Closure Plan

Ash Pond 1
Clinch River Plant

Appalachian Power Company
Clinch River Plant, Carbo, Virginia

April 2014 (Revised November 2016)

Prepared by: American Electric Power Service Corporation
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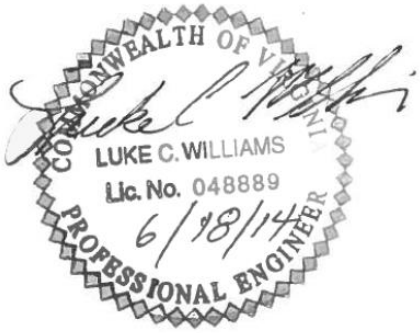

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Attachment A: Pond Closure Drawings
Attachment B: Geotechnical Analyses
Attachment C: Engineering Report and Calculations
Attachment D: Construction Quality Assurance Plan
Attachment E: Construction Specifications
Attachment F: Closure Cost Estimate
Attachment G: Alternate Final Cover Demonstration
Attachment H: CCR Closure Plan Compliance (40 CFR 257.102)

I. Closure Plan

Appalachian Power Company (APCo), doing business as American Electric Power (AEP), is submitting a landfill application for Closure of Ash Pond 1 at the Clinch River Plant in Russell County, Virginia. Ash Pond 1 was used to dispose of bottom ash produced at the Clinch River Plant. As of October 19, 2015, ash will no longer be disposed of in Pond 1 in order to be an inactive surface impoundment per the Federal Coal Combustion Residual rules. Pond 1 will receive water and solids from the Plant's advanced waste water treatment plant until April of 2016. The pond will be dewatered shortly after and will undergo closure.

A. Closure Activities

A.1 Closure Plan Time-Frames

This application anticipates closure to be completed before September of 2018.

A.2 Closure Performance Standard

This closure plan satisfies the requirements of 40 CFR 257.102 of the Federal CCR Rule, which is evidenced by and further detailed in Attachment H.

Closure of the site will consist of covering Ash Pond 1 with a geomembrane cap, a geocomposite drainage net, and soil cover to minimize infiltration of precipitation.

The Closure Plan has been developed to minimize post-closure maintenance. Ash Pond 1 will be covered with soil and seeded using a mixture of perennial cool-season grasses, a perennial legume, and for quick cover, annual grain species. This mixture should produce a thick, maintenance-free vegetative cover to minimize erosion. Erosion resistant materials are also used as needed to prevent erosion in surface drainage conveyances.

Stormwater runoff from the Pond 1 watershed will be diverted away from the final grades of the protective cap as shown on the plans. Rainfall runoff from the watershed flows overland (and concentrated at one location) towards Pond 1 from the north side of the pond. These flows will be collected above Pond 1 in either the existing Pond 1A Diversion Channel or the proposed Pond 1B Diversion Channel.

The existing Pond 1A Diversion Channel will divert the stormwater runoff away from the protective cap by routing around the western perimeter of the pond. This diversion channel conveys flow to the south side of Pond 1 at VA Rt. 665 and into the Clinch River.

The Pond 1B Diversion Channel will divert the stormwater runoff away from the protective cap by routing around the eastern perimeter of the pond. At the end of this diversion channel, flow will be collected at a drop inlet structure and discharged into a proposed 48" HDPE pipe. This pipe will convey the flows through an existing tunnel under VA Rt. 616 and into Dumps Creek.

Rainfall falling directly onto the protective cap will be routed to a central collection channel at Pond 1A that intercepts the Pond 1A Diversion Channel above the concrete flume. This channel will be created by the final grading and will convey non-erosive flows. Runoff collected on the Pond 1B protective cap will flow to the Pond 1B Diversion Channel.

A.3 Inventory Removal and Disposal

The Temporary Ash Storage area is located along the northern perimeter of Pond 1A and contains ash that was excavated from Pond 1A. The ash was placed at this location for use as fill during grading operations for the Pond 1 closure. The ash may be used to reach the grades shown in the PVC Liner Subgrade Plan as shown on the drawings. Once the stockpiled ash has been moved from the Temporary Ash Storage Area and placed to achieve subgrade throughout the Pond 1 closure limits, the Temporary Ash Storage Area will also be covered with both the PVC Liner and final cover soils as shown on the drawings.

None of the coal combustion residuals, which were historically sluiced to Ash Pond 1, will be removed prior to the closure activities.

A.4 Leachate/Seep Management

The Reclaim Pond currently collects leachate from the Pond 1 toe seep drains. Leachate is conveyed from the Reclaim Pond to the Clinch River Plant's water treatment facility for treatment. Following closure of Pond 1, the Reclaim Pond will continue to collect and convey seep leachate from the pond.

A.5 Closure

The general concept for site closure, the requirements for soil cover, vegetation, and post-closure maintenance are explained herein and are shown on the Pond Closure Drawings in Attachment A. Cover soil will be obtained from both on-site and off-site sources. The designed cap meets the requirements of the alternate final cover as noted in the demonstration of Attachment J.

A.4.1 Cap Description.

The cap system consists of:

- 30 mil PVC flexible membrane liner (FML), covered by
- A double-sided geocomposite drainage net (GDN), covered by
- 24-inch thick vegetated soil cover (or approved alternate).

A.4.2 Engineering calculations and stability calculations of the final cover system are provided in Attachment B & C.

A.4.3 Maintenance Needs.

The cover system is designed to function effectively with minimum maintenance needs. The top surface will be graded to provide positive drainage and to prevent ponding. The vegetative cover specified will be monitored closely, particularly in the establishment year and will be reseeded and mulched as necessary. The vegetation species were chosen so as not to require maintenance. Fertilizer-nutrient cycling and biological nitrogen fixation (by Birdsfoot trefoil) will maintain and build fertility levels. Woody plants will not be allowed to grow on the closed pond. The calculated soil loss from the soil erosion control layer was determined to be 0.28 tons per acre per year. These calculations are contained in

Attachment C of this document. Erosion control blankets will be used to control erosion while vegetation is establishing.

A.4.4 Construction Quality Assurance Plan.

This plan is included in Attachment D.

A.6 Schedule for Closure

Closure is anticipated to be completed before September of 2018. Please refer to Section 7.0 of Attachment H for additional details pertaining to the pond closure schedule.

A.7 Posting

Signs will be posted at the south access gate of the Pond 1 facility. These signs will indicate that the site is closed and unauthorized entrance is prohibited. No customer notification was required due to APCo being the only user of the facility.

A.8 Notification

The land is already recorded with Russell County, Virginia. Upon closure, the Russell County Board of Supervisors in Lebanon, Virginia will be notified.

A.9 Certification

The required certification by a registered professional engineer will be provided at the appropriate time following completion of closure activities.

A.10 Closure Cost Estimate

An estimate of closure costs has been produced and is available in Attachment F.

A.11 Post Closure Cost Estimate

An estimate of post closure costs has been produced and is available in a separate document titled: Post Closure Care Plan.

B. Closure Calculations

B.1 Cover System Stability and Liquids Management

Attachment B & C contains calculations for cover system stability, peak storm run-off and volumes, surface water management facilities (ditches and pipes), and soil erosion during construction and throughout the post-closure period.

B.2 Settlement, Subsidence and Displacement

Issues pertaining to settlement, consolidation, bearing capacity, liquefaction and stability for Ash Pond 1 are addressed in Attachment B. No adverse effects due to these issues are anticipated.

B.3 Freeze and Thaw Effects

According to the U.S. Weather Bureau, the depth of maximum frost penetration for the Carbo area is approximately 15 inches. Since the FML used in the cap system will be covered with soils material, freeze/thaw cycles will not affect the integrity of the FML.

C. Construction Specifications

The site and cap system construction requirements/specifications are included in Attachment E.

D. Groundwater

Information regarding the groundwater is provided in a separate document titled: Groundwater Monitoring Plan Pond 1A/1B.