2017 Annual Landfill Inspection

Big Stone Plant - Ash Disposal Area

Big Stone City, South Dakota

Prepared for
Otter Tail Power Company

December 2017

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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 2017.12.12 15:26:19 -06'00'

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

Dated this 12th day of December, 2017

1.0 Introduction

Otter Tail Power Company (OTP) operates the Big Stone Plant (Big Stone), located near Big Stone City, South Dakota. The Big Stone Plant is a coal-fired electrical generating plant. Coal combustion residuals (CCR) management 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 the CCR Rule for landfills, and is therefore subject to annual inspections by a qualified professional engineer (QPE). This report documents the 2017 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 October 2016 through November 2017. Inspection reports from October 3, 2016, through November 28, 2017, were reviewed as part of the QPE annual inspection.

2.2 Results of Previous Annual Inspections

The 2016 annual inspection report was reviewed in preparing this 2017 report. The 2016 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 August 10, 2017, 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 on cover appeared well established and well maintained at time of inspection. Small area of repair needed for vegetation on slope outside of landfill footprint, east of landfill.
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

A topographic survey was conducted in July 2016 to establish a volume of CCR in place in the ADA at that time. CCR generation has been calculated since the 2016 survey to serve as the basis for estimating the volume of CCR contained in the ADA in 2017. Assuming an in-place unit weight of 80 pounds per cubic foot and based on OTP's reporting records, approximately 2.77 million cubic yards of CCR were in place in the ADA at the time of the 2017 QPE inspection. Approximately 2.78 million cubic yards of CCR were in place in the ADA as of November 30, 2017.