

WGS Generating Station Ash Pond B Closure Plan

Georgetown, SC

Water & CCR Environmental Services

PREPARED BY SOUTH CAROLINA PUBLIC SERVICE AUTHORITY (SANTEE COOPER)

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Revision: 2

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REVISION COPY & CONTROL

Document Revision No.	Revision Date	Revision Notes
0	10/14/2016	Original document.
1	10/9/2019	Revision to incorporate changes in site conditions and update the closure schedule.
2	12/21/2022	Revision to incorporate changes in site conditions and update the closure schedule.

1 Introduction

Santee Cooper prepared this Closure Plan for the Coal Combustion Residuals (CCR) surface impoundment, known as the Winyah Ash Pond B, at Winyah Generating Station in Georgetown, SC pursuant to the requirements of 40 CFR § 257.102(b). The Winyah Ash Pond B (Pond) is an approximately 65-acre impoundment regulated by South Carolina Department of Health and Environmental Control (SCDHEC), NPDES Permit #SC0022471. At the time of this writing, the Winyah Ash Pond B is no longer used for industrial wastewater treatment and CCR disposal for the four Winyah Generating Station units. The impoundment ceased receipt of waste and initiated closure on 4/11/2021. Fly ash is being reclaimed from the Pond for beneficial use. Groundwater monitoring is conducted under a state-approved monitoring program and the CCR Rule. This Closure Plan will be used to assist Santee Cooper in the Closure of the Winyah Ash Pond B.

The United States Environmental Protection Agency (EPA) promulgated regulations regarding Coal Combustion Residuals which were published in the Federal Register on April 17, 2015 (40 CFR Part 257). Section §257.102(b)(1) requires a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The initial closure plan for the Winyah Generating Station Ash Pond B, date October 14, 2016, was written by Geosyntec and placed in the operating record prior to the regulatory deadline of October 17, 2016, as required by §257.102(b)(2). This revised version was amended to update the closure schedule, make technical modifications, and reflect the current status of the Pond. This Closure Plan may be additionally amended pursuant to the requirements of § 257.102(b)(3).

2 Narrative of Closure by Removal

Per §257.102(b)(1)(i) the closure plan must include: a *narrative description of how the CCR unit will be closed in accordance with this section.*⁴

The purpose of this Closure Plan is to describe steps to close the Ash Pond B consistent with recognized and generally accepted good engineering practices. Closure is designed to minimize long-term maintenance and control the post-closure release of constituents into environmental pathways of air, surface water and groundwater. The existing Ash Pond B at Winyah Generating Station in Georgetown, South Carolina will be closed by removal of CCR. The CCRs will either be beneficially used or disposed of in an on-site Class 3 Landfill. The first cells of the Class 3 Landfill received a Permit to Operate November 2018. Most of these cells will be used for the closure of Ash Pond A. Additional cells will be constructed in the footprint of Ash Pond A to facilitate closure of Ash Pond B and the South Ash Pond.

Winyah Station converted to dry bottom ash and fly ash handling so ash is no longer sluiced to this pond. Additional station upgrades have been completed which allowed stormwater and wastewater inflows to be eliminated from Ash Pond B. However, the Pond still receives stormwater runoff from Ash Pond A, but this will cease once Ash Pond A closure is completed. All dewatering effluent from within the Ash Pond B will be pumped to the existing wastewater treatment facility for treatment. Due to the long history of Santee Cooper's beneficial use program, the Pond has been periodically dewatered throughout its lifetime to improve accessibility. However, dewatering efforts were intensified in recent years in preparation for closure initiation. After verification testing confirms that all waste has been removed, the dikes will be breached in one or more locations, the area will be backfilled, and the entire area will be graded to provide positive drainage and permanently seeded.

3 CCR Removal and Decontamination Procedures

Per §257.102(b)(1)(ii): *if closure of the CCR unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section.*

Paragraph §257.102(c) states: *Closure by removal of CCR. An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are 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 established pursuant to §257.95(h) for constituents listed in appendix IV to this part.*⁴

The existing Ash Pond B contains both CCR waste and contact stormwater. At present, Ash Pond B no longer receives CCR or wastewater inflows which ceased on April 11, 2021, and rainfall is the only source of stormwater in the Pond. The CCR material is a mixture of fly ash and bottom ash.

Stormwater exits the pond via an outlet structure that is hydraulically connected to the Cooling Pond, where it is further treated prior to being discharged or recycled for plant use.

The procedure to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) above is described as follows:

1. All waste and wastewater streams previously pumped to Ash Pond B were re-routed or eliminated by April 11, 2021.
2. The Ash Pond B will be dewatered by pumping all legacy wastewater and contact stormwater for treatment to the Winyah Industrial Cooling Pond. Continual dewatering operations are anticipated throughout the duration of closure to minimize the amount of free water present within the CCR impoundment.
3. The CCRs will be dewatered further using stacking and gravity decanting as required to remove free water until the material can pass EPA Method 9095B (paint filter test). All CCR waste and contact soil hauled to the onsite Class Three Landfill must first pass this test. Material slated for beneficial use must also be dewatered.
4. CCR material is and will be excavated using conventional equipment (e.g., track hoes). CCR material intended for beneficial use is excavated and placed in temporary storage piles within the Winyah Ash Pond B for loading. The trucks are weighed and recorded on certified scales prior to leaving the station. CCR material that is not beneficially used either due to the quality or to regulatory time constraints will be landfilled by placement in off-road trucks, hauled to, and compacted in an onsite Class 3 Landfill.
5. Beneficial use will continue concurrent with removal of CCRs to the landfill. Market demand or costs could impact beneficial use options. Beneficial use requires excavation using conventional equipment, screening to meet the contract specifications, placement in off-road trucks for hauling to the on-site SEFA STAR facility or on-road trucks for hauling to other beneficial use options.
6. Groundwater monitoring will continue throughout the closure process following both a SCDHEC-approved program required under the station's NPDES permit and a CCR Rule groundwater monitoring plan.
7. Borings will be used to evaluate the bottom of the pond to create an excavation plan.
8. Post ash removal, visual analysis of the remaining soil, with testing, will be performed to verify complete removal of the CCR material. If results indicate removal of the CCRs is not complete, removal of a thin layer of subgrade soil may be required. Soil evaluation will be repeated until adequate removal of the CCR is verified. For soil results which indicate a de minimis of residual

CCR material remains and/or do not fully achieve the standards specified by SCDHEC, a deed restriction will be placed on those areas.

9. Erosion and sediment controls will be installed prior to breaching or removing the pond dikes to ensure all non-contact construction stormwater is controlled in a manner to prevent erosion and sedimentation in areas surrounding the pond.
10. The pond will be graded as required to provide positive drainage to the industrial cooling pond and to allow for mowing and maintenance access and will be permanently seeded. If necessary, additional soil fill material will be imported to the site and compacted within the pond.
11. The Ash Pond B dikes will be breached in one or more locations, with the dike material used to partially fill the pond excavation. This will prevent the impoundment of water.

4 Maximum Inventory of CCR

Per §257.102(b)(1)(iv), the closure plan must include: *An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.*⁴

The base grades of the pond were estimated based on historical information. Geosyntec relied on the data available on the pre-development drawing set prepared by Lockwood Greene in 1978. The starting bottom surface used was digitized from contours shown on Drawing CV-549 and 550 [Lockwood Greene, 1978]

Geosyntec performed investigations to support the geotechnical evaluation of the ponds. Although not specifically designed for this purpose, these investigations were used to estimate the transition between in-place CCR material and natural soils (i.e., the pond bottom). Three investigations were performed by Geosyntec, in February 2013, October 2013, and December 2013. In addition, Geosyntec reviewed the logs from borings drilled by Paul C. Rizzo and Associates (PCRA) in 1993 and again in 1999 to help us estimate the pond bottoms.

The pond bottom was used to estimate the amount of in-place material by subtracting it from the existing ground surface (topographic survey dated 06/29/2011 and revised 1/14/2012 by Thomas & Hutton). These quantities determined by Geosyntec's investigation were used as a starting point to begin tracking the inventories within the ponds. This has been accomplished by estimating inflows based on plant operating efficiencies and accounting for outflows to beneficial use customers and onsite landfills. The current quantities below reflect the amount of CCRs present in October 2022. The quantities shown are estimates.^{1,2,3}

Table 4-1: Estimated Quantities and Types of CCR Materials – Ash Pond B

Type	Volume ¹ (cy)	Type of Materials
Historic Max CCR	1,798,520 (2,158,224 tons)	Bottom ash, cenospheres, boiler slag, and fly ash
Current Quantities CCR	734,515 (881,418 tons)	

Note(s):

[1] Tons calculated assuming a density of approximately 1.2 tons/cy. For the Historic Max, Ash Pond A&B were calculated as one pond and then halved between the two ponds.

5 Schedule of Closure by Removal

Per §257.102(b)(1)(vi), the closure plan must include: A schedule for completing all activities necessary to satisfy the closure criteria in this 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 CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure. When preparing the written closure plan, if the owner or operator of a CCR unit estimates that the time required to complete closure will exceed the timeframes specified in paragraph (f)(1) of this section, the written closure plan must include the site-specific information, factors, and considerations that would support any time extension sought under paragraph (f)(2) of this section.⁴

A project to upgrade plant equipment was completed that allowed for remaining stormwater and wastewater inflows to the Ash Pond B to cease by April 11, 2021 at which point closure was initiated. It is estimated that all closure activities will be completed in 2026 assuming no delays due to permitting, weather impacts on construction, excess dewatering requirements, or unforeseen equipment or manpower shortages. This also assumes an ongoing robust beneficial use market.

The schedule for completing all activities required to close the Pond is as follows:

Table 5-1: Anticipated Closure Schedule

Activity	Anticipated Schedule
Final receipt of stormwater and wastewater flows & Notification of intent to initiate closure ¹	Apr 11, 2021 (completed)
Submit revised Ash Pond B State Closure Plan to DHEC for approval	May 2021 (completed)
Receive Land Disturbance Permit for Borrow Pit (Landfill Foundation Material)	Jun 2021 (completed)
CCR Removal for landfill disposal and beneficial use to reduce volume of CCR material in Ash Pond B	Apr 2021 – Apr 2026 (in progress)
Landfill Construction & Receive Approval to Operate Landfill Cells 4 & 5 ²	Jul 2021-Dec 20, 2021 (completed)
Intensification of dewatering activities (installation of sock drain)	Mar 2022
Initiate Landfill Disposal to Cells 4 & 5 from Ash Pond B ²	Mar 28, 2022
Landfill Construction & Receive Approval to Operate Landfill Cells 6 & 7 ²	Jan 2022 - Dec 2022 (in progress)
Obtain DHEC approval for State Closure Plan	May 2023
Notification of completion of physical closure for Ash Pond B ^{3,4}	Apr 2026
Post-Closure Activities for Ash Pond B (e.g., Grade and remove dikes)	Apr 2026 – Dec 2026

Notes:

- 1) Per §257.102(g), no later than the date the owner or operator initiates closure of a CCR unit, the owner or operator must prepare a notification of intent to close a CCR unit
- 2) SC DHEC has issued the permit to construct the landfill. The permitted location is in the footprint of the Winyah A Ash Pond. Closure of the specific areas of Ash Pond A must be complete, and certified by SC DHEC, prior to construction of the landfill.
- 3) Per §257.102(f)(l)(ii), the owner or operator must complete closure of the CCR unit, for



existing and new CCR surface impoundments and any lateral expansion of a CCR surface impoundment, within five years of commencing closure activities.

- 4) Per §257.102(h), within 30 days of completion of closure of the CCR unit, the owner or operator must prepare a notification of closure of a CCR unit

All dates are approximate and are provided to convey the overall sequence and scope of closure activities, and to demonstrate their approximate duration. Activities may commence and/or complete earlier or later than shown. It is estimated that all physical closure activities will be completed within 5 years, however this schedule is weather dependent. Extended periods of inclement weather will impact the schedule since neither the Pond, nor the Winyah Class 3 Landfill are accessible in extreme weather events due to safety. Supply chain management issues impacting equipment purchases and repairs and labor shortages may also affect the closure schedule. Extensions to complete CCR removal may be sought if the schedule is adversely impacted by these or other factors out of Winyah Generating Station's control in accordance with 257.102(f)(2).

Closure completion will be certified by a Professional Engineer licensed in the South Carolina. In accordance with §257.102(h), Santee Cooper will prepare a notification of closure of the Winyah Ash Pond B within 30 days of completion of closure and place the notification in the operating record.


6 Conclusion

This report satisfies the written closure plan requirements outlined in Title 40 CFR §257.102 for the Ash Pond B at Winyah Generating Station in Georgetown, South Carolina. The Ash Pond B will be closed by removing CCR material. Closure by removal via continued beneficial use and disposal in an on-site Class 3 landfill cells commenced on April 11, 2021.

7 Certification

I, Aubree L. Decoteau, being a registered Professional Engineer in the State of South Carolina, do hereby certify to the best of my knowledge, information, and belief that the information contained in this Winyah Ash Pond B Closure Plan dated December 21, 2022 was developed pursuant to the requirements of 40 CFR 257.102 and has been prepared with recognized and generally accepted good engineering practices.

Signature



Aubree L. Decoteau

Date

12/21/2022

8 References

1. Geosyntec (2014). Pond Bottom Estimate. Winyah Generating Station. Georgetown, South Carolina. Interoffice communication.
2. Lockwood-Greene, (1972), A Drawing Set for Santee Cooper Winyah Generating Station.
3. Thomas and Hutton (2011) Topographic Survey of a Portion of Santee Cooper Winyah Generating Station. Revised 2012.
4. USEPA (2015). "40 CFR Parts 257: Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities," Federal Register, Vol. 80, No. 74, April 2015.