



Annual CCR Surface
Impoundment Inspection
Slag Pond

**Nelson Dewey Generating Station
Cassville, Wisconsin**

Prepared for:

Wisconsin Power and Light Company

Nelson Dewey Generating Station
11999 County Highway VV
Cassville, Wisconsin 53806

Prepared by:

SCS ENGINEERS
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December 2017
File No. 25216054.00

Offices Nationwide
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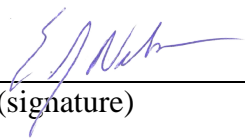
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PE CERTIFICATION

	<p>I, Eric J. Nelson, hereby certify that this Annual CCR Surface Impoundment Inspection Report meets the requirements of 40 CFR 257.83(b)(2), was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.</p>
	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  (signature) </div> <div style="text-align: center;"> 12/22/2017 (date) </div> </div>
	<p style="text-align: center;">Eric J. Nelson (printed or typed name)</p>
	<p>License number <u>E-37855-6</u></p>
	<p>My license renewal date is <u>7/31/2018</u>.</p>
<p>Pages or sheets covered by this seal: <u>All - WPL Nelson Dewey Slag Pond Annual CCR Rule Inspection,</u> <u>December 2017</u></p>	

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1.0 INTRODUCTION

On November 13, 2017, SCS Engineers (SCS) completed an annual inspection of the Slag Pond at the Wisconsin Power and Light Company (WPL) Nelson Dewey Generating Station (NED) in Cassville, Wisconsin. The inspection was completed in accordance with the U.S. Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) rule, 40 CFR 257 Subpart D, in particular 257.83(b)(1). WPL is currently in the process of closing the Slag Pond.

1.1 PURPOSE

The purpose of the annual inspection is to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. Per 40 CFR 257.83(b)(1), the inspection must, at a minimum, include:

- A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by 257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections)
- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures
- A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation

This annual inspection report has been prepared in accordance with the requirements of 40 CFR 257.83(b)(2) to document the annual inspection.

1.2 BACKGROUND

WPL is in the process of decommissioning the generating station and began Slag Pond closure construction in July 2017. During closure, the Slag Pond remains an existing CCR surface impoundment under the CCR rule. According to 40 CFR 257.83(b)(1), an annual inspection by a qualified professional engineer is required for existing CCR surface impoundments that are subject to the periodic structural assessment requirements in 40 CFR 257.73(d) or 257.74(d). Based on the January 15, 2016 annual inspection report prepared by Hard Hat Services (HHS) for the Slag Pond (HHS, 2016a), the Slag Pond has a height of 5 feet or more and a storage volume of 20-acre feet or more, so it is subject to the requirements of 40 CFR 257.73(d).

The Slag Pond is described in the following excerpt from HHS' December 2016 annual inspection report for this CCR unit (HHS, 2016b):

The NED Slag Pond is located northwest of the generating plant and south of the on-site closed ash landfill. The NED Slag Pond receives storm water runoff from part of the on-site closed ash landfill, and the slag handling area. The NED Slag Pond was the primary receiver of process flows from the generating plant prior to December 31, 2015 when the facility's generating units retired. Wastewater was also periodically pumped from the NED WPDES Pond to the NED Slag Pond. Process flows, prior to the facility ceasing operations, included sluiced CCR (slag) from the slag tanks located inside the generating plant, and flows associated with the seal well sump pumps. Flows from the seal well sump pumps included soot blowers, air compressors, boiler blowdown, Unit 1 and Unit 2 floor sumps, oil and hydrogen coolers and demineralization/reverse osmosis multi-media units.

Prior to the facility ceasing operations, the sluiced slag was discharged into the east end of the NED Slag Pond where the majority of CCR was recovered. A dozer was used to push the CCR towards an excavator for dredging. Prior to October 19, 2015, the dredged CCR was stockpiled adjacent to the NED Slag Pond for dewatering. Once dewatered, the CCR was transported off-site for beneficial use. CCR has not been added to any stockpiles outside of the NED Slag Pond on or after October 19, 2015, the effective date of the CCR Rule.

The water used to sluice the CCR from the generating plant to the NED Slag Pond flowed from the east end to the west end of the NED Slag Pond. The southwest corner of the NED Slag Pond consists of the facility's Wisconsin Pollution Discharge Elimination System (WPDES) Outfall 002. The concrete outfall structure includes a rectangular weir restriction that discharges into a 30-inch diameter reinforced concrete pipe (RCP). The water flows through the WPDES Outfall 002, under the embankment on the west side of the NED Slag Pond, and discharges into a riprap lined swale that flows to the southwest into the Mississippi River.

2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

SCS identified no deficiencies or releases during the annual inspection of the Slag Pond. Deficiencies and releases must be remedied by the owner or operator as soon as feasible and the remedy documented.

In addition, SCS did not identify any conditions during the annual inspection that, in our opinion, have the potential to become a deficiency if left unaddressed.

3.0 SURFACE IMPOUNDMENT INSPECTION

Mr. Eric Nelson of SCS completed an annual inspection of the Slag Pond on November 13, 2017, in accordance with 40 CFR 257.83(b)(1). Mr. Nelson is a licensed professional engineer

in Wisconsin and holds a Bachelor's of Science degree in Geological Engineering. He has over 19 years of experience in the design, construction, and operation of solid waste disposal facilities and impoundment closures.

The scope of the annual inspection is described in **Sections 3.1** and **3.2**. The results of the annual inspection are discussed in **Section 4.0**.

3.1 OPERATING RECORD REVIEW

SCS reviewed the available information in the operating record for the Slag Pond in support of the visual inspection discussed in **Section 3.2**. SCS reviewed operating record materials provided by WPL and the information posted on Alliant Energy's CCR Rule Compliance Data and Information website for the NED facility.

3.2 VISUAL INSPECTIONS

SCS completed a visual inspection of the Slag Pond to identify signs of distress or malfunction of the CCR unit and appurtenant structures per 40 CFR 257.83(b)(1)(ii). WPDES Outfall 002, along with the associated concrete weir structure and 30-inch diameter RCP discharge pipe, has been removed as part of the Slag Pond closure construction. Through closure construction activities, the hydraulic structures underlying the base of the CCR unit or passing through the embankment of the CCR unit have been removed. Therefore, an inspection of the structural integrity and continued safe and reliable operation of these features per 40 CFR 257.83(b)(1)(iii) is no longer required.

4.0 INSPECTION RESULTS

The results of the annual inspection, along with a description of any deficiencies identified during the visual inspection, are summarized in the following sections in accordance with 40 CFR Part 257.83(b)(2).

4.1 CHANGES IN GEOMETRY

The interior geometry of the Slag Pond has changed significantly during closure construction from that described in the operating record documents and previous annual inspection report. At the time of the inspection, the Slag Pond had been filled with CCR and other materials to create the foundation for a final cover system.

The exterior geometry of the Slag Pond embankments has not changed significantly during the closure construction.

4.2 INSTRUMENTATION

No instrumentation remains at the Slag Pond. Based on the previous annual inspection report by HHS (HHS, 2016b), instrumentation supporting the operation of the Slag Pond included:

- A flow meter
- A water elevation marker

This instrumentation has been removed as part of the Slag Pond closure construction.

As noted in the previous inspection report and in operating record documents, no flow had been recorded from the Slag Pond since mid-March 2016. The water elevation in the impoundment receded below the invert elevation of the discharge structure at WPDES Outfall 002 after WPL ceased non-sluicing plant process water discharges to the Slag Pond.

The discharge of water from the Slag Pond resumed during closure construction. The Slag Pond was dewatered to prepare the impoundment for the placement of fill materials required to create the foundation for a final cover system. The dewatering system used at the Slag Pond was equipped with a separate flow meter. The flow meter was located with the temporary water treatment system installed near the west end of the Slag Pond. A maximum daily discharge rate of 715,200 gallons was recorded during the Slag Pond dewatering activities. Treated water from Slag Pond dewatering operations was discharged via the 30-inch diameter pipe located downstream of the weir structure at WPDES Outfall 002.

WPL recorded a water elevation of 615.5 feet on July 22, 2017. This was the maximum Slag Pond water elevation recorded by WPL on the inspection and monitoring checklists in the impoundment operating record since the previous annual inspection.

4.3 HISTORIC IMPOUNDED WATER AND CCR CONDITIONS

The approximate minimum, maximum, and present depth and elevation of the impounded water in the Slag Pond since the previous inspection are summarized in the table below.

Condition	Depth / Elevation (feet)	Notes
Minimum Water Depth	0	
Minimum Water Elevation	609.22	Approximate top of CCR at the time of the previous annual inspection (HHS, 2016b)
Maximum Water Depth	6.3	Difference between the maximum recorded water elevation and the top of CCR elevation at the time of the previous inspection (HHS, 2016b)
Maximum Water Elevation	615.5	Maximum water elevation recorded by WPL during the current reporting period
Present Water Depth	0	
Present Water Elevation	Not applicable	The Slag Pond has been dewatered and backfilled for closure

The approximate minimum, maximum, and present depth and elevation of the CCR in the Slag Pond since the previous inspection are summarized in the table below.

Condition	Depth / Elevation (feet)	Notes
Minimum CCR Depth	1.22	Approximate thickness based on the minimum CCR elevation less the approximate bottom elevation of the Slag Pond (608 feet) reported in the December 2016 annual inspection report (HHS, 2016b)
Minimum CCR Elevation	609.22	Approximate top of CCR at the time of the previous annual inspection (HHS, 2016b)
Maximum CCR Depth	28	Difference between the approximate peak top of fill elevation at the time of our inspection and the approximate bottom elevation of the Slag Pond (608 feet)
Maximum CCR Elevation	630	Approximate peak top of fill elevation in the Slag Pond at the time of our inspection
Present CCR Depth	28	Difference between the approximate present top of fill elevation and the approximate bottom elevation of the Slag Pond (608 feet)
Present CCR Elevation	630	Approximate peak top of fill elevation in the Slag Pond at the time of our inspection

4.4 CURRENT STORAGE CAPACITY

The Nelson Dewey Generating Station is no longer operating and WPL is in the process of closing the Slag Pond. The Slag Pond had no operating storage capacity at the time of the inspection.

The Slag Pond has been backfilled in preparation for the installation of a final cover system to close the impoundment. Based on the planned grades for the final cover system subgrade and the site conditions at the time of our inspection, we estimate the storage capacity within the original Slag Pond footprint to be 7,800 cubic yards.

4.5 CURRENT IMPOUNDED WATER AND CCR CONDITIONS

There was no water impounded in the Slag Pond at the time of our inspection.

The volume of CCR and sediment impounded in the Slag Pond at the time of the inspection is approximately 75,000 cubic yards. This is based on the potential maximum volume of CCR that could accumulate in the Slag Pond if completely filled as discussed in the written closure plan for the Slag Pond found in the operating record (SCS, 2016). Additional CCR, sediment, and fill has been placed within the Slag Pond footprint above the peak elevation of the Slag Pond embankments, in accordance with state agency approvals that have been obtained for the closure

project. This material is not included in the approximate volume of impounded CCR and sediment.

4.6 APPEARANCE OF STRUCTURAL WEAKNESS

The inspection included a review of the appearance of an actual or potential structural weakness of the Slag Pond. The visual inspection included a review of the areas described in **Section 3.2** for the presence of the following conditions:

- Seepage
- Sloughing, slumping, or sliding
- Excessive settlement
- Surface cracking
- Inappropriate vegetation growth
- Animal impacts
- Erosion damage
- Failing riprap
- Failing outlet or outfall structures

4.6.1 Seepage

No active seeps or signs of seepage such as open pathways in slopes, boils, or sinkholes were noted during the inspection.

4.6.2 Sloughing, Slumping, or Sliding

No sloughing, slumping, or sliding of the impoundment embankments was noted during the inspection.

4.6.3 Excessive Settlement

No excessive settlement of the impoundment embankments was noted during the inspection.

4.6.4 Surface Cracking

No surface cracking of the impoundment embankments was noted during the inspection.

4.6.5 Inappropriate Vegetation Growth

No inappropriate vegetation growth was noted during the inspection.

4.6.6 Animal Impacts

No animal activity affecting the stability of the Slag Pond was noted during the inspection.

4.6.7 Erosion Damage

No erosion damage of the impoundment embankments indicative of structural weakness was noted during the inspection.

4.6.8 Failing Riprap

No failing riprap was noted during the inspection.

4.6.9 Failing Outlet or Outfall Structures

The outlet from the Slag Pond had been removed as part of the closure activities prior to our site inspection.

4.7 DISRUPTIVE EXISTING CONDITIONS

No disruptive existing conditions were noted during the inspection.

4.8 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

Beyond the Slag Pond closure activities, no changes since the previous annual inspection were noted that may have affected the stability of the Slag Pond.

5.0 REFERENCES

Hard Hat Services (HHS), 2016a, Wisconsin Power and Light Nelson Dewey Generating Station, CCR Surface Impoundment Annual Inspection Report, Naperville, IL, January 2016.

Hard Hat Services (HHS), 2016b, Wisconsin Power and Light Nelson Dewey Generating Station, CCR Surface Impoundment Annual Inspection Report, Naperville, IL, December 2016.

SCS Engineers (SCS), Initial Closure Plan, Wisconsin Power and Light Company, Nelson Dewey Generating Station, October 2016.

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