

**Coal Combustion Residual
Surface Impoundment
Annual Inspection
2019**

**Basin Electric Power Cooperative
Leland Olds Station**

January 2020

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Background and Purpose

In accordance with 40 CFR § 257.83(b), the purpose of this document is to fulfill the requirements for an Annual Inspection Report prepared by a Qualified Professional Engineer (QPE) to ensure the design, construction, operation, and maintenance of the Basin Electric Power Cooperative (Basin Electric) Leland Olds Station (LOS) surface impoundments (Ash Pond 2 and Pond 3) are consistent with recognized and generally accepted good engineering standards.

LOS operates two lignite-fired boilers, resulting in the production of coal combustion residuals (CCRs). The facility is located approximately four miles southeast of Stanton in Mercer County, North Dakota.

LOS plant site CCR facilities were constructed in the 1960s and 1970s and first came under regulation by the North Dakota Department of Health (now known as the North Dakota Department of Environmental Quality (NDDEQ)) solid waste management rules in 1982. Ash Pond 2 (approximately 42 acres) was used for bottom ash disposal at LOS until it was placed in inactive status in 2015. Pond 3 (approximately 4.1 acres) did not directly receive sluiced ash from the plant, but instead served as a secondary settling basin to remove suspended solids. Pond 3 was also placed in inactive status in 2015. The EPA "Extension Rule" became effective on October 4, 2016 providing a timeline for inactive units to comply with CCR Rule requirements.

Pond 2 was partially closed in 2017. Approximately 23 acres in the south and southwest areas of the pond were closed in accordance with the design standards specified in 40 CFR § 257.102 and NDDEQ permit requirements. The remaining areas of Ash Pond 2 and Pond 3 were scheduled to be closed in 2019. Due to delays in the start-up and commissioning of the new wastewater treatment system, however, the ponds remained in-service until late-June 2019, when the new system was fully operational.

With the delays in completion and commissioning of the new wastewater treatment facilities, the closure work on Ash Pond 2 and Pond 3 began about a month later than initially planned, with the earthwork contractor mobilizing to the site the week of July 15th, 2019. Significant progress was made in pond dewatering and grading. Due to unseasonably wet conditions during 3rd

quarter 2019, however, the contractor was unable to complete all closure activities as originally planned. Final capping and site reclamation is now anticipated to be completed during the 2020 construction season.

Ash Pond 2 received water from the temporary bottom ash handling system and other wastewater flows from the plant during the first half of 2019. Ash Pond 2 discharged into Pond 3 and the wastewater was conveyed to North Dakota Pollution Discharge Elimination System (NDPDES) Outfall 003. Outfall 003 remains active, but is not connected or associated with the either pond, and no longer receives bottom ash transport water or legacy wastewater.

Records Review

Existing information regarding the status and condition of the LOS surface impoundments was reviewed as part of the QPE annual inspection effort. The evaluation included reviews of the facility CCR Rule operating record, files associated with the NDDEQ-issued solid waste management permit, and past inspection reports. No indications of structural instability have been observed to date for any of the CCR units at LOS. The results from structural stability and factors of safety assessments for each of the CCR surface impoundments at LOS are presented in documents prepared by Basin Electric's third-party engineer (AECOM) and are included in the operating record. The documents demonstrate the LOS surface impoundments meet the requirements set forth in 40 CFR § 257.73(d).

Ash Pond 2 and Pond 3 were constructed in the 1960s and 1970s concurrent with the construction of LOS Units 1 and 2. The impoundment dikes were constructed by excavating locally derived materials from the impoundment basins and placing the excavated materials (silts and clays) along the perimeter of the basins to form the impoundment dikes.

Ash Pond 2 and Pond 3 were dewatered and graded to approximate final contours in 2019. As such, the Ponds no longer impound water or CCRs.

Periodic Inspections

During 2019, qualified individuals (generally the LOS Environmental Coordinator) conducted weekly inspections for any appearance of actual or potential structural weakness and other

conditions which were disrupting or had the potential to disrupt the operation or safety of the surface impoundments. The weekly inspection checklists are filed in the operating record. Appearances of structural weakness may include, but are not limited to: (1) signs of piping and other internal erosion; (2) transverse, longitudinal, and desiccation cracking; (3) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions; (4) animal burrows; (5) excessive or lacking vegetative cover; and (6) slope erosion. A review of the periodic inspection reports for the LOS CCR landfill indicated no signs of actual or potential structural weakness or other adverse conditions as described above.

Annual Inspection Criteria

Ash Pond 2 and Pond 3 were visually inspected several times during 2019 by Kevin L. Solie, North Dakota Professional Engineer PE-9488. The most recent inspection occurred on October 30, 2019. The inspections seek to identify signs of distress or malfunction of the impoundment and appurtenant structures. The hydraulic structures passing through the dikes are also visually inspected for structural integrity and continued safe & reliable operation.

Based on the visual inspection of Ash Pond 2 and Pond 3 on October 30, 2019, the following annual inspection criteria are addressed:

- i. Changes in the geometry of the Ash Pond 2 and Pond 3 dikes since the previous annual inspection: Dikes have been removed to allow for the closure activities described earlier in this report.
- ii. Instrumentation for Pond 3 has been removed in conjunction with the demolition of the pump house.
- iii. The maximum recorded reading of impounded water and CCR in Ash Pond 2 since the previous annual inspection is approximately 8' at an elevation of 1683.0 msl.
- iv. The maximum recorded reading in Pond 3 is 4.2' or 1682.2 msl.
- v. The approximate minimum depth of impounded water and CCR in Ash Pond 2 since the previous annual inspection is 0' or 1675.0 msl.
- vi. The approximate minimum depth in Pond 3 is 0' or 1678.1 msl.
- vii. The present depth and elevation of the impounded water and CCR in Ash Pond 2 is approximately 0' at an elevation of 1675 msl.
- viii. The present depth and elevation of the impounded water and CCR in Pond 3 is approximately 0' at an elevation of 1678 msl.

- ix. The storage capacity of Ash Pond 2 at the time of inspection is 0 ac-ft.
- x. The storage capacity of Pond 3 at the time of inspection is 0 ac-ft.
- xi. The approximate volume of impounded water and CCR in Ash Pond 2 at the time of inspection is 0 ac-ft.
- xii. The approximate volume of impounded water and CCR in Pond 3 at the time of inspection is 0 ac-ft.
- xiii. There are no appearances of actual or potential structural weakness of the impoundment, nor are there any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the ponds and appurtenant structures.
- xiv. There are no other changes that may affect the stability or operation of the impounding structures since the previous annual inspection.

Certification Statement

I certify this document has been prepared in accordance with 40 CFR § 257.83(b) which requires a written Annual Inspection Report by a Qualified Professional Engineer as set forth in the *Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments*.



Kevin L. Solie, North Dakota PE-9488
January 13, 2020

