FGD Pond Periodic Hazard Potential Classification

Wateree Station
Richland County, South Carolina

October 2021

Prepared For:

Dominion Energy of South Carolina
142 Wateree Station Road
Eastover, South Carolina 29044

Prepared By:

TRC
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TABLE OF CONTENTS

FIGURES

APPENDICES

Revision History

Revision Number	Revision Date	Section Revised	Summary of Revisions
0	9/2016		Initial Issue developed by others
1	10/14/2021	1 through 5	Update for periodic assessment.

1.0 Background

Dominion Energy of South Carolina (DESC) owns and operates the Wateree Station (Station). The purpose of this report is to update the hazard potential classification (Classification) for the Flue Gas Desulfurization (FGD) pond forebay 1 and 2 at the Station as required by the United States Environmental Protection Agency's (USEPA) final coal combustion residual (CCR) rule Title 40 Code of Federal Regulations (40 CFR) Part 257 Subpart D - "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments." The requirements for hazard potential classification assessments for existing impoundments are presented in 40 CFR 257.73. The FGD pond is considered an existing surface impoundment according to the federal rule (40 CFR 257.53). The initial hazard potential classification determined Forebay 1 and 2 to be low hazard potential (South Carolina Electric and Gas, 2016). The initial hazard potential classification was placed in the Station's operating record on October 17, 2016. The periodic hazard potential classification assessments are to be updated every 5 years pursuant to 40 CFR 257.73(f)(3).

1.1 Existing Conditions

The Station is located on the Wateree River in Richland County, South Carolina near the Town of Eastover, refer to Figure 1. The FGD pond Forebay 1 and 2 were constructed above existing grade with a footprint of approximately 2.25 acres, refer to Figure 2 and Attachment A. The FGD pond is located outside of the 100-year flood plain of the nearby Wateree River (refer to Attachment B).

The FGD pond Forebay 1 and 2 have surface areas of approximately 1.15 acres and 1.10 acres respectively with average depths of 4.5 feet and provide 1.5 feet of freeboard. Inner slopes range from 4 horizontal (H):1 vertical (V) to 8H:1V. Outer slopes are no steeper than 3H:1V with a maximum height of 12 feet. The top of berm width ranges between 10 to 20 feet and the separation berm top width is 8 feet. There have not been significant changes to Forebay 1 and 2 since the initial hazard potential classification.

The FGD pond receives a single wastewater stream pumped from the FGD scrubber system in the Wateree Station and provides treatment to the wastewater by settling solids. The capacity of Forebay 1 and 2 are 1.7 million gallons and 1.6 million gallons, respectively. The forebays are maintained by periodic dewatering to remove particulate material and to inspect the concrete base.

2.0 Hazard Potential Evaluation

In accordance with 40 CFR 257.73 (a)(2), the owner or operator of the CCR unit must conduct an initial and periodic hazard potential classifications of surface impoundments every five years. The classifications are as follows:

- Low hazard potential CCR impoundments are diked surface impoundments where failure or mis-operation results in no probable loss of human life and low economic or environmental losses. Losses are principally limited to the owner's property.
- Significant hazard potential CCR surface impoundments are diked surface impoundments where failure or mis-operation results in no probable loss of life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
- High hazard potential CCR surface impoundments are diked surface impoundments where failure or mis-operation will probably cause loss of human life.

The State of South Carolina classifies a dam as a structure that is at least 25 feet in height or a structure that impounds at least 50 acre-feet of water. FGD Forebay 1 and 2 have a maximum hydraulic height of 4.5 feet and have a combined capacity of 10 acre-feet. Therefore, FGD Forebay 1 and 2 are not classified as dams under South Carolina Law.

Based on the design of Forebay 1 and 2, the ability to control incoming flow, and the inability for stormwater runoff to enter the surface impoundment, structural failure of either Forebay is unlikely.

Additionally, the risk of natural disasters such as earthquakes, floods, hurricanes, and tornadoes was considered during this evaluation. The risk of a major earthquake that may impact the FGD pond (causing a peak ground acceleration greater than 0.1 times the acceleration of gravity) has a less than 1% chance of occurrence (greater than a 475-year return period) based on USGS Unified Hazard Tool (2014). The probability of other natural disasters, such as hurricanes or tornadoes, affecting the berms is considered to be less than that of earthquakes, and estimated to be less than 1%. The risk of people being in the area of the FGD pond also limits the risk profile. Under typical conditions, people are in the vicinity of the ponds roughly 30 minutes per day or approximately 2% of a 24-hour period. Assuming that the risk of natural disasters is 1% multiplied by the time of occupancy 2%, the risk of a natural disaster occurring with people present is less than 0.02% which is considered low risk. The occurrence of a natural disaster does not necessarily result in failure of the berms and release of the liquid in the surface impoundment resulting in a chance of occurrence less than 0.02%.

If the berms were to fail, the limited water height of 4.5 feet and small storage volumes would result in flooding limited to the area adjacent to the surface impoundment. If water was released from the FGD pond, a component would be intercepted by the stormwater management ditches at the Station and the remainder would flow north into the low open area on the northwest side of the Station. This area has no development that would be affected by flooding and would contain water under the unlikely event of a berm failure of Forebay 1 and 2. Damage would be limited to property owned and operated by the Station.

Based on this evaluation of the existing FGD pond Forebay 1 and 2:

- There is no apparent risk of loss of life associated with a potential failure of the berms.
- There will not be interruption or impact to critical infrastructure due to a potential failure of the berms.
- Environmental impacts will be limited to property owned and operated by DESC.

Therefore, Forebay 1 and 2 are classified as a **LOW HAZARD** potential.

3.0 Conclusions

Based upon these evaluations, the FGD pond at the Wateree Station is classified as a low hazard potential surface impoundment. The South Carolina Department of Health and Environmental Control will be notified once this document has been placed in the operating record and posted to the publicly accessible website.

A periodic hazard potential classification assessment must be conducted every 5 years from the completion date of this Classification. The next periodic hazard potential classification is required by October 2026.

The Classification shall be amended whenever the periodic review period is reached, or if changes in site conditions, either intentionally or unintentionally, occur that will change the current Classification.

4.0 References

National Flood Insurance Program. 2017. Flood Insurance Rate Map: Richland County, South Carolina Panel 560 of 650. Map Number 45079C0560L. Map Revised December 21, 2017. Federal Emergency Management Agency. Washington, D.C.

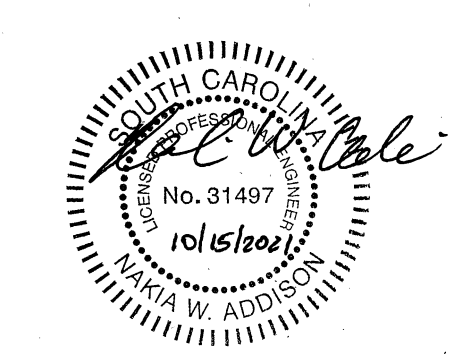
South Carolina Electric and Gas. 2016. Hazard Potential Classification Assessment for the Wateree Station FGD Pond. Richland County, South Carolina. September 2016.

United States Geological Survey. 2014. Unified Hazard Tool: Conterminous U.S. Vers. 4.2.0. https://earthquake.usgs.gov/hazards/interactive/

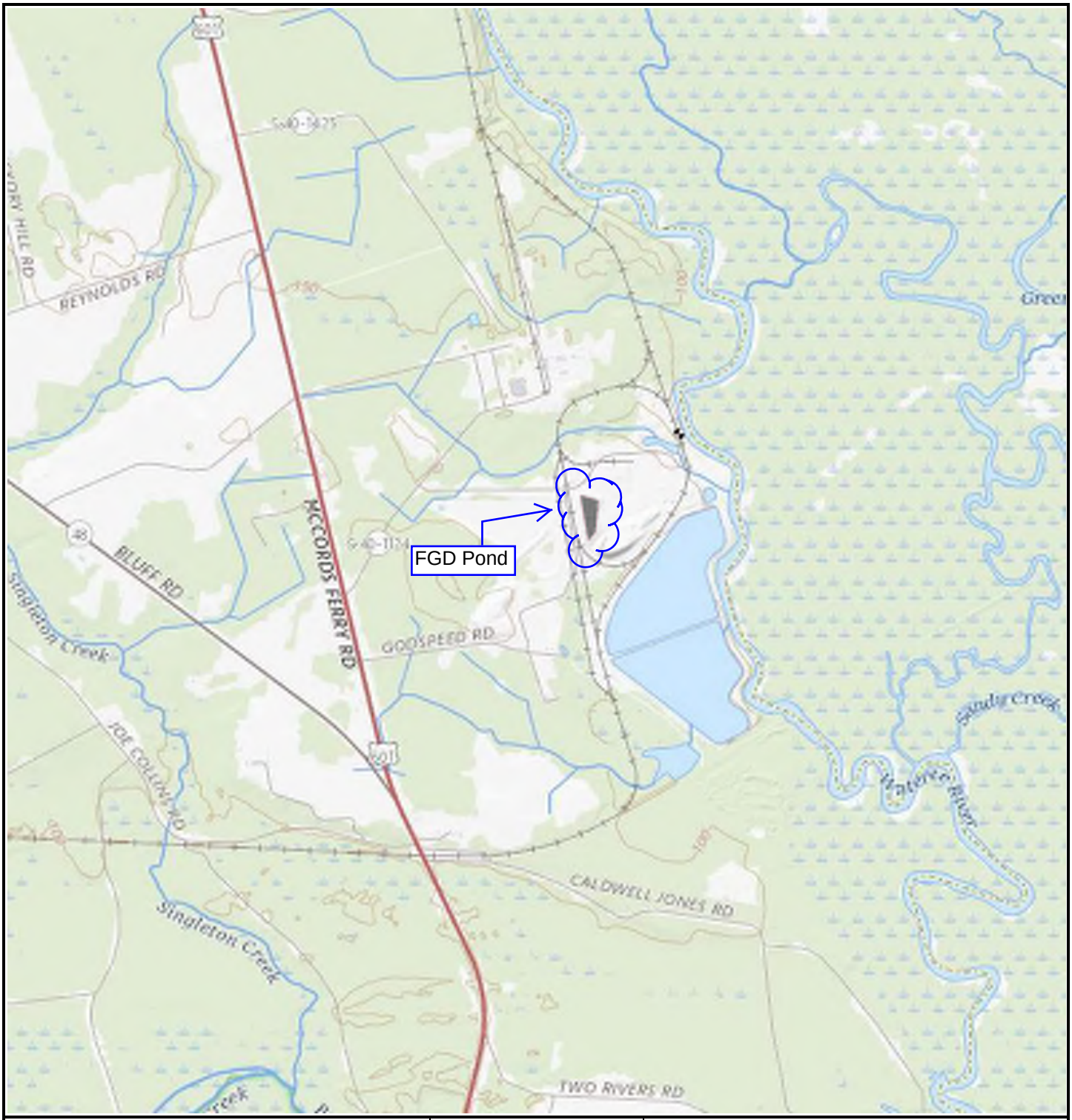
5.0 Certification

I, the undersigned South Carolina Professional Engineer, hereby certify that I am familiar with the technical requirements of 40 CFR 257 Subpart D. I also certify that it is my professional opinion that, to the best of my knowledge, information, and belief, that the information in this demonstration is in accordance with current good and accepted engineering practice(s) and standard(s) and meets the requirements of paragraph (a) in 40 CFR 257.73.

For the purpose of this document, "certify" and "certification" shall be interpreted and construed to be a "statement of professional opinion." The certification is understood and intended to be an expression of my professional opinion as a South Carolina Licensed Professional Engineer, based upon knowledge, information, and belief. The statement(s) of professional opinion are not and shall not be interpreted or construed to be a guarantee or a warranty of the analysis herein.



Nakia Addison, P.E.	31497 Engineer License Number
Signature of Professional Engineer	10/15/2021 Date



POND

0 0.5
mile
33.8218, -80.6295

Base Map: USGS/TNM Topo
Data Sources: TRC, Fulcrum

DOMINION
WATEREE STATION

SITE LOCATION

DRAWN BY:	S. EDWARDS	PROJ. NO.:	447435.0000
CHECKED BY:	J. HOTSTREAM		
APPROVED BY:	N. ADDISON		
DATE:	OCT. 2021		

FIGURE 1

TRC
50 INTERNATIONAL DRIVE
SUITE 150
GREENVILLE, SOUTH CAROLINA 29615

FILE: 2CA261A7-0947-484C-9FCC-60C09FC02EBF

0 1,000
feet
33.8234, -80.6274

Base Map: ESRI Imagery
Data Sources: TRC, Fulcrum

DOMINION
WATEREE STATION

SITE OVERVIEW

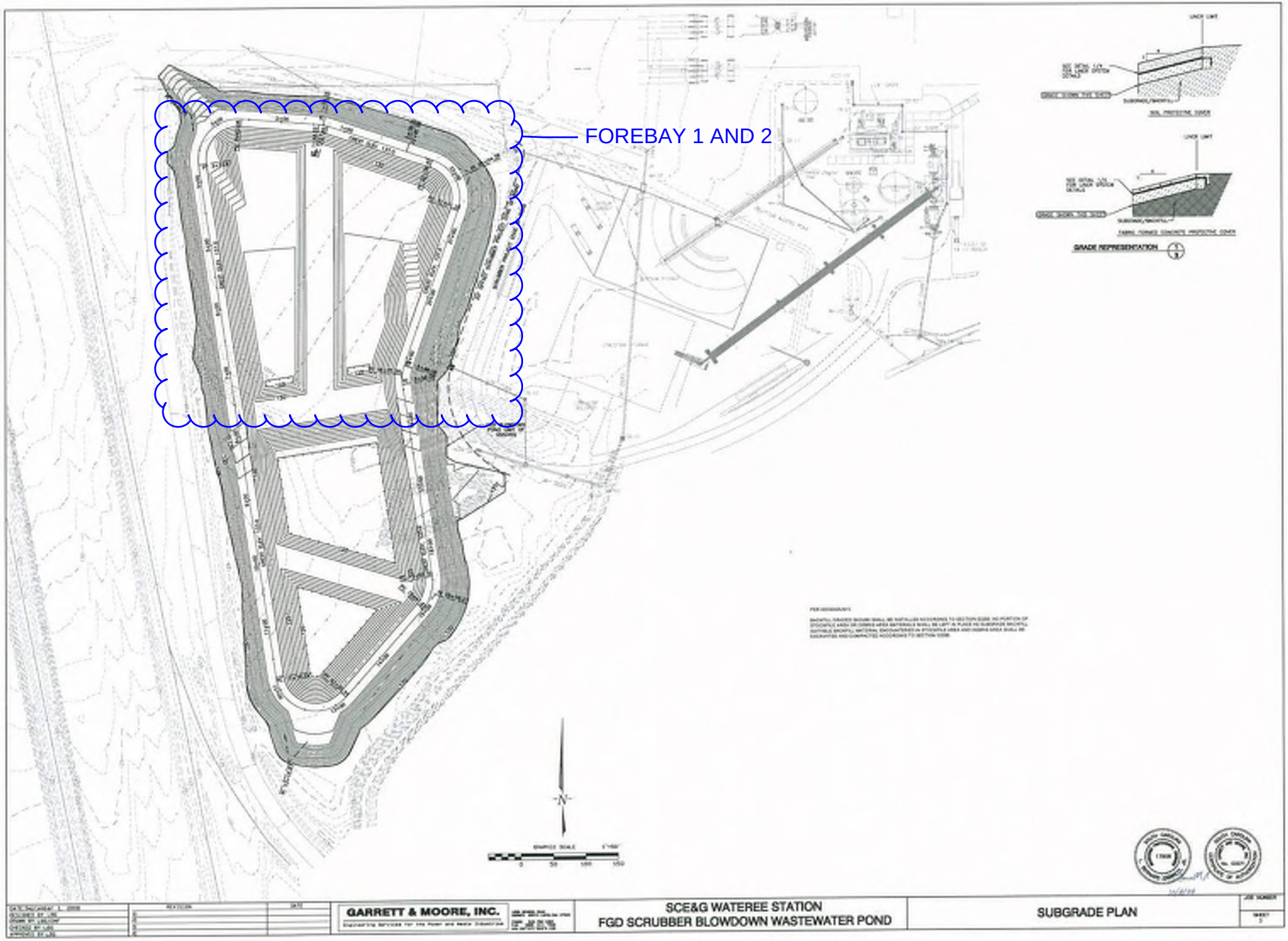
DRAWN BY:	S. EDWARDS	PROJ. NO.:	447435.0000
CHECKED BY:	J. HOTSTREAM		
APPROVED BY:	N. ADDISON		
DATE:	OCT. 2021		

FIGURE 2

TRC
50 INTERNATIONAL DRIVE
SUITE 150
GREENVILLE, SOUTH CAROLINA 29615

FILE: 94AE2FE9-6B01-4368-8120-D85D07C7612B

Appendix A: Select Engineering Drawings



GARRETT & MOORE, INC.

SCE&G WATEREE STATION
FGD SCRUBBER BLOWDOWN WASTEWATER POND

SUBGRADE PLAN

Appendix B: Flood Insurance Rate Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Lambert Conformal Conic State Plane South Carolina FIPS 3900. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by Richland County, South Carolina.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

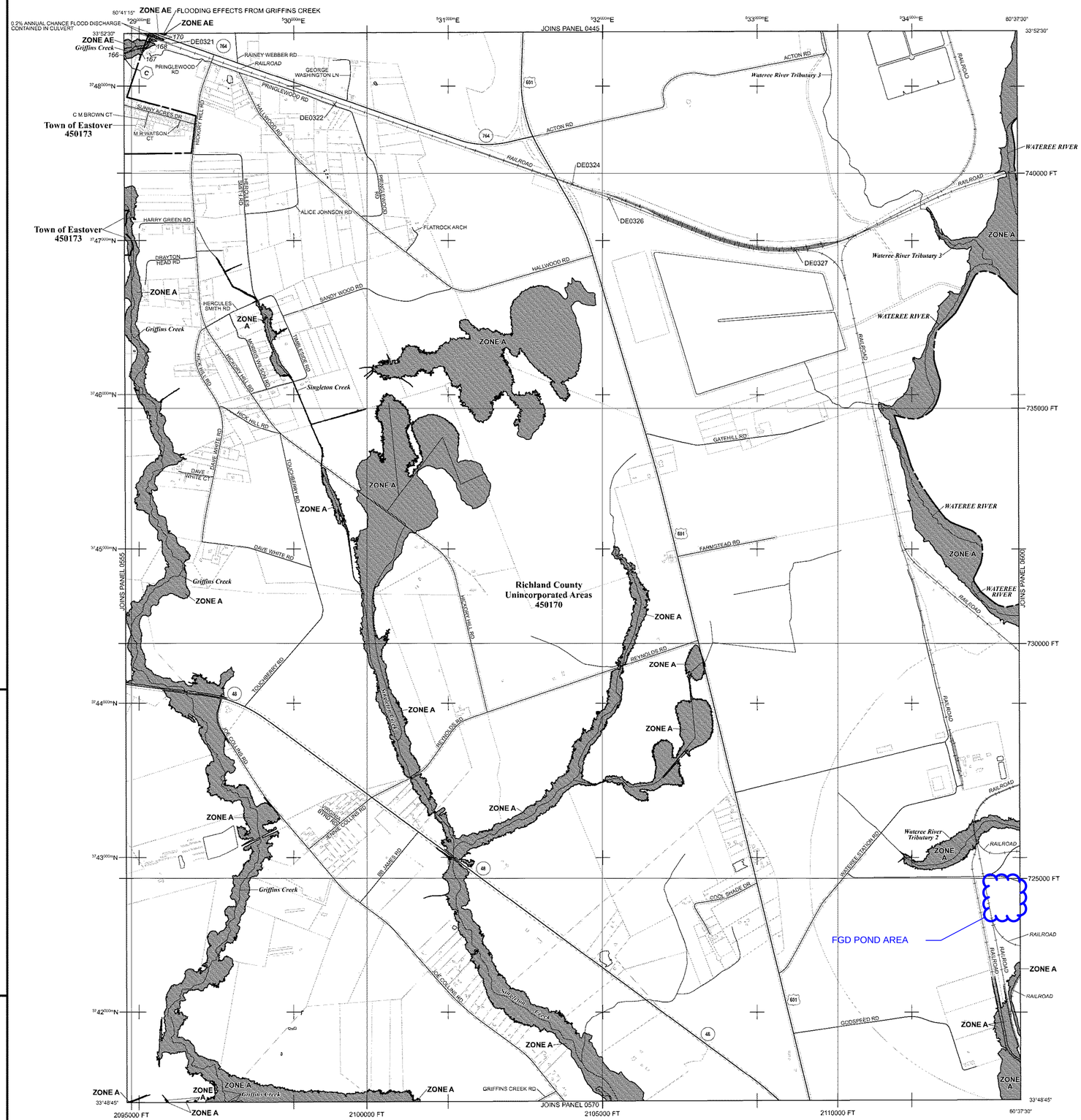
For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the **FEMA Mapping Information eXchange** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service website at http://www.msc.fema.gov/. Available products may include previously issued Letters of Map Change, a Flood Insurance Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

The **profile base lines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile base line , in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

DNR

This digital Flood Insurance Rate Map (FIRM) was produced through a unique cooperative partnership between the State of South Carolina and the Federal Emergency Management Agency (FEMA). The State of South Carolina has implemented a long term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map floodplain areas at the local level. As a part of this effort, the state of South Carolina has joined in a Cooperating Technical State agreement with FEMA to produce and maintain this digital FIRM.

http://www.dnr.state.sc.us/



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A — Cross section line

23 — 23 — Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

4276000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 17

6000000 FT — 5000-foot grid values: South Carolina State Plane coordinate system (FIPSZONE = 3900), Lambert projection

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
January 19, 1994

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
February 20, 2002
September 29, 2010

December 21, 2017 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to update map format, to add roads and road names, to reflect updated topographic information, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0560L

FIRM

FLOOD INSURANCE RATE MAP
RICHLAND COUNTY, SOUTH CAROLINA
AND INCORPORATED AREAS

PANEL 560 OF 650

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EASTOVER, TOWN OF	450173	0560	L
RICHLAND COUNTY	450170	0560	L

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
45079C0560L

MAP REVISED
DECEMBER 21, 2017

Federal Emergency Management Agency