CLOSURE PLAN

CFR 257.102(b)

Fly Ash Pond

Big Sandy Plant
Louisa, Kentucky

October, 2016

Prepared for : Kentucky Power – Big Sandy Plant

Louisa, Kentucky

Prepared by: American Electric Power Service Corporation

1 Riverside Plaza

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GERS-16-009

CLOSURE PLAN
CFR 257.102(b)
BIG SANDY PLANT
FLY ASH POND

PREPARED BY _____ DATE 8-19-16
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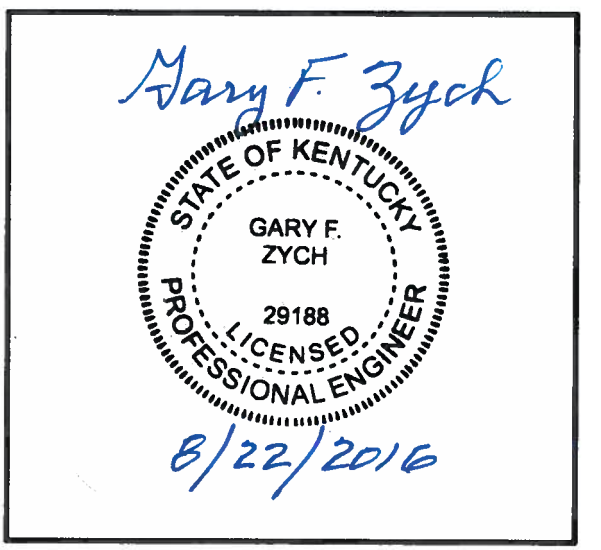

I certify to the best of my knowledge, information, and belief that the information contained in this closure plan meets the requirements of 40 CFR § 257.102

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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1.0 OBJECTIVE

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

2.0 DESCRIPTION OF THE CCR UNIT

The Big Sandy Power Plant is located north of the City of Louisa, Lawrence County, Kentucky. It is owned and operated by Kentucky Power. The facility operates two surface impoundments for storing CCRs called the Fly Ash Pond and the Bottom Ash Pond. This report deals with the closure plan for the Fly Ash Pond.

The Fly Ash Pond is a valley impoundment with a main dam and a saddle dam. The Big Sandy Fly Ash Pond received sluiced fly ash and waste water from the plant via the bottom ash pond. Bottom Ash excavated from the Big Sandy Bottom Ash Pond is also placed within the Fly Ash Pond.

The Big Sandy Power Plant has ceased burning coal and has been refueled for natural gas. The Fly Ash Pond currently receives waste water from the plant for discharge through the permitted outfall.

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 Big Sandy Fly Ash Pond will be closed by closure in place. The closure will consist of re-grading the existing onsite materials and the installation of an impermeable cap with vegetative cover. The existing surface will be graded to achieve a gently sloping surface to promote surface water runoff. The regraded surface will be covered with a flexible geomembrane system and 2-feet of soil fill consisting of an 18" soil infiltration layer and 6" of earthen material that is capable of sustaining native plant growth. The surface soil 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 include of a flexible geomembrane that will have a permeability less than or equal to the permeability of the natural subsoils and is no greater than 1 x 10-5 cm/sec. The geomembrane will be installed directly over the graded CCR material. Over the geomembrane will be installed an infiltration layer consisting of 18" of earthen material and an erosion layer consisting of 6" of earthen material 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 slope will be a minimum of 2% and will covey water to a KPDES permitted outfall.

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 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 will cover the CCR material and will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than 1 x 10^{-5} cm/sec.

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

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

The impoundment will be graded with minimum side slopes of 2% to prevent the ponding of water with channels graded to drain. The Main dam will be lowered and the saddle dam removed to preclude the future impoundment of water, sediment, or slurry.

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 graded with side slopes with a minimum of 2% slope and a maximum 3:1 slope with channels provided to drain storm water. The final configuration of the impoundment 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 impoundment 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 multi-year phased manner as liquids are removed and areas are stabilized.

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

[The owner or operator of a CCR surface impoundment of any lateral expansion of a CCR surface impoundment must meet the requirements of paragraph (d)(2)(i) and (ii) of this section prior to installing the final cover system required under paraphraph (d)(3) of this section.]

4.2.1 SECTION 257.102(d)(2)(i)

[Free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residue.]

As part of closure of the CCR unit, all free water will be removed and the ash dewatered to sufficient depth to provide a stable surface. All water discharges will be in accordance with the KPDES permit.

4.2.2 SECTION 257.102(d)(2)(ii)

[Remaining waste must be stabilized sufficient to support the final cover system.]

The remaining waste that make up the subgrade of the final cover system will be stabilized by removal of liquids to sufficient depth and providing bridging as necessary.

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 that will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than 1×10^{-5} cm/sec. The geomembrane will be installed directly over the graded CCR material. Over the geomembrane will be installed an infiltration layer consisting of 18" of earthen material and an erosion layer consisting of 6" of earthen material 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 slope will be a minimum of 2% and will covey water to a KPDES permitted outfall. The final cover slope will be a minimum of 2% to accommodate settling and subsidence.

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 estimated maximum CCR volume ever on-site is approx. 8,200 acre feet.

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 requiring a final cover is 145 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.

Engineering and Design for the Closure of the Big Sandy Fly Ash Pond began in 2011. Initial permits were submitted to Kentucky Department of Environmental Protection (KYDEP) Division of Waste Management (DWM) in 2013. A special waste landfill permit was issued for closure of the Big Sandy Fly Ash Pond by DWM in 2015.

A Permit for Modification of the Dam associated with the closure was submitted to KYDEP Division of Water (DOW) Dam Safety Program in 2013 a permit issued in 2014.

Requests for 401 and 404 permits were submitted to KYDEP DOW and US Amy Corp of Engineers in 2015. These permits are required to allow construction of the final cover system. It is anticipated that these permits will be received in late 2016.

The wastewater discharge from the plant is scheduled to be re-routed to a new permitted outfall at the plant by the end of 2018.

Pre-construction activities were initiated in the fall of 2015, these activities included cutting and clearing trees around the perimeter of the site and in borrow areas and establishing areas for construction trailers.

A general contractor has been selected and awarded a contract and has begun initial water management and stabilization activities in Mid-2016. Construction will occur in a phased approach with final cover placed as areas are stabilized and graded. Closure of the entire facility is scheduled to be completed in 2020.