



2022 Annual Landfill Inspection

R.M. Heskett Station Coal Ash Landfill

Prepared for
Montana-Dakota Utilities Company

January 2023

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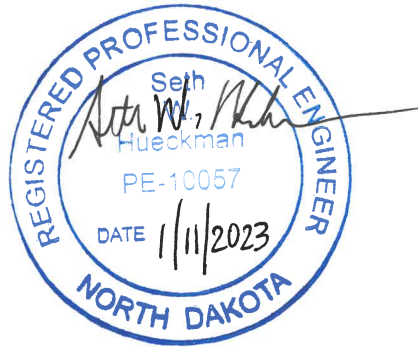
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Certifications

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 Subp. 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.



Seth W. Hueckman
Barr Engineering Co.
ND Registration Number PE-10057

Dated this 11th day of January, 2023

1.0 Introduction

Montana-Dakota Utilities Co. (MDU) operates the R.M. Heskett Station (Heskett), in Mandan, North Dakota. MDU operated two coal-fired boilers at Heskett, resulting in production of coal combustion residuals (CCR). CCR management is subject to the provisions of North Dakota Administrative Code (NDAC) Title 33.1, Article 20, Chapter 8, and the Federal Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments per 40 CFR 257 Subpart D these standards will be referred to herein as the CCR Rule. The coal-fired boilers were retired and ceased operating in February 2022. While the coal-fired boilers were operating, MDU hauled dry CCR material from the Heskett plant to the on-site landfill. MDU continued to maintain and inspect the on-site landfill throughout 2022 in accordance with the CCR Rule. Under NDAC 33.1-20-08-05-04 and 40 CFR §257.84, CCR landfills are subject to annual inspections by a qualified professional engineer (QPE). This report documents the annual landfill inspection performed by Seth W. Hueckman, P.E. on September 28, 2022, as required by the 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.

2.0 Review of Existing Information

A review of existing information was performed to confirm that the design, construction, operation and maintenance of the landfill is consistent with recognized and generally accepted good engineering standards.

2.1 Results of Weekly Inspections

Weekly inspection reports from January 4, 2022 through December 30, 2022 were reviewed as part of this annual inspection. No deficiencies were found.

2.2 Results of Previous Annual Inspections

The annual inspection performed in September 2021 was reviewed as part of this annual inspection. The annual inspection documented the following visual observations and associated remedial activities:

- Waste contained within active landfill limits. A couple piles of ash starting to encroach on the final cover limits on the west side of the active landfill limits. MDU pulled back those piles of ash in Fall 2021.
- Surface water controls appeared adequate. Southwest corner of the active landfill limits appeared to be an area where ash-contact run-off could run-on to the final cover during a large rain event. No evidence of ash-contact run-off leaving the active landfill limits was observed. MDU re-graded the southwest corner in Fall 2021 to mitigate this potential issue.
- Vegetation appeared well established and well maintained. Phase 1 Cover area vegetation not as well established as other previously closed portions of the landfill but appeared adequate.

3.0 Structural Integrity and Operational Review

An on-site inspection was performed on September 28, 2022 to visually identify signs of distress or malfunction of the landfill. The inspection consisted of an on-foot inspection of the perimeter embankments, the active landfill face, final covered areas, and the evaporation pond. Visual inspection items and results are summarized in the following table:

Table 3-1 Summary of Visual Inspection

Item	Visual Inspection Description	Visibly Observed (Yes/No)	Notes
1	Proper placement of waste	Yes – Except as Noted	Waste contained within active landfill limits. A couple piles of sand ash encroaching final cover on the west side of the active landfill limits. MDU pulled back piles of ash in Fall 2022.
2	Adequate slope stability and erosion control	Yes – Except as Noted	No significant erosion identified. Small rill on southwest side of existing earthen cover. MDU to monitor and repair in final cover construction planned for 2023.
3	Run-on and Run-off controls properly functioning	Yes	Surface water controls appeared adequate.
4	Surface water percolation minimized	Yes	No surface water ponding or excessive leachate generation observed.
5	Liner systems properly operated and maintained	Yes – Except as Noted	Liner and cover system in good condition at time of inspection. Two approximately 1-inch holes in the geomembrane cover flap near the crest of the surface water control berm (above water line) were identified during the inspection. Contact water still maintained within lined cover limits. Berm is temporary and will be removed during final cover construction planned for 2023.
6	Leachate collection systems properly operated and maintained	Yes – Except as Noted	No leachate collection system issues identified. Leachate cleanout and toe-drain pipes in the southeast corner of the active landfill are partially covered with vegetation. MDU to fully expose and mark pipe locations in Spring 2023.
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 present at time of inspection. Active landfill limits covered with shredded tire refuse to limit dust emissions.
9	Landfill geometry consistent with facility plan	Yes	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. Minor Russian olive vegetation observed on final cover and perimeter embankment. MDU removed in Fall 2022.
12	Debris controlled or absent	Yes	No debris present.

No appearances of an actual or potential structural weakness of the landfill, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the landfill, were observed during the inspection. Retirement of the coal-fired boilers ended the production of CCR at

Heskett. Subsequently, dry CCR is no longer being hauled to and disposed in the landfill. Remaining landfill capacity will be consumed with waste generated during the decommissioning of the coal-fired boilers currently in progress and will be followed by final closure of the landfill in 2023. Furthermore, no other changes to the landfill design, maintenance, or operations were observed that could affect the stability or operation of the landfill.

4.0 Volume of CCR Contained

A topographic survey of the landfill was performed in September 2022 to calculate volumes of CCR contained in the CCR unit and capacity remaining. The following table summarizes the volume of CCR contained in the landfill:

Table 4-1 Volume of CCR Contained in Landfill

Slot/Cell	Approximate Permitted Design CCR Capacity (cy)	Current CCR Capacity Consumed (cy)	Approximate Remaining CCR Capacity (cy)	Status of Slot/Cell
Slots 1-5	700k	700k	0k	Closed
Slots 6-10	1,150k	1,150k	0k	Slots 6 & 7 Closed, Slots 8, 9, & 10 Partially Closed and Partially Active
Vertical Expansion Space	182k (See Note 1)	156k	26k	Entered Vertical Expansion Space to Construct Phase 1 Cover in 2019
Total	2,032k	2,006k	26k	N/A

Notes:

- 1) A new solid waste permit was issued on February 14th, 2022, that reduced the Permitted Design CCR Capacity from 1,420kcy (Cells 1-8) to 182kcy.