

# CLOSURE PLAN

**CFR 257.102(b)**

CCR Landfill

John E. Amos Plant  
Putnam County, West Virginia

October, 2016  
(Revised July 2019)

Prepared for: Appalachian Power Company

1530 Winfield Rd,

Winfield, West Virginia 25213

Prepared by: American Electric Power Service Corporation

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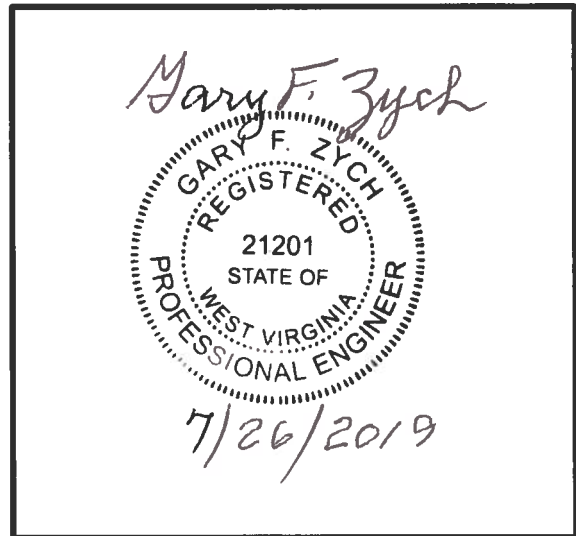
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CLOSURE PLAN  
CFR 257.102(b)  
JOHN E. AMOS PLANT  
CCR LANDFILL

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Gary F. Zych, P.E.  
Manager – AEP Geotechnical Engineering



I certify to the best of my knowledge, information, and belief that the information contained in this closure plan meets the requirements of 40 CFR § 257.102

I certify to the best of my knowledge, information and belief that design of the final cover system as described in this closure plan meets the requirements of 40 CFR § 257.102.

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### Attachment A

Revised July 2019

**This revision documents the change in cover cap from a 2 ft thick soil cap to a Coal Combustion Residuals compliant cap that has been approved by the West Virginia Dept. of Environmental Protection.**

## **1.0 OBJECTIVE**

This report was prepared by AEP- Geotechnical Engineering Services (GES) section to fulfill requirements of CCR 257.102(b) for Closure Plans of Existing CCR Units.

## **2.0 DESCRIPTION OF THE CCR UNIT**

The John E. Amos Power Plant is located near Winfield, West Virginia. It is owned and operated by Appalachian Power Company (APCO). The facility operates a landfill for the disposal of CCR materials.

The landfill is permitted by the West Virginia Department of Environmental Protection, Permit No. WV0116254. The landfill consists of 9 cells that will encompass 191.9 acres for a permitted fill capacity of 36.8 million cubic yards.

## **3.0 DESCRIPTION OF CLOSURE PLAN 257.102(b)(1)(i)**

*[A narrative description of how the CCR unit will be closed in accordance with this section]*

The John E. Amos landfill will be closed in place periodically throughout the life capacity of the facility. Closure of the landfill will be done in accordance with the Closure Plan permitted by the West Virginia Department of Environmental Protection. The closure will consist of regrading the existing onsite materials and the installation of an impermeable cap with vegetative cover. At least six inches of soil will be placed over CCR material and graded to promote surface water runoff. The regraded surface will be covered with a 50-mil High Density Polyethylene (HDPE) Integrated Drainage System (IDS) geomembrane, or equivalent, covered by 18 inch thick vegetated soil cover. The surface will be seeded and mulched to promote the growth of a vegetative cover.

## **4.0 CLOSURE IN PLACE 257.102 (b)(1)(iii)**

*[If closure of the CCR unit will be accomplished by leaving the CCR in place, a description of the final cover system, designed in accordance with paragraph(d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.]*

The final cover system will consist of a flexible geomembrane liner with an integrated geocomposite drainage system, or equivalent, that will have a permeability that is less than or equal to the permeability of the bottom liner and is no greater than  $1 \times 10^{-5}$  cm/sec. The geomembrane will be installed over a minimum of 6 inches of graded soil overlaying CCR material. The geocomposite drainage net will be on the topside of the HDPE IDS geomembrane. Over the HDPE IDS geomembrane, a non-woven geotextile will be placed. Directly over the geotextile, 18 inches of soil cover will be placed that is capable of sustaining native plant growth. The final cover will be seeded and mulched to promote growth of a vegetative cover. The final cover slopes will convey water to the NPDES permitted outfalls.

## **4.1 CLOSURE PERFORMANCE STANDARDS 257.102 (d)(1)**

### **4.1.1 SECTION 257.102(d)(1)(i)**

*[Control, minimize or eliminate, the maximum extent possible extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere.]*

The final cover system is designed to minimize infiltration into the landfill.

### **4.1.2 SECTION 257.102(d)(1)(ii)**

*[Preclude the probability of future impoundment of water, sediment, or slurry.]*

The final surface areas will be graded to a minimum slope of 2% to prevent the ponding of surface water runoff. Drainage features will be designed to have positive drainage.

### **4.1.3 SECTION 257.102(d)(1)(iii)**

*[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.]*

The final cover system will be composed of 3:1 slopes terminating along benches that are graded with a minimum of 2% slope. The final configuration of the facility will meet the stability requirements to prevent the sloughing or movement of the final cover system during the closure and post-closure care period.

### **4.1.4 SECTION 257.102(d)(1)(iv)**

*[Minimize the need for further maintenance of the CCR unit.]*

The facility will be vegetated to prevent erosion. Maintenance of the final cover system will include mowing.

### **4.1.5 SECTION 257.102(d)(1)(v)**

*[Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.]*

The CCR unit will be closed in a timeframe consistent with recognized and generally accepted good engineering practices. As the fill reaches the approved final grades, periodic closure activities may occur.

## **4.2 DRAINING AND STABILIZING OF THE SURFACE IMPOUNDMENT 257.102(d)(2)**

This section is not applicable to a landfill.

#### **4.3 FINAL COVER SYSTEM 257.102 (d)(3)**

*[If a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion , and at a minimum, meets the requirements of paragraph (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section.*

*The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(i)(A) through (D) of this section. The design of the final cover system must be included in the written closure plan.]*

The final cover system will consist of a flexible geomembrane liner with an integrated geocomposite drainage system, or equivalent, that will have a permeability that is less than or equal to the permeability of the bottom liner and is no greater than  $1 \times 10^{-5}$  cm/sec. The geomembrane will be installed over a minimum of 6 inches of graded soil overlaying CCR material. The geocomposite drainage net will be on the topside of the HDPE IDS geomembrane. Over the HDPE IDS geomembrane, a non-woven geotextile will be placed. Directly over the geotextile, 18 inches of soil cover will be placed that is capable of sustaining native plant growth. The final cover will be seeded and mulched to promote growth of a vegetative cover. The final cover slopes will convey water to the NPDES permitted outfalls. The written certification from a qualified professional engineer that the design of the alternate final cover system meets the requirements of section 257.102(d)(3) is included in Attachment A.

#### **5.0 ESTIMATE OF MAXIMUM CCR VOLUME 257.102 (b)(1)(iv)**

*[An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.]*

The maximum CCR volume permitted for this facility is 36.7 million cubic yards.

#### **6.0 ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER 257.102 (b)(1)(v)**

*[An estimate of the largest area of CCR unit ever requiring a final cover*

The largest area of the CCR unit ever requiring a final cover at any time is 33.6 acres.

#### **7.0 CLOSURE SCHEDULE 257.102(b)(1)(vi)**

*[A schedule for completing all activities necessary to satisfy the closure criteria in the section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of the CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of the CCR unit closure.*

At this time, the facility will close upon retirement of the power plant. Once the CCR unit requires closure a schedule to satisfy this section will be prepared and the Plan amended.

## Attachment A

## Certification/Statement of Professional Opinion

The alternative final cover system design for the Appalachian Power Company (APCO) John E. Amos (Amos) FGD Landfill, located at the John E. Amos Power Plant, was prepared by GAI Consultants, Inc. (GAI) pursuant to the agreed upon Scope of Services that GAI performed for the project, dated June 16, 2016. On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the State of West Virginia that the alternate final cover system engineering design for the Amos FGD Landfill was prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances, at the same time, and in the same locale.

It is my professional opinion that the engineering design meets the technical requirements of the United States Environmental Protection Agency's "Standard for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments", published in the Federal Register on April 17, 2015, with an effective date of October 19, 2015 (40 CFR 257 Subpart D). This Certification/Statement of Professional Opinion is limited to the requirements in Section 257.102(d)(3) pertaining to the design of an alternative final cover system, and does not certify that this system has been constructed in accordance with the requirements of this section.

The use of the words "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.

**GAI Consultants, Inc.**

Kerry L. Frech, P.E.

Civil Technical Leader

