Coal Combustion Residuals

2017 Annual Fugitive Dust Control Report

Prepared for
Montana-Dakota Utilities Company
R.M. Heskett Station

December 2017

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1.0 Introduction

The process of ash disposal at the R.M. Heskett Station (Heskett) of Montana-Dakota Utilities Co. (MDU) is subject to Federal Standards for the Disposal of Coal Combustion Residuals (CCR) in Landfills and Surface Impoundments per 40 Code of Federal Regulations (CFR) Part 257 Subpart D (CCR Rule). CCR is defined in 40 CFR §257.53, Definitions as follows:

> *"…CCR means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers…"*

MDU developed a CCR Fugitive Dust Control Plan (FDCP) to satisfy the requirements described in 40 CFR §257.80, Air Criteria, as they apply to CCR units, roads, and other CCR management and material handling activities at the Heskett facility. Heskett placed the FDCP in the facility's operating record on October 15, 2015, as required by 40 CFR §257.105(g)(1).

2.0 Objective

MDU has compiled this annual report on CCR fugitive dust control for the Heskett facility to meet the objectives of 40 CFR §257.80(c). The annual report includes the following:

- *a description of the actions taken by the owner or operator to control CCR fugitive dust in compliance with the FDCP, Rev. 0,*
- *a record of all citizen complaints, and*
- *a summary of any corrective measures taken.*

As stated in 40 CFR §257.80(c), this report has been completed *"one year after the date of completing the previous report."* As required by 40 CFR §257.105(g), the report has been added to the facility's operating record *"as it becomes available."*

3.0 Fugitive Emission Sources

Heskett's CCR FDCP identifies sources where possible emissions may occur in the process of transporting multiple types of CCR from Units 1 and 2 to the CCR disposal facility and subsequent emissions at the disposal facility. Unit 1 and Unit 2 are both coal-fired boilers that produce CCR. The CCR is divided between three silos depending on CCR type: fly ash or bottom ash. Each silo is equipped with a truck loading area. The ash is conditioned using water as it leaves the silo and is loaded into trucks. Bottom ash is removed every third or fourth day. Heskett has the capability to remove mechanical ash (heavier fly ash) from Unit 2 and store it in a separate silo as needed. Once the various types of ash are generated, the CCR FDCP applies to potential emission points outlined below. The location of each emission source is denoted on Diagram 1 – Site Plan located in Appendix A of this report.

CCR Disposal Facility: Heskett operates an on-site CCR disposal facility (landfill). CCR emissions can occur during vehicle travel on the CCR surface within the disposal facility and during dry weather/high wind conditions.

Truck Loading: Haul trucks transport CCR from the plant to the landfill. Truck loading occurs at various locations within the facility depending on the type of CCR as previously described and are shown on Diagram 2 – Site Area located in Appendix A of this report.

Haul Road: The haul truck transports CCR along the gravel haul road to the landfill. CCR emissions can occur along the haul road.

Bunker/containment: At times some boiler slag and on rare occasions other CCR is stored in containment before being transferred to the landfill.

Placement: The CCR is removed from the haul truck into the currently active CCR landfill. CCR emissions can occur during the truck dumping operation and during spreading of the CCR within the landfill.

4.0 Operating Procedures and Control Measures

In 2017, Heskett implemented the following types of CCR fugitive dust operating procedures and control measures to minimize CCR from becoming airborne:

- **Conditioned CCR by adding water to CCR as it leaves the silo before loading into haul trucks.** The water to ash ratio is manually adjusted by Heskett personnel to account for varying weather conditions. Water conditioned CCR is heavier and agglomerates, allowing the CCR to be less susceptible to wind generating fugitive dust.

- **Delayed hauling in high wind conditions.** The silos are able to store CCR for more than one day but less than two days. This control method was appropriate because the site region occasionally experienced high wind conditions in 2017. High wind accelerates drying of moisture-conditioned CCR and causes increased CCR fugitive dust transport. By suspending hauling during high wind conditions, accelerated drying of the CCR that occurs after placement in the landfill and the emissions that can occur during CCR discharge from the haul trucks were avoided.

- **Applied water to haul roads using a water truck.** Truck traffic, sun exposure, and wind conditions can increase the mobility of dust on unpaved haul roads. In 2017, watering reduced soil agitation and dust generation caused by these factors. Water truck fill locations are denoted on Diagram 1 – Site Plan and Diagram 2 - Site Area located in Appendix A of this report.

- **Placement of fluidized bed material on top of the fly ash in the CCR disposal facility.** The weight of the fluidized bed material prevents fly ash from becoming airborne. This method utilized the readily available source of fluidized bed material to minimize emissions from deposits of the lighter fly ash.

- **Maintained CCR placement in the landfill to minimize CCR fugitive dust emissions.** Heskett implements a CCR placement procedure with fill progressing upwind. The progression upwind mitigates CCR fugitive dust emissions by allowing more downwind travel distance within the landfill, which increases the opportunity for any airborne dust to settle out of the air within the landfill. This placement procedure minimized potential CCR transport by air currents into populated areas.

- **Use of pay loaders in place of tracked dozers for CCR placement.** Heskett operates pay loaders to move and place CCR in the landfill. The bucket of the loader is able to contain the CCR and significantly reduces the amount of CCR that becomes airborne as CCR is spread after placement into the landfill.

- **Maintain a grass or cover crop on the covered portion of the CCR disposal facility.** In 2017, Heskett mowed and removed hay from the vegetated, covered portion of the landfill.

- **Respond to and cleanup of CCR spills.** If a CCR spill occurred and was less than approximately one cubic foot of CCR (i.e., size of a 5-gallon bucket), removal of spilled CCR was completed by

the end of the day. This procedures minimizes CCR exposure time to prevent it from becoming airborne. In 2017, there were no spills greater than approximately one cubic foot.

5.0 Monitoring

40 CFR §257.80(b)(4), Air Criteria, stipulates that, *"The CCR fugitive dust control plan must include a description of the procedures the owner or operator will follow to periodically assess the effectiveness of the control plan."* A person other than a professional engineer may perform monitoring responsibilities. In order to ensure that operations are in accordance with the CCR FDCP, Heskett personnel monitored operations and meteorological conditions as outlined below on a daily and weekly basis. In the event that operations were suspended or idled, the associated operations did not require monitoring until such time that operations restarted.

- Boundary Dust Observation Log: Recorded temperature, wind speed (provided by national weather service), wind direction (provided by national weather service), sky condition, and dust observation. The 2017 Boundary Observation Log (from November 24, 2016 through December 7, 2017) is maintained at Heskett.

- Precipitation Log: Recorded date and precipitation amount (obtained from rain gauge on site). The 2017 Precipitation Log (from November 24, 2016 through December 7, 2017) is maintained at Heskett.

- Ash Haul Log: Recorded date, time, landfill area in which CCR is placed, and whether spill occurred. Heskett hauled 2,684.5 loads of fly ash, 444.5 loads of sand ash, and 107.5 loads of coarse ash from November 23, 2016 through December 7, 2017. The 2017 weekly landfill inspection checklists, daily log of total ash haul trucks, and daily log of ash haul road observations (from December 14, 2016 through December 7, 2017) are maintained at Heskett.

6.0 Recordkeeping

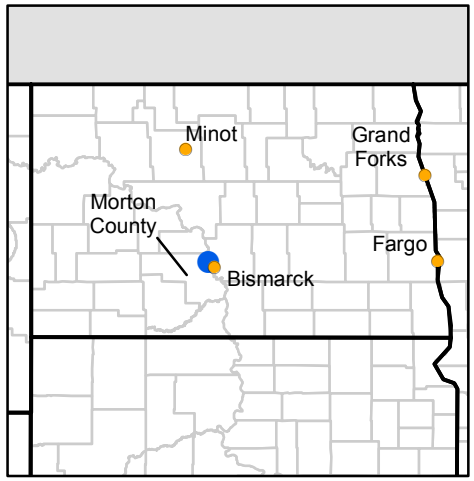
MDU has a history of positive communication with the community. As required by 40 CFR §257.80(b)(3), Heskett maintained a log for any citizen complaints regarding CCR fugitive dust events at the facility and any corrective measures taken. In 2017, Heskett did not receive any citizen complaints. Therefore, no corrective measures were required.

7.0 Reporting

This report will be added to the facility's operating record *"no later than 14 months after placing the initial CCR fugitive dust control plan in the facility's operating record,"* as required in 40 CFR §257.80(c). Within 30 days of placing this report in the operating record it will be made publicly available on the MDU CCR web site in compliance with 40 CFR §257.107(g)(2), Publicly Accessible Internet Site Requirements. Additionally, to comply with 40 CFR §257.106(g)(2), Notification Requirements, MDU will *"notify the State Director… when [annual fugitive dust control plan] has been placed in the operating record and on the owner or operator's publicly accessible internet site."* Notification to the State Director will be made to ccr.solidwaste.reports@nd.gov as requested by the North Dakota Department of Health.

Appendix A

Diagrams



- Ash Haul Route
- CCR Disposal Facility
- Potential Fill Station for Water Truck
- Water Truck Fill Location
- Bottom Ash Silo/Loading
- Fly Ash Silo/Loading
- Fluidized Bed Material Silo/Loading
- Storage Bin

N

0 400 800 1,600

Feet

1 Inch = 800 Feet

Aerial Photography, USDA-FSA
Aerial Photography Field Office, 2014

DIAGRAM 1 - SITE PLAN
R.M. Heskett Station
Montana Dakota Utilities Co.
Morton County, North Dakota

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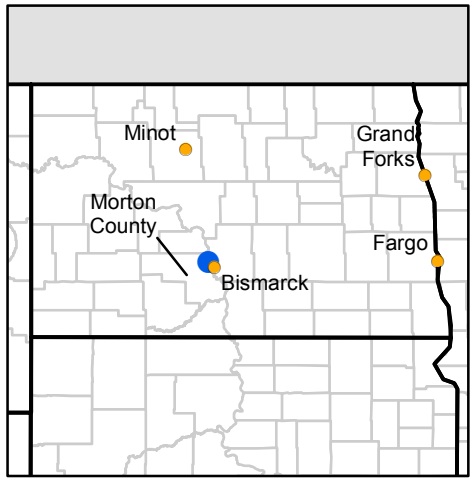

- Ash Haul Route
- Water Truck Fill Location
- Bottom Ash Silo/Loading
- Fly Ash Silo/Loading
- Fluidized Bed Material Silo/Loading
- Storage Bin

N

0 125 250 500

Feet

1 Inch = 250 Feet

Aerial Photography, USDA-FSA
Aerial Photography Field Office, 2014

DIAGRAM 2 - SITE AREA
R.M. Heskett Station
Montana Dakota Utilities Co.
Morton County, North Dakota

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