Prepared for

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CLOSURE PLAN NARRATIVE

ASH POND A

WINYAH GENERATING STATION

GEORGETOWN, SOUTH CAROLINA

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1. INTRODUCTION

The United States Environmental Protection Agency (EPA) promulgated new regulations regarding Coal Combustion Residuals (CCRs). These regulations (40 CFR Part 257) were published in the Federal Register on April 17, 2015. One of the requirements (§257.102(b)(1)) of the new regulations is to prepare 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.

This written closure plan must be placed in the facility's operating record no later than October 17, 2016, as required by §257.102(b)(2).

This report presents the written closure plan for the existing Ash Pond A at Winyah Generating Station in Georgetown, South Carolina.

2. DISCUSSION

Title 40 CFR §257.102(b)(1)(i) through (vi) specify the minimum required information that must be included in the written closure plan. Each requirement is stated below, along with the required information. The written closure plan must include, at a minimum, the following:

2.1 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.*

> The existing Ash Pond A at Winyah Generating Station in Georgetown, South Carolina will be closed by removal of CCR. Prior to initiation of closure, numerous plant upgrades will be implemented that will allow all existing CCR and wastewater inflows to be either eliminated or diverted from entering the Ash Pond A. All CCR in the Ash Pond A will be dewatered to remove free water, and then will be hauled to and placed in an onsite lined Class Three CCR Landfill; the landfill is currently being permitted and is expected to be ready to receive CCR in 2018. All dewatering effluent from within the Ash Pond A will be pumped to the existing wastewater treatment facility for treatment. After verification testing confirms that all waste has been removed, construction of phase 2 of the onsite Class Three CCR landfill will begin.

2.2 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.*

The existing Ash Pond A contains both CCR waste and wastewater. At present, numerous CCR and wastewater streams are pumped to the Ash Pond A. Wastewater exits the pond via an outlet structure that is hydraulically connected to the Ash Pond B and is eventually conveyed to the Cooling Pond, where it is further treated prior to being discharged.

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

1. All existing waste streams currently pumped to the Ash Pond A will be re-routed or eliminated.

2. The Ash Pond A will be dewatered by pumping all wastewater for treatment. Continual dewatering operations are anticipated throughout the duration of closure to minimize the amount of free water present within the CCR impoundment.

3. The CCR waste will be dewatered further using stacking and gravity decanting as required to remove all free water until the material is capable of passing EPA Method 9095B (paint filter test). All waste hauled to the onsite Class Three CCR Landfill must first pass this test.

4. The CCR waste will be excavated using conventional equipment (e.g. track hoes), placed in off-road trucks, and hauled to (and compacted in) the onsite Class Three CCR Landfill.

5. Soil and groundwater testing will be performed to verify decontamination of the CCR unit is complete. If test results do not indicate that decontamination of the CCR unit is complete, removal of a thin layer of subgrade soil may be required. Testing will be repeated until decontamination of the CCR unit is verified. This includes verification that concentrations of constituents within the groundwater do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in appendix IV to this part.

6. 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.

7. Construction of phase 2 of the onsite Class Three CCR landfill will begin within the footprint of Ash Pond A.

2.3 Final Cover System (NA)

Per §257.102(b)(1)(iii): *If closure of the CCR unit will be accomplished by leaving 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 above requirement is not applicable, as the closure will not be accomplished by leaving CCR in place.

2.4 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.*

The base grades of the pond were estimated based on historical information. In particular, Geosyntec relied on the data available on the pre-development drawing set by Lockwood Greene prepared in 1972. The starting bottom surface used was digitized from contours shown on Drawing CV-504 [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, on 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). The quantities below reflect the amount of CCRs present in September 2016.

Estimated Quantities and Types of CCR Materials - Ash Pond A

Type	Volume [1] (cy)	Type of Materials
CCR	2,730,000 (3,276,000 tons)	Bottom ash, boiler slag, and fly ash

Note(s):
[1] Tons calculated assuming a density of approximately 1.2 tons/cy.

2.5 Largest Area Requiring Final Cover (NA)

Per §257.102(b)(1)(v), the closure plan must include: *An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life.*

The above requirement is not applicable, as the closure will not be accomplished by leaving CCR in place.

2.6 Schedule for 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.

A project is currently underway to upgrade plant equipment that will allow for all current CCR and wastewater inflows to the Ash Pond A to cease in 2018. The Ash Pond A is scheduled to begin closure by removal of CCR at that time, within 30 days of final receipt of waste / wastewater. It is estimated that all closure activities will be completed in 2026 within 8 years. The schedule for completing all activities required to close the Ash Pond A is shown as follows:

Final Closure Schedule – Ash Pond A

Activity	Completion Date
SCDHEC Closure plan review / approval	Dec 2017 – Feb 2018
Construct onsite Class Three Landfill - Area 1	Sep 2017 - Dec 2018
DHEC certifies operation	Jan 2019
Construct onsite Class Three Landfill - Area 2 (Cells 4 & 5)	Aug 2021 - Nov 2022
DHEC certifies operation	Dec 2022
Procure final closure contractor	Feb 2018 – April 2018
Final receipt of waste / wastewater flows	May 2018
[1]Notification of intent to initiate closure	May 2018
Dewater CCR waste	May 2018 – Aug 2026
Remove CCR from Cells 4 & 5	Feb 2019 - Feb 2021
State certifies CCR removal	Aug 2021
Remove CCR from Cells 6 & 7	Jan 2023 - Jan 2025
State certifies CCR removal	Jul 2025
Remove CCR from Cell 8	Aug 2025 - Aug 2026
State certifies CCR removal	Dec 2026
[2,3]Notification of closure completion	Feb 2027

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) Per §257.102(f)(1)(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.
3) 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. However, the estimated initiation of closure by removal is in 2018, with the estimated completion of closure by removal in 2026.

3. CONCLUSIONS

This report satisfies the written closure plan requirements outlined in Title 40 CFR §257.102 for the Ash Pond A at Winyah Generating Station in Georgetown, South Carolina. The Ash Pond A will be closed by removing all CCR material. Closure by removal is expected to commence in 2018 and be completed in 2026.

4. CERTIFICATION

This written closure plan meets the requirements of this section (§257.102 Criteria for conducting the closure or retrofit of CCR units.) of the Code of Federal Regulations Title 40, Part 257, Subpart D, and was prepared in accordance with current practices and the standard of care exercised by scientists and engineers performing similar tasks in the field of civil engineering, and no other warranty is provided in connection therewith. The contents of this report are based solely on the observations of the conditions observed by Geosyntec personnel and information provided to Geosyntec by Santee Cooper. Consistent with applicable professional standards of care, our opinions and recommendations were based in part on data furnished by others. Although we were not able to independently verify such data, we did evaluate it to determine whether it was consistent with other information that we developed in the course of our performance of the scope of services. The information contained in this report is intended for use solely by Santee Cooper and their subconsultants.

Certified by:

Date 10/14/2016

C. Fabian Benavente, P.E. South Carolina License Number 32067
Senior Engineer

5. REFERENCES

Geosyntec (2014). Pond Bottom Estimate. Winyah Generating Station. Georgetown, South Carolina. Interoffice communication.

Lockwood-Greene, (1972), A Drawing Set for Santee Cooper Winyah Generating Station.

Thomas and Hutton (2011) Topographic Survey of a Portion of Santee Cooper Winyah Generating Station. Revised 2012.

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.

Winyah Generating Station
Ash Pond A
§257.102(f) Closure Plan Owner Statement

In order to obtain additional time extension(s) to complete closure of a CCR unit beyond the times provided by paragraph (f)(1) of §257.102, the owner or operator of the CCR unit must include with the demonstration required by paragraph (f)(2)(i) of the same section the following statement signed by the owner or operator or an authorized representative. Information to support the demonstration required by paragraph (f)(2) is contained in the attached closure plan.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration and all attached documents, and that, based on my inquiry of the individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

John W. Dills

10/17/2016

Owner representative
John W. Dills, P.E.
Group Manager Station Construction

Date