

SOUTH CAROLINA ELECTRIC & GAS



CLOSURE PLAN

FOR THE
WATEREE STATION
FGD POND
RICHLAND COUNTY, SOUTH CAROLINA

SEPTEMBER 2016



1 OVERVIEW

The EPA Administrator, Gina McCarthy, signed the Disposal of Coal Combustion Residuals from Electric Utilities final rule on December 19, 2014, and it was published in the Federal Register (FR) on April 17, 2015. The regulations provide a comprehensive set of requirements for the safe disposal of coal combustion residuals (CCRs), commonly known as coal ash, from coal-fired power plants. The rule will be administered as part of the Resource Conservation and Recovery Act [RCRA, 42 United States Code (U.S.C.) §6901 et seq.], using the Subtitle D approach.

South Carolina Electric & Gas (SCE&G) is subject to the CCR Rule. Based on SCE&G's review of the rule, the **Flue Gas Desulfurization (FGD) Pond at SCE&G Wateree Station** has been determined to be an existing CCR surface impoundment subject to the CCR rule requirements.

2 PURPOSE

The purpose of this report is to document that the Wateree Station FGD Pond Closure Plan meets the requirements of CCR rule §257.102 – *Written Closure Plan*.

3 APPLICABLE REGULATIONS

CCR rule §257.102 – *Written Closure Plan* states the following:

(b) Written closure plan. (1) Content of the plan. The owner or operator of a CCR unit must 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. The written closure Plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section.

(i) A narrative description of how the CCR unit will be closed in accordance with this section.

(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.

(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.

(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

(v) 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.

(vi) 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.

The closure of the FGD Pond is to be accomplished through removal of CCR from the FGD Pond, therefore per (b)(1)(ii) as stated above, the closure plan shall provide a description of the procedures to remove the CCR and decontaminate the FGD Pond in accordance with 257.102 (c), which states:

(c) 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 FGD POND DESCRIPTION

Wateree Station is coal-fired electric generation plant located along the Wateree River near Eastover, Richland County, South Carolina. The FGD Pond is used to manage wastewater generated from the flue gas desulfurization scrubber system. The FGD pond was constructed in accordance with construction permit (permit 19263-IW) issued from the South Carolina Department of Health and Environmental Control (SCDHEC) on December 7, 2009, and placed into operation in accordance with an operation approval issued by DHEC on April 10, 2010. Effluent discharge for the FGD Pond is regulated under NPDES Permit #SC0002038.

The FGD Pond includes two forebays (1.1 and 1.15-acres), a primary settling pond, and a secondary settling pond.

5 CLOSURE PLAN

A Closure Plan has been prepared for the closure of the FGD Pond, which includes the complete removal of the CCR material. A copy of the Closure Plan is presented in Attachment 1.

The Closure Plan includes a narrative description of how the FGD Pond will be closed, a description of the procedures to remove the CCR and decontaminate the Ash Pond, an estimate of the maximum

inventory of CCR on-site, and a schedule for completing all activities necessary to satisfy the closure, in satisfaction of the requirements of §257.102 (b)(1) paragraphs (i), (ii), (iv) and (vi), respectively.

The requirements of paragraphs §257.102 (b)(1)(iii) and (v) are not applicable as they pertain to in-place closure.

8 CONCLUSION

Based on the discussions above, the Wateree Station FGD Pond Closure Plan meets the requirements of CCR rule §257.102 – *Written Closure Plan*.

ATTACHMENT 1

CLOSURE PLAN

SOUTH CAROLINA ELECTRIC & GAS



**WATEREE STATION
FGD POND
CLOSURE PLAN**

RICHLAND COUNTY, SOUTH CAROLINA

SEPTEMBER 2016

Prepared by



1. INTRODUCTION

Wateree Station is coal-fired electric generation plant located along the Wateree River near Eastover, Richland County, South Carolina. The FGD Pond is used to manage wastewater generated from the flue gas desulfurization scrubber system. The FGD pond was constructed in accordance with construction permit (permit 19263-IW) issued from the South Carolina Department of Health and Environmental Control (SCDHEC) on December 7, 2009, and placed into operation in accordance with an operation approval issued by SCDHEC on April 10, 2010. Effluent discharge for the FGD Pond is regulated under NPDES Permit #SC0002038.

The FGD Pond includes two forebays (1.1 and 1.15-acres), a primary settling pond, and a secondary settling pond. Drawings showing the overall site layout and FGD Pond are presented on Figures 1 and 2.

The FGD Pond incorporates a liner system comprised of, from bottom to top: an 18-inch thick low permeability compacted soil liner (CSL), geosynthetic clay liner (GCL), HDPE geomembrane (GM) liner, fabric cushion, and protective cover (fabric formed concrete revetment mat in forebays, soil cover in settling bays). Wastewater is pumped to the pond from the plant via an HDPE pipe forcemain, with effluent from the pond flowing to an adjacent pump station for pumped discharge via an HDPE forcemain to a downstream receiving body.

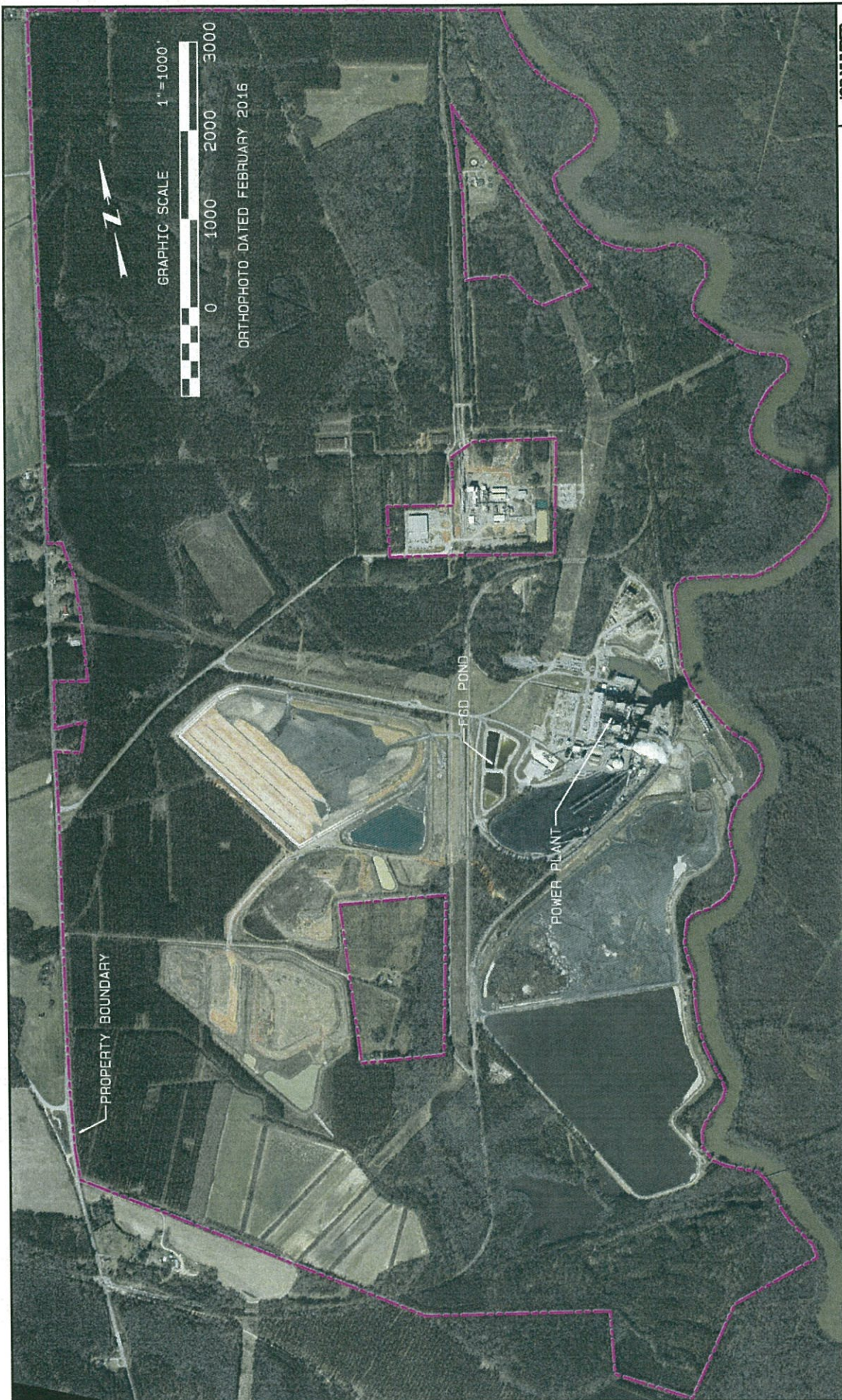
The closure of the FGD Pond will be accomplished through removal of coal combustion residuals (CCR) from the pond.

The purpose of this document is to present a plan for the closure of the FGD Pond. The key components and objectives of the pond closure plan are as follows:

- Inflow Diversion
- CCR Removal
- Pond Demolition
- Sampling of Pond Subsoil
- Site Restoration
- Closure schedule
- Reporting and inspections
- Groundwater Monitoring

2. INFLOW DIVERSION

Prior to pond closure, wastewater influent will be blocked, diverted or otherwise prevented from entering the pond.



1100 CRESCENT GREEN DRIVE
 SUITE 200
 CARY NORTH CAROLINA 27518
 TEL: 919-765-1600
 FAX: 919-811-7208
 www.garrett-moore.com



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SCE&G WATEREE STATION

**FGD POND
CLOSURE PLAN**

JOB NUMBER

SHEET
1



3 CCR REMOVAL

To facilitate removal of the accumulated CCR sludge, the pond will be dewatered to remove free liquids. Dewatering will be accomplished via pumping to an approved receiving on-site unit in accordance with the requirements of the facility NPDES permit, or pumped and hauled to an appropriately permitted off-site treatment works.

The maximum inventory of CCR ever on-site over the active life of the CCR unit is estimated to be approximately 16,450 cubic yards (8,450 cubic yards in Forebay #1 and 8,000 cubic yards in Forebay #2). This volume represents both forebays being filled to the normal (maximum) pool level.

With the pond sufficiently dewatered, SCE&G and their subcontractors will remove the accumulated CCR sludge from the pond. The CCR sludge material will be loaded into dumptrucks, hauled and disposed at either the on-site Class Three landfill (Facility ID #LF3-0028) or other appropriately permitted off-site landfill.

It is understood that some de minimis CCR material may remain in the pond following mass CCR sludge removal (residues within fabric-formed concrete revetment mat dimpled surface, etc.). Care shall be taken to ensure this material is contained and prevented from being released to the environment. This material will be collected during pond demolition work and disposed at either the on-site Class Three landfill or other appropriately permitted off-site landfill.

4 POND DEMOLITION

Upon successful completion of the pond CCR sludge removal, the existing pond infrastructure will be dismantled to include the composite liner system and overlying concrete revetment mat, pump station, and influent and effluent HDPE piping networks. Care will be taken to ensure any final CCR residue still in the pond is contained and collected for appropriate disposal, and not allowed to runoff or otherwise release to the environment.

The pond's geosynthetics clay liner (GCL), geomembrane (GM) liner, fabric cushion and protective cover (concrete revetment mat in forebays, soils cover in settling bays) will be removed from the pond area and disposed in either the on-site Class Three landfill or other appropriately permitted off-site landfill. The remaining pond infrastructure components (pump station components, HDPE piping, etc.) will be salvaged for parts or re-use, recycled, or disposed in the on-site Class Three Landfill. Influent and effluent HDPE forcemain piping will be capped/sealed and abandoned in place, or removed and salvaged for re-use, recycled, or appropriately disposed.

5 SAMPLING OF POND SUBSOILS

Upon completion of pond demolition, a sampling and testing program will assess the potential impact of wastewater pond operations on the geochemical composition of the underlying low permeability compacted soil liner (CSL) soil and underlying residual soils, as necessary. Sample(s) of the CSL underlying the base on the pond's synthetic liner will be collected and

analyzed at a SCDHEC certified laboratory for constituents typically of concern for coal ash and as required by the CCR rules to include Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Selenium, Thallium, and Radium 226 and 228 combined. The soil samples will be analyzed using accepted EPA and/or SW-846 methodologies. To ensure similar soil types are used in the comparison, "background" sample(s) will be collected from CSL soils not potentially impacted by the pond operations such as those located along the top edge/berm of the pond at elevations above where pond water levels were ever observed to have risen.

In order to assess potential impacts resulting from the pond operations, the results of the analysis on the CSL soil sample(s) will be compared to a background soil sample(s) to determine if a statistically significant increase in the concentrations is observed in the CSL soil underlying the pond. In the event the analysis yields results indicating no statistically significant increase in the concentrations of the pond CCL soil sample(s) as compared to the background CCL sample(s), then the CSL will be considered 'clean' and no further analyses required.

In the event the analysis yields results indicating a statistically significant increase in the concentrations of the pond CSL soil sample(s) as compared to the background sample(s), then a similar sampling of the residual soil directly under the CSL will be performed and analyzed to determine if the concentrations indicate a potential leakage through the CSL and into the underlying residual soils. "Background" sample(s) for analysis of the residual soil will be collected from an area upgradient of the pond and in an area not potentially impacted by the pond or other site operations, from a soil of the same soil type as collected in the pond residual soil sample. In the event the analysis yields results indicating no statistically significant increase in the concentrations of the pond residual soil sample(s) as compared to the background sample(s), then it may be concluded that the CSL contained the leakage and no additional analyses of the underlying pond residual soils are required. In this case, the CSL materials will be removed and disposed at either the on-site Class Three landfill (Facility ID #LF3-0028) or other appropriately permitted off-site landfill.

In the event the analysis on the residual soils yields results indicating a statistically significant increase in the concentrations of the pond underlying residual soil sample(s) as compared to the background sample(s), SCDHEC will be notified and a plan for additional investigations and analyses and corrective actions will be developed for SCDHEC's review and approval. It is understood that the results of groundwater monitoring for the facility will be considered in development of corrective action plans.

6 SITE RESTORATION

Upon removal of the CCR materials, demolition/removal of pond infrastructure, and successful confirmatory sampling of the pond subsoils, the pond area will be graded to prevent ponding and promote natural drainage, graded to establish appropriate grades for post-closure planned end uses, or as otherwise deemed appropriate by SCE&G.

7 CLOSURE SCHEDULE

SCE&G will prepare a schedule for closure activities. Closure of the subject area must be completed within 180 days following of beginning closure activities. Extensions of the closure event period may be granted by SCDHEC if SCE&G demonstrates that closure will take longer than 180 days and they have taken and will continue to take all steps to prevent threats to human health and the environment from the unclosed pond.

8 INSPECTIONS AND REPORTING

Construction quality assurance (CQA) observations and information documenting the closure project will be compiled and condensed at project completion. A Certification Report describing the project, details relative to the closure construction, and site observations will be prepared and submitted to SCDHEC for review. The report will include a certification by a registered professional engineer that the pond closure construction was performed in accordance with the Closure Plan.

9 GROUNDWATER MONITORING

Groundwater monitoring associated with the FGD Pond is currently performed in accordance with the facility NPDES Permit (Permit #SC0002038). A map identifying the locations of the existing monitoring well network is presented on Figure 2. Please note that the upgradient “background” well (FGD-01) is not shown on Figure 2, and is located approximately 450-ft west of the northwest corner of the drawing. Groundwater monitoring at the site will continue in accordance with the requirements of the NDPEs permit and CCR rules.

Upon written approval by SCDHEC for the closure construction, it is understood that SCE&G may submit a request to cancel NPDES coverage for with FGD Pond provided groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to 257.95(h) of the CCR Rules.