



CLOSURE AND POST-CLOSURE PLAN

CLOSURE AND POST-CLOSURE PLAN FOR SHELDON STATION

Submitted To: Nebraska Public Power District
Sheldon Station
4500 West Pella Road
Hallam, Nebraska 68368

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1.0 CLOSURE PLAN

Ash Landfill No. 4 (Landfill) at Nebraska Public Power District's (NPPD's) Sheldon Station (SS) will be closed in accordance with the Closure Plan in effect at the time of closure. The Closure Plan will conform to the Environmental Protection Agency's (EPA's) Coal Combustion Residual (CCR) rule, 40 Code of Federal Regulations (CFR) Part 257.102, Criteria for constructing the closure or retrofit of CCR units. The CCR rule was promulgated on April 17, 2015 and effective on October 19, 2015.

1.1 Closure Description

The Landfill at SS will be closed by leaving the CCR in place and the final cover system will be designed to meet the requirements of §257.102. The Landfill will be closed in phases as ash placement progresses. The phased design minimizes the active ash depositional footprint, provides surface water controls to manage ash contact water within lined areas, and prevents surface water run-on into the deposition area.

1.2 Final Cover System

A description of the final cover design, methods and procedures for final cover installation and meeting of performance standards is presented in the following sections.

1.2.1 Design

The CCR rule states that the final cover system must be designed and constructed such that the permeability of the final cover system is less than or equal to the permeability of the bottom liner system or no greater than 1×10^{-5} cm/sec, whichever is less. The liner design at the Landfill consists of (from top to bottom):

- At least three feet of select fill or fly ash, serving as a protective layer to prevent trafficking damage to the liner
- Eight-oz. geotextile (Trevira 011/280)
- One foot of contact water collection material and four-inch perforated piping to reduce drainage lengths (ADS N-12 LF)
- Three feet of low-permeability soil (LPS) liner
- Subdrain system consisting of gravel and four-inch perforated pipe trenches (ADS N-12 L)

The final cover will be constructed according to the regulatory requirements present at the time of closure.

1.2.2 Methods and Procedures

Methods and procedures will be developed to ensure that the closure of the ash landfill meets the cover performance standards specified in the CCR rule. The Landfill will be closed in a manner that will:

- Control, minimize, or eliminate, to the maximum possible extent, post-closure infiltration of liquids into the Landfill and releases of CCR, leachate, or contact water run-off to the ground, surface waters, or the atmosphere.



- Preclude the probability of future impoundment of water, sediment, or slurry.
- Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;
- Minimize the need for further maintenance of the unit.
- Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

The final cover system design, including cover grades and profile, will be re-evaluated prior to construction of final cover. The cover system will be engineered to meet the regulatory requirements effective at the time of placement. Final cover will be installed in accordance with a construction quality assurance (CQA) plan, which will be developed and submitted to the appropriate regulatory agencies for approval prior to commencing the work. The CQA plan will require monitoring of final cover construction to help ensure that the final cover system will meet the design intent and conforms to the performance standards of the CCR rule.

1.3 Closure Estimates

1.3.1 Active Life Maximum CCR Inventory Estimates

The total capacity of the Landfill is approximately 527,800 cubic yards. The approximate remaining capacity of the Landfill is approximately 283,000 cubic yards (through September 2016). Using an average monthly CCR disposal rate of 1,200 cubic yards, the Landfill has a remaining lifespan of approximately 20 years.

1.3.2 CCR Area for Final Cover Estimates

The estimated maximum area requiring final cover at any time during the active life of the Landfill is approximately 11.3 acres.

1.4 Closure Schedule

NPPD will provide the appropriate regulatory agencies with written notice 30 days prior to the closure of any phase. The phased closure will be constructed according to the regulation in place at the time of final cover construction. NPPD will provide the regulatory agencies with construction quality assurance (CQA) documentation and as-built drawings certified by an independent professional engineer registered in Nebraska for each phase of closure.

NPPD will provide written notification to the appropriate regulatory agencies at least 180 days prior to the date that closure of the final phase is expected to begin at the ash landfill. This notice will also be placed in the site's Operating Record.



NPPD will begin implementation of closure within 30 days of receipt of the final know volume of CCRs, or within two years of the last receipt of CCRs. Written notification will be placed in the facility's Operating Record, for each of the following:

- Date of receipt of the final volume of CCR placed in the Landfill.
- Date of the initiation of closure.
- Dates of installation of the final cover system.

Closure activities will be completed or an extension will be applied for within 6 months of final receipt of CCRs. Notification of intent to close the Landfill will be placed in the facility's Operating Record prior to initiating closure. The notification will include certification by a qualified professional engineer for the design of the final cover system. Upon completion of closure activities, certification from a qualified professional engineer will be obtained verifying that closure has been completed in accordance with the Closure Plan. Within 30 days of completion of closure notification of closure, including the certification by a qualified professional engineer, will be placed in the facility's Operating Record.

Following closure, a permanent notation on the deed to the property indicating the land has been used as a CCR landfill, and the use is restricted under the post-closure care requirements will be recorded. Within 30 days of recording this notation on the deed, documentation will be placed in the facility's Operating Record.

1.5 Post-Closure Plan

The Post-Closure Plan for the Landfill will apply to the 30 year period immediately following closure of the Landfill. Within 60 days following the post-closure period, a certification signed by a professional engineer, registered in the State of Nebraska, will be placed in the facility's Operating Record.

As discussed in section §257.104, Post-Closure Care Requirements, of the CCR rule, post-closure care will:

- Maintain the integrity and effectiveness of the final cover system, including repairs as needed to correct the effects of settlement, subsidence, erosion, or other events, and prevent run-on and run-off from eroding or otherwise damaging the final cover.
- Maintain the integrity and effectiveness of the leachate collection and removal system and operating the leachate collection and removal system in accordance with the requirements of § 257.70 in the CCR rule;
- Maintain the groundwater monitoring system and groundwater monitoring activities specified by sections §257.90 through §257.98 in the CCR rule.



1.6 Post-Closure Monitoring and Maintenance Activities

Annual monitoring and maintenance of the cover and water control structures will be performed. If erosion, settling, subsidence, or other problems arise, the cover will be re-graded to match the design contours and re-seeded where necessary. Maintenance will be performed on the Landfill cover and water control structures as needed to prevent run-on and runoff from eroding or otherwise damaging the final cover.

The annual site inspection will typically be performed in between late spring and early fall to facilitate inspection of the final cover vegetation. Inspections may also be performed after significant storm events. The annual site inspection report will be placed in the facility's Operating Record.

Maintenance and repairs will be made as soon as practical, generally no later than two weeks after inspection. Cover and surface water controls repair work will be done in accordance with the Construction Quality Assurance (CQA) Plan. Cover repair will typically be completed in the spring or summer months, and any necessary re-seeding will take place in the spring or late fall.

To prevent unauthorized access, the gates, fences, and posted signs at SS will be monitored annually and repaired as necessary during the post-closure period. Groundwater monitoring wells will be included with this monitoring and maintenance program, as needed.

Semi-annual groundwater quality sampling from the monitoring wells will be performed. The samples will be collected and analyzed in accordance with the most current Sampling and Analysis Plan (SAP). Results of the testing will be placed in the facility's Operating Record.

1.7 Contact Information

Questions arising during the post-closure period should be directed to:

Nebraska Public Power District
Attn: Environmental Protection Supervisor
P.O. Box 499
Columbus, Nebraska 68602-0499
Telephone: (402) 563-5329
E-Mail: kmkruml@nppd.com

1.8 Planned Property Usage

During the post-closure period, the Landfill will not be utilized. The integrity of the final cover, liner, and other components of the containment system, and the function of the groundwater monitoring wells, will not be disturbed during the post-closure period. Grazing or feeding of farm or domestic animals will not be allowed during the post-closure period. Unwanted vegetation such as trees and noxious weeds will be removed.



2.0 CERTIFICATION

The undersigned attest to the completeness and accuracy of the above written closure and post-closure plans, and certify that the plans meet the requirements detailed in §257.102, Criteria for Conducting the Closure or Retrofit of CCR Units and §257.104, Post-closure Care Requirements. Notification of the completion of the plans will be provided to the State Director of the Nebraska Department of Environmental Quality (NDEQ), as well as placed in the operating records and available on NPPD's publically accessible CCR website.

If further information is required, please contact the undersigned at (303) 980-0540.

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3.0 REFERENCES

EPA 2015a. Environmental Protection Agency, Code of Federal Regulations Title 40 Part 257: Hazardous and Solid Waste Management System; *Disposal of Coal Combustion Residuals from Electric Utilities*. April 17, 2015.

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