



2017 Annual Surface Impoundment Inspection

Coyote Station – Nelsen Pond

Beulah, North Dakota

Prepared for
Otter Tail Power Company

November 2017

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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 7th day of November, 2017

Scott F. Korom
2017.11.07 15:10:39 -06'00'

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 includes the information required by § 257.83 (b) Annual inspections by a qualified professional engineer and documents the annual inspection performed by Scott F. Korom, PE, on September 6, 2017, 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

The Nelsen Pond History of Construction (October 2016) report is located at OTP's CCR website (<http://www.ccr-cs.net/nelsen-pond-sp-170/>). It was reviewed in the 2016 Annual Inspection Report and no deficiencies were found. The report has not been revised since it was last reviewed.

2.2 Previous Periodic Structural Stability Assessments

The initial Structural Stability Assessment report (Carlson McCain, October 17, 2016) is located at OTP's CCR 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 2015 Annual Surface Impoundment Inspection Report (Barr Engineering Co. [Barr], January 2016) and the 2016 Annual Inspection Report (Barr, November 2016) are located at OTP's CCR website (<http://www.ccr-cs.net/nelsen-pond-sp-170/>). Both reports stated that existing site information was reviewed, a site inspection was completed, and no deficiencies were found.

2.4 Weekly Inspections

Weekly inspection reports from October 20, 2016, through October 31, 2017 were reviewed for this report. All but one of the weekly inspections were 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 12, 2017, weekly report recorded that Barr Engineering was onsite "last Wednesday" (September 6, 2017) for the annual inspection and that the North Dakota Department of Health was onsite "last Thursday" (September 7, 2017) for the quarterly inspection. Otherwise, nothing noteworthy was documented on the weekly inspection reports provided by OTP.

3.0 Structural Integrity and Operational Review

An on-site inspection was performed on September 6, 2017, to visually identify signs of distress or malfunction of the CCR Unit. No deficiencies were found and 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	Consistent With Good Engineering Standards (Yes/No)	Notes
1	Free of signs of excessive, turbid, or sediment-laden seepage.	Yes	None.
2	Free of signs of piping and other internal erosion.	Yes	None.
3	Free of signs of deep transverse, longitudinal, and desiccation cracking.	Yes	None.
4	Free of signs of slides, bulges, boils, sloughs, scarps, sinkholes, or depressions.	Yes	None.
5	Geometry of surface impoundment is unchanged from previous inspection.	Yes	None.
6	Free of signs of abnormally high pool levels.	Yes	None.
7	Animal burrows absent or of no significance.	Yes	None.
8	Adequate vegetation density and vegetation maintenance.	Yes	None.
9	Adequate slope stability and erosion control.	Yes	None.
10	Debris controlled or absent.	Yes	Recommended removal of wood pallet and two small piles of debris.
11	Outlet control structure is free of obstructions.	Yes	None.

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 next expected use is anticipated to be in 2019.

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, as noted in the 2016 Annual Inspection Report.

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	0.5	Ave. elev. = 1935.5	3,000	39,500
Maximum	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.