## **CLOSURE PLAN – AMENDMENT 1**

## FGD POND WILLIAMS STATION GOOSE CREEK, SOUTH CAROLINA

**Prepared For:** 

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

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#### **1.0 INTRODUCTION**

The A.M. Williams Station (Williams Station) is a coal-fired power generation station located in Goose Creek, South Carolina that is owned by South Carolina Generating Company (SCGENCO) and operated by Dominion Energy South Carolina, Inc. (DESC). 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 the on-site FGD Pond in accordance with South Carolina Department of Health and Environmental Control (SCDHEC) regulations and permits. The FGD Pond is also regulated as a Coal Combustion Residual (CCR) Surface Impoundment per Title 40 Code of Federal Regulations (CFR), Part 257, Subpart D published in April 2015 (CCR Rule) by the U.S. Environmental Protection Agency (USEPA) and subsequent revisions. The FGD Pond must meet the closure requirements defined in §257.102 and §257.103 for existing CCR surface impoundments. The FGD Pond is defined as an existing CCR surface impoundment in §257.53.

The Williams Station FGD Pond Closure Plan dated September 2016 proposed closure by removal of CCR and the composite liner system and other infrastructure at the end of the pond operations. Since then, in accordance with §257.103(f)(1), DESC submitted a Site Specific Alternative Deadline To Initiate Closure Demonstration (Alternative Closure Demonstration) dated November 2020 which proposes that the FGD Pond will be closed by removal of the CCR in the pond, and leaving the pond infrastructure intact for the purpose of opening a new CCR impoundment in the same footprint. The FGD Pond will concurrently have seismic stabilization construction performed to comply with requirements in §257.63(a) – Seismic Impact Zones. Following construction and certifications required for a new surface impoundment, a new FGD Pond will be opened as a new CCR impoundment pond.

The proposed change in pond closure requires an amendment to the September 2016 Closure Plan in accordance with §257.102(b)(3) which states the owner or operator must amend the closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit requires the need to revise an existing written closure plan.

#### 2.0 SITE DESCRIPTION

#### 2.1 SITE OVERVIEW AND FGD POND CONSTRUCTION

The Williams Station is a 650 MW coal-fired electric generating station located at 2242 Bushy Park Road in Goose Creek, Berkeley County, South Carolina (refer to Figure 1). The station is generally positioned within a small strip of lowlands between meanders of the Back River (west) and the Cooper River (east) (refer to Figure 2). 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 (refer to Figure 3).

The FGD Pond is located within the boundaries of the wastewater management impoundment complex at the facility. The approximate two acre FGD Pond was constructed within the footprint of former Pond C, becoming operational in 2009. Figures 3 and 4 depict the location of the FGD Pond in relation to Williams Station and the wastewater management impoundment complex, respectively. The FGD Pond is comprised of two approximate 700,000 gallon forebays (identified as Forebay 1 and Forebay 2). Each forebay was constructed with a composite liner system comprised of the following, from bottom to top:

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

The FGD Pond construction was certified to meet the design documents and Construction Quality Assurance (CQA) Plan by Garrett & Moore (CQA Report, Williams Station FGD Scrubber Blowdown Wastewater Pond, dated September 14, 2009). Accordingly, the FGD Pond is a lined CCR impoundment. The FGD Pond was designed, constructed and is operating in accordance with SCDHEC Bureau of Water Permit Number 19263-IW.

The only waste stream placed in the FGD Pond is wet FGD blowdown from the FGD system. The FGD blowdown contains residual gypsum solids that are discharged from the secondary hydrocyclone overflows and pumped to the operating forebay of the FGD Pond. Each FGD forebay allows the gypsum solids to settle and provide temporary storage until removed, dewatered, and disposed in the Williams Station Highway 52 Landfill. A solids removal treatment system (i.e., Lamella clarifier with one filter press) is used to remove solids prior to discharge to the FGD Pond in an effort to extend the time between cleanouts of the online forebay. The FGD Pond is permitted to receive approximately 0.319 million gallons a day (MGD) of wastewater. There are no non-CCR waste streams discharged to or placed in the FGD Pond. The FGD Pond discharges to Pond D which flows into Pond E and then to the NPDES permitted outfall before reaching the Cooper River in accordance with SCDHEC NPDES Permit SC0003883 (effective January 1, 2017).

#### 2.2 REGULATORY BACKGROUND

In the CCR Rule Location Restriction compliance demonstration dated October 2018, DESC reported that the Williams Station FGD Pond does not satisfy the requirements of §257.63(a) – Seismic Impact Zones. As the FGD Pond is a critical operational component to Williams Station's ability to produce electricity and there were no other technically feasible on-site or off-site options to manage the FGD blowdown wastewater, DESC elected to continue operation of the FGD Pond in accordance with the alternative closure requirements identified in §257.103.

As reported in the Alternative Closure Demonstration, DESC determined that the fastest technically feasible option to bring the FGD Pond is to open a new CCR impoundment in the footprint of the current FGD Pond that meets the CCR Rule's seismic impact zone location standard. This will require an upgrade of the current FGD Pond perimeter dikes, closure of the current FGD Pond, and then opening a new FGD Pond within the current footprint in accordance with the CCR Rule. This Closure Plan addresses the steps to close the current FGD Pond and open a new CCR Rule compliant FGD Pond.

# 3.0 CRITERIA FOR CONDUCTING THE CLOSURE OR RETROFIT OF CCR UNITS §257.102

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

#### 3.1 WRITTEN CLOSURE PLAN §257.102(B)

#### 3.1.1 CONTENT OF THE PLAN §257.102(B)(1)

\$257.102 (b) Written closure plan (b)(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.

(b)(1)(i) A narrative description of how the CCR unit will be closed in accordance with this section.

(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.

The FGD Pond will be closed by removal of CCR and decontamination of the liner system as described Section 3.2.

# (b)(1)(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

The maximum inventory of CCR ever on-site over the active life of the CCR unit is estimated to be approximately 3,500 cubic yards per each of the two settling bays (7,000 cubic yards total). This volume represents the forebays being filled to the maximum pool level.

# (b)(1)(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.

The pond will be closed by CCR removal and final cover is not required. The FGD Pond disposal area is approximately 2 acres.

(b)(1)(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.

As stated in the Alternative Closure Demonstration, DESC's proposed schedule for closure is to complete the perimeter dike seismic stabilization construction in June 2021, cease operation of the FGD Pond in August 2021, remove CCR and decontaminate the liner in September 2021, obtain certification of closure from our professional engineer following decontamination, complete liner

integrity testing and repair (as needed) in October 2021, and certify the new Pond for operation in October 2021.

## 3.1.2 AMENDMENT OF A WRITTEN CLOSURE PLAN §257.102(B)(3)

(b)(3)(i) The owner or operator may amend the initial or any subsequent written closure plan developed pursuant to paragraph (b)(1) of this section at any time.

(b)(3)(ii) The owner or operator must amend the written closure plan whenever

- (A) There is a change in the operation of the CCR unit that would substantially affect the written closure plan in effect; or
- (B) Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan.

(b)(3)(iii) The owner or operator must amend the closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written closure plan. If a written closure plan is revised after closure activities have commenced for a CCR unit, the owner or operator must amend the current closure plan no later than 30 days following the triggering event.

The original Closure Plan is dated September 2016. This amendment addresses proposed changes to the Closure Plan based on a change in operation of the CCR unit. A new Closure Plan will be prepared following completion of this pond closure that will address closure of the new FGD Pond at the end its operating life.

## **3.1.3 WRITTEN CERTIFICATION §257.102 (B)(4)**

\$257.102 (b)(4) The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of this section.

A written certification from a qualified professional engineer is provided in Section 5.0.

#### 3.2 CLOSURE BY REMOVAL OF CCR §257.102(C)

\$257.102(c) 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 proposed steps for the FGD Pond closure, certification and opening of a new FGD pond are as follows:

- 1. Complete the subsurface soil stabilization construction around the perimeter dikes of the FGD Pond.
- 2. Cease operation of the FGD Pond upon completion of the stabilization.
- 3. Initiate and complete the closure by removal of CCR for both Forebay 1 and Forebay 2 simultaneously:
  - a. Remove all CCR above the existing liner system and fabric form concrete protective cover and decontaminate the fabric form concrete surface, as well as any affected areas.
  - b. Perform non-intrusive electric leak location (ELL) testing of the existing geomembrane to: 1) certify the integrity of the liner system for use as the new FGD Pond liner system; and, 2) confirm areas below the liner have not be contaminated by a release from the prior FGD Pond operations. Based on the Report of Leak Location Services, Existing FGD Scrubber Blow Down Pond-Forebay No. 1, prepared by Bunnel Lammons Engineering and dated November 9, 2020 (refer to the Alternative Closure Demonstration), this method can effectively be performed on the in-place geomembrane liner with the decontaminated fabric formed concrete blanket remaining in-place.
  - c. If required, due to an inability to confirm current liner integrity or should more than an acceptable number of leaks be determined from the ELL test, an alternate or supplemental sampling method will be utilized to confirm liner integrity. For this alternate, it is proposed to collect one or more soil samples from beneath the geomembrane liner at locations where leaks are detected using the following procedures:

- i. After removing all CCR and decontaminating the fabric formed concrete blanket, excavate through the concrete blanket and cut open the geotextile and geomembrane.
- ii. Collect a soil sample within the compacted soil liner (Pond Leak Confirmation Soil Sample). Backfill the soil liner with bentonite and clay, weld the 60-mil geomembrane liner and replace the geotextile and concrete blanket.
- iii. Collect background soil samples (Background Soil Sample) from the compacted soil liner at the perimeter anchor trench on the dike of the FGD Pond. This location is considered background with respect to the Pond Leak Confirming Soil Samples(s) because it is above the normal pool level of the FGD Pond and beyond areas that could have been impacted by potential liner leaks.
- iv. Test the samples for select Appendix IV CCR constituents including 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 collected and analyzed in conformance with EPA SW-846 or similar, as applicable.
- v. Compare the Pond Leak Confirmation Soil Sample results to the Background Soil Sample results. If the concentrations in the Pond Leak Confirmation Soil Sample indicate an appreciable increase above the Background Soil Sample, DESC could either decide to collect additional samples from the forebay or decide to remove and replace the protective cover, geotextile, 60-mil liner and/or compacted soil liner in portions of the FGD Pond depending on the subsequent sample results.
- d. Prepare closure certification documentation, including confirmatory groundwater monitoring results demonstrating that groundwater monitoring concentrations do not exceed groundwater protection standards for the constituents in Appendix IV to 40 CFR Part 257.
- 4. Obtain engineering certifications and reporting for the new FGD Pond to comply with the CCR Rule.
- 5. Place both forebays in operation and resume wastewater placement in the new FGD Pond.

Additional information regarding the CCR removal and decontamination follows:

## Dewatering:

Upon initiation of the ceasing of wastewater to the FGD Pond, the water remaining in the forebays will be removed via pumping to expose the stored sediments and allow for removal by excavation. The time required to remove the water is limited by the water quality criteria of the water that is pumped; therefore, the water removal must be completed

in stages. Each pumping stage will be dependent on the time necessary to allow sediments to settle from the water being pumped.

#### Sediment Removal & Cleaning:

Sediment removal will begin once the dewatering is complete. For this activity the sediments are excavated and stockpiled at the east end of the forebay. The stockpiled sediments then require time to decant until suitable for placing in a dump truck and hauled to the Williams Station Highway 52 Landfill. Because there is a fabric formed concrete protective cover above the liner system, complete removal of the sediments to achieve closure by removal criteria will include power washing to decontaminate the remaining sediments from the fabric formed concrete surface. A licensed professional engineer will certify all CCR has been removed and the affected areas have been decontaminated based on a visual inspection.

## 3.3 INITIATION OF CLOSURE ACTIVITIES §257.102(E)

\$257.102(e) Except as provided for in paragraph (e)(4) of this section and \$257.103, the owner or operator of a CCR unit must commence closure of the CCR unit no later than the applicable timeframes specified in either paragraph (e)(1) or (2) of this section.

As stated in the Alternative Closure Demonstration, DESC's proposed schedule is to complete stabilization of the perimeter dikes in June 2021, cease operation of the FGD Pond in August 2021, remove CCR and decontaminate the liner in September 2021, complete liner integrity testing and repair (as needed) in October 2021, and certify the new Pond for operation in October 2021.

#### **3.4 COMPLETION OF CLOSURE ACTIVITIES §257.102(F)**

#### 3.4.1 CLOSURE ACTIVITIES TIMEFRAME §257.102(F)(1)

(f)(1) Except as provided for in paragraph (f)(2) of this section, the owner or operator must complete closure of the CCR unit:

(f)(1)(i) For existing and new CCR landfills and any lateral expansion of a CCR landfill, within six months of commencing closure activities.

(f)(1)(ii) For existing and new CCR surface impoundments and any lateral expansion of a CCR surface impoundment, within five years of commencing closure activities.

DESC's proposed schedule is to complete closure in September 2021.

## 3.4.2 EXTENSIONS OF CLOSURE TIMEFRAMES §257.102(F)(2)

(f)(2)(i) Extensions of closure timeframes. The timeframes for completing closure of a CCR unit specified under paragraphs (f)(1) of this section may be extended if the owner or operator can demonstrate that it was not feasible to complete closure of the CCR unit within the required timeframes due to factors beyond the facility's control. If the owner or operator is seeking a time extension beyond the time specified in the written closure plan as required by paragraph (b)(1)of this section, the demonstration must include a narrative discussion providing the basis for additional time beyond that specified in the closure plan. The owner or operator must place each completed demonstration, if more than one time extension is sought, in the facility's operating record as required by §257.105(i)(6) prior to the end of any two-year period. Factors that may support such a demonstration include:

(f)(2)(i)(A) Complications stemming from the climate and weather, such as unusual amounts of precipitation or a significantly shortened construction season;

(f)(2)(i)(B) Time required to dewater a surface impoundment due to the volume of CCR contained in the CCR unit or the characteristics of the CCR in the unit;

(f)(2)(i)(C) The geology and terrain surrounding the CCR unit will affect the amount of material needed to close the CCR unit; or

(f)(2)(i)(D) Time required or delays caused by the need to coordinate with and obtain necessary approvals and permits from a state or other agency.

Closure of the FGD Pond will be completed within five years of initiating closure activities.

## 3.4.3 CLOSURE CERTIFICATION §257.102(F)(3)

(f)(3) Upon completion, the owner or operator of the CCR unit must obtain a certification from a qualified professional engineer verifying that closure has been completed in accordance with the closure plan specified in paragraph (b) of this section and the requirements of this section.

Upon completing of closure of the FGD Pond, DESC will obtain a written certification from a qualified professional engineer stating that closure has been completed in accordance with the Closure Plan.

## 3.5 NOTIFICATION OF INTENT §257.102(G)

\$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. The notification must include the certification by a qualified professional engineer for the design of the final cover system as required by \$257.102(d)(3)(iii), if applicable. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by \$257.105(i)(7).

The Alternative Deadline Demonstration dated November 2020 provides the notification of intent to close the CCR unit. The notification was placed in the operating record in accordance with §257.105(i)(7).

## 3.6 NOTIFICATION OF CLOSURE §257.102(H)

\$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. The notification must include the certification by a qualified professional engineer as required by \$257.102(f)(3). The owner or

# operator has completed the notification when it has been placed in the facility's operating record as required by §257.105(i)(8).

Within 30 days of completion of closure, DESC will prepare a notification of closure of the CCR unit. The notification will include certification by a qualified professional engineer as required by \$257.102(f)(3) stating that closure has been completed in accordance with this Closure Plan. The notification will be placed in the operating record in accordance with \$257.105(i)(8).

## **3.7 DEED NOTATIONS §257.102(I)**

\$257.102 (i) Deed notations. (1) Except as provided by paragraph (i)(4) of this section, following closure of a CCR unit, the owner or operator must record a notation on the deed to the property, or some other instrument that is normally examined during title search.

Because the FGD Pond will be immediately opened as a new CCR impoundment, the deed notation will not be recorded following closure. Following permanent closure of the new CCR unit, DESC will record a notation on the deed to the property, or other some instrument that is normally examined during a title search. The notification on the deed will in perpetuity notify any potential purchasers of the property that the land has been used as a CCR unit and that its use is restricted under the post-closure care requirements. Within 30 days of recording the notation on the deed to the property, DESC will prepare a notification stating that the notation has been recorded. The notification will be placed in the operating record in accordance with §257.105(i)(9).

#### **3.8 RECORD KEEPING REQUIREMENTS §257.102(J)**

\$257.102(j) The owner or operator of the CCR unit must comply with the closure recordkeeping requirements specified in \$257.105(i), the closure notification requirements specified in \$257.106(i), and the closure Internet requirements specified in \$257.107(i).

DESC will comply with the closure recordkeeping requirements specified in §257.105(i), the closure notification requirements specified in §257.106(i), and the closure Internet requirements specified in §257.107(i).

# 3.9 CRITERIA TO RETROFIT AN EXISTING CCR SURFACE IMPOUNDMENT §257.102(K)

DESC is not planning to retrofit the FGD Pond. The current FGD Pond will be upgraded to meet the seismic impact zone requirements, closed via closure by removal of CCR, and opened new CCR impoundment.

#### 4.0 ALTERNATE CLOSURE REQUIREMENTS §257.103

The applicable sections of §257.103 are presented below in bold, italic font. The responses follow each section of the rule and are provided in normal font.

#### 4.1 ALTERNATIVE CLOSURE REQUIREMENTS §257.103

§257.103 The owner or operator of a CCR landfill, CCR surface impoundment, or any lateral expansion of a CCR unit that is subject to closure pursuant to §257.101(a), (b)(1), or (d) may continue to receive CCR and non-CCR wastes in the unit provided the owner or operator meets the requirements of either paragraph (a), (b), (f)(1), or (f)(2) of this section.

DESC submitted a Site Specific Alternative Deadline To Initiate Closure Demonstration dated November 2020 in accordance with §257.103(f)(1). The demonstration proposes that the FGD Pond will be closed by removal of the CCR in the pond, and leaving the pond infrastructure intact for the purpose of opening a new CCR impoundment in the same footprint.

#### 5.0 PROFESSIONAL ENGINEER CERTIFICATION

This Closure Plan fulfills the CCR Rule Closure requirements for a Written Closure Plan in §257.102(b).

I, Scott L. Brown, P.E., a registered professional engineer in the state of South Carolina certify that Williams Station FGD Pond fulfils the Closure Plan requirements of §257.102(b). This certification is based on my review of the amended Williams Station FGD Pond Closure Plan.

Scott L. Brown

Printed Name of Professional Engineer

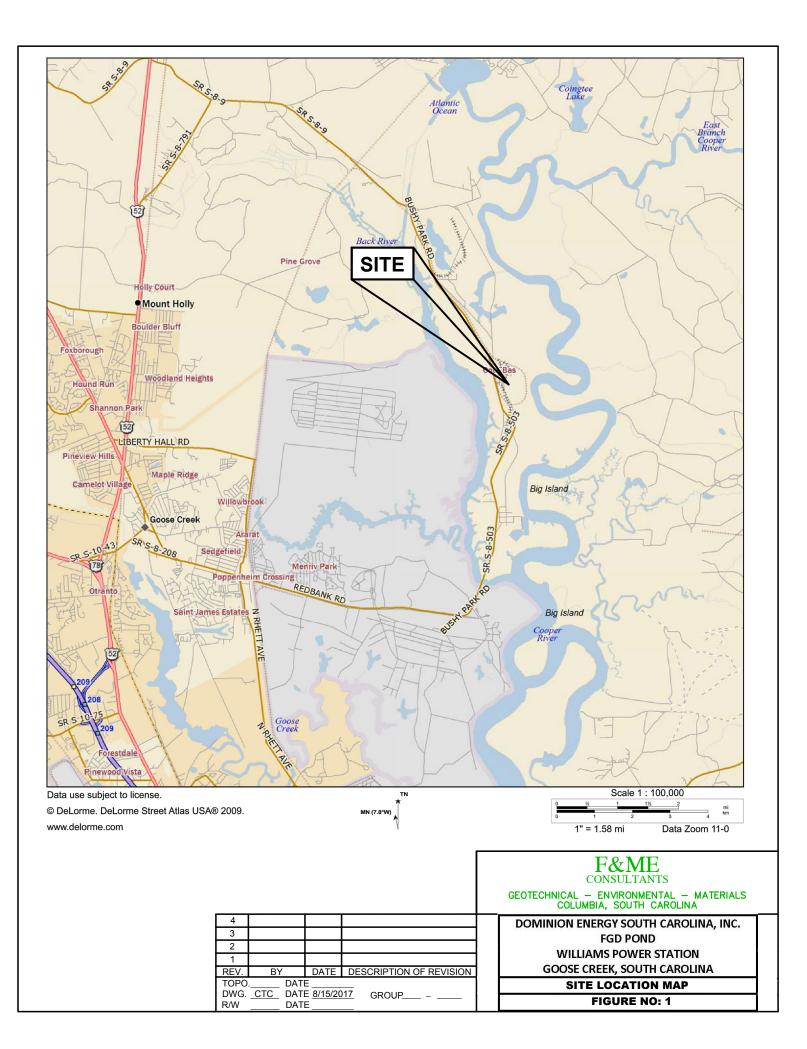
Signature

025687	South Carolina	February 1, 2021
Registration No.	Registration State	Date

Stamp/Seal:



**FIGURES** 



#### SITE LOCATION

FGD Waste Water Pond at William Station 
Goose Creek, SC January 17, 2020 
Terracon Project No. EN195074



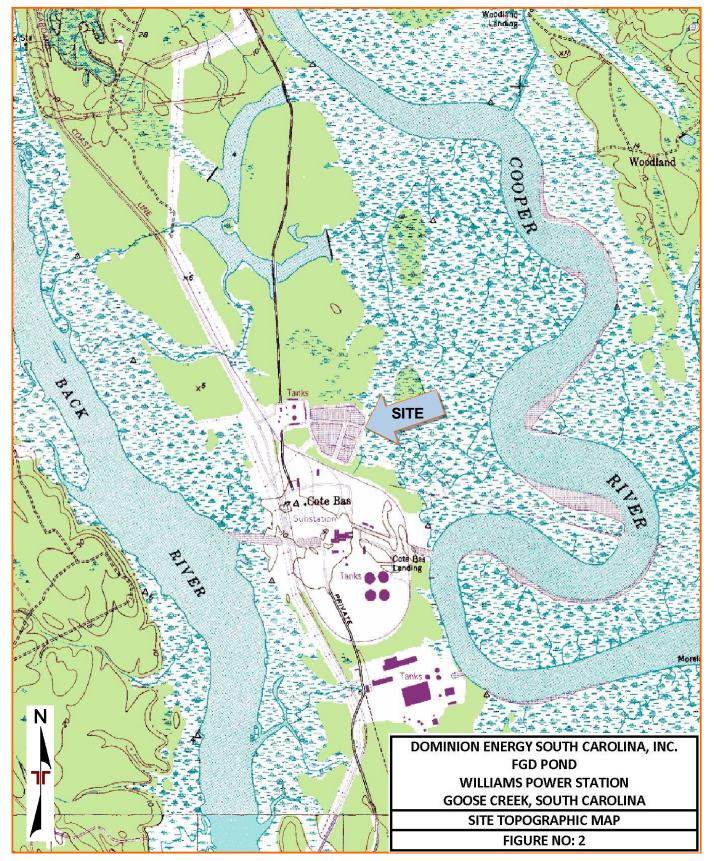


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: KITTREDGE, SC (1/1/1979) and NORTH CHARLESTON, SC (1/1/1998).



