



2016 Annual Surface Impoundment Inspection

Coyote Station – Nelsen Pond

Beulah, North Dakota

Prepared for
Otter Tail Power Company

November 2016

Bismarck, ND

2016 Annual Surface Impoundment Inspection

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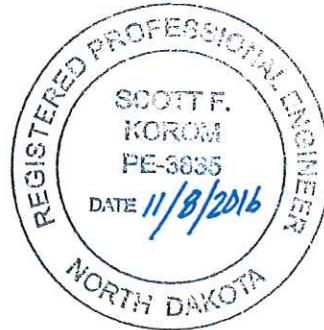
Certifications

I hereby certify that I have examined the facility and, being familiar with the provisions of 40 CFR 257 Subp. D, attest that Otter Tail Power Company's Coyote Station, Nelsen Pond CCR surface impoundment design, construction, operation, and maintenance are consistent with recognized and generally accepted good engineering standards, including consideration of applicable industry standards and the requirements of 40 CFR §257.83.



Scott F. Korom, PE 3835
Barr Engineering Co.
North Dakota Registration Number PE 3835

Dated this 8th day of November, 2016



Scott F. Korom

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1.0 Introduction

Otter Tail Power Company (OTP) operates the Coyote Station (Coyote), in Beulah, North Dakota. Coyote, is a coal-fired electrical generator that results in the production of coal combustion residuals (CCR). 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). OTP periodically dredges and pumps CCR material that accumulates in the incised Slag Pond to Nelsen Pond to dewater prior to disposal.

Nelsen Pond is required to meet the CCR Rule for surface impoundments, and is therefore subject to annual inspections by a qualified professional engineer. This report documents the annual inspection performed by Scott F. Korom, PE, on October 18, 2016, as required by the CCR Rule.

2.0 Review of Existing Information

A review of existing information was performed to confirm that the design, construction, operation, and maintenance of the surface impoundment is consistent with recognized and generally-accepted good engineering standards. No deficiencies were found and the existing information reviewed is described in the following subsections.

2.1 CCR Unit Design and Construction Information

A report on the history of construction of Nelsen Pond is located at an OTP website (<http://www.ccr-cs.net/nelsen-pond-sp-170/>). It was reviewed and no deficiencies were found.

2.2 Previous Periodic Structural Stability Assessments

The initial Structural Stability Assessment, dated October 17, 2016, is located at an OTP website (<http://www.ccr-cs.net/nelsen-pond-sp-170/>). It concluded that "The CCR unit was designed, constructed, and is operated and maintained with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded."

2.3 Previous Annual Surface Impoundment Inspection Reports

The initial Annual Surface Impoundment Inspection Report, dated January 2016, is located at an OTP website (<http://www.ccr-cs.net/nelsen-pond-sp-170/>). It stated that existing site information was reviewed, a site inspection was completed, and no deficiencies were found.

2.4 Weekly Inspections

The 2015 Annual Surface Impoundment Inspection Report covered OTP weekly surface impoundment inspections by a qualified person through December 23, 2015. For the Annual Surface Impoundment Inspection Report for 2016, weekly inspection reports were reviewed from December 30, 2015, through October 13, 2016, with most of the weekly inspections having been done by Mr. Justin Sailer, Plant Engineer. The inspection reports were dated at intervals not exceeding seven days and no significant problems in the design, construction, operation, and maintenance of Nelsen Pond were noted. Mr. Sailer reported that over the past year there was no change in the geometry of Nelsen Pond and no monitoring instrumentation was used; in addition, no CCR or CCR-related fluids were added or removed from the impoundment.

The September 2, 2016, report recorded that a consultant took three soil samples from the Nelsen Pond clay liner. Mr. Sailer reported that the locations where soil samples were taken from the liner were backfilled and repaired with granular bentonite.

3.0 Structural Integrity and Operational Review

An on-site inspection was performed on October 18, 2016, 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 Nelsen Pond

Inspection consisted of on-foot inspection of perimeter berms and embankments, toe-of-slope, mid-slope, and crest-of-slope. Visual inspection items and results are summarized in the following table:

Table 3-1 Summary of Visual Inspection

Item	Visual Inspection Description	Inspected (Yes/No)	Notes
1	Free of signs of excessive, turbid, or sediment-laden seepage.	Yes	No evidence of seepage at time of inspection.
2	Free of signs of piping and other internal erosion.	Yes	No evidence of piping or other internal erosion identified at time of inspection.
3	Free of signs of deep transverse, longitudinal, and desiccation cracking.	Yes	No evidence of deep transverse, longitudinal or desiccation cracking identified at time of inspection.
4	Free of signs of slides, bulges, boils, sloughs, scarps, sinkholes, or depressions.	Yes	No evidence of slides, bulges, boils, sloughs, scarps, sinkholes, or depressions observed at time of inspection.
5	Geometry of surface impoundment is unchanged from previous inspection.	Yes	No evidence of any change in the geometry of the surface impoundment.
6	Free of signs of abnormally high pool levels.	Yes	No liquid was in the impoundment.
7	Animal burrows absent or of no significance.	Yes	No burrows of significance identified at time of inspection.
8	Adequate vegetation density and vegetation maintenance.	Yes	Vegetation generally appeared well-established and well-maintained at time of inspection.
9	Adequate slope stability and erosion control.	Yes	No significant erosion identified at time of inspection.
10	Debris controlled or absent.	Yes	Other than a single wooden pallet, no debris present in impoundment at time of inspection.
11	Outlet control structure is free of obstructions.	Yes	Outlet control structure was free of obstructions at time of inspection.

3.2 Other Changes

No other changes to the CCR Unit design, maintenance, or operations were observed or reported by plant personnel as part of the annual inspection that could affect the stability or operation of the CCR Unit. The annual inspection did not reveal any conditions that would cause concern with regard to actual or potential structural weakness of the CCR unit, or any existing conditions that are disrupting, or have the potential to disrupt, the operation and safety of the CCR unit and appurtenant structures.

4.0 Volume of CCR Contained

The following table summarizes the CCR Unit usage at the time of the inspection and since the previous annual inspection. Nelsen Pond is normally dry, except when slag has been recently placed for dewatering; OTP reported that such use did not occur since the previous annual inspection. The values below are based on there currently being no standing water in Nelsen Pond and that the dry CCR is about 0.5 feet thick over the underlying clay liner, the latter as reported by Mr. Sailer.

Table 4-1 Approximate Minimum, Maximum, and Present Depth and Elevation of Impounded Water and CCR.

Water Level	Approx. Depth of Impounded CCR and Water (ft)	Approx. Elevation of Impounded CCR and Water (ft)	Approx. Volume of Impounded CCR and Water (cy)	Approx. Volume of Storage Capacity Remaining (cy) ¹
Minimum ²	0.25	Ave. elev. = 1935.25	1,500	41,000
Maximum ³	0.5	Ave. elev. = 1935.5	3,000	39,500
At Inspection	0.5	Ave. elev. = 1935.5	3,000	39,500

¹ Estimated total capacity of Nelsen Pond with 2 ft of freeboard (elev. = 1942 ft) is 42,500 cy.

² Based on the 2015 Annual Surface Impoundment Inspection Report. When liner samples were collected in 2016, it was estimated that the existing ash thickness on the liner is about six inches, or three inches more than was reported in 2015. The 2016 estimate is not a result of more ash having been added to Nelsen Pond during 2016, but rather is a result of further investigation.

³ Based on the 2016 Annual Surface Impoundment Inspection.