# NOTIFICATION OF CLOSURE

# FGD POND
# WILLIAMS STATION
# GOOSE CREEK, SOUTH CAROLINA

This Notification of Closure is provided within 30 days of completion of closure in accordance with §257.102(h) and serves to document that Dominion Energy South Carolina (DESC) has completed closure of the A.M. Williams Station CCR Unit described as the FGD Pond. The FGD Pond is officially closed as of April 28, 2021. The professional engineer certification of closure, in accordance with §257.102(c), is contained within the enclosed Closure by Removal Certification, prepared by Civil & Environmental Consultants, Inc. and dated May 2021.

# CLOSURE BY REMOVAL CERTIFICATION

## FGD POND
## WILLIAMS STATION
## GOOSE CREEK, SOUTH CAROLINA

**Prepared For:**

**DOMINION ENERGY SOUTH CAROLINA, INC.**
**COLUMBIA, SOUTH CAROLINA**

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**CEC Project 306-309**

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# 1.0 OBJECTIVE

This report has been prepared for South Carolina Generating Company (SCGENCO) and Dominion Energy South Carolina, Inc. (DESC) to demonstrate that the A.M. Williams Station (Williams Station) Coal Combustion Residuals (CCR) Unit described as the FGD Pond meets the closure requirements of the United States Environmental Protection Agency (USEPA) CCR Rule which has been published in the Federal Register (FR) on April 17, 2015 as part of the Code of Federal Regulations (CFR) Title 40, Part 257 (§257). CEC has prepared this report for DESC to specifically meet the closure by removal certification requirements in §257.102(c) for the FGD Pond.

## 2.0 SITE OVERVIEW

The Williams Station is a coal-fired power generation station located at 2242 Bushy Park Road in Goose Creek, South Carolina that is owned by SCGENCO and operated by DESC. The 650 MW coal-fired electric generating station is generally positioned within a small strip of lowlands between meanders of the Back River (west) and the Cooper River (east). The station property is bound by Bushy Park Road to the west and tidal wetlands and/or lowlands border the remainder of the property. The Williams Station wastewater management impoundment complex, comprised of six interconnected separate ponds labeled Ponds A through E and the Coal Pile Runoff Pond, is located north of main station structures.

Williams Station infrastructure includes a flue gas desulfurization (FGD) air quality control system that produces an FGD wastewater blowdown waste stream that is managed in an on-site FGD Pond originally constructed in 2009 in accordance with applicable South Carolina Department of Health and Environmental Control (SCDHEC) regulations and permits. This CCR Unit is also regulated as a CCR Surface Impoundment per Title 40 CFR, Part 257, Subpart D published in April 2015 (CCR Rule) by the USEPA and subsequent revisions.

The FGD Pond is located within the boundaries of the wastewater management impoundment complex at the Williams Station facility and was originally constructed within the footprint of former Pond C in 2009. The FGD Pond is comprised of two approximate 700,000 gallon forebays (identified as Forebay 1 and Forebay 2) and approximately two acres in total. Each forebay was constructed with a composite liner system comprised of the following, from bottom to top:

- 18-inch thick compacted clay soil liner (CCL);
- 60-mil textured HDPE geomembrane liner;
- 28-ounce per square yard geotextile cushion; and,
- 6-inch thick fabric formed concrete protection layer.

The FGD Pond was closed by removal of CCR in accordance with §257.102(c) and the Closure Plan – Amendment 1 (Closure Plan), dated February 2021.

## 3.0 CRITERIA FOR CLOSURE BY REMOVAL §257.102(C)

The applicable sections of §257.102(c) are presented below in bold, italic font. The responses follow each section of the rule and are provided in normal font.

> ***(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.***

### 3.1 CLOSURE BY REMOVAL OF CCR

In accordance with the Closure Plan and §257.102(c), DESC completed removal of CCR within the FGD Pond and decontamination of the FGD Pond and composite liner system. The closure by removal is summarized below. Detailed information is provided in the Construction Summary Report dated May 2021 prepared by CEC and contained in the FGD Pond Operating Record.

#### 3.1.1 CCR Removal

Removal of CCR from the two forebays of the FGD Pond was performed by Bio-Nomic Services (Bio-Nomic) in two phases that occurred intermittently between January 6, 2021 and April 15, 2021. For Phase 1, Bio-Nomic was on-site between January 6, 2021 and January 21, 2021 to begin CCR waste removal within Forebay No. 2 of the FGD Pond. Utilizing a dredge, CCR sediment and wastewater was collected from Forebay No. 2 and pumped to a processing tank (i.e., "frac tank") where a flocculent was used to aid in increasing the solids content prior to dewatering through a filter press. The CCR solids were then run through a filter press prior to transporting to the designated gypsum storage pad located on the south side of Williams Station. The materials were then hauled to the Williams Station Highway 52 Landfill for disposal.

Bio-Nomic returned to the site on March 11, 2021 to begin Phase 2 of the CCR waste removal within the FGD Pond forebays. Bio-Nomic began the Phase 2 CCR removal by first removing free water from the two FGD Pond forebays. Once the majority of the free water was removed, Bio-Nomic utilized vacuum trucks to remove the remaining CCR wastewater and solids that were atop the concrete protective cover of the liner system. The CCR wastewater and solids were pumped to a frac tank where a flocculent was added, then run through a filter press prior to transporting to the designated gypsum storage pad for final disposal. To facilitate CCR removal from the uneven concrete protective surface, Bio-Nomic utilized water obtained from Pond E to spray the top of the concrete fabric form protective cover in order direct the CCR solids towards the vacuum hoses. The CCR waste removal and initial FGD Pond cleaning was completed on April 2, 2021.

### 3.1.2 FGD Pond Decontamination

The activities performed to complete the decontamination of the FGD Pond in accordance with the Closure Plan and §257.102(c) can be subdivided into: 1) decontamination of the concrete fabric form protective cover; 2) performance of non-intrusive electric leak location (ELL) testing; and, 3) decontamination of the liner system by removing any CCL contaminated by leaks from the geomembrane liner.

#### *3.1.2.1 Decontamination of the Concrete Fabric Form Protective Cover*

After completing the primary CCR removal and initial cleaning by Bio-Nomic, Bio-Nomic began decontaminating the surface of the concrete fabric form protective cover of the FGD Pond. Bio-Nomic utilized power washers across the entirety of the FGD Pond to remove all remaining CCR material. The water used for the power washing was obtained from the cooling tower basin at Williams Station which is fed by the Cooper River. The referenced water source does not contain CCR material and therefore was designated as a clean water source to complete decontamination. As the power washers progressed across the FGD Pond, Bio-Nomic utilized two vacuum trucks to remove water and CCR sediments generated from the decontamination. The decontamination of the fabric form protective cover was completed by Bio-Nomic on April 15, 2021. Based on CEC's

visual observation of the power washing and final sediment removal activities and review of the decontaminated concrete fabric form surface, CEC certifies that all CCR was removed from the FGD Pond protective cover surface and all adjacent areas contacted by CCR.

*3.1.2.2 Closure Non-Intrusive Electric Leak Location (ELL) Testing and Results*

Bunnel Lammons Engineering (BLE) performed non-intrusive ELL testing of the existing 60 mil textured HDPE geomembrane liner to confirm areas below the liner have not be contaminated by a release from the FGD Pond operations.

Non-destructive ELL testing methods, in accordance with ASTM D 7007 (i.e., Water Covered Method as well as the Dipole Testing Method), were used to confirm that the existing 60 mil textured HDPE geomembrane liner of the FGD Pond remained intact without any potential leaks. The results of the ELL testing are as follows:

*Forebay No. 1 ELL Test Results*

The closure ELL survey for Forebay No. 1 was performed between March 8 and March 11, 2021. In a small area at the bottom of Forebay No. 1 near the northwest corner, the ELL testing identified an anomalous electric current reading and a suspected leak. The potential leak area was isolated to an approximately 5 foot by 8 foot area near an area of previous repair of the 60 mil textured HDPE geomembrane liner and protective cover. Subsequent investigation, as described in Section 3.1.2.3, confirmed a geomembrane leak at this location. As a result of the detected leak, decontamination of the underlying CCL was performed, as described in Section 3.1.2.3.

*Forebay No. 2 ELL Test Results*

The closure ELL survey for Forebay No. 2 was performed between April 9 and April 11, 2021. The ELL testing identified a total of four areas with an anomalous electric current readings indicting suspected leaks. Each suspected leak area was identified and marked by BLE for further investigation. Subsequent investigation of each potential leak, as described in Section 3.1.2.3,

confirmed a that only one location (bottom near the east end) had a geomembrane leak. As a result of the detected leak, decontamination of the underlying CCL was performed at the corresponding location, as described in Section 3.1.2.3.

A CEC representative was on-site during the closure ELL surveys to observe and document the ELL test procedures and results. Refer to the Construction Summary Report for additional information related to the ELL testing.

#### *3.1.2.3 Decontamination of Compacted Clay Liner*

In accordance with §257.102(c), the owner or operator must complete decontamination of all areas affected by releases from the CCR unit and based on the ELL leak detection test results, a total of five potential leaks were identified in the existing 60 Mil textured HDPE geomembrane liner. In order to complete decontamination of the FGD Pond composite liner system in areas affected by potential leaks, DESC contracted Cooper, Barnette & Page (CBP) to investigate the condition of the geomembrane to confirm the presence of a leak at the suspected locations and perform any necessary decontamination. The investigation and required FGD Pond composite liner system decontamination was completed between March 17, 2021 and April 14, 2021.

In accordance with the Closure Plan, the process for decontaminating the composite liner within a potential or known geomembrane leak areas included: 1) removal of the concrete fabric form protective cover beyond the potential leak areas; 2) removal of the existing geotextile fabric cushion and 60 Mil textured HDPE geomembrane liner beyond the potential leak areas; 3) confirmatory liner integrity testing of the exposed geomembrane; and, 4) if necessary removal of any CCL observed to be contaminated by a leak. The decontamination of the CCL, if necessary in the case of a detected leak, required confirmation of decontamination that included: 1) obtain a composite sample of the CCL (designated as Pond Leak Confirmation Soil Sample) after removal of contaminated CCL: 2) obtain a composite background soil sample of the CCL (designated as Background Soil Sample) at a location above the normal pool level of the FGD pond and beyond an area that could have been impacted by potential leaks; and, 3) performance of laboratory testing

on the Pond Leak Confirmation Soil Samples and Background Soil Sample for Appendix IV CCR constituents to confirm decontamination was achieved.

A CEC representative was on-site during the supplemental investigation performed at the suspected leak locations. Based on the subsequent investigations, only two of the five suspected leak locations identified by the ELL testing were confirmed to have a leak in the geomembrane (refer to the *Removal of 28 oz. Geotextile Cushion and Geomembrane Leak Confirmation Testing* subsection for identified leak locations). For the two identified leak locations, the CEC representative observed and confirmed that the steps outlined in the referenced Closure Plan were followed with respect to decontamination of the underlying CCL, and to perform the required sampling testing and evaluation of the CCL. The activities completed to investigate the potential leak areas and decontaminate the CCL within confirmed geomembrane leak areas within of FGD Pond composite liner system are described below.

*Removal of the Concrete Fabric Form Protective Cover*

Advanced Concrete Coring, Inc. was subcontracted by CBP to assist with removal of the concrete fabric form protective covering. In order to protect the underlying existing HDPE liner during concrete removal, the concrete was removed by saw cutting a cross hatched pattern that penetrated about 4 inches in depth. Once the concrete was saw cut, CBP utilized hammer drills equipped with a chisel bit to break up and remove the top four inches of concrete. The remainder of the concrete was removed utilizing hand tools and a hammer drill equipped with a chisel bit. Overall, CBP removed the concrete fabric form cover layer within a total of seven areas within the FGD Pond: 1) suspected and confirmed leak in Forebay No. 1; 2) four suspected (2 confirmed and 2 non-leaks) in Forebay No. 2; a non-leak related concrete and CCL repair in Forebay No. 2; and, the Background Soil Sample location in the interior berm between the two forebays.

*Removal of 28 oz. Geotextile Cushion and Geomembrane Leak Confirmation Testing*

CBP removed the 28 oz. fabric cushion beneath the concrete protective cover in order to expose the top of the existing HDPE liner and utilized wet vacuums to remove any surface water seeping

into the areas and atop the exposed 60 Mil textured HDPE geomembrane liner. BLE then conducted testing of the exposed HDPE liner in accordance with the Arc Testing Method (ASTM D 7953). The results of the testing revealed two confirmed leaks in the existing HDPE liner at the following two locations: 1) an approximate 25 feet by 16 feet area in the bottom northwest corner of Forebay No. 1; and, 2) an approximate 8 feet by 6 feet area in the east end of Forebay No. 2. The remaining three suspected leak areas in Forebay No. 2 were confirmed to not have a geomembrane leak and the geotextile and protective concrete cover was restored.

*Removal of 60 Mil Textured HDPE Geomembrane Liner*

CBP removed the existing 60 Mil HDPE liner within the two confirmed leak areas. In addition to the confirmed leak areas, CBP removed the existing 60 Mil HDPE liner within the approximate 12 feet by 12 feet area in the west end of the Forebay No. 2 for the purpose of evaluating the condition of the CCL in an area that had not been contaminated by a leak and a 2 feet by 2 feet area on the interior berm for background soil sampling.

*Removal of Contaminated CCL*

Once the existing HDPE liner was removed in these areas, and where applicable, the CEC representative evaluated the surface of the exposed CCL to visually confirm that the limits of removed concrete protective cover and HDPE liner sufficiently bound the extent of CCL contamination below the geomembrane at the two confirmed leak areas or softened CCL in the non-leak area. At the confirmed leak areas, this extent was determined based on the visual presence and extent of saturated CCL. Once the limits of contamination were confirmed within the two leak areas by CEC, CBP proceeded with removing the contaminated CCL via a mini-excavator and/or hand tools within the plan dimensions confirmed by CEC. The depth of contaminated CCL removal was directed by a CEC representative based on visual review that all saturated CCL was removed. The overall plan and depth dimensions of the removal of contaminated CCL within the two confirmed leak areas are: 1) approximately 21 feet by 14 feet by about 1 feet deep (below the top of the CCL) within the northwest corner of Forebay No. 1; and, 2) approximately 5 feet by 2 feet by about 3 inches deep (below the top of the CCL) within

the bottom east end of Forebay No. 2. The non-leak area CCL removal within the bottom west end of Forebay No. 2 was approximate 10 feet by 10 feet by about 8 to 11 inches deep (below the top of the CCL).

*Pond Leak Decontamination Confirmation and Background Soil Sampling*

In order to confirm that the CCL removal within the two confirmed leak areas sufficiently removed contaminated CCL, the CEC representative obtained Pond Leak Confirmation Soil Samples and a Background Soil Sample for subsequent laboratory testing of the Appendix IV CCR constituents in accordance with the Closure Plan. The CEC representative obtained a composite soil sample from within the two confirmed leak areas subsequent to removal of the contaminated CCL. Prior to sampling, the CEC representative decontaminated the sampling tools with distilled water and Alconox. The composite soil samples were obtained from four separate hand augered test holes that extended to depths of about 4 to 6 inches. The soil samples obtained from each confirmed leak area were composited in glass jars and stored on ice inside of a cooler until transported to the laboratory. In addition to the Pond Leak Confirmation Soil Samples, the CEC representative obtained a composite Background Soil Sample of the CCL within an area on top of the dividing berm between the two forebays, above the normal pool elevation of the FGD Pond. The composite Background Soil Sample was obtained from four separate hand augered test holes that extended to depths of about 4 to 6 inches (below the top of the existing CCL). The composite Background Soil Sample was placed in a glass jar and stored on ice inside of a cooler until transported to the laboratory. Each of the hand augered test holes were backfilled with granular bentonite.

In addition to the Pond Leak Confirmation and Background Soil Samples, CEC obtained samples of the CCR waste (i.e., FGD Sample) from Forebay No. 1 prior to final cleaning and decontamination in order to develop an understanding of the characteristics of the FGD material and comparison of the Appendix IV CCR constituents with the Pond Leak Confirmation and Background Soil Samples.

The analysis of the data indicates that the Pond Leak Confirmation Soil Samples and the Background Soil Sample came from the same material with no identifiable contamination from

the FGD CCR. Therefore, CEC certifies that all CCL contaminated by the leaking geomembrane in the two defined leak areas within Forebay No. 1 and No. 2 was removed in accordance with the Closure Plan and §257.102(c). Detailed information regarding the laboratory testing and results is provided in the Construction Summary Report. Closure by removal of the FGD Pond was complete upon receipt of the laboratory data of the Pond Leak Confirmation and Background Soil Samples demonstrating that the contaminated CCL was removed.

## 3.2 GROUNDWATER MONITORING CONCENTRATION ANALYSIS

The FGD Pond has remained within the Detection Monitoring Program (§257.94) since the initiation of CCR Rule groundwater monitoring in September 2017. Any concentrations of the CCR Rule Appendix III monitoring parameters found at statistically significant increases (SSIs) relative to background concentrations have been found to be attributable to a source other than the FGD Pond. According to the recent Alternate Source Demonstration (ASD) completed by NGC in 2021, the concentrations in groundwater that constitute SSIs downgradient of the FGD Pond are caused by upgradient impacts from other source areas and historic impacts prior to the FGD Pond construction.

No reporting associated with the Assessment Monitoring Program was performed because the ASD conclusions indicated a transition to Assessment Monitoring was not necessary. Accordingly groundwater protection standards (GWPS) as described under §257.95(h) were not established. Therefore, determining whether any groundwater monitoring concentrations exceed the GWPS is not applicable to this CCR Unit. Based on the analysis described in the ASD and summarized above, the observed SSIs were not attributed to the FGD Pond. The FGD Pond remained in detection monitoring throughout the life of the unit.

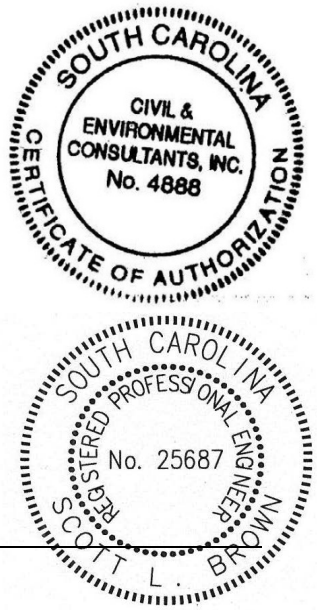
## 4.0 CLOSURE BY REMOVAL CERTIFICATION

***By means of this certification, I certify that the FGD Pond, Williams Station, has been closed in accordance with the Closure Plan dated February 2021 and the requirements of 40 CFR § 257.102(c).***

Scott L. Brown, P.E.

Printed Name of Professional Engineer

Signature

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