

Coal Combustion Residuals Impoundment Closure Plan

GenOn Northeast Management Company
Keystone Generating Station
Ash Filter Ponds A, B, and C (#0386201)
Shelocta, Pennsylvania

GAI Project Number: C151611.01, Task 002
October 2016



Prepared by: GAI Consultants, Inc.
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Prepared for: GenOn Northeast Management Company
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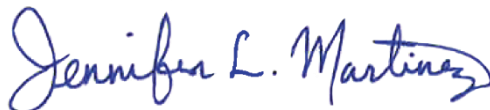
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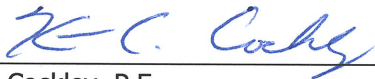
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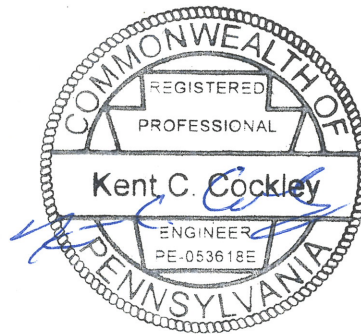
Professional Engineer's Certification

The Closure Plan (Plan) for the Ash Filter Ponds A, B, and C (#0386201) was prepared by GAI Consultants, Inc. (GAI). The Plan was based on certain information that, other than for information GAI originally prepared, GAI has relied on but not independently verified. Therefore, this Professional Engineer's Certification is limited to the information available to GAI at the time the Plan was written. On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the Commonwealth of Pennsylvania, that the Plan has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances and at the time and in the same locale. It is my professional opinion that the Plan was prepared consistent with the requirements of Section 257.102 of the United States Environmental Protection Agency's "Disposal of Coal Combustion Residuals from Electric Utilities," published in the Federal Register on April 17, 2015 with an effective date of October 19, 2015.

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.



Kent C. Cockley, P.E.
Engineering Director / Senior Associate



1.0 Introduction

The Keystone Generating Station is a steam electric generating station located along Crooked Creek in Plumcreek Township, Shelocta, Pennsylvania (PA). The station is jointly owned by the utilities in the Keystone Owners Group, and operated by GenOn Northeast Management Company, a subsidiary of NRG Energy, Inc. The station consists of two 900-megawatt coal-fired units.

Three, lined ash filter ponds are located at the Keystone Generating Station site and are operated and maintained under the PA Department of Environmental Protection Water Quality Management Permit No. 0386201. The ash filter ponds consist of Ash Filter Ponds A, B, and C. During station operations, the bottom ash is sluiced from the ash hoppers to the hydrobins where the ash particles are allowed to settle. The hydrobin overflow water with suspended particles gravity-flows to a distribution box, which controls the water's routing to the individual ash filter ponds. The underflow is periodically drained in preparation for ash removal. This underflow also gravity-flows to the in-service ash filter ponds. The dewatered Coal Combustion Residuals (CCRs) are loaded onto trucks for disposal at the Keystone Station Disposal Site. During normal operations, two ponds are in service to handle the hydrobin overflow, and the remaining pond is drained, cleaned, and prepared for service. The maximum quantity of coal combustion material ever on-site over the active life of each pond is 7,000 cubic yards.

2.0 Closure Plan

This CCR Closure Plan (CP) [§257.102(b)] sets forth the steps required to complete closure activities of the ash filter ponds by removing the CCR and decontaminating all areas affected by releases from the CCR unit in accordance with §257.102(b)(1)(ii) and §257.102(c). This CP will be maintained in the facility's operating record in accordance with §257.102(b)(2)(iii) by October 17, 2016. Closure could occur for one or more ponds concurrently.

2.1 Closure Plan Overview

The CP includes the following:

- Narrative describing how the CCR unit will be closed in accordance with §257.102;
- Description of the closure of the ash filter ponds including a general description of the methods and procedures to remove all CCR and decontaminate all affected areas, and a description stating how closure will achieve the performance standards set forth by §257.102(c);
- Estimate of the maximum inventory of CCR ever on-site over the active life of the pond;
- Estimate of the largest area of the CCR unit ever requiring closure any time over the CCR unit's active life (for in-place closure);
- Schedule for completing all activities necessary to satisfy the closure criteria, including an estimate of the year in which all closure activities for the pond will be completed; and
- Written certification from a qualified professional engineer that the written CP meets the requirements of §257.102.

2.2 Closure Plan Narrative

The impoundments are to be closed by removal of CCR. Prior to the initiation of closure activities, a notification of intent to close the CCR unit will be prepared and placed in the facility's operating record as required by §257.102(g) of the CCR Rule. Upon closure of any of the ash filter ponds, liquid, CCR, and applicable liner materials will be removed. All associated riser structures, influent pipes, and effluent pipes into the subject pond(s) will be decommissioned, removed, and/or filled with grout. The

area will be graded to drain and will be vegetated. Stormwater will be directed through existing outfalls in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. PA0002062. An outside contractor will be used to perform the decontamination of areas affected by the ash filter pond(s).

The ash filter ponds will be drained by gravity and by using submersible pumps and pumped water filter bags, as necessary. The pumped water will be used as makeup water in the Flue Gas Desulfurization scrubber and/or will be discharged in accordance with NPDES Permit No. PA0002062 and will be actively monitored during closure activities. Any sediment will be removed and disposed of at the Keystone Station Disposal Site along with the excavated portions of the liner materials until the ponds are visually free of CCRs. These materials may also be disposed of at a different approved municipal or residual waste disposal facility. Pumps, influent pipes, and discharge pipes in the manholes will be removed along with sampling and electronic monitoring equipment used for flow measurements if they are no longer needed for station operations.

If not transitioned to non-CCR use, the ash filter pond(s) will then be graded to existing surrounding ground surface elevations and finish-graded to a uniform slope for positive drainage. All disturbed areas as a result of closure will be seeded, fertilized, and mulched. Revegetation will be in accordance with Formula W seed mix as defined in the PA Department of Transportation (PADOT) Specification Publication 408.

2.3 Closure Activities

This section provides a detailed description of the closure activities.

2.3.1 Site Preparation

Site preparation will comply with applicable regulations. The ash filter ponds will be dewatered and sediment will be removed. The liner materials will be excavated until the area is visually free of CCR. If not transitioned to non-CCR use, the ash filter ponds will be graded with soil and fine-graded to provide positive drainage toward the drainage facilities. Finally, the disturbed areas during closure activities will be seeded, fertilized, and mulched.

2.3.2 Final Seeding

The seeding mixture will be in accordance with Formula W Wetland Conservation Mix from the PADOT Publication 408. The seed mix is suited for the PA climate.

2.3.3 Stormwater Run-on/Run-off Controls Installation

Erosion and Sedimentation (E&S) Controls will be installed prior to the construction of the pond closures. Specifically, surface water management and erosion control will be provided by gently sloping vegetated areas toward existing outfalls. Temporary E&S controls will also be used during closure. Periodic inspections of the site will be completed at intervals sufficient to detect and correct any impairment of any E&S control device. Any impairments discovered during inspections will be corrected until vegetation of the final cover surface has been established and the Notice of Termination for state/county permitting has been approved.

2.3.4 Groundwater Monitoring

Groundwater monitoring will be conducted in accordance with the requirements of §257.90 through §257.98. As per §257.102(c), closure by the removal of CCR will be complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard (GPS) established pursuant to §257.95 (h) for each constituent listed in Appendix IV of the CCR Rule detected in the groundwater.

Specifically, closure will be deemed complete when the facility documents that all Appendix IV constituent concentrations are below maximum contaminant levels or background levels for two consecutive sampling events, using the statistical procedures in §257.93(g).

If constituent groundwater concentrations exceed the GPS, corrective measures will be initiated in accordance with §257.96.

2.4 Closure Schedule

The total area to be closed is approximately 2.6 acres (each ash filter pond is approximately 0.85 acres). Since the ash filter ponds will be operating as long as the Keystone Generating Station is operating on coal, closure of the ponds will occur when the station ceases operations on coal and CCR and non-CCR wastewater are no longer produced.

Final closure of the ponds must commence 30 days after the ash filter ponds receive the known final receipt of CCR and non-CCR wastewater. At this time, the closure of ash filter ponds is anticipated to occur in the early 2030s. Closure activities must be completed within five years of commencing closure activities [§257.102(e) and (f)]. Closure is anticipated to take approximately five years, due to the time required to:

- Apply for and receive the appropriate permits needed to commence closure activities (including preparing construction bid specifications and contract work);
 - ▶ Notification of intent to close the CCR unit must be prepared no later than the date owner initiates closure of the CCR unit (§257.102(g)).
- Prepare the site to comply with applicable regulations;
- Dewater and remove CCR and sediment from each ash filter pond;
- Backfill pond areas with soil and fine-grade to provide positive drainage; and
- Seed, fertilize, and mulch disturbed areas for final cover protection.

A two year time extension could be required if complications are encountered as provided for under §257.102(f)(2)(i).

Once the ash filter ponds are closed, a professional engineer will verify and certify that closure has been completed in accordance with the CP [§257.102(f)(3)]. Within 30 days of completing closure of the ash filter ponds, a notification of closure will be prepared by Keystone and will include the professional engineer's certification of completion [§257.102(h)].

3.0 References

- CCR Compliance Fugitive Dust Control Plans, October 2015. CB&I Environmental & Infrastructure, Inc.
- Form 18R Narrative, Closure/Post-Closure Land Use Plan, Keystone Station Ash/Refuse Disposal Site; December 8, 1997.
- Form T3, Status and Description Notice for Residual Waste Storage or Disposal Impoundment, Bottom Ash Pond A, December 28, 1992.
- Form T3, Status and Description Notice for Residual Waste Storage or Disposal Impoundment, Bottom Ash Pond B, December 28, 1992.
- Form T3, Status and Description Notice for Residual Waste Storage or Disposal Impoundment, Bottom Ash Pond C, December 28, 1992.
- United States Environmental Protection Agency (USEPA) 40 CFR Parts 257 and 261 Hazardous and Solid Waste Management Disposal System; Disposal of Coal Combustion Residual from Electric Utilities, Final Rule April 2015.