

**Coal Combustion Residual  
Landfill  
Run-On and Run-off Control Plan**

**Basin Electric Power Cooperative  
Leland Olds Station  
Stanton, ND**

**January 2018**

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## Revision History

<b><i>Revision Number</i></b>	<b><i>Description of Revision</i></b>	<b><i>Reviser's Name</i></b>	<b><i>Revision Date</i></b>
<b>1</b>	<ul style="list-style-type: none"><li>• Section entitled "CCR Landfill Lateral Expansion" was added to describe recent construction activities associated with CCR landfill.</li><li>• Updated "Run-On Control Description" and "Run-Off Control Description" section to include details of leachate collection system associated with landfill lateral expansion.</li></ul>	Maria Tomac	January 13, 2018

## Purpose and Definitions

In accordance with 40 CFR §257.81, the purpose of this Run-on and Run-off Control Plan is to fulfill the requirement for a written plan to document how the run-on and run-off control systems have been designed and constructed at the Basin Electric Power Cooperative (Basin Electric) Leland Olds Station (LOS) Landfill. CCRs generated at LOS (and thus regulated under 40 CFR §257) include bottom ash, flue gas desulfurization (FGD) materials and fly ash.

Leland Olds Station consists of 2 coal fired units generating 669 megawatts (MW) combined. The power plant, owned and operated by Basin Electric Power Cooperative (BEPC), is approximately 4 miles southeast of Stanton, North Dakota. Unit 1 went online in 1966 and Unit 2 in 1975. CCRs from LOS are disposed at the Glenharold Mine Landfill, which is regulated as a special waste disposal landfill by the North Dakota Department of Health (NDDoH).

## Landfill Description

The Glenharold Mine Landfill was first permitted for the disposal of CCRs in 1992, with disposal beginning at the facility in late 1992. The landfill is located in an upland area, approximately four miles south and west of the LOS plant site. The landfill was developed in spoils left by the surface mining of the Hagel Lignite Bed in the late 1960s and early 1970s. Partial sequential closure of the landfill has been conducted as areas of the landfill are filled and brought to final grade. To date, approximately 34.44 acres of the 68.09 acre CCR landfill footprint have been closed using an engineered cover system approved by the NDDoH.

The LOS Landfill contains bottom ash, gypsum, and fly ash, which are byproducts of the coal burning process. On a daily average, approximately 1,400 tons of ash and gypsum are generated at LOS. Not all CCRs generated at LOS are managed in the landfill, significant amounts are sold for beneficial use. The moisture-conditioned ash and gypsum are transported by haul truck to the landfill, where they are dumped, spread, and compacted.

## CCR Landfill Lateral Expansion

A lateral expansion of the CCR landfill was approved by the NDDoH and 2 cells were constructed in 2017. The lateral expansion includes eight future disposal cells encompassing approximately 80.7 acres of lined landfill footprint. The design of the bottom liner, leachate

collection system and final cover system for the lateral expansion meets the requirements set forth in 40 CFR Part 257 (CCR Rule). The expansion area is bounded by the existing landfill to the east and perimeter berms on the north, west and south sides. Ancillary features include perimeter ditches, stormwater ponds, leachate evaporation pond, soil stockpiles and access roads.

The initial phase of development for the expansion area (constructed in 2017) included Cell 1A & 1B and a leachate collection sump, which contains approximately 21 acres of composite landfill liner. Since the lateral expansion area has been constructed, the Run-On and Run-Off Control Plan must be updated.

## Run-On Control Description

No run-on flow onto the active portion of the CCR unit during the peak discharge from a 25-year, 24-hour storm will come in contact with CCRs. All open areas of the landfill are constructed above the surrounding area and non-contact water is diverted from the active areas. As sequential closure of the landfill is completed, the clean water flow is directed away from the landfill and down the slopes to the surrounding landscape.

## Run-Off Control Description

The run-off flow from the active portion of the CCR unit collected during a 25-year, 24-hour storm is directed to the landfill leachate collection sumps by sloping the ash in that direction and via the leachate collection system.

The National Oceanic and Atmospheric Administration (NOAA) Atlas shows that a 25-year, 24-hour rainfall event is approximately 3.5 inches. Based on this rainfall event, the size of the existing landfill sump needs to be a minimum of 10,974 cubic yards to store the run-off captured from the 33.3 acres of captured area. The existing landfill sump was constructed in 2015 with a capacity of approximately 11,098 cubic yards, and is therefore adequate.

The size of the landfill expansion sump has 53,119 cubic yards of capacity to store the run-off from a maximum of 19.62 acres of open, captured area. The current open area in Cells 1A & 1B is 14.9 acres, therefore the sump size is adequate.

Runoff is not discharged into Waters of the United States (WUS) and is thus in compliance with the provisions of §257.81(b).

## Certification Statement

I certify that this Run-on and Run-off Control Plan meets the requirements of 40 CFR §257.81 specifying Run-on and Run-off Controls for CCR Landfills in the *Standards for the Disposal of Coal Combustion Residuals in Landfills and Impoundments*.



Maria Tomac, ND PE 5939  
January 13, 2018