



2020 Annual Landfill Inspection

Big Stone Plant - Ash Disposal Area

Prepared for
Otter Tail Power Company
Big Stone City, South Dakota

December 2020

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Certifications

I hereby certify that I, or someone under my direct supervision, have examined the Big Stone Plant Ash Disposal Area CCR Landfill, and, being familiar with the provisions of 40 CFR 257 Subp. D and standard practices of the industry, I have determined that the Ash Disposal Area design, construction, operation, and maintenance are consistent with generally accepted good engineering standards.

Paul T. Swenson, P.E.
Barr Engineering Co.
Registration Number 8949

Dated this 11th day of December, 2020

1.0 Introduction

Otter Tail Power Company (OTP) operates the Big Stone Plant (Big Stone), located near Big Stone City, South Dakota. Big Stone is a coal-fired electrical generating plant, operation of which results in coal combustion residuals (CCR) as a by-product. Management of CCR is subject to Federal Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments per 40 CFR 257 Subpart D (CCR Rule). CCR generated by the plant is placed in an on-site landfill or sent off-site for beneficial use. The on-site landfill is known as the Ash Disposal Area (ADA).

The ADA is required to meet CCR Rule provisions for landfills and is therefore subject to annual inspections by a qualified professional engineer (QPE). This report documents the 2020 ADA annual inspection, as required by the CCR Rule.

2.0 Review of Existing Information

Existing information was reviewed to confirm that the design, construction, operation, and maintenance of the ADA are consistent with recognized and generally accepted good engineering standards. No deficiencies were found, and the existing information reviewed is described in following subsections.

2.1 Results of Weekly Inspections

Weekly landfill inspections were conducted by a qualified person from December 2019 through November 2020. Inspection reports from December 3, 2019, through November 24, 2020, were reviewed as part of the QPE annual inspection. Review of the weekly inspection reports did not identify any potential issues with operation or maintenance of the ADA.

2.2 Results of Previous Annual Inspections

The 2019 annual inspection report was reviewed in preparing this 2020 report. The 2019 report did not identify any significant deficiencies at the facility when compared with industry practices and state permit and rule requirements.

3.0 Structural Integrity and Operational Review

An on-site inspection was performed on October 10, 2012 to visually identify signs of distress or malfunction of the CCR Unit. The results of the inspection are included in the following subsections.

3.1 Visual Inspection of Ash Disposal Area

Inspection consisted of on-foot inspection of perimeter berms and embankments, the active ADA face, and final covered areas. Visual inspection items and results are summarized in the following table:

Table 3-1 Summary of Visual Inspection

Item	Visual Inspection Description	Consistent With Good Engineering Standards (Yes/No)	Notes
1	Proper placement of waste	Yes	None
2	Adequate slope stability and erosion control	Yes	None
3	Run-on and Run-off controls properly functioning	Yes	None
4	Surface water percolation minimized	Yes	None
5	Contact water systems properly operated and maintained	Yes	None
6	Water quality monitoring systems maintained and operating	Yes	None
7	Dust adequately controlled	Yes	None
8	Geometry of ADA is unchanged from previous inspection.	Yes	None
9	Animal burrows absent or of no significance	Yes	None
10	Adequate vegetation density and vegetation maintenance	Yes	Vegetation well established. Site is hayed every 2 years (done last year). Some small trees/brush present along the east embankment. OTP removed brush and trees identified during the annual inspection along embankment shortly after the annual inspection.
11	Debris controlled or absent	Yes	None

3.2 Other Changes

No other changes to the CCR Unit design, maintenance, or operations were observed as part of the annual inspection that could affect the stability or operation of the CCR Unit.

4.0 Volume of CCR Contained in ADA

The in-place CCR volume reported in 2019 were based on survey results provided by OTP. The survey quantity calculations used an incorrect final cover section thickness and an incorrect vertical datum resulting in an overestimate of volume placed in 2019. With the corrected cover section thickness and proper vertical datum, it was calculated that approximately 2.89 million cubic yards of CCR were in place in the ADA at the time of the 2019 QPE inspection on October 18, 2019.

Volume of ash placement in 2020 is based on scaled ash quantities from OTP's reporting records. Assuming an in-place unit weight of 80 pounds per cubic foot, , approximately 52,000 cubic yards were added to the landfill between inspections, so approximately 2.95 million cubic yards of CCR were in place in the ADA at the time of the QPE inspection on October 12, 2020.