accessible. No snow cover was present, thus allowing the unhindered observation of the ground surface. Visual inspection items and results are summarized in the following table:

Table 1 Summary of Visual Inspection

Item	Visual Inspection Description	Visibly Observed (Yes/No)	Notes
1	Proper placement of waste	Yes	Waste is contained within landfill limits.
2	Adequate slope stability and erosion control	Yes	No significant areas of erosion identified.
3	Run-on and Run-off controls properly functioning	Yes	Surface water controls appeared adequate and were functioning.
4	Surface water percolation minimized	Yes	No surface water ponding or excessive leachate generation observed.
5	Liner systems properly operated and maintained	Yes	Liner and cover system appeared to be in good condition at time of inspection.
6	Leachate collection systems properly operated and maintained	Yes	The leachate collection system was jetted and inspected by a third-party vendor on October 15, 2024 and found to be in very good condition, with no defects noted. Routine maintenance was also performed on leachate collection system pumps and transducers.
7	Water quality monitoring systems maintained and operating	Yes	Existing monitoring wells were accessible and appeared to be in good condition.
8	Dust adequately controlled	Yes	No dust issues observed to be present at time of inspection.
9	Landfill geometry consistent with facility plan	Yes	Plan was reviewed prior to visit and no geometry changes observed.
10	Animal burrows absent or of no significance	Yes	No burrows of significance identified.
11	Adequate vegetation density and vegetation maintenance	Yes	Vegetation appeared well established and well maintained. Basin Electric will monitor and remove/repair, if necessary, in 2025.
12	Debris controlled or absent	Yes	No windblown wastes noted.

4 Volume of CCR Contained

The annual Basin Electric waste volume survey for the LOS CCR landfill was conducted in late-2024. Based on the results of the survey, approximately 304,000 cubic yards of CCRs and other permitted materials were placed in the landfill since the previous survey in November 2023. The total volume of CCRs present in the LOS landfill as of November 2024 is approximately 15,054,000 cubic yards; approximately 8,050,000 cubic yards of permitted airspace remain (Basin Electric, 2024b).

5 Summary and Conclusions

The annual inspection revealed no appearance of actual or potential structural weakness of the CCR unit. No signs of distress or malfunction of the CCR unit were observed during the inspection and no changes have occurred that affect the stability or operation of the facility. The design, construction, operation and maintenance of the facility are consistent with recognized and generally accepted good engineering standards and industry practices. No corrective measures are recommended for the LOS CCR landfill.

6 References

AECOM, 2024. Basin Electric Power Cooperative Leland Olds Station Coal Combustion Residual Landfill Annual Inspection Report – 2023, January 16, 2024.

Basin Electric, 2024a. Drawing Number 0CY-9534, Revision 45 - Special Waste Landfill Permit SP-143 Topography, November 2024.

Basin Electric, 2024b. Drawing Number 0CY-9570, Revision 11 - Special Waste Landfill Permit SP-143 Volume History, December 2024.

Attachment A

Photolog



Subject: Southwest corner of active disposal area, toe of waste slope on expansion cell looking north-northeast

Location: Leland Olds Station CCR landfill, Stanton, ND

Date: November 18, 2025

Comments: Suggest operations continue to maintain gap between waste and edge of liner. Fill progression appears consistent with plan.



Subject: West berm of leachate pond, view to east

Location: Leland Olds Station CCR landfill, Stanton, ND

Date: November 18, 2025

Comments: No damage to exposed HDPE liner; pond has adequate freeboard.