STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DATA REQUIREMENTS RULE SUBMITTAL

January 13, 2017

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

Via U.S. Mail and Electronic Mail

January 13, 2017

Mrs. Heather McTeer Toney
Regional Administrator
U.S. Environmental Protection Agency – Region 4
61 Forsyth Street SW – Mail Code: 9T25
Atlanta, GA 30303-8909

Re: Data Requirements Rule for the 2010 One-Hour Sulfur Dioxide Primary National Ambient Air Quality Standard – Air Dispersion Modeling Demonstrations

Dear Mrs. Toney:

In accordance with 40 C.F.R. 51.1203, and in response to the U.S. Environmental Protection Agency's (EPA) August 21, 2015 Data Requirements Rule (DRR) (80 Fed. Reg. 51,052), the Florida Department of Environmental Protection (Department) hereby submits a suite of reports addressing each of the twelve primary sources identified in the Department's January 15, 2016 submittal to EPA Region 4. This includes eleven area characterization reports (Appendices B through L) that address each of the active sources. The twelfth report addresses Gulf Power Company's Lansing Smith Electric Generating Plant, which ceased operations on March 30, 2016, in compliance with the facility's Title V operating permit. This submittal includes a technical report (Appendix A) addressing the enforceable permit conditions limiting Lansing Smith to less than 2,000 tons per year (tpy) of sulfur dioxide (SO_2) emissions.

Each area characterization consists of an air dispersion modeling demonstration assessing the ambient air quality in the area around the primary source with respect to the 2010 one-hour SO_2 National Ambient Air Quality Standard (NAAQS). These modeling demonstrations were performed in accordance with the Department's June 30, 2016 technical modeling protocol submittal to EPA Region 4 and all applicable rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models* and EPA's *SO_2 NAAQS Designations Modeling Technical Assistance Document*.

Ten of the eleven area characterizations provided through this submittal clearly reflect that historic and current operating conditions at the source are not contributing to a violation of the 2010 SO_2 NAAQS. With regard to the eleventh area characterization (Appendix K), which addresses the Mosaic New Wales phosphate fertilizer manufacturing plant in Mulberry, Florida, the Department intends to supplement the attached modeling demonstration with another based on additional federally-enforceable permit limits and operational changes reflecting a range of SO_2 reduction projects currently underway pursuant to a pending consent decree between Mosaic and the U.S. EPA. The Department expects these projects to be completed in significant part prior to any final area designation determinations or nonattainment planning periods.

With the exception of the two existing nonattainment areas in Hillsborough and Nassau Counties, the Department recommends that the entire State of Florida be designated as "attainment" or "unclassifiable" for the 2010 SO_2 NAAQS. This recommendation is based on the required area-specific analyses under the DRR and current data from the state's existing SO_2 ambient monitoring network.

The complete submittal package (hard copy and electronic copy) has been sent directly to the Air Planning Branch for EPA Region 4, together with the data files used in generating each air dispersion modeling report. The electronic copy is in a searchable format and is an exact duplicate of the hard copy. If you have any questions about this submittal, please contact me at (850) 717-9000 or by email at Jeff.Koerner@dep.state.fl.us.

Sincerely,

Jeffrey J. Koerner

Jeff Koerner, Director
Division of Air Resource Management

JK/pm
cc (with package): R. Scott Davis, Chief, Air Planning Branch, EPA Region 4
Tiereny Bell
Lynorae Benjamin
Twunjula Bradley
Rick Gillam

Appendix A
SO_2 Data Requirements Rule Report
Bay County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

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1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 C.F.R. Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources, the source can take a permit limiting annual emissions to 2,000 tons, or the state can submit documentation showing that the source shutdown by January 13, 2017.

2. Overview

Gulf Power Company (Gulf) owns and operates the Lansing Smith Electric Generating Plant (Lansing Smith), an electrical generating facility, in Southport, Florida under Title V Permit No. 0050014-025-AV issued by the Florida Department of Environmental Protection (Department).[1] Lansing Smith emitted 6,535 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[2] However, the largest units at the facility ceased operation on March 30, 2016 in compliance with their operating permit and as confirmed by the letter from Gulf to the Department included as **Appendix A-1** to this submittal. The retirement of these units has reduced the annual SO_2 potential to emit (PTE) of the Lansing Smith facility to significantly less than the 2,000-ton limit. Accordingly, the Department did not perform an area characterization for Bay County and is instead submitting documentation in the form of this report detailing the retirement of Units 1 and 2 and the current PTE for the facility.

3. Documentation and History of Retirement

Lansing Smith Units 1 and 2 are coal-fired, electricity-generating boilers that began commercial operation in 1965 and 1967 respectively. Clean Air Act (CAA) Section 169A requires certain large sources that began operation between 1962 and 1977 to implement the "best available retrofit technology" (BART) to address visibility impacts. EPA's 1999 Regional Haze Rule included provisions to address BART.[3] The Department performed a complete BART analysis for the two units including an analysis of possible SO_2 controls. Neither unit was equipped with any pollution control technology for SO_2 and the Department determined, in accordance with *Appendix Y to 40 C.F.R. Part 51: The Guidelines for BART Determinations Under the Regional Haze Rule*, that the installation of a dry sorbent injection (DSI) system to reduce SO_2 emissions by March 31, 2016 would be required for the facility to meet the BART requirements.[4] The facility applied for and received an air construction permit in 2012 authorizing the installation of the DSI system.[5]

Also in 2012, EPA finalized its Mercury and Air Toxics Standards (MATS) for power plants imposing significant emissions limits on coal- and oil-fired electrical generating units (EGUs).[6] The compliance date for this rule was April 16, 2015. In 2013, Gulf applied for and received an air construction permit

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[1] *See* Title V Permit No. 0050014-025-AV, issued by the Florida Department of Environmental Protection on April 9, 2015, attached to this Report as Appendix A-3.
[2] *See* 40 C.F.R. 51.1202.
[3] *See* 40 C.F.R. 51 Subpart P.
[4] See 40 C.F.R. 52.520.
[5] Air Construction Permit No. 0050014-020-AC, issued by the Florida Department of Environmental Protection on May 21, 2012.
[6] *See* 40 C.F.R. 63 Subpart UUUUU.

authorizing the testing of a variety of emissions control sorbent additives for the DSI system in order to meet the emission limits imposed by BART and MATS.[7]

After extensive testing, Gulf requested a one-year extension of the MATS compliance date so that it could complete an ongoing transmission system upgrade. In its request, Gulf explained that Units 1 and 2 would not be able to "meet MATS emission limits under their current configuration" and that the company did not expect to continue to rely on generation from these units. On February 17, 2015, the Department received a letter from Gulf as a part of its Title V permit revision announcing their intent to cease coal-fired operation by March 31, 2016 rather than comply with the limits imposed by BART and MATS. This letter is included as **Appendix A-2** to this submittal.

The requirement to comply with BART and MATS or otherwise cease operation was incorporated into Lansing Smith's Title V operating permit on April 9, 2015. This permit is included as **Appendix A-3** to this submittal. Conditions A.0. and A.48. of the permit detailing this requirement are shown below as **Figure 1** and **Figure 2** respectively.

Figure 1: Condition A.0. of Title V air operating permit 0050014-25-AV issued by the Florida Department of Environmental Protection to Gulf Power Company for the Lansing Smith Electric Generating Plant in Southport, FL on April 9, 2015.

A.0. Mercury and Air Toxics Standards (MATS) and Best Available Retrofit Technology (BART). These emissions units are subject to regulation pursuant to 40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units and to Rule 62-296.340, F.A.C., Best Available Retrofit Technology, both of which impose additional and stricter emissions limitations than can be met by these units under their current physical and operational design. Rather than upgrading these units, Gulf Power is electing to comply with the new requirements by ceasing coal-fired operations of Units 1 and 2 prior to the compliance dates. In order to comply with the MATS and BART requirements, the following conditions shall be met:

a. *Cessation of Coal-fired Operations*. Units 1 and 2 shall cease coal-fired operations no later than March 31, 2016. Future firing of coal in these units is prohibited unless or until modifications necessary to comply with 40 CFR 63, Subpart UUUUU and Rule 62-296.340, F.A.C., have been made.
b. *Notification*. Gulf Power shall provide a notification to both the permitting and compliance authorities on or before March 31, 2016, confirming the final date of coal-fired operations.
c. *Reasonable Precautions to Prevent Unconfined Emissions of Particulate Matter*. The coal and ash storage facilities shall be properly maintained to prevent excessive dust. Water sprays and/or chemical dust suppressants shall be applied as necessary (see also Specific Condition **FW.5.**).
d. *Construction Permit for Future Operation*. In the event that Gulf Power desires to operate these units subsequent to March 31, 2016, a construction permit application shall first be submitted, and a permit received, to obtain the authority to modify the units and/or control devices as needed in order to meet and demonstrate compliance with all requirements applicable to the desired operation at that time.

[Rules 62-204, 62-210.300(1), 62-212.300, 62-212.400, 62-213.440, 62-296.320(4)(c) & 62-296.340, F.A.C.; 40 CFR 63, Subpart UUUUU; and, Gulf Power Letter Dated February 17, 2015]

[7] Air Construction Permit No. 0050014-023-AC, issued by the Florida Department of Environmental Protection on July 15, 2013.

Figure 2: Condition A.48. of Title V air operating permit 0050014-25-AV issued by the Florida Department of Environmental Protection to Gulf Power Company for the Lansing Smith Electric Generating Plant in Southport, FL on April 9, 2015.

A.48. Units 1 and 2 - Off-Line. Before April 16, 2016, the permittee shall cease operating Units 1 and 2. If the permittee wishes to operate Unit 1 and 2, the permittee shall apply for and obtain any air construction permits prior to installing any additional air pollution control equipment needed to comply with the MATS rule. Thereafter, Units 1 and 2 shall operate only in full compliance with the MATS rule upon recommencing operations. [40 CFR 63.6(i)(10), Subpart UUUUU in 40 CFR 63, and section 112(i)(3)(A) of the Clean Air Act]

4. Current Facility SO_2 Emission Limits

As previously mentioned, the remaining units at Lansing Smith have a combined PTE of significantly less than the 2,000-ton threshold imposed by the DRR. The four remaining units include two oil-fired simple-cycle combustion turbines (SCCTs) used for peak electricity demand and two combined cycle combustion turbines (CCCTs) that operate on natural gas. The PTE calculation for each of these units is detailed in **Table 1** and shows that the total PTE for the facility is just 1,310.5 tons per year (tpy).

Table 1: 2017 Potential to emit calculations for SO_2 for Gulf Power Company's Lansing Smith Electrical Generating Station.

Unit Description	Permit Condition	Emission Rate Calculation	Short Term Emission Rate	Annual PTE (tons)
Combustion Turbine A	Fuel Sulfur = 0.5% TV Permit 0050014-025-AV Condition B.6.	SO_2 = (1.01 x 0.5) × 271 MMBtu/hr AP-42 Section 3.1, Table 3.1-2a.	136.9 lb/hr	599.6
Combustion Turbine B	Fuel Sulfur = 0.5% TV Permit 0050014-025-AV Condition B.6.	SO_2 = (1.01 x 0.5) × 271 MMBtu/hr AP-42 Section 3.1, Table 3.1-2a.	136.9 lb/hr	599.6
Unit 3 CC-1	2 grains S/100 scf natural gas TV Permit 0050014-025-AV Condition C.7.	SO_2 = (2.0 gr S/100 scf) × (2.2231 x 10^6 scf/hr) × (1 lb S/7,000 gr S) × (2 lb SO_2/lb S)	12.7 lb/hr	55.6
Unit 3 CC-2	2 grains S/100 scf natural gas TV Permit 0050014-025-AV Condition C.7.	SO_2 = (2.0 gr S/100 scf) × (2.2231 x 10^6 scf/hr) × (1 lb S/7,000 gr S) × (2 lb SO_2/lb S)	12.7 lb/hr	55.6

4.1. Historic Operation of Existing Units

The vast majority of Lansing Smith's current PTE is attributable to the two peaking units that are designed and intended to operate just a few hours a day seasonally. In fact, from 2011-2015 these two units operated a total of 397 hours, which amounts to less than 1% of the time. These units emitted just 7 tons of SO_2 over the five-year period. The two baseload CCCTs historically operate most of the year but have emitted only 14.7 tons of SO_2 over the same period.

5. Conclusion

The DRR requires states to characterize the air quality around certain large sources of SO_2 with respect to the 2010 1-hour SO_2 NAAQS if certain conditions are not met. These conditions include the shutdown of the facility or a federally enforceable permit limiting the facility's emissions to less than 2,000 tpy. Gulf's Lansing Smith facility in Bay County met the threshold for DRR-applicability but subsequently retired the two units responsible for more than 99.9% of the facility's SO_2 emissions. The retirement of these units is federally enforceable through Title V permit 0050014-25-AV and the remaining enforceable PTE of the facility is well below the 2,000 tpy threshold. Based on these factors, the Department is confident that this report satisfies the DRR requirements for the Lansing Smith facility.

Appendix A-1
Gulf Power July 15, 2016 Letter to FDEP:
Lansing Smith Units 1 and 2 Retirement

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

One Energy Place
Pensacola, FL, 32520

850-444-6311

GULF POWER
A SOUTHERN COMPANY

July 15, 2016

Mr. Andrew Joslyn
Florida Department of Environmental Protection
Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

RE: Lansing Smith Electric Generating Plant – Facility ID No. 0050014
Title V Permit No. 0050014-025-AV
Unit 1 and 2 – MATS Limited Operation Report

VIA EMAIL

Mr. Joslyn:

As outlined in Condition A. 47. of the above-referenced Lansing Smith Title V permit, please find enclosed Gulf Power's Limited Operation Report for 2nd quarter 2016 summarizing hours of operation and capacity factor for Units 1 and 2 during the MATS extension.

Please note that the Units ceased coal-fired operation and were retired from the Acid Rain program on March 30, 2016. Therefore, there is not data to report and this is the last report for these Units.

If you have any questions, please contact or Mr. Greg Terry at (850) 444-6144 or Ms. Susan Kennedy at (850) 444-6153.

Sincerely,

Richard M. Markey
Director of Environmental Affairs

Attachment

Cc (email): FDEP Tallahassee
Jeff F. Koerner, Syed Arif

Gulf Power

Mike Burroughs	Mike Smith	Alan McLane	Brent Skipper
Roger Danley	Greg Terry	Dwain Waters	Susan Kennedy
Ashley Jansen	Wendell Smith	Adrianne Collins	Jill Bartling
Shardra Scott			

MATS LIMITED OPERATION SUMMARY REPORT
Smith Units 1 and 2
Panama City, Florida
2nd Quarter 2016

Unit	Hours of Operation	Net Capacity Factor (%)
1	0.00	0.00
2	0.00	0.00

Unit	Date	Hour	Explanation
1	none	NA	NA
2	none	NA	NA

*Note - Smith Units 1 and 2 ceased coal-fired operations and were retired from the Acid Rain program on March 30, 2016.

Appendix A-2
Gulf Power February 17, 2015 Letter to FDEP: Lansing Smith Units 1 and 2 Planned Retirement

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

Environmental Affairs
One Energy Place
Pensacola, Florida, 32520-0328

Tel. 850.444.6144

GULF POWER
A SOUTHERN COMPANY

February 17, 2015

Mr. Jeff Koerner, P.E.
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 5505
Tallahassee, FL. 32399-2400

Via Email
Subject: Plant Smith Coal Units Ceasing Operation

Dear Mr. Koerner:

Gulf Power has made a final decision and publically announced that Smith Units 1 and 2 will cease coal-fired operation by March 31, 2016. This correspondence officially notifies the Department of the resulting updated environmental air strategy from that decision.

Gulf Power appreciates the Department's patience in this process. If you have any questions regarding this information, please contact me or Dwain Waters at (850) 444-6527.

Sincerely,

Greg Terry

Greg Terry, P.E.
Air Quality Team Leader
Gulf Power Company

cc: Jim Vick, Gulf Power
Dwain Waters, Gulf Power
David Read, P.E., FDEP Office of Permitting and Compliance, Tallahassee
Jon Holtom, P.E., FDEP Office of Permitting and Compliance, Tallahassee
Andrew Joslyn, FDEP NW District Office, Pensacola, FL

Appendix A-3
Gulf Power Company – Lansing Smith Electric Plant
Title V Operating Permit No. 0050014-025-AV

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

Gulf Power Company

Lansing Smith Electric Generating Plant

Facility ID No. 0050014
Bay County

Title V Air Operation Permit Renewal

Permit No. 0050014-025-AV
(Renewal of Title V Air Operation Permit No. 0050014-018-AV)

Permitting Authority:

State of Florida
Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road
Mail Station #5505
Tallahassee, Florida 32399-2400

Telephone: (850) 717-9000
Fax: (850) 717-9097

Compliance Authority:

Department of Environmental Protection
Northwest District Office

160 Governmental Center, Suite 308
Pensacola, Florida 32502-5794

Telephone: (850) 595-0700
Fax: (850) 595-8417

Title V Air Operation Permit Renewal

Permit No. 0050014-025-AV

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Florida Department of Environmental Protection
BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

JONATHAN P. STEVERSON
SECRETARY

PERMITTEE:
Gulf Power Company
One Energy Place
Pensacola, Florida 32520-0328

Permit No. 0050014-025-AV
Facility ID No. 0050014
Lansing Smith Electric Generating Plant
SIC Nos. 49, 4911
Title V Air Operation Permit Renewal

The purpose of this permit is to renew the existing Title V air operation permit No. 0050014-018-AV for the above referenced facility. The existing Lansing Smith Electric Generating Plant is located in Bay County at 4300 County Road 2300, Lynn Haven, Florida 32409. UTM Coordinates are: Zone 16; 623.74 Kilometer (km) East and 3349.11 km North. Latitude is: 30° 16’ 8.4566” North; and, Longitude is: 85° 42’ 2.4149” West.

The Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-213 and 62-214. The above named permittee is hereby authorized to operate the facility in accordance with the terms and conditions of this permit.

Effective Date: April 9, 2015
Renewal Application Due Date: August 28, 2019
Expiration Date: April 9, 2020

Executed in Tallahassee, Florida

For:
Jeffery F. Koerner, Deputy Director
Division of Air Resource Management

JFK/dlr/yha

Subsection A. Facility Description.

This facility consists of two coal fired steam generators (boilers), a Pratt & Whitney Twin-Pac combustion turbine peaking unit, and two gas-fired combined-cycle combustion turbine electrical generators with duct-fired heat recovery steam generators (HRSG). The two boilers, Units 1 and 2, are Acid Rain Phase II Units. The two boilers are also regulated under the Clean Air Interstate Rule (CAIR) and 40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal-and Oil-Fired Electric Utility Steam Generating Units. The two combined-cycle combustion turbines are Acid Rain and CAIR units. Pulverized coal is the primary fuel for the boilers. Distillate fuel oil is used to fire the Twin-Pac combustion turbine and as a “back-up” fuel for the boilers. Natural gas is the only fuel allowed to be fired in the two combined-cycle combustion turbines.

The facility also has emergency and non-emergency reciprocating internal combustion engines which are regulated under 40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (RICE) and/or 40 CFR 60, Subpart IIII, NSPS for Stationary Compression Ignition RICE adopted in Rules 62-204.800(11)(b), F.A.C. & 8(b), F.A.C., respectively.

Subsection B. Summary of Emissions Units.

EU No.	Brief Description
Regulated Emissions Units	
001	Boiler Number 1 - 1,944.8 MMBtu/hour (Phase II Acid Rain and CAIR Unit)
002	Boiler Number 2 - 2,246.2 MMBtu/hour (Phase II Acid Rain and CAIR Unit)
003	Combustion Turbines A and B - 542 MMBtu/hour Peaking Unit (CAIR Unit)
004	170 MW Gas Combustion Turbine with HRSG and Duct Burner (Acid Rain and CAIR Unit)
005	170 MW Gas Combustion Turbine with HRSG and Duct Burner (Acid Rain and CAIR Unit)
006	Cooling Tower
009	General Purpose Internal Combustion Engines (Emergency and Non-Emergency)
011	165 HP Emergency Diesel Sump Pump (Big Orange)
012	550 HP Emergency Diesel Generator at CCCT
013	153 HP Emergency Diesel Sump Pump (Big Blue)
Unregulated Emissions Units and Activities (See Appendix U).	
007	Material Handling of Coal and Ash
008	Fugitive PM Sources - On-site Vehicles

Also included in this permit are miscellaneous insignificant emissions units and/or activities (see Appendix I, List of Insignificant Emissions Units and/or Activities).

Subsection C. Applicable Regulations.

Based on the Title V air operation permit renewal application received May 19, 2014, this facility is a potential major source of hazardous air pollutants (HAP). The existing facility is a Prevention of Significant Deterioration (PSD) major source of air pollutants in accordance with Rule 62-212.400, F.A.C. A summary of applicable regulations are shown in the following table.

Applicable Regulations	EU Nos.
Federal Rule Citations	
40 CFR 60, Subpart A, NSPS General Provisions	004, 005
40 CFR 60, Subpart Da, NSPS Standards of Performance for Electric Utility Steam Generating Units	
40 CFR 60, Subpart GG, Standards of Performance for Stationary Combustion Turbines	
40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	011, 012, 013
40 CFR 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines	009, 011, 012, 013
40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants Coal-and Oil-Fired Electric Utility Steam Generating Units	001, 002
40 CFR 64, Compliance Assurance Monitoring (CAM)	
40 CFR 75, Acid Rain Monitoring Provisions	001, 002, 004, 005
State Rule Citations	
62-204, F.A.C., Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference	001, 002, 003, 004, 005
62-210, F.A.C., Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms	
62-212.400, F.A.C., Best Available Control Technology (BACT)	
Rule 62-213, F.A.C. (Title V Air Operation Permits for Major Sources of Air Pollution)	
62-214, F.A.C., Requirements For Sources Subject To The Federal Acid Rain Program Federal Acid Rain Program, Phase II	001, 002, 004, 005
62-296, F.A.C., Emission Limiting Standards	001, 002, 003, 004, 005
62-296.470, F.A.C., Implementation of Federal Clean Air Interstate Rule	
62-297, F.A.C., Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures	

The following conditions apply facility-wide to all emission units and activities:

FW1. Appendices. The permittee shall comply with all documents identified in Section VI, Appendices, listed in the Table of Contents. Each document is an enforceable part of this permit unless otherwise indicated. [Rule 62-213.440, F.A.C.]

Emissions and Controls

FW2. **Not federally Enforceable.** Objectionable Odor Prohibited. No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rule 62-296.320(2) and 62-210.200(Definitions), F.A.C.]

FW3. General Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed-necessary and ordered by the Department. Nothing is deemed necessary and ordered at this time. [Rule 62-296.320(1), F.A.C.]

FW4. General Visible Emissions. No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20% opacity. This regulation does not impose a specific testing requirement. [Rule 62-296.320(4)(b), F.A.C.]

FW5. Unconfined Particulate Matter. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction; alteration; demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions. Reasonable precautions to prevent emissions of unconfined particulate matter at this facility include:

a. Grassing over each section of the ash landfill as it reaches its capacity.
b. Regular packing of the coal pile to reduce blowing dust and aid in the prevention of coal fires.
c. Application of a dust suppressant to the coal on the conveyor belts as necessary.
d. Chemical or water application to unpaved roads and/or unpaved yard areas.
e. Paving and maintenance of roads, parking areas, and yards.
f. Landscaping or planting of vegetation.
g. Confining abrasive blasting where possible.
h. Other techniques, as necessary.

[Rule 62-296.320(4)(c), F.A.C.; and, proposed by applicant in Title V air operation permit renewal application received May 19, 2014]

Annual Reports and Fees

See Appendix RR, Facility-wide Reporting Requirements for additional details.

FW6. Electronic Annual Operating Report and Title V Annual Emissions Fees. The information required by the Annual Operating Report for Air Pollutant Emitting Facility [Including Title V Source Emissions Fee Calculation] (DEP Form No. 62-210.900(5)) shall be submitted by April 1st of each year, for the previous calendar year, to the Department of Environmental Protection's Division of Air Resource Management. Each Title V source shall submit the annual operating report using the DEP's Electronic Annual Operating Report (EAOR) software, unless the Title V source claims a technical or financial hardship by submitting DEP Form No. 62-210.900(5) to the DEP Division of Air Resource Management instead of using the reporting software. Emissions shall be computed in accordance with the provisions of subsection 62-210.370(2), F.A.C. Each Title V source must pay between January 15 and April 1 of each year an annual emissions fee in an amount determined as set forth in subsection 62-213.205(1), F.A.C. The annual fee shall only apply to those regulated pollutants, except carbon monoxide and greenhouse gases, for which an allowable numeric emission-limiting standard is specified in the source's most recent construction permit or operation permit. Upon completing the required EAOR entries, the EAOR Title V Fee Invoice can be printed by the source showing which of the reported emissions are subject to the fee and the total Title V Annual Emissions Fee that is due. The submission of the annual Title V emissions fee payment is also due (postmarked) by April 1st of each year. A copy of the system-generated EAOR Title V Annual Emissions Fee Invoice and the indicated total fee shall be submitted to: **Major Air Pollution Source Annual Emissions Fee, P.O. Box 3070, Tallahassee, Florida 32315-3070.** Additional information is available by accessing the Title V Annual Emissions Fee On-line Information Center at the following Internet web site: http://www.dep.state.fl.us/air/emission/tvfee.htm. [Rules 62-210.370(3), 62-210.900 & 62-213.205, F.A.C.; and, §403.0872(11), Florida Statutes (2013)]

{Permitting Note: Resources to help you complete your AOR are available on the electronic AOR (EAOR) website at: http://www.dep.state.fl.us/air/emission/eaor. If you have questions or need assistance after reviewing the information posted on the EAOR website, please contact the Department by phone at (850) 717-9000 or email at eaor@dep.state.fl.us.}

{Permitting Note: The Title V Annual Emissions Fee form (DEP Form No. 62-213.900(1)) has been repealed. ***A separate Annual Emissions Fee form is no longer required to be submitted by March 1st each year.****}*

FW7. Annual Statement of Compliance. The permittee shall submit an annual statement of compliance to the compliance authority at the address shown on the cover of this permit and to the US. EPA at the address shown below within 60 days after the end of each calendar year during which the Title V air operation permit was effective. [Rules 62-213.440(3)(a)2. & 3. and (b), F.A.C.]

U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303
Attn: Air Enforcement Branch

FW8. Prevention of Accidental Releases (Section 112(r) of CAA). If, and when, the facility becomes subject to 112(r), the permittee shall:

a. Submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center. Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent electronically through EPA's Central Data Exchange system at the following address: https://cdx.epa.gov. Information on electronically submitting risk management plans using the Central Data Exchange system is available at: http://www.epa.gov/osweroe1/content/rmp/index.htm. The RMP Reporting Center can be contacted at: RMP Reporting Center, Post Office Box 10162, Fairfax, VA 22038, Telephone: (703) 227-7650.
b. Submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C.

[40 CFR 68]

Other Requirements

FW9. Patrolling Requirements. Computer modeling results indicate modeled violations of the State of Florida's, and of the National, 24-hour sulfur dioxide ambient air quality standards within the property boundaries of this plant. In order to protect the general public, "No Trespassing" notices, combined with a regular patrol to ensure that public access is precluded in the areas described below (see Appendix PA-1, Patrol Area):

Beginning from the point of origin[1, 2], proceed due north for a distance of approximately 330 meters until reaching the old fence line (point 1). From point 1, turn 90º to the west and proceed along the old fence line for a distance of 580 meters (point 2). From point 2, proceed due south for a distance of 175 meters (point 3). From point 3, proceed back to the point of origin to define the area.

[1] Point of origin: center of the common stack for Units 1 and 2.
[2] Set due north from the center of the stack as 0°.

[Rules 62-204.220(1) & 62-204.240(1), F.A.C.]

FW10. Facility-wide NO_X Emissions Cap. In addition to individual (point source) emission limits and NO_X averaging plan requirements, the Lansing Smith facility shall be required to comply with a facility-wide NO_X emissions cap of 6,666 tons per year (TPY). CEMS shall be the method of compliance. See facility-wide Condition **FW11.** for reporting and record-keeping requirements. [0050014-002-AC.]

FW11. CEMS for Reporting Facility-wide NO_X Emissions. The NO_X CEMS shall be used for ensuring compliance with the facility-wide cap. For the oil-fired peaking turbine (Emissions Unit EU 003), emissions shall be determined using fuel sampling and AP-42 emission factors. Monthly records shall be maintained of the facility-wide NO_X emissions and the owner/operator shall calculate the facility-wide cap on a monthly basis for each prior consecutive 12-month period. These records shall be made available to inspectors as necessary. Additionally, a summary shall be filed with each quarterly report as a means of demonstrating compliance with the facility-wide cap for each consecutive 12-month period. The monthly calculations for the coal-fired units shall consist of use of the monthly NO_X emission rate per MMBtu (as determined by CEMS using the appropriate fuel F factor) multiplied by the monthly fuel (MMBtu) usage as specified in specific condition **A.22.** and converted as appropriate to tons of NO_X for each unit. The sum of the monthly NO_X emissions from the coal units and the oil-fired peaking turbine shall then be added to the monthly NO_X emissions from the combined cycle unit, which will be calculated based upon the monthly average NO_X emission rate (lb/hr) multiplied by the number of valid operating hours for the same period. [Rule 62-4.070 and 62-204.800(7), F.A.C. to avoid PSD Review; and, 0050014-002-AC]

The specific conditions in this section apply to the following emissions units:

EU No.	Brief Description
001	Boiler Number 1 - 1,944.8 MMBtu/hour (Phase II Acid Rain and CAIR Unit).
002	Boiler Number 2 - 2,246.2 MMBtu/hour (Phase II Acid Rain and CAIR Unit).

Emission Unit No. 001 is a tangentially fired, dry bottom boiler with generator nameplate rating of 175 megawatts (MW). Emission Unit 001 began commercial operation on May 7, 1965. Emission Unit 002 is a tangentially fired, dry bottom boiler with generator nameplate rating of 205 MW. Emission Unit 002 began commercial operation on April 4, 1967. Both Units are sharing a common stack that is 199 feet tall with a diameter of 18 feet and exit temperature of 260 degrees Fahrenheit (°F). The volumetric flow rate of Units 001 and 002 combined, at permitted capacity, is approximately 1,567,967 acfm. PM emissions from unit 001 are controlled by a hot side (Buell Model # BAL 2X34N333-4-3P) and a cold side (General Electric Model # BE1.2X21(12) 30-1.5-1.5-4.2P) electrostatic precipitator. PM emissions from unit 002 are controlled by a hot side (Buell Model # BAL 2X34N333-4-3P) and a cold side (GE-ESI Model # BE2.1X(2-12's)(12)-30-111-4.3P) electrostatic precipitator. Also, Low-NO_X burners and selective non-catalytic reduction (SNCR) control NO_X emissions. Continuous emissions monitoring systems (CEMS) to measure and record NO_X and SO_2 emissions and continuous opacity monitoring systems (COMS) to measure and record visible emissions (opacity) of the exhaust gas.

{Permitting Notes: Units 001 and 002 are regulated under Rule 62-296.405, F.A.C. (Fossil Fuel Fired Steam Generators with more than 250 MMBtu/Hour Heat Input); have not undergone PSD Preconstruction Review; are regulated under Phase II of the federal Acid Rain Program (40 CFR 75); and, are subject to regulation under the Clean Air Interstate Rule (CAIR). The two boilers are also subject to 40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal-and Oil-Fired Electric Utility Steam Generating Units.}

A.0. Mercury and Air Toxics Standards (MATS) and Best Available Retrofit Technology (BART). These emissions units are subject to regulation pursuant to 40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units and to Rule 62-296.340, F.A.C., Best Available Retrofit Technology, both of which impose additional and stricter emissions limitations than can be met by these units under their current physical and operational design. Rather than upgrading these units, Gulf Power is electing to comply with the new requirements by ceasing coal-fired operations of Units 1 and 2 prior to the compliance dates. In order to comply with the MATS and BART requirements, the following conditions shall be met:

a. *Cessation of Coal-fired Operations*. Units 1 and 2 shall cease coal-fired operations no later than March 31, 2016. Future firing of coal in these units is prohibited unless or until modifications necessary to comply with 40 CFR 63, Subpart UUUUU and Rule 62-296.340, F.A.C., have been made.
b. *Notification*. Gulf Power shall provide a notification to both the permitting and compliance authorities on or before March 31, 2016, confirming the final date of coal-fired operations.
c. *Reasonable Precautions to Prevent Unconfined Emissions of Particulate Matter*. The coal and ash storage facilities shall be properly maintained to prevent excessive dust. Water sprays and/or chemical dust suppressants shall be applied as necessary (see also Specific Condition **FW.5.**).
d. *Construction Permit for Future Operation*. In the event that Gulf Power desires to operate these units subsequent to March 31, 2016, a construction permit application shall first be submitted, and a permit received, to obtain the authority to modify the units and/or control devices as needed in order to meet and demonstrate compliance with all requirements applicable to the desired operation at that time.

[Rules 62-204, 62-210.300(1), 62-212.300, 62-212.400, 62-213.440, 62-296.320(4)(c) & 62-296.340, F.A.C.; 40 CFR 63, Subpart UUUUU; and, Gulf Power Letter Dated February 17, 2015]

Essential Potential to Emit (PTE) Parameters

A.1. Permitted Capacity. The maximum allowable heat input rate is as follows (see Specific Condition **A.32.**):

Unit No.	MMBtu/hr Heat Input	Fuel Type
001	1,944.8	Coal
	316	No. 2 Fuel Oil
	316	On-Specification Used Oil
002	2,246.2	Coal
	205	No. 2 Fuel Oil
	205	On-Specification Used Oil

[Rules 62-4.160(2), 62-210.200(PTE) & 62-296.405, F.A.C.; permits AC03-2023, AC03-2024, 0050014-011-AC & 0050014-026-AC]

A.2. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(2), F.A.C.]

A.3. Methods of Operation.

a. *Fuels.* The fuels that are allowed to be burned in these boilers are coal and/or new No. 2 fuel oil and/or on-specification used oil (see Specific Condition **A.41.**). Fuel oil is only used for periods of start-up and as needed for flame stabilization. Also, on-site generated "oil contaminated soil" is periodically combusted for energy recovery purposes.

b. Other.

1. Supplemental injection of "sodium carbonate" (at a rate of up to 420 pounds per hour) as necessary to maintain visible emissions below the applicable standards.
2. Supplemental injection of "GAM 60" for purposes of maintaining boiler tube temperatures.

[Rule 62-213.410, F.A.C.]

A.4. Hours of Operation. These emissions units may operate continuously (8,760 hours/year). [Rule 62-213.440 & 62-210.200(PTE), F.A.C.]

*{Permitting Note: During the MATS extension period, Specific Condition **A.47.** supersedes and replaces Specific Condition **A.4.**}*

Control Technology

A.5. Selective Non-Catalytic Reduction (SNCR) System. The permittee is required to operate, and maintain a High Energy Reagent Technology (HERT) SNCR system for Units 1 and 2 to reduce emissions of NO_X in accordance with this permit and as described in the application, approved drawings, plans, and other documents on file with the Department. Based on the fuel used and the operating conditions recorded during the baseline testing authorized by air construction permit No. 0050014-012-AC, the designed target NO_X conversion efficiency for Unit 1 is 50% and the designed target NO_X conversion efficiency for Unit 2 is 30%. The designed target ammonia slip level is 5 part per million by volume (ppmv) based on a 24-hour average. [Design; Application No. 0050014-013-AC and Rule 62-4.080, F.A.C.]

{Permitting Note: Advanced Combustion Technology, Inc. designed the HERT SNCR system, which generally consists of the following:

- ***Urea Injection System**: Urea is delivered by truck and stored on site as a 50% aqueous solution in one 45,000 gallon tank. It is expected that the tank will be maintained at about 2/3 capacity to avoid the possibility of an overfill. This provides enough urea for about 5½ days of operation. The solution is maintained at a temperature of approximately 90° F by circulating through the SNCR system piping loop heating module. Using plant service water or other dilution water source, the metering module dilutes the reagent to a predetermined concentration (somewhat less than 30%) and precisely controls the flow of the diluted reagent to distribution modules located near the boiler injection point. The distribution modules provide the final control of diluted reagent and atomizing/cooling (plant) air being delivered to each injector. The diluted reagent is injected into the boiler via wall-mounted air atomizing lance* *installed in the upper levels of the boiler. At peak load, the urea injection rate is about 145 gallons per hour (gph) for Unit 1 and about 135 gph for Unit 2. This translates to an ammonia flow for Unit 1 of 391 lb/hr and for Unit 2 of 364 lb/hr, on a dry basis.*

- ***Ammonia Slip**: The SNCR is designed and guaranteed to have a maximum ammonia slip concentration of 5 ppmvd corrected to 3% O_2 (24 hour basis) in the duct cross-sectional area for all boiler loads. There are no provisions for continuously monitoring ammonia concentration in the flue gas. When ammonia measurements in the flue gas are required, a wet chemical method or other methods approved by EPA will be utilized. Although not required, more frequent tracking of ammonia slip will be monitored by measuring the amount of residual ammonia adsorbed by the fly ash. Fly ash samples will be measured periodically using an ion-specific electrode.}*

Emission Limitations and Standards

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging times for Specific Conditions **A.6. - A.11.** are based on the specified averaging time of the applicable test method.

A.6. Visible Emissions. Visible emissions shall not exceed 40 percent opacity. Because units 1 and 2 share a common stack, visible emissions violations from the stack will be attributed to both units unless opacity meter results show the specific unit causing the violation. [Rules 62-296.405(1)(a), F.A.C. and 62-213-440, F.A.C.]

A.7. Visible Emissions - Soot Blowing and Load Change. Visible emissions shall not exceed 60 percent opacity during the 3-hours in any 24-hour period of excess emissions allowed for boiler cleaning (soot blowing) and load change. A load change occurs when the operational capacity of a unit is in the 10 percent to 100 percent capacity range, other than startup or shutdown, which exceeds 10 percent of the unit's rated capacity and which occurs at a rate of 0.5 percent per minute or more. Visible emissions above 60 percent opacity shall be allowed for not more than 4, six (6)-minute periods, during the 3-hour period of excess emissions allowed for boiler cleaning and load changes, at units which have installed continuous opacity monitors. [Rule 62-210.700(3), F.A.C.]
{Permitting Note: Load changes may be demonstrated by monitoring megawatt output.}

A.8. SO_2 Emissions.

a. The sulfur content of the No. 2 fuel oil and the "on-specification" used oil shall not exceed 0.5 percent, by weight, as measured by applicable test methods. Sulfur dioxide emissions shall not exceed the following emissions limitations, as measured by applicable compliance methods:

Unit No.	Emissions Limit
001, alone	2.10 lbs./MMBtu
002, alone	2.70 lbs./MMBtu
001 and 002, combined	4.50 lbs./MMBtu

[Rules 62-213.440, F.A.C. and Applicant request in Title V permit renewal application received May 19, 2014.]

b. When combusting coal in Boilers 1 and 2, the owner or operator shall not cause to be discharged into the atmosphere from either unit any gases which contain SO_2 in excess of 0.74 lb/MMBtu. Compliance with the emission standard shall be determined on a 30-day rolling average basis in accordance with the procedures contained in 40 Code of Federal Regulation (CFR), Part 60, Subpart Da. This condition shall become effective upon the effective date of EPA's approval of these specific requirements in the Florida Regional Haze State Implementation Plan to the extent that it applies to these units. The compliance date for the requested emission standard shall be no later than March 31, 2016. [Permit No. 0050014-020-AC]

{Note: This condition will apply in addition to other SO_2 requirements contained in the current Facility Title V Air Operation Permit, its renewals and its revisions.}

A.9. NO$_X$ Emissions Cap. The combined NO$_X$ emissions from Units 1 and 2 shall not exceed 4,700 tons during any consecutive 12-month rolling total as determined by CEMS data reported to the EPA Acid Rain database (including the NO$_X$ emissions and heat input rates). Within three working days of discovering an exceedance of the NO$_X$ emissions cap, the permittee shall notify the Compliance Authority. [Permit No. 0050014-016-AC and Rule 62-4.080, F.A.C.] (See Facility-Wide Conditions **FW10.** and **FW11.**)

{Permitting Note: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. For this project, proper operation of the air pollution control device means complying with the NO$_X$ emissions cap. [Rule 62-210.650, F.A.C.]}

A.10. PM Emissions. Particulate matter emissions shall not exceed 0.1 pound per million Btu heat. [Rule 62-296.405(1)(b), F.A.C.]

A.11. Particulate Matter - Soot Blowing and Load Change. Particulate matter emissions shall not exceed an average of 0.3 pound per million Btu heat input during the 3-hours in any 24-hour period of excess emissions allowed for boiler cleaning (soot blowing) and load change. [Rule 62-210.700(3), F.A.C.]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C. cannot vary any requirement of an NSPS, NESHAP or Acid Rain program provision.

A.12. Excess Emissions Allowed - Malfunction. Excess emissions resulting from malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

A.13. Excess Emissions Allowed - Start up or Shutdown. Excess emissions resulting from startup or shutdown shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized. [Rule 62-210.700(2), F.A.C.]

A.14. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

Monitoring of Operations

A.15. CAM Plan. These emissions units are subject to the Compliance Assurance Monitoring (CAM) requirements contained in the attached Appendix CAM. Failure to adhere to the monitoring requirements specified does not necessarily indicate an exceedance of a specific emissions limitation; however, it may constitute good reason to require compliance testing pursuant to Rule 62-297.310(7)(b), F.A.C. [40 CFR 64; Rules 62-204.800 and 62-213.440(1)(b)1.a., F.A.C.]

A.16. SNCR Urea Injection Rate Monitor. In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a flow meter to measure and record the urea injection rate for the SNCR system. [Rules 62-4.070(3) and 62-212.400(5)(c), F.A.C., and permit No. 0050014-013-AC]

Continuous Monitoring Requirements

{Permitting Note: In accordance with the federal Acid Rain Phase II requirements and Permit No. 0050014-013-AC, the following continuous monitors are installed on these units: SO_2, NO$_X$, Carbon Dioxide (CO_2), opacity, urea injection rate and stack gas flow.}

A.17. Opacity and CO_2 CEMS. These emissions units shall have installed, and shall maintain, continuous monitoring systems for monitoring opacity and CO_2. [Rule 62-296.405(1)(f)1., F.A.C. and Permit No. 0050014-016-AC]

A.18. NO_X CEMS. The Acid Rain NO_X CEMS shall be used to demonstrate compliance with the facility-wide NO_X emissions cap. (See Facility-wide conditions **FW10.**, **FW11.** and Specific Condition **A.9.**) [Permit No. 0050014-016-AC]

A.19. SO_2 CEMS. Those emissions units not having an operating flue gas desulfurization device may monitor sulfur dioxide emissions by fuel sampling and analysis according to methods approved by the EPA. The permittee elected to satisfy the monitoring requirements using SO_2 continuous emissions monitors. [Rule 62-296.405(1)(f)1.b., F.A.C.]

A.20. SO_2 Averaging Time. Continuous SO_2 emission monitoring 24-hour averages are required to demonstrate compliance with the standards of the Department (Specific Condition **A.8.**). A valid 24-hour average shall consist of no less than 18 hours of valid data capture per calendar day. In the event that valid data capture is interrupted, the permittee shall immediately initiate as-fired fuel sampling to demonstrate compliance with the SO_2 emissions standard. As-fired fuel sampling shall continue until such time as valid data capture is restored. In lieu of as-fired fuel sampling, the permittee may elect to demonstrate SO_2 emissions compliance by the temporary use of a spare SO_2 emissions monitor. The spare, previously calibrated, SO_2 emissions monitor must be installed and collecting data in the same time frame as required above for as-fired fuel sampling in order to maintain a quality control (QC) program. At a minimum, the QC program must include written procedures which shall describe in detail complete, step-by-step procedures and operations for each of the following activities:

a. Calibration of CEMS.
b. Calibration Drift (CD) determination and adjustment of CEMS.
c. Preventative maintenance of CEMS (including spare parts inventory).
d. Data recording, calculations and reporting.
e. Accuracy audit procedures including sampling and analysis methods.
f. Program of corrective action for malfunctioning CEMS.

[Rules 62-213.440, 62-204.800(7)(e)5., and 62-296.405(1)(f)1.b., F.A.C.; and, AO03-211310]

A.21. Continuous Monitor Performance Specifications. If continuous monitoring systems are required by rule or are elected by the permittee to be used for demonstrating compliance with the standards of the Department, they must be installed, maintained and calibrated, either:

a. In accordance with the EPA performance specifications listed below. These Performance Specifications are contained in 40 CFR 60, Appendix B, and are adopted by reference in Rule 62-204.800, F.A.C.
   (1) Performance Specification 1-Specifications and Test Procedures for Opacity Continuous Emission Monitoring Systems in Stationary Sources.
   (2) Performance Specification 2-Specifications and Test Procedures for SO_2 Continuous Emission Monitoring Systems in Stationary Sources.
   (3) Performance Specification 3-Specifications and Test Procedures for CO_2 Continuous Emission Monitoring Systems in Stationary Sources. Or,
b. In accordance with the applicable requirements of 40 CFR 75, Subparts B and C. Excess emissions pursuant to Rule 62-210.700, F.A.C., shall be determined using the 40 CFR part 75 CEMS.

[Rule 62-297.520, F.A.C.; 40 CFR 75; and, Applicant request.]

Test Methods and Procedures

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

A.22. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
17, 5, 5B or 5F	Method for Determining Particulate Matter Emissions (All PM is assumed to be PM_{10}.)
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)
20	Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines
25 and or 25A	Method for Determining Gaseous Organic Concentrations (Flame Ionization)
6, 6A, 6B or 6C	Determination of Sulfur Dioxide
CTM-027	Conditional EPA Test Method 027, Measurement of Ammonia Slip (or equivalent method)

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [62-297.401, F.A.C., and Permit No. 0050014-016-AC]

A.23. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

A.24. Annual Compliance Tests Required. During each federal fiscal year (October 1st to September 30th), each Emission Units (EU 001 and EU 002) shall be tested to demonstrate compliance with the emissions standards for SO_2 and PM. [Rule 62-297.310(7), F.A.C. and Permit No. 0050014-016-AC]

A.25. Compliance Tests Prior To Renewal. Compliance tests shall be performed for PM, SO_2 and VE once every 5 years. The tests shall occur prior to obtaining a renewed operating permit to demonstrate compliance with the emission limits in Specific Conditions **A.6. - A.11.** [Rules 62-210.300(2)(a) and 62-297.310(7)(a), F.A.C.]

{Permitting Note: Tests which are only required once during the term of a permit prior to obtaining a renewed permit should be performed roughly five years from the previous test.}

A.26. Testing While Injecting Additives. If supplemental additives are used greater than 50% of the time that the unit(s) are operated, the owner or operator shall conduct all emissions tests while injecting additives, consistent with normal operating practices approved by the Department. [Rule 62-213.440, F.A.C.]

A.27. DEP Method 9. The provisions of EPA Method 9 (40 CFR 60, Appendix A) are adopted by reference with the following exceptions:

1. EPA Method 9, Section 2.4, Recording Observations. Opacity observations shall be made and recorded by a certified observer at sequential fifteen-second intervals during the required period of observation.

2. EPA Method 9, Section 2.5, Data Reduction. For a set of observations to be acceptable, the observer shall have made and recorded, or verified the recording of, at least 90 percent of the possible individual observations during the required observation period. For single-valued opacity standards (e.g., 20 percent opacity), the test result shall be the highest valid six-minute average for the set of observations taken. For multiple-valued opacity standards (e.g., 20 percent opacity, except that an opacity of 40 percent is permissible for not more than two minutes per hour) opacity shall be computed as follows:
   a. For the basic part of the standard (i.e., 20 percent opacity), the opacity shall be determined as specified above for a single-valued opacity standard.
   b. For the short-term average part of the standard, opacity shall be the highest valid short-term average (i.e., two-minute, three-minute average) for the set of observations taken.

   In order to be valid, any required average (i.e., a six-minute or two-minute average) shall be based on all of the valid observations in the sequential subset of observations selected, and the selected subset shall contain at least 90 percent of the observations possible for the required averaging time. Each required average shall be calculated by summing the opacity value of each of the valid observations in the appropriate subset, dividing this sum by the number of valid observations in the subset, and rounding the result to the nearest whole number. The number of missing observations in the subset shall be indicated in parenthesis after the subset average value. [Rules 62-297.310, and 62-297.401, F.A.C.]

A.28. Visible Emissions. The test method for visible emissions shall be DEP Method 9, incorporated in Chapter 62-297, F.A.C. A transmissometer may be used and calibrated according to Rule 62-297.520, F.A.C. The Permittee has elected to utilize a transmissometer (opacity meter) for demonstrating compliance with the visible emissions limit. As long as the transmissometer is calibrated, maintained, and operated in accordance with Performance Specification 1 of 40 CFR 60, Appendix B (see Specific Condition **A.23.**), the annual test for visible emissions is not required. [Rules 62-213.440 and 62-296.405(1)(e)1., F.A.C.]

{Permitting Note: A transmissometer used to demonstrate compliance should record sufficient data so as to be equivalent to a Method 9 test. Method 9 requires determining an average based on 24 readings at 15-second intervals, thus, a six-minute average. The transmissometers in use at this facility make a permanent recording every six-minutes based on an average of readings taken every 15 seconds. After the 6-minute average is recorded, the individual readings are erased and a new 6-minute average is determined based on the next set of 24 individual readings. This 6-minute block recording is consistent with the requirements of Method 9.}

A.29. Particulate Matter. The test methods for particulate matter emissions shall be EPA Methods 17, 5, 5B, or 5F, incorporated by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet. EPA Method 5 may be used with filter temperature no more than 320 degrees Fahrenheit. For EPA Method 17, stack temperature shall be less than 375 degrees Fahrenheit. The owner or operator may use EPA Method 5 to demonstrate compliance. EPA Method 3 or 3A with Orsat analysis shall be used when the oxygen based F-factor, computed according to EPA Method 19, is used in lieu of heat input. Acetone wash shall be used with EPA Method 5 or 17. [Rules 62-213.440, 62-296.405(1)(e)2., 62-297.310, and 62-297.401, F.A.C.]

A.30. Sulfur Dioxide. The test methods for sulfur dioxide emissions shall be EPA Methods 6, 6A, 6B, or 6C, incorporated by reference in Chapter 62-297, F.A.C. Fuel sampling and analysis may be used as an alternate sampling procedure if such a procedure is incorporated into the operation permit for the emissions unit. If the emissions unit obtains an alternate procedure under the provisions of Rule 62-297.620, F.A.C., the procedure shall become a condition of the emissions unit's permit. The Department will retain the authority to require EPA Method 6 or 6C if it has reason to believe that exceedances of the sulfur dioxide emissions limiting standard are occurring. Results of an approved fuel sampling and analysis program shall have the same effect as EPA Method 6 test results for purposes of demonstrating compliance or noncompliance with sulfur dioxide standards. [Rules 62-213.440, 62-296.405(1)(e)3., 62-297.310, 62-297.401, F.A.C.; and, AO03-211310]

{Permitting Note: The permittee has elected to demonstrate compliance with the SO_2 limits specified in

*Specific Condition **A.8.** by means of a continuous emissions monitoring system (CEMS). In addition to any other requirements associated with the operation and maintenance of these CEMS (i.e., Acid Rain requirements), operation of the CEMS shall be in accordance with the requirements listed below. The annual calibration RATA associated with these CEMS may be used in lieu of the required annual EPA Reference Method 6, as long as all of the requirements of Rule 62-297.310, F.A.C., are met (i.e., prior test notification, proper test result submittal, etc.).}*

A.31. Fuel Sampling and Analysis. The following fuel sampling and analysis protocol shall be used as an alternate sampling procedure authorized by permit to demonstrate compliance with the sulfur dioxide standard in the event that the SO_2 continuous emissions monitor is not able to capture valid data:

a. Determine and record the as-fired fuel sulfur content, percent by weight, for liquid fuels using either ASTM D2622-92, ASTM D4294-90, ASTM D1552-(latest edition), both ASTM D4057-88 and ASTM D129-91, or the latest edition, to analyze a representative sample of the blended fuel following each fuel delivery.
b. Determine and record the as-fired fuel sulfur content, percent by weight, for coal using ASTM D2013-72 and ASTM D4239-85, or the latest edition, to analyze a representative sample of the blended as-fired pulverized coal.
c. Determine and record the density (using ASTM D 1298-80, ASTM D4052-(latest edition) or equivalent) and the calorific heat value in Btu per pound (using ASTM D 240-76, or the latest edition) of the fuel oil combusted.
d. Determine and record the calorific heat value in Btu per pound of the blended, as-fired pulverized coal using ASTM D2013-72 and ASTM D5865-(latest version), or the latest edition.
e. Record daily the amount of each fuel fired, the density of the fuel oil, the heating value of each fuel fired, and the percent sulfur content, by weight, of each fuel fired.
f. Utilize the information in a., b., c., d. and e., above, to calculate the SO_2 emission rate to ensure compliance at all times.

[Rules 62-213.440, 62-296.405(1)(e)3., 62-296.405(1)(f)1.b. and 62-297.440, F.A.C.]

A.32. Heat Input. Compliance with the heat input limitations specified in Specific Condition **A.1.** shall be demonstrated solely through the use of the composite fuel samples (see Specific Condition **A.31.c. & d.**) taken by on-site personnel (see Specific Condition **A.39.**) Records of the composite samples (typically taken daily as-fired for solid fuel and per shipment (after blending) for liquid fuel) shall be maintained on-site for a period of five years and shall be made available for Department inspection upon request. [Permit No. 0050014-011-AC]

{Permitting Note: The permittee and the Department agree that the CEMS used for the federal Acid Rain Program conservatively overestimates the heat input for this unit. The monitoring data for heat input is therefore not appropriate for purposes of compliance, including annual compliance certification.}

Recordkeeping and Reporting Requirements

A.33. Reporting Schedule. The following reports and notifications shall be submitted to the Compliance Authority:

Report	Reporting Deadline	Related Condition(s)
Excess Emissions	Quarterly	**A.35.**

A.34. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements.

A.35. Excess Emission Reports. Submit to the Department a written report of emissions in excess of emission limiting standards as set forth in Rule 62-296.405(1), F.A.C., for each calendar quarter. The nature and cause of the excess emissions shall be explained. This report does not relieve the owner or operator of the legal liability for violations. All recorded data shall be maintained on file by the Source for a period of five years. [Rules 62-213.440 and 62-296.405(1)(g), F.A.C.]

A.36. Specific NO_X Reporting Requirement. The permittee shall prepare and submit reports for all required NO_X tests in accordance with the provisions of Rule 62-297.310(8), F.A.C. For each required test run, the report shall indicate the actual heat input rate (MMBtu/hour), the NO_X emission rate (lb/MMBtu) as recorded by the CEMS, and the urea injection rate (lb/hour). The report shall also include copies of the continuous monitoring records for the NO_X emissions. [Rule 62-297.310(8), F.A.C. and Permit No. 0050014-016-AC]

A.37. Annual NO_X Reports. In conjunction with each Annual Operating Report, the permittee shall submit an annual report summarizing the actual NO_X emissions from Units 1 and 2 as determined by the Acid Rain CEMS for each 12-month rolling total for the calendar year. The reports shall identify the date and duration of any periods when the CEMS was off line or unable to report valid data and shall describe how NO_X emissions were determined for these periods and included in the 12-month rolling total. Each report shall be submitted to the Compliance Authority in accordance with the deadline for the Annual Operating Report. The Compliance Authority may request this report at other times within the calendar year. [Rule 62-4.070(3), F.A.C. and Permit No. 0050014-016-AC]

A.38. Hours of Operation Log. For each emissions unit, the permittee shall maintain an operation log available for Department inspection that documents the total hours of annual operation, including a detailed account of the hours operated on each of the allowable fuels. [Rule 62-213.440]

A.39. Fuel Consumption Log. The owner or operator shall maintain daily records of fuel consumption and each analysis that provides the heating value and sulfur content for all fuels fired. These records must be of sufficient detail to determine compliance with the allowable sulfur dioxide emission limitations. [Rules 62-213.440 & 62-4.070(3), F.A.C.]

{Permitting Note: Daily records of fuel consumption are maintained on a 24-hour block (midnight to midnight) basis. Gulf Power will meet greater than a 95% daily sampling rate.}

A.40. CEMS Maintenance Log. A maintenance log of the continuous monitoring systems shall be kept showing:

a. Time out of service.
b. Calibration and adjustments.

[Rule 62-213.440, F.A.C.; and, AO03-211310, Specific Condition 8]

Miscellaneous Conditions

A.41. Used Oil. Burning of on-specification used oil is allowed in this emissions unit in accordance with all other conditions of this permit and the following conditions:

a. *On-specification Used Oil Emissions Limitations.* This emissions unit is permitted to burn on-specification used oil, which contains a Polychlorinated Biphenyl (PCB) concentration of less than 50 ppm. On-specification used oil is defined as used oil that meets the specifications of 40 CFR 279 - Standards for the Management of Used Oil, listed below. "Off-specification" used oil shall not be burned. Used oil which fails to comply with any of these specification levels is considered "off-specification" used oil.

CONSTITUENT/PROPERTY	ALLOWABLE LEVEL
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	1000 ppm maximum

Flash point	100 degrees F minimum

b. *Quantity Limitation*. This emissions unit is permitted to burn "on-specification" used oil that is generated by Gulf Power Company, not to exceed 50,000 gallons per calendar year in each boiler (001 & 002).
c. *PCB Limitation*. Used oil containing a PCB concentration of 50 or more ppm shall not be burned at this facility. Used oil shall not be blended to meet this requirement.
d. *Operational Requirements.* On-specification used oil with a PCB concentration of 2 to less than 50 ppm shall be burned only at normal source operating temperatures. On-specification used oil with a PCB concentration of 2 to less than 50 ppm shall not be burned during periods of startup or shutdown.
e. *Testing Requirements*. For each batch of used oil to be burned, the owner or operator must be able to demonstrate that the used oil qualifies as on-specification used oil and that the PCB content is less than 50 ppm. The requirements of this demonstration are governed by the following federal regulations:

   Analysis of used oil fuel. A generator, transporter, processor/re-refiner, or burner may determine that used oil that is to be burned for energy recovery meets the fuel specifications of Sec. 279.11 by performing analyses or obtaining copies of analyses or other information documenting that the used oil fuel meets the specifications. [40 CFR 279.72(a)]

   Testing of used oil fuel. Used oil to be burned for energy recovery is presumed to contain quantifiable levels (2 ppm) of PCB unless the marketer obtains analyses (testing) or other information that the used oil fuel does not contain quantifiable levels of PCBs.

   (1) The person who first claims that a used oil fuel does not contain quantifiable level (2 ppm) PCB must obtain analyses or other information to support that claim.
   (2) Testing to determine the PCB concentration in used oil may be conducted on individual samples, or in accordance with the testing procedures described in Sec. 761.60(g)(2). However, for purposes of this part, if any PCBs at a concentration of 50 ppm or greater have been added to the container or equipment, then the total container contents must be considered as having a PCB concentration of 50 ppm or greater for purposes of complying with the disposal requirements of this part.
   (3) Other information documenting that the used oil fuel does not contain quantifiable levels (2 ppm) of PCBs may consist of either personal, special knowledge of the source and composition of the used oil, or a certification from the person generating the used oil claiming that the oil contains no detectable PCBs. [40 CFR 761.20(e)(2)]

   When testing is required, the owner or operator shall sample and analyze each batch of used oil to be burned for the following parameters:
   Arsenic, cadmium, chromium, lead, total halogens, flash point and PCBs.
   Testing (sampling, extraction and analysis) shall be performed using approved methods specified in EPA Publication SW-846 (Test Methods for Evaluating Solid Waste, Physical/Chemical Methods).
   Additionally, the owner or operator shall sample and analyze each batch of used oil to be burned for the sulfur content (by weight), density and heat content in accordance with applicable test methods (see Specific Conditions **A.30.** and **A.31.**).

f. *Record Keeping Requirements.* The owner or operator shall obtain, make, and keep the following records related to the use of used oil in a form suitable for inspection at the facility by the Department:
   (1) The gallons of on-specification used oil placed into inventory to be burned and the gallons of on-specification used oil burned each month, and
   (2) For each deposit of used oil, results of the analyses as required by the above conditions, or
   (3) Other information, besides testing, used to make a claim that the used oil meets the requirements of on-specification used oil or that the used oil contains less than 50 ppm of PCBs.
   [40 CFR 279.72(b), 40 CFR 279.74(b) and 40 CFR 761.20(e)]

g. *Reporting Requirements*. The owner or operator shall submit, with the Annual Operation Report form, the analytical results required above and the total amount of on-specification used oil placed into inventory to be burned and the total amount of on-specification used oil burned during the previous calendar year.

[Rules 62-4.070(3) and 62-213.440, F.A.C.; and, 40 CFR 279 and 40 CFR 761, unless otherwise noted.]

A.42. Ambient Monitoring Requirements. Owners of fossil fuel steam generators shall monitor their emissions and the effects of the emissions on ambient concentrations of sulfur dioxide, in a manner, frequency, and locations approved, and deemed necessary and ordered by the Department. [Rule 62-296.405(1)(c)3., F.A.C.]

{Permitting Note: No ambient monitoring stations are deemed necessary nor ordered by the Department at this time.}

40 CFR 63, Subpart UUUUU Requirements

A.43. Subpart UUUUU Requirements. In addition to the emissions limits shown above, the permittee shall also comply with the following emissions limits no later than April 16, 2016. Note, the permittee was granted a one year extension by the Department (see Appendix 40 CFR 63, Subpart UUUUU) to come into compliance with these emission limits. The normal compliance date is April 16, 2015.

a. *Filterable Particulate Matter (PM).* Emissions of PM shall not exceed either 0.030 pound/million British thermal unit (lb/MMBtu) or 0.30 pound per megawatt-hour (lb/MWh). In lieu of the filterable PM emission limit, the permittee may select to meet a total non-Hg HAP metals emission limit of either 5.0 x 10^{-5} lb/MMBtu or 0.50 pounds per gigawatt-hour (lb/GWH). Finally, in lieu of ether filterable PM or total non-Hg HAP metals emission limits the permittee my meet the following individual HAP metal emission limits:

(1) Antimony (Sb) - 0.80 pounds per terra Btu (lb/TBtu) or 8.0 x 10^{-3} lb/GWh.
(2) Arsenic (As) - 1.1 lb/TBtu or 0.020 lb/GWh.
(3) Beryllium (Be) - 0.20 lb/TBtu or 2.0 x 10^{-3} lb/GWh.
(4) Cadmium (Cd) - 0.30 lb/TBtu or 3.0 x 10^{-3} lb/GWh.
(5) Chromium (Cr) - 2.8 lb/TBtu or 0.030 lb/GWh.
(6) Cobalt (Co) - 0.80 lb/TBtu or 8.0 x 10^{-3} lb/GWh.
(7) Lead (Pb) - 1.2 lb/TBtu or 0.020 lb/GWh.
(8) Manganese (Mn) - 4.0 lb/TBtu or 0.050 lb/GWh.
(9) Nickel (Ni) - 3.5 lb/TBtu or 0.040 lb/GWh.
(10) Selenium (Se) - 5.0 lb/TBtu or 0.060 lb/GWh.

b. *Hydrogen Chloride (HCl).* Emissions of HCl shall not exceed either 2.0 x 10-3 lb/MMBtu or 0.020 lb/MWh. In lieu of HCl emission limit, the permittee may select to meet a SO_2 emission limit of either 0.20 lb/MMBtu or 1.5 lb/GWH.

c. *Mercury (Hg).* Emissions of Hg shall not exceed either 1.2 lb/TBtu or 0.013 lb/GWh.

Compliance with the above emissions limits shall be demonstrated pursuant to one of the available options specified in 40 CFR 63, Subpart UUUUU (see attached Appendix 40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units). The permittee shall also comply with the recordkeeping and reporting requirements and all other applicable requirements specified Subpart UUUUU. [40 CFR 63 Subpart UUUUU]

{Permitting Note: Power output is on a gross basis for compliance with applicable emission limits. You may not use the alternate SO_2 emission limit in lieu of the HCl limit if your Electric Utility Steam Generating Unit does not have some form of FGD system and SO_2 CEMS installed.}

A.44. Other Reporting Requirements.

a. *Preliminary Design.* The permittee shall as soon as practicable and no later than January 31, 2015 submit to the Department updated project details including the selection of implementation strategies including but not limited to: the capacity and location of the DSI systems and associated silos; approximate fuel sulfur specifications and potential sources; contemplated improvements to the electrostatic precipitators, reorientation of components such as the air heaters; and contemplated modifications and improvements to coal and ash handling systems. [Rule 62-4.070, F.A.C. (Reasonable Assurance) and Permit No. 0050014-020-AC]

b. *Estimates of Projected Actual Emissions.* The permittee shall as soon as practicable and no later than January 31, 2015 submit to the Department updated estimates of baseline actual emissions and future actual emissions of SO_2, Nitrogen oxides (NO_X), carbon monoxide (CO), PM, PM smaller than 10 microns (PM_{10}) and ($PM_{2.5}$) in accordance with the procedures specified in Rule 62-210.200, F.A.C. [Rules 62-4.070, F.A.C. (Reasonable Assurance) and Rule 62-210.200, F.A.C. (Definitions: Potential-to-Emit, Actual Baseline Emissions; Projected Actual Emissions and Significant Emissions Rate) and Permit No. 0050014-020-AV]

Permit Conditions Related to the MATS Compliance Date Extension

A.45. Compliance Date. For affected Units 1 and 2, the MATS compliance date is extended from April 16, 2015 to April 16, 2016 for all requirements subject to the conditions in this section. [40 CFR 63.6(i); and Rule 62-204.800(11)(d)1., F.A.C.]

A.46. Transmission System Upgrades. The permittee shall complete the transmission system upgrades authorized by the Florida Public Service Commission in its December 19, 2013 order. The permittee shall meet the following schedule for completing these transmission systems upgrades, unless the permittee notifies the Department in advance:

Transmission System Upgrade Description	Target Completion
Holmes Creek - Bonifay Tap Section Rebuild Double Circuit (Chipley Tap)	April 2015
Holmes Creek - Highland City New 230 kV Transmission Line	April 2015
Holmes Creek - Highland City Capacitor Autobank (230/115 kV Ring Bus)	April 2015
Highland City +/- 100 MVAR Static VAR Compensator (SVC)	April 2015
System operations monitoring, verification and experience	April 15, 2016

By the 15th day of each month, beginning the month following the effective date of this permit, the permittee shall provide a written status report for the previous month on the transmission system upgrades and an updated schedule if necessary to the Division and Compliance Authority. The permittee shall provide advance notice to the Division and Compliance Authority if it is unable to meet a target in the above schedule and shall identify a new completion date. Once the transmission system upgrades are complete, these reports shall summarize the findings of the monthly on-site inspections of each SVC and any other monitoring and verification activities. [40 CFR 63.6(i)(10) and (11), Rule 62-204.800(11)(d)1., F.A.C., and Rule 62-4.070, F.A.C.]

A.47. Units 1 and 2 - Limited Operation. To minimize MATS-related emissions during the one-year extension period, the permittee shall limit operation to only one affected unit (Unit 1 or 2) and operate that unit at the minimum level necessary to maintain stable generating unit operations in compliance with all other conditions of this permit. However, in the event of a transmission system condition resulting in a potential or actual reliability issue during the one-year extension period, Units 1 and/or 2 may operate in a manner that system control deems necessary to mitigate or eliminate the reliability issue in compliance with all other conditions of this permit. During the one-year extension period, Units 1 and 2 shall not be dispatched for any other reasons. Within 15 days following each calendar quarter, the permittee shall submit a summary report identifying the hours of operation and the capacity factor for each unit. The report shall provide an explanation for each event requiring operation of the units to resolve a reliability issue (e.g., new transmission system upgrades unavailable or unable to stabilize grid and other circumstances). [40 CFR 63.6(i)(10) and (11), Rule 62-204.800(11)(d)1., F.A.C., and Rule 62-4.070, F.A.C.]

*{Permitting Note: During the MATS extension period, Specific Condition **A.47.** supersedes and replaces Specific Condition **A.4.**}*

A.48. Units 1 and 2 - Off-Line. Before April 16, 2016, the permittee shall cease operating Units 1 and 2. If the permittee wishes to operate Unit 1 and 2, the permittee shall apply for and obtain any air construction permits prior to installing any additional air pollution control equipment needed to comply with the MATS rule. Thereafter, Units 1 and 2 shall operate only in full compliance with the MATS rule upon recommencing operations. [40 CFR 63.6(i)(10), Subpart UUUUU in 40 CFR 63, and section 112(i)(3)(A) of the Clean Air Act]

Subsection B. Emissions Unit 003

The specific conditions in this section apply to the following emissions unit:

EU No.	Brief Description
003	Combustion Turbines A & B, 542 MMBtu/hr Peaking Unit

Emissions unit number 003 is a Pratt and Whitney Twin-Pac combustion turbine-generator set consisting of two combustion turbines with separate stacks powering a common 40 MW electrical generator. The combustion turbines are designated as combustion turbine A and combustion turbine B. The Twin-Pac system has a maximum heat input of 542 million Btu per hour (MMBtu/hour) while being fueled by No. 2 fuel oil with a maximum sulfur content of 0.5%, by weight. Emissions from these combustion turbines are uncontrolled.

{Permitting notes: This emissions unit is regulated under Rule 62-210.300, F.A.C., Permits required and 62-296.470 CAIR. These turbines are not subject to 40 CFR 60, Subpart GG, Standards of Performance for New Stationary Gas Turbines. Each combustion turbine has its own stack. Stack heights = 33 feet, exit dimensions = 13'-7" x 10'-2", exit temperatures = 1,200 ºF, actual volumetric flow rate (total for both stacks) = 1,069,740 acfm. They began commercial operation on May 18, 1971.}

<u>Essential Potential to Emit (PTE) Parameters</u>

B.1. <u>Permitted Capacity</u>. The maximum allowable heat input rate is as follows:

EU No.	MMBtu/hr Heat Input	Fuel Type
003	542	No. 2 Fuel Oil

[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

B.2. <u>Emissions Unit Operating Rate Limitation After Testing</u>. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(2), F.A.C.]

B.3. <u>Methods of Operation</u>. Only new No. 2 fuel oil shall be fired in this combustion turbine engine. [Rule 62-213.410, F.A.C.; Applicant's request in Title V permit renewal application received May 19, 2014]

B.4. <u>Hours of Operation</u>. These emissions units may operate continuously (8,760 hours/year). [Rule 62-210.200(PTE), F.A.C.]

<u>Emission Limitations and Standards</u>

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging time(s) for Specific Conditions **B.5. - B.7.** are based on the specified averaging time of the applicable test method.

B.5. <u>Visible Emissions</u>. Visible emissions from each combustion turbine stack shall not be equal to or greater than 20 percent opacity. [Rule 62-296.320(4)(b)1., F.A.C. and AO03-249657]

B.6. <u>Sulfur Dioxide - Sulfur Content</u>. The sulfur content of the new No. 2 fuel oil shall not exceed 0.5 percent, by weight (see Specific Condition **B.11.)**. The permittee shall maintain a log available for Department inspection of the fuel sulfur content. [Rule 62-213.440, F.A.C. and AO03-249657]

B.7. <u>Facility-wide NO_X Emissions Cap</u>. In addition to the above requirements, emissions unit -003 is also subject to the facility-wide NO_X emissions cap of 6,666 tons per year. See Facility-wide Conditions **FW10.** and **FW11.**

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C. cannot vary any requirement of an NSPS, NESHAP or Acid Rain program provision.

B.8. Excess Emissions Allowed. Excess emissions from these emissions units resulting from startup, shutdown or malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

B.9. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented during startup, shutdown or malfunction, shall be prohibited. [Rule 62-210.700(4), F.A.C.]

Monitoring of Operations

B.10. Sulfur Dioxide. The permittee shall demonstrate compliance with the liquid fuel sulfur limit by means of a fuel analysis provided by the vendor upon each fuel delivery. See Specific Conditions **B.6.** and **B.11.** [Rule 62-213.440, F.A.C.]

Test Methods and Procedures

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

B.11. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
9	Visual Determination of the Opacity of Emissions from Stationary Sources
ASTM D2622-92 or ASTM D4294.90 ASTM D4057-88 and ASTM D129-91	The fuel sulfur content, percent by weight, for liquid fuels shall be evaluated using either these methods or the latest edition.

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-213.440, 62-296.320(4)(b)4.9., 62-297.401 F.A.C. and 62-297.440, F.A.C.]

B.12. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

B.13. Annual Compliance Tests Required. During each federal fiscal year (October 1st to September 30th), this unit shall be tested to demonstrate compliance with the emissions standards for VE. [Rule 62-297.310(7), F.A.C.]

B.14. Compliance Tests Prior To Renewal. Compliance tests shall be performed for VE once every 5 years. The tests shall occur prior to obtaining a renewed operating permit to demonstrate compliance with the emission limits in Specific Condition **B.5.** [Rules 62-210.300(2)(a) and 62-297.310(7)(a), F.A.C.]

{Permitting Note: Tests which are only required once during the term of a permit prior to obtaining a renewed permit should be performed roughly five years from the previous test.}

Recordkeeping and Reporting Requirements

B.15. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements.

B.16. Hours of Operation Log. The permittee shall maintain an operation log available for Department inspection that documents the total hours of annual operation. [Rules 62-213.440 & 62-210.200(PTE), F.A.C.]

Miscellaneous Conditions

B.17. Periodic Monitoring Requirements. The owner or operator shall conduct testing for visible emissions, using EPA Method 9, while the combustion turbine is operating at 90-100 percent of its capacity, according to the following schedule: Upon exceeding 400 hours of operation on fuel oil, and every 150 hours of operation on fuel oil thereafter, in any given federal fiscal year (October 1 through September 30), the owner or operator shall conduct a visible emissions test on each of these combustion turbines while firing fuel oil. These tests shall be performed within 20 days of exceeding such operating hours. Regardless of the number of hours of operation on fuel oil, at least one compliance test shall be conducted on each combustion turbine every five years, coinciding with the term of this operation permit. [Rules 62-213.440(4) and 62-297.310(7), F.A.C.]

Subsection C. Emissions Units 004 & 005 and 006

The specific conditions in this section apply to the following emissions units:

EU No.	Brief Description
004	Combined Cycle Combustion Turbine Generator - *Facility Identification Unit No. 1 (CC-1)*
005	Combined Cycle Combustion Turbine Generator - *Facility Identification Unit No. 2 (CC-2)*
006	Salt Water Cooling Tower

Emission units 004 and 005 (collectively designated as Gulf Smith Unit 3) consist of a General Electric Model No. PG7241 (FA), combined-cycle combustion turbine with electrical generator set and General Electric OpFlex Peak enhancement package designed to expand the peak power production profile. Continuous Dynamics Monitoring (CDM) system installed to ensure that the combustion system parameters are kept at optimal performance. CDM is part of the remote dry low-NO_X (DLN) tuning service provided by General Electric.

The unit will achieve a nominal 566 megawatts, at annual average site conditions, with duct burners. These units are capable of a maximum of approximately 574 megawatts in combined cycle operation with power augmentation and evaporative cooling at 95 degrees F. The maximum heat input of the combustion turbines is a nominal 1,927 MMBtu/hr Lower Heat Value (LHV) at 65 degrees F each. The maximum heat input of the duct burners is a nominal 303 MMBtu/hr (LHV at 65 degrees F) each. The plant includes two 121-foot stacks; a small heater for the gas pipeline; and a 10-cell, mechanical draft salt water cooling tower. The cooling tower is not subject to a NESHAP because chromium-based chemical treatment is not used. Simple cycle operation is not a permitted activity. Support facilities for Unit 3 include water treatment and storage facilities. Emissions from Units -04 and -005 are controlled by Dry Low NO_X (DLN) combustors firing exclusively natural gas. Inherently clean fuels and good combustion practices are employed to control all pollutants. Emission unit -006 is a regulated salt water cooling tower for Smith units -004 and -005 and is equipped with drift eliminators.

{Permitting notes: These units began commercial operation during January of 2002. Units -004 and -005 are regulated under Acid Rain, Phase II. In addition, these CT's are regulated under: NSPS - 40 CFR 60, Subpart GG (Standards of Performance for Stationary Gas Turbines), which is adopted and incorporated by reference in Rule 62-204.800(7)(b), F.A.C.; a BACT determination (PSD-FL-269), dated July 28, 2000; Air Construction Permit No. 0050014-002-AC, issued July 28, 2000; and, Air Construction Permit revision project No. 0050014-003-AC. The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not required to demonstrate compliance with non-NSPS permit standard(s). Stack heights = 121 feet, exit diameters = 16.8 feet, exit temperatures = 186 ºF, actual volumetric flow rates = 981,334 acfm.}

Essential Potential to Emit (PTE) Parameters

C.1. Permitted Capacity. The maximum allowable heat input rate is as follows:

a. *Combustion Turbine Capacity*. The maximum heat input rate, based on the lower heating value (LHV) of the fuel at ambient conditions of 65°F temperature, 100% load, and 14.7 psi pressure shall not exceed 1,927 million Btu per hour (MMBtu/hr) for each combustion turbine when firing natural gas. The maximum heat input rates will vary depending upon ambient conditions and the combustion turbine characteristics. Manufacturer's curves corrected for site conditions or equations for correction to other ambient conditions shall be provided to the Department of Environmental Protection (DEP) within 45 days of completing annual compliance testing.

b. *Heat Recovery Steam Generator equipped with Duct Burner*. The maximum heat input rate of each natural gas fired duct burner shall not exceed 303 MMBtu/hour (LHV).

[Rules 62-4.160(2) & 62-210.200(PTE), F.A.C.; and, 0050014-002-AC & 0050014-003-AC].

C.2. Emissions Unit Operating Rate Limitation After Testing. See the related testing provisions in Appendix TR, Facility-wide Testing Requirements. [Rule 62-297.310(2), F.A.C. and 0050014-002-AC]

C.3. Methods of Operation-Fuel. Pipeline natural gas is the only fuel allowed to be fired in the two combined-cycle combustion turbines. [Rule 62-213.410, F.A.C. and 0050014-002-AC]

*{Permitting Note: For the purposes of Subsection C. of this permit, "pipeline natural gas" means natural gas with a sulfur content of less than 2.0 grains per dry standard cubic foot that is provided by the natural gas pipeline transmission company. (See Specific Condition **C.10.**)}*

C.4. Hours of Operation. Maximum allowable hours of operation for the 566 MW Combined Cycle Plant are 8,760 hours per year while firing natural gas. Combined operation in steam power augmentation mode plus OpFlex Peak mode is limited to1,000 hours per year per unit. [Rule 62-210.200 F.A.C. (Definitions-Potential Emissions) and permit No's 0050014-002-C and 0050014-019-AC]

Control Technology

C.5. NO_X Control. Dry Low NO_X (DLN) combustors shall be maintained on the stationary combustion turbine and Low NO_X burners shall be maintained in the duct burner arrangement to comply with the NO_X emissions limits listed in Specific Condition **C.9.** DLN systems shall each be maintained as per manufacturer's recommendation. [Rules 62-4.070 and 62-204.800(7), F.A.C. to avoid PSD Review; and, 0050014-002-AC]

C.6. PM Control. Drift eliminators shall be maintained on the cooling tower to reduce PM/PM_{10} emissions. [0050014-002-AC]

Emission Limitations and Standards

{Permitting Note: The attached Table 1, Summary of Air Pollutant Standards, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Unless otherwise specified, the averaging times for Specific Conditions **C.7. - C.12.** are based on the specified averaging time of the applicable test method.

C.7. Emissions Summary.

a. The following table is a summary of the BACT determination and is followed by the applicable specific conditions. Values are corrected to 15% O_2 on a dry basis. These limits, or their equivalent in terms of lb/hr or NSPS units, as well as the applicable averaging times, are followed by the applicable specific conditions.

Emission Unit	NO_X (1)	CO BACT	SO_2/SAM BACT	VOC BACT	PM/Visibility (% Opacity)	Technology and Comments
C.T.'s: With Duct Burners	82.9 lb/hr	16 ppm @ 15% O_2	2 gr/100 scf natural gas (3)	4 ppm @ 15% O_2	10%	Dry Low NO_X Combustors Natural Gas, Good Combustion
DB	0.1 Ib/MMBtu					
Steam Power Augmentatio n	113.3 lb/hr	23 ppm @ 15% O_2	2 gr/100 scf natural gas (3)	6 ppm @ 15% O_2	10%	Unit limited to 1000 hours per year of operation
OpFlex Peak Enhancement	113.3 lb/hr	23 ppm @ 15% O_2	2 grains per 100 scf of natural gas	NA[e]	10%	Continuous Dynamics Monitoring system
Cooling Tower					18.2 lb/hr (2)	Drift Eliminators

(1) NO_X limits not determined by BACT.
(2) Listed for informational purposes only.
(3) See Fuel Monitoring Schedule in Specific Condition **C.15.**

b. In addition to the above conditions that were established by permit 0050014-002-AC, emissions units -004 and -005 are also independently subject to all of the emission standards and requirements of 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines included with permit as Appendix NSPS subpart GG. Particularly the NO_X emission standard contained in 40 CFR 60.332(a)(1), which must be corrected to ISO conditions. [Rules 62-212.400, 62-204.800(7)(b) (Subpart GG and Da), 62-210.200 (Definitions-Potential Emissions) F.A.C.; 40 CFR 60 Subpart GG; and, permit No. 0050014-002-AC]

c. The Opflex peaking mode will be used to displace some of the steam power augmentation mode and is subject to the same emissions standards and initial Best Available Control Technology (BACT) determinations. [Permit No. 0050014-019-AC]

d. Emissions of NO_X in the stack exhaust gas with the combustion turbine operating in the Opflex peaking mode with or without duct firing shall not exceed 113.3 lb/hour based on a 30-day rolling average of data collected by the continuous emissions monitor system (CEMS) and prorated daily as necessary based upon hours of operation per operating mode. [Permit No. 0050014-019-AC]

e. Compliance with the CO emissions standard shall be demonstrated by stack testing accordance with Method 10, promulgated by the Environmental Protection Agency (EPA). [Permit No. 0050014-019-AC] *{Permitting Note: For informational purposes, the CO limit equates to 116.6 lb/hour. Compliance with the CO limit also provides reasonable assurance that VOC emissions are very low (<6 ppmvd @ 15% O_2)}*

f. Emissions of SO_2 and SAM shall be minimized by the firing of natural gas meeting this fuel sulfur specification. Compliance with this requirement may be demonstrated with data collected from the natural gas pipeline transmission company in conjunction with the current NSPS Custom Fuel Monitoring Schedule specified in the Title V air operation permit. [Permit No. 0050014-019-AC]

g. Compliance with the visible emissions standard shall be determined by EPA Method 9. [Permit No. 0050014-019-AC]

C.8. Visible Emissions. VE emissions shall serve as a surrogate for PM/PM_{10} emissions from the combustion turbine operating with or without steam augmentation and/or the duct burner and shall not exceed 10 percent opacity from the stack in use. PM/PM_{10} emissions (for information only) are up to 43 lb/hr. [Rules 62-4.070, 62-212.400 & 62-204.800(7), F.A.C.; and, 0050014-002-AC]

C.9. NO_X Emissions.

a. Emissions of NO_X in the stack exhaust gas, with the combustion turbine operating and the duct burner on shall not exceed 82.9 lb/hr (30 day rolling average). Emissions of NO_X in the stack exhaust gas, with the combustion turbine operating with steam augmentation and the duct burner on shall not exceed 113.3 lb/hr (30 day rolling average). Compliance will be determined by the continuous emission monitor system (CEMS) and prorated daily as necessary based upon hours of operation per operating mode. Emissions of NO_X in the stack exhaust gas with the combustion turbine operating with the duct burner on shall not exceed 82.9 lb/hr and 113.3 lb/hr with steam augmentation to be demonstrated by initial stack test.

b. Emissions of NO_X from the duct burner shall not exceed 0.1 lb/MMBtu, which is more stringent than the NSPS.

c. When NO_X monitoring data is not available, substitution for missing CEMS data shall be handled as required by Title IV (40 CFR 75) to calculate any specified average time. Heat input for these periods shall be determined by fuel sampling and measurement.

d. Facility-wide NO_X emissions cap: In addition to individual (point source) emission limits and NO_X averaging plan requirements, the Lansing Smith facility shall be required to comply with a facility-wide NO_X emissions cap of 6,666 TPY. CEMS shall be the method of compliance for reporting and record-keeping requirements. (See specific condition **FW10.**)

[Rules 62-4.070 and 62-204.800(7), F.A.C. to avoid PSD Review; and, 0050014-002-AC]

C.10. Sulfur Dioxide. SO_2 emissions shall be limited by firing natural gas with a total sulfur content less than 2 grains per 100 standard cubic foot as determined and provided by the natural gas pipeline transmission company. Compliance with this requirement in conjunction with implementation of the Custom Fuel Monitoring Schedule in Specific Condition **C.15.** will demonstrate compliance with the applicable NSPS SO_2 emissions limitations from the duct burner or the combustion turbine. {For informational purposes, annual SO_2 emissions will be up to 105 TPY} [40 CFR 60 Subpart GG; Rules 62-4.070, 62-212.400 & 62-204.800(7), F.A.C.; and, 0050014-003-AC]

C.11. Carbon Monoxide. Emissions of CO in the stack exhaust gas with the combustion turbine operating and duct burner on shall exceed neither 16 ppm nor 23 ppm (@ 15%O_2) with steam augmentation to be demonstrated annually by stack testing using EPA Method 10. {For informational purposes, this equates to 78.7 lb/hr and 116.6 lb/hr respectively} [Rule 62-212.400, F.A.C. and 0050014-002-AC]

C.12. Volatile Organic Compounds. Emissions of VOC in the stack exhaust gas with the combustion turbine operating and duct burner on shall exceed neither 4 ppm nor 6 ppm (@ 15%O_2) with steam augmentation to be demonstrated by initial stack test using EPA Method 18, 25 or 25A. {For informational purposes, this equates to 10.2 lb/hr and 16.8 lb/hr respectively} [Rule 62-212.400, F.A.C. and 0050014-002-AC]

Excess Emissions

Rule 62-210.700 (Excess Emissions), F.A.C. cannot vary any requirement of an NSPS, NESHAP or Acid Rain program provision.

C.13. Excess Emissions Prohibited. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. Such preventable emissions shall be included in the calculation of the 30-day rolling averages compiled by the continuous NO_X emissions monitor. [Rule 62-210.700(4), F.A.C. and 0050014-002-AC]

Monitoring of Operations

C.14. CAM Plan. These emissions units are subject to the Compliance Assurance Monitoring (CAM) requirements contained in the attached Appendix CAM. Failure to adhere to the monitoring requirements specified does not necessarily indicate an exceedance of a specific emissions limitation; however, it may constitute good reason to require compliance testing pursuant to Rule 62-297.310(7)(b), F.A.C. [40 CFR 64; Rules 62-204.800 and 62-213.440(1)(b)1.a., F.A.C.]

C.15. Natural Gas Monitoring Schedule. A custom fuel monitoring schedule pursuant to 40 CFR 75 Appendix D for natural gas may be used in lieu of the daily sampling requirements of 40 CFR 60.334 (b)(2) provided the following requirements are met (monitoring of nitrogen content is not required):

a. The permittee shall apply for an Acid Rain permit within the deadlines specified in 40 CFR 72.30.
b. The permittee shall submit a monitoring plan, certified by signature of the Designated Representative, that commits to using a primary fuel of pipeline supplied natural gas pursuant to 40 CFR 75.11(d)(2).
c. Each unit shall be monitored for SO_2 emissions using methods consistent with the requirements of 40 CFR 75 and certified by the USEPA.
d. This custom fuel monitoring schedule will only be valid when pipeline natural gas is used as a primary fuel. If the primary fuel for these units is changed to a higher sulfur fuel, SO_2 emissions must be accounted for as required pursuant to 40 CFR 75.11(d).

Gulf Power shall notify DEP of any change in natural gas supply for reexamination of this monitoring schedule. A substantial change in natural gas quality (i.e., sulfur content variation of greater than 1 grain per 100 cubic foot of natural gas) shall be considered as a change in the natural gas supply. Sulfur content of the natural gas will be monitored weekly by the natural gas supplier during the interim period when this monitoring schedule is being reexamined. [0050014-002-AC]

Continuous Monitoring Requirements

C.16. NO_X CEMS. The permittee shall maintain and operate a continuous emission monitor in the stack to measure and record the nitrogen oxides emissions from these units. Periods when NO_X emissions are above the standards, listed in Specific Conditions **C.7.** and **C.9.**, shall be reported to the DEP Northwest District Office within one working day (verbally) followed up by a written explanation postmarked not later than three (3) working days (alternatively by facsimile within one working day). [Rules 62-204.800, 62-210.700, 62-4.130, 62-4.160(8), F.A.C.; 40 CFR 60.7 (1998 version); and, 0050014-002-AC]

C.17. NO_X CEMS Requirements for Continuous Compliance. Continuous compliance with the NO_X emission limits shall be demonstrated with the CEM system based on the applicable averaging time of 30 day rolling average. Based on CEMS data, a separate compliance determination is conducted at the end of each operating day and a new average emission rate is calculated from the arithmetic average of all valid hourly emission rates from the previous operating day. A valid hourly emission rate shall be calculated for each hour in which at least two NO_X concentrations are obtained at least 15 minutes apart. A valid operating day shall consist of at least one valid operating hour. These excess emissions periods shall be reported as required. Continuous compliance with the 0.1 lb/MMBtu limit for the duct burners will be demonstrated through continuous compliance with the combined duct burner and CT emission limits. [Rule 62-4.070 and 62-204.800(7), F.A.C. to avoid PSD Review; and 0050014-002-AC]

{Permitting Note: The requirements for the NO_X CEMS which are installed and maintained in accordance with 40 CFR 75 are at least as stringent as the requirements of 40 CFR 60, and are an acceptable alternative.}

C.18. CEMS for reporting excess emissions. The NO_X CEMS shall be used in lieu of the requirement for reporting excess emissions in accordance with 40 CFR 60.334(c)(1), Subpart GG (1998 version). Upon request from DEP, the CEMS emission rates for NO_X on the CT's shall be corrected to ISO conditions to demonstrate compliance with the NO_X standard established in 40 CFR 60.332. [0050014-002-AC]

Test Methods and Procedures

{Permitting Note: The attached Table 2, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

C.19. Test Methods. Required tests shall be performed in accordance with the following reference methods:

Method	Description of Method and Comments
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography
20	Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines
25 and or 25A	Method for Determining Gaseous Organic Concentrations (Flame Ionization)

The above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rule 62-297.401, F.A.C. and Permit No. 0050014-002-AC]

C.20. Common Testing Requirements. Unless otherwise specified, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

C.21. Annual Compliance Tests Required. During each federal fiscal year (October 1st to September 30th), EU -004 and -005 shall be tested to demonstrate compliance with the emissions standards for CO, VE and NO_X. Annual compliance with the applicable NO_X emissions standards shall also be demonstrated with valid data collected by the required CEM systems during the required annual RATA at permitted capacity. Continuous compliance shall be demonstrated as specified in Specific Condition **C.17.** [Rule 62-297.310(7), F.A.C. and Permit No. 0050014-002-AC]

C.22. Compliance Tests Prior To Renewal. Compliance tests shall be performed for CO and VE once every 5 years while operating in the OpFlex peaking mode. The tests shall occur prior to obtaining a renewed operating permit to demonstrate compliance with the emission limits in Specific Conditions **C.9. - C.12.** [Rules 62-210.300(2)(a), 62-297.310(7)(a), F.A.C. and 0050014-019-AC]

{Permitting Note: Tests which are only required once during the term of a permit prior to obtaining a renewed permit should be performed roughly five years from the previous test.}

Additional Compliance Test Requirements

C.23. Compliance with the SO_2 and PM/PM_{10} emission limits. Notwithstanding the requirements of Rule 62-297.310(7), F.A.C., the use of pipeline natural gas is the method for determining compliance for SO_2 and PM_{10}. For the purposes of demonstrating compliance with the 40 CFR 60.333 SO_2 standard, ASTM methods D4084-82 or D3246-81 (or equivalent) for sulfur content of gaseous fuel shall be utilized in accordance with the EPA-approved custom fuel monitoring schedule, or natural gas supplier data may be submitted, or the natural gas sulfur content referenced in 40 CFR 75 Appendix D may be utilized. However, the applicant is responsible for ensuring that the procedures in 40 CFR 60.335 or 40 CFR 75 are used when determination of fuel sulfur content is made. Analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency pursuant to 40 CFR 60.335(e) (1998 version). [BACT and 0050014-002-AC]

C.24. Compliance with CO emission limit. Annual compliance testing for CO may be conducted at less than capacity when compliance testing is conducted concurrent with the annual RATA testing for the NO_X CEMS required pursuant to 40 CFR 75. As an alternative to annual testing in a given year, periodic tuning data may be provided to demonstrate compliance in the year the tuning is conducted. [0050014-002-AC]

C.25. Compliance with the VOC emission limit. An initial test was required to demonstrate compliance with the VOC emission limit. Thereafter, the CO emission limit and periodic tuning data will be employed as surrogate and no annual testing is required. [0050014-002-AC]

C.26. Tests After Substantial Modifications. All performance tests required for initial startup shall also be conducted after any substantial modification and appropriate shakedown period of air pollution control equipment including the replacement of dry low-NO_X combustors. Shakedown periods shall not exceed 100 days after re-starting the combustion turbine. [0050014-002-AC]

Recordkeeping and Reporting Requirements

C.27. Reporting Schedule. The following reports and notifications shall be submitted to the Compliance Authority:

Report	Reporting Deadline	Related Condition(s)
Excess Emissions	Quarterly	**C.29.**
Excess Emissions - Malfunctions	Quarterly (if requested)	**C.32.**

C.28. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements.

C.29. Quarterly Reports. Quarterly excess emission reports, in accordance with 40 CFR 60.7(a)(7)(c) (1998 version), shall be submitted to the DEP Northwest District Office. [0050014-002-AC]

C.30. Operational Records. To demonstrate compliance with the operational restriction on hours, the permittee shall maintain records of the hours of operation of each combustion turbine when operating in OpFlex Peaking mode and steam power augmentation mode. [Rule 62-4.070(3), F.A.C. and 0050014-019-AC]

C.31. Actual Emissions Reporting. This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.

a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit.

b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 5-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

1) The name, address and telephone number of the owner or operator of the major stationary source;
2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;
3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and
4) Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

For this project, the permit requires the annual reporting of actual NOx emissions for the following units: EU 004 and EU 005 Combined Cycle Combustion Turbine and Generator Sets.

[Application 0050014-019-AC; and Rules 62-212.300(1)(e) and 62-210.370, F.A.C.]

C.32. Excess Emissions Report. If excess emissions occur for more than two hours due to malfunction, the owner or operator shall notify DEP Northwest District office within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, all excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. Following this format, 40 CFR 60.7, periods of startup, shutdown, malfunction, shall be monitored, recorded, and reported as excess emissions when emission levels (in terms of applicable averaging periods) exceed the permitted standards listed in Specific Conditions **C.7. - C.12.** [Rules 62-4.130, 62-204.800, 62-210.700(6), F.A.C.; 40 CFR 60.7 (1998 version); and, 0050014-002-AC]

{Permitting Note: This condition does not relieve the permittee from complying with the more stringent requirements of Rules 62-4.130, 62-4.160 and 62-210.700(6), F.A.C. for "immediately" reporting excess emissions due to malfunctions (see condition RR2 of Appendix RR, Facility-wide Reporting Requirements).}

Other Requirements

C.33. Federal Rule Requirements. In addition to the specific conditions listed above, this emissions unit is also subject to the applicable requirements contained in 40 CFR 60, Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978, attached to this permit as Appendix NSPS, Subpart Da - Standards of Performance for Electric Utility Steam Generating Units. [0050014-002-AC]

The specific conditions in this section apply to the following emissions units:

ID No.	Emission Unit Description
009	59 HP Non-Emergency Building Sump Pump Engine 394 HP Emergency Generator for Units 1 & 2 160 HP Emergency Fire Pump #1 160 HP Emergency Fire Pump #2

Emissions Unit 009 consists of one non-emergency building sump pump engine, one emergency generator and two emergency diesel engine-driven fire pumps #1 & #2.

The following table provides important details for the engines collectively regulated as EU 009:

Engine Identification	Engine Brake HP	Date of Construction	Model Year	Engine Manufacturer	Model No.
Non-Emergency Building Sump Pump Engine	59	Pre-2001	Pre-2001	Lister Diesel	HR4
Emergency Generator	394	2003	2003	Volvo	D250 9.6A60
Emergency Fire Pump #1	160	Pre-2001	1984	Detroit Diesel	10647110
Emergency Fire Pump #2	160	Pre-2001	1984	Detroit Diesel	10647110

{Permitting Notes: These compression ignition reciprocating internal combustion engines (CI RICE) are regulated under 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) adopted in Rule 62.204.800(11)(b), F.A.C. This permit section addresses "existing" stationary CI RICE less than or equal to 500 HP with a displacement of less than 10 liters per cylinder that are located at a major source of HAP, that commenced construction before 6/12/2006, and that have not been modified or reconstructed after this date. If the RICE are modified or reconstructed after 7/11/2005, the NSPS 40 CFR 60, Subpart IIII, will then apply. }

Essential Potential to Emit (PTE) Parameters

D.1. Hours of Operation.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 63.6640(f)(1)]

b. *Other Situations*. You may operate your emergency stationary RICE for any combination of the purposes specified in paragraphs b.(1) through (3) for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph c.(1) counts as part of the 100 hours per calendar year allowed by this condition.

(1) Maintenance and Testing. Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year. [40 CFR 63.6640(f)(2)(i)]

(2) Emergency Demand Response. The emergency engines may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see 40 CFR 63.14), or other authorized entity as determined by the

Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3. [40 CFR 63.6640(f)(2)(ii)]

(3) Voltage or Frequency Deviations. The emergency generator may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency. [40 CFR 63.6640(f)(2)(iii)]

c. *Non-emergency Situations*.

(1) The emergency diesel sump pump engine, the emergency diesel fire pump engines, and the emergency diesel generator engine may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph b., above. The 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 63.6640(f)(3)]

(2) The non-emergency building sump pump engine may operate as needed, provided the requirements of Specific Condition **D.2.** are met. [40 CFR 63.6640(a)]

D.2. Work or Management Practice Standards.

a. *Oil*. Change oil and filter every 500 hours of operation for the emergency engines and 1,000 hours for the non-emergency engine or annually, whichever comes first. [40 CFR 63.6602 & Table 2c.1.a. & 2.a.]

b. *Air Cleaner*. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first and replace as necessary. [40 CFR 63.6602 & Table 2c.1.b. & 2.b.]

c. *Hoses and Belts*. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. [40 CFR 63.6602 & Table 2c.1.c. & 2.c.]

d. *Operation and Maintenance*. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions or develop and follow your own maintenance plan which must provide, to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution, control practice for minimizing emissions. [40 CFR 63.6625(e), 63.6640(a) & Table 6.9.a.]

e. *Engine Startup*. During periods of startup the owner or operator must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 CFR 63.6625(h)]

f. *Oil Analysis*. The owner or operator has the option of using an oil analysis program to extend the oil change requirement. The oil analysis must be performed at the same frequency specified for changing the oil in paragraph **a**., above. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis; if the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine. [40 CFR 63.6625(i)]

Monitoring of Operations

D.3. Hour Meter. The owner or operator must install a non-resettable hour meter on each engine if one is not already installed. [40 CFR 63.6625(f)]

{Permitting Note. The 59 HP non-emergency sump pump engine is not required to be equipped with an hour meter.}

Compliance

D.4. Continuous Compliance. Each unit shall be in compliance with the emission limitations and operating standards in this section at all times. [40 CFR 63.6605(a)]

D.5. Operation and Maintenance of Equipment. At all times the owner or operator must operate and maintain, any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the compliance authority which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

Recordkeeping Requirements

D.6. Notification, Performance and Compliance Records. The owner or operator must keep:

a. A copy of each notification and report that the owner or operator submitted to comply with this section, including all documentation supporting any Initial Notification or Notification of Compliance Status that the owner or operator submitted.
b. Records of the occurrence and duration of each malfunction of operation.
c. Records of all required maintenance performed on the hour meter.
d. Records of actions taken during periods of malfunction to minimize emissions in accordance with Specific Condition **D.5.**, including corrective actions to restore malfunctioning process and monitoring equipment to its normal or usual manner of operation.
e. Records of the actions required in specific condition **D.2.d.** to show continuous compliance with each emission limitation or operating requirement.
f. Records of the Work or Management Practice Standards specified in Specific Condition **D.2.**
g. Records of the maintenance conducted in order to demonstrate that the RICE was operated and maintained according to your own maintenance plan.
h. Records of the hours of operation of each emergency engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation including what classified the operation as emergency and how many hours are spent for non-emergency operation. If the engines are used for emergency demand response operation or for periods of voltage or frequency deviations, the owner or operator must keep records of the notification of the emergency situation, and the time of engine operation for these purposes.

[40 CFR 63.6655(a)(1), (a)(2), (a)(5), (d), (e)(1) & (f)(1)]

D.7. Record Retention.

a. The owner or operator must keep records in a suitable and readily available form for expeditious reviews.
b. The owner or operator must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record.

[40 CFR 63.6660 and 40 CFR 63.10(b)(1)]

Reporting Requirements

D.8. Delay of Performing Work Practice Requirements. If an emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the work practice requirements on the schedule required in Specific Condition **D.2.**, or if performing the work practice on the required schedule would otherwise pose an unacceptable risk under federal, state, or local law, the work practice can be delayed until the emergency is over or the unacceptable risk under federal, state, or local law has abated. The work practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under federal, state, or local law has abated. Sources must report any failure to perform the work practice on the schedule required and the federal, state or local law under which the risk was deemed unacceptable. [40 CFR 63, Subpart ZZZZ, Table 2c, footnote 1]

General Provisions

D.9. 40 CFR 63 Subpart A - General Provisions. The owner or operator shall comply with the following applicable requirements of 40 CFR 63 Subpart A - General Provisions, which have been adopted by reference in Rule 62-204.800(11)(d)1., F.A.C., except that the Secretary is not the Administrator for purposes of 40 CFR 63.5(e), 40 CFR 63.5(f), 40 CFR 63.6(g), 40 CFR 63.6(h)(9), 40 CFR 63.6(j), 40 CFR 63.13, and 40 CFR 63.14. Link to 40 CFR 63, Subpart A - General Provisions

General Provisions Citation	Subject of Citation
§63.1	General applicability of the General Provisions
§63.2	Definitions (additional terms defined in 43 CFR 63.6675)
§63.3	Units and abbreviations
§63.4	Prohibited activities and circumvention
§63.5	Construction and reconstruction
§63.6(a)	Applicability
§63.9(a)	Applicability and State delegation of notification requirements
§63.9(b)(1)-(5)	Initial notifications (except that §63.9(b)(3) is reserved)
§63.9(i)	Adjustment of submittal deadlines
§63.9(j)	Change in previous information
§63.10(a)	Administrative provisions for recordkeeping/reporting
§63.10(b)(1)	Record retention
§63.10(b)(2)(vi)-(xi)	Records
§63.10(b)(2)(xii)	Record when under waiver
§63.10(b)(2)(xiv)	Records of supporting documentation
§63.10(b)(3)	Records of applicability determination
§63.10(d)(1)	General reporting requirements
§63.10(f)	Waiver for recordkeeping/reporting
§63.12	State authority and delegations
§63.13	Addresses
§63.14	Incorporation by reference
§63.15	Availability of information

[40 CFR 63.6665 & Table 8 to Subpart ZZZZ of Part 63]

The specific conditions in this section apply to the following emissions units:

EU No.	Brief Description
011	Emergency Diesel Sump Pump (Big Orange)
012	Emergency Diesel Generator at CCCT
013	Emergency Diesel Sump Pump (Big Blue)

This section is comprised of three stationary compression ignition (CI) reciprocating internal combustion engines (RICE) that use only low-sulfur diesel fuel.

The following table provides important details for these emissions units:

ID No.	Engine Identification	Engine Brake HP	Date of Construction	Model Year	Engine Manufacturer	Model No.
011	Emergency Diesel Sump Pump Engine (Big Orange)	165	Late 2006	Late 2005	Power Tech	6068TF275
012	Emergency Diesel Generator	550	2011	2009	Detroit Diesel	350RE OZDD
013	Emergency Diesel Sump Pump Engine (Big Blue)	153	2012	2010	John Deere	6068T

Permitting Note: These emissions units are regulated under 40 CFR 63, Subpart ZZZZ, NESHAP for Stationary RICE adopted in Rule 62-204.800(11)(b), F.A.C. and 40 CFR 60, Subpart IIII, NSPS adopted in Rule 62-204.800(8)(b). This permit section addresses "new" stationary CI RICE, with a displacement less than 10 liters per cylinder, that are located at a major source of HAP. In accordance with provisions of 40 CFR 63.6590(c)(6), meeting the requirements of 40 CFR 60, Subpart IIII, satisfies compliance with the requirements of 40 CFR 63, Subpart ZZZZ.}

Essential Potential to Emit (PTE) Parameters

E.1. Allowable Fuel. These Stationary RICE must use diesel fuel that meets the following requirements for non-road diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted:

a. *Sulfur Content.* The sulfur content shall not exceed = 15 ppm = 0.0015% weight.

b. *Cetane Index or Aromatic Content*. The fuel must have a minimum cetane index of 40 or must have a maximum aromatic content of 35 volume percent.

[40 CFR 60.4207(b) and 80.510(b)]

E.2. Hours of Operation.

a. *Emergency Situations*. There is no time limit on the use of emergency stationary RICE in emergency situations. [40 CFR 60.4211(f)(1)]

b. *Other Situations*. You may operate your emergency stationary RICE for any combination of the purposes specified in paragraphs b.(1) through (3) for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph **c.** counts as part of the 100 hours per calendar year allowed by this paragraph.

(1) Maintenance and Testing. Each RICE is authorized to operate for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and

readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year. [40 CFR 60.4211(f)(2)(i)]

(2) Emergency Demand Response. Each RICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see 40 CFR 60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3. [40 CFR 60.4211(f)(2)(ii)]

(3) Voltage or Frequency Deviations. Emergency stationary RICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency. [40 CFR 60.4211(f)(2)(iii)]

c. *Non-emergency Situations*. These emergency RICE may be operated for up to 50 hours per calendar year in nonemergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph **b.**, above. The 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. [40 CFR 60.4211(f)(3)]

Emission Limitations

E.3. EU 011. Nitrogen oxide (NO_X) emissions from EU 011 shall not exceed 9.2 grams per kilowatt-hour (g/kW-hr) (6.9 grams per horsepower-hour (g/HP-hr)). [40 CFR 60.4205(a) and Table 1 to Subpart IIII]

E.4. EU 012. Emissions from EU 012 shall not exceed the following:

a. *NMHC + NO_X Emissions*. Non-methane hydrocarbons plus nitrogen oxide emissions shall not exceed 4.0 g/KW-hr.

b. *CO Emissions*. Carbon monoxide emissions shall not exceed 3.5 g/KW-hr.

c. *PM emissions*. Particulate matter emissions shall not exceed 0.20 g/KW-hr.

[40 CFR 60.4205(b), 60.4202(a)(2) & 89.112 (Table 1)]

E.5. EU 013. Emissions from EU 013 shall not exceed the following:

a. *NMHC + NO_X Emissions*. Non-Methane Hydrocarbons and Nitrogen oxide emissions shall not exceed 4.0 g/KW-hr.

b. *CO Emissions*. Carbon monoxide emissions shall not exceed 5.0 g/KW-hr.

c. *PM emissions*. Particulate matter emissions shall not exceed 0.30 g/KW-hr.

[40 CFR 60.4205(b), 60.4202(a)(2) & 89.112 (Table 1)]

Testing and Compliance Requirements

E.6. Operation and Maintenance. Except as permitted in Specific Condition **E.9.**, over the entire life of the engine, the owner or operator must:

a. Operate and maintain the stationary CI internal combustion engine according to the manufacturer's emission-related written instructions;

b. Change only those emission-related settings that are permitted by the manufacturer; and,

c. Meet the emissions limits in Specific Conditions **E.3. - E.5.**

[40 CFR 60.4206 and 40 CFR 60.4211(a)]

E.7. EU 011 Compliance Requirements. For Emissions Unit 011, you must demonstrate compliance according to one of the methods specified in paragraphs a. through e.

a. Having purchased an engine certified according to 40 CFR Part 89 or 40 CFR Part 94, as applicable, for the same model year and maximum engine power The engine must have been installed and configured according to the manufacturer's specifications.

b. Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in Specific Condition **E.10.** and these methods must have been followed correctly.
c. Keeping records of engine manufacturer data indicating compliance with the standards.
d. Keeping records of control device vendor data indicating compliance with the standards.
e. Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in Specific Condition **E.10.**

[40 CFR 60.4211(b)]

E.8. EU 012 & 013 Compliance/Certification Requirements. For Emissions Units 012 and 013, you must comply with the emissions standards specified in Specific Conditions **E.4.** and **E.5.**, respectively, by having purchased an engine certified by the manufacturer to meet those limits. These engines must have been installed and configured according to the manufacturers' emission-related specifications, except as permitted in Specific Condition **E.9.** [40 CFR 60.4211(c) & (g)]

E.9. Failure to Follow Manufacturer's Emission-related Written Instructions. If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows:

a. *EU 011 & EU 013*. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. [40 CFR 60.4211(g)(2)]
b. *EU 012*. You must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. You must conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards. [40 CFR 60.4211(g)(3)]

E.10. Testing Requirements. In the event performance tests are required pursuant to Specific Condition **E.9.**, the following requirements shall be met:

a. *Testing Procedures*. The performance test must be conducted according to the in-use testing procedures in 40 CFR Part 1039, Subpart F. Link to Subpart F
b. *NTE Standards*. Exhaust emissions from Emissions Units 011, 012 and 013 must not exceed the not-to-exceed (NTE) numerical requirements, rounded to the same number of decimal places as the applicable standard (STD) in Specific Conditions **E.3.**, **E.4.** and **E.5.**, respectively, determined from the following equation:

   NTE Requirement For Each Pollutant = (1.25) x (STD) (Eq. 1)

   Alternatively, EU 011 (pre-2007) may follow the testing procedures in 40 CFR 60.4213, as appropriate. Link to 40 CFR 60.4213

[40 CFR 60.4212(a), (c) & (d)]

E.11. Common Testing Requirements. Unless otherwise specified and if required, tests shall be conducted in accordance with the requirements and procedures specified in Appendix TR, Facility-Wide Testing Requirements, of this permit. [Rule 62-297.310, F.A.C.]

Monitoring of Operations

E.12. Hour Meter. The owner or operator must install a non-resettable hour meter if one is not already installed. [40 CFR 60.4209(a)]

Recordkeeping and Reporting Requirements

E.13. Hours of Operation Records. Owner or operator must keep records of the operation of the engine in emergency and non-emergency services that are recorded through the non-resettable hour meter. The owner or operator must record the time of operation of the engine and the reason the engine was in operation during that time. [Rule 62-213.440(1), F.A.C.]

E.14. Maintenance Records. To demonstrate conformance with the manufacturer's emission-related written instructions for operation and maintenance and to document when compliance testing must be performed pursuant to Specific Condition **E.9.**, the owner or operator must keep the following records:

a. Engine manufacturer documentation and/or certification indicating compliance with the standards.
b. A copy of the manufacturer's written instructions for operation and maintenance of the engines.
c. A written maintenance log detailing the date and type of maintenance performed on the engines, as well as any deviations from the manufacturer's written instructions.

[Rule 62-213.440(1), F.A.C.]

E.15. Testing Notification. At such time that the requirements of Specific Condition **E.10.** become applicable, the owner or operator shall notify the compliance authority of the date by which the initial compliance test must be performed. [Rule 62-213.440(1)]

E.16. Other Reporting Requirements. See Appendix RR, Facility-Wide Reporting Requirements, for additional reporting requirements. [Rule 62-213.440(1)(b), F.A.C.]

General Provisions

E.17. 40 CFR 60 Subpart A, General Provisions. The owner or operator shall comply with the applicable requirements of 40 CFR 60, Subpart A - General Provisions, as specified below. Link to 40 CFR 60, Subpart A - General Provisions

General Provisions Citation	Subject of Citation
§ 60.1	General applicability of the General Provisions
§ 60.2	Definitions (see also § 60.4219)
§ 60.3	Units and abbreviations
§ 60.4	Address
§ 60.5	Determination of construction or modification
§ 60.6	Review of plans
§ 60.8	Performance tests (if required)
§ 60.9	Availability of information
§ 60.10	State Authority
§ 60.12	Circumvention
§ 60.14	Modification
§ 60.15	Reconstruction
§ 60.16	Priority list
§ 60.17	Incorporations by reference
§ 60.19	General notification and reporting requirements

[40 CFR 60.4218 and Table 8 to 40 CFR 60, Subpart IIII]

Federal Acid Rain Provisions

Operated by: Gulf Power Company
Plant: Lansing Smith Electric Generating Plant
ORIS Code: 0643

The emissions units listed below are regulated under Acid Rain, Phase II.

E.U. ID No.	Brief Description
001	Boiler Number 1 - 1,944.8 MMBtu/hour (Phase II Acid Rain Unit)
002	Boiler Number 2 - 2,246.2 MMBtu/hour (Phase II Acid Rain Unit)
004	170 MW Gas Combustion Turbine with HRSG and Duct Burner (Acid Rain Unit)
005	170 MW Gas Combustion Turbine with HRSG and Duct Burner (Acid Rain Unit)

A.1. The Phase II Acid Rain Part application submitted for this facility, as approved by the Department, is a part of this permit. The owners and operators of these Phase II acid rain units must comply with the standard requirements and special provisions set forth in the application listed below:

a. DEP Form No. 62-210.900(1)(a), dated 5/13/14, received 5/19/14.
b. DEP Form 62-210.900(1)(a)1, dated 9/24/12, received 05/19/14, for the years 2015, 2016 and 2017.

[Chapter 62-213, F.A.C. and Rule 62-214.320, F.A.C.]

A.2. Nitrogen oxide (NO_X) requirements for each Acid Rain Phase II unit are as follows:

E.U. ID #	EPA ID	NO_X Limit
001	**ID No. 1 Boiler 1**	Pursuant to 40 CFR 76.11, the Florida Department of Environmental Protection approves three NO_X emissions averaging plans for this unit. Each plan is effective for one calendar year for the years **2015, 2016 and 2017.** Under each plan, this unit's NO_X emissions shall not exceed the annual average alternative contemporaneous emission limitation of **0.62** lb/MMBtu. In addition, this unit shall not have a total annual heat input **greater than 13,246,415** MMBtu. See Specific Condition **A.4.**, below. Pursuant to 40 CFR 76.11(b)(1), unless a new or revised averaging plan is submitted as part of a Title V permit revision application prior to January 1, 2018, this unit's applicable NO_X emission limitation for calendar years 2018 and 2019 is 0.40 lb/MMBtu (from 40 CFR 76.7(a)(1) for tangentially fired, dry bottom boilers). In addition, this unit shall also comply with all other applicable requirements of 40 CFR Part 76, including the duty to reapply for a NO_X compliance plan and the requirements covering excess emissions.

Federal Acid Rain Provisions

E.U. ID #	EPA ID	NO_X Limit
002	**ID No. 2 Boiler 2**	Pursuant to 40 CFR 76.11, the Florida Department of Environmental Protection approves three NO_X emissions averaging plans for this unit. Each plan is effective for one calendar year for the years **2015, 2016 and 2017.** Under each plan, this unit's NO_X emissions shall not exceed the annual average alternative contemporaneous emission limitation of **0.44** lb/MMBtu. In addition, this unit shall not have an annual heat input **greater than 14,354,271** MMBtu. See Specific Condition **A.4.**, below. Pursuant to 40 CFR 76.11(b)(1), unless a new or revised averaging plan is submitted as part of a Title V permit revision application prior to January 1, 2018, this unit's applicable NO_X emission limitation for calendar years 2018 and 2019 is 0.40 lb/MMBtu (from 40 CFR 76.7(a)(1) for tangentially fired, dry bottom boilers). In addition, this unit shall also comply with all other applicable requirements of 40 CFR Part 76, including the duty to reapply for a NO_X compliance plan and the requirements covering excess emissions.

Also, see Additional Requirements a. and b., below.

Additional Requirements

a. Under the plan (NO_X Phase II averaging plan), the actual Btu-weighted annual average NO_X emission rate for the units in the plan shall be less than or equal to the Btu-weighted annual average NO_X emission rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitations under 40 CFR 76.5, 76.6, or 76.7, except that for any early election units, the applicable emission limitations shall be under 40 CFR 76.7. If the designated representative demonstrates that the requirement of the prior sentence (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emission limitation and annual heat input limit.
b. In addition to the described NO_X compliance plan, this unit shall comply with all other applicable requirements of 40 CFR part 76, including the duty to reapply for a NO_X compliance plan and requirements covering excess emissions.

A.3. Sulfur dioxide (SO_2) Emission Allowances. SO_2 emissions from sources subject to the Federal Acid Rain Program (Title IV) shall not exceed any allowances that the source lawfully holds under the Federal Acid Rain Program. Allowances shall not be used to demonstrate compliance with a non-Title IV applicable requirement of the Act.

a. No permit revision shall be required for increases in emissions that are authorized by allowances acquired pursuant to the Federal Acid Rain Program, provided that such increases do not require a permit revision pursuant to Rule 62-213.400(3), F.A.C.
b. No limit shall be placed on the number of allowances held by the source under the Federal Acid Rain Program.
c. Allowances shall be accounted for under the Federal Acid Rain Program.

[Rule 62-213.440(1)(c)1., 2. & 3., F.A.C.]

A.4. Comments, notes, and justifications. The Department is maintaining the multi-state NO_X averaging plan that was established by Gulf Power and Southern Companies, which was previously approved for calendar years 2013 - 2017. [Rules 62-213.440, 62-214.330 & 62-214.420, F.A.C.]

Reporting Requirements

A.5. Demonstration of Compliance With the Phase II NO_X Averaging Plan. The Designated Representative shall provide a copy of the demonstration of compliance, prepared in accordance with 40 CFR 76.11(d), to the Department within 60 days after the end of the calendar year. [Rule 62-213.440, F.A.C.]

Acid Rain Part Application

For more information, see instructions and refer to 40 CFR 72.30, 72.31, and 74; and Chapter 62-214, F.A.C.

This submission is: ☐ New ☐ Revised ☒ Renewal

STEP 1

Identify the source by plant name, state, and ORIS or plant code.

Plant name	State	ORIS/Plant Code
LANSING SMITH ELECTRIC GENERATING PLANT	FL	643

STEP 2
Enter the unit ID# for every Acid Rain unit at the Acid Rain source in column "a."

If unit a SO_2 Opt-in unit, enter "yes" in column "b".

For new units or SO_2 Opt-in units, enter the requested information in columns "d" and "e."

a	b	c	d	e
Unit ID#	SO_2 Opt-in Unit? (Yes or No)	Unit will hold allowances in accordance with 40 CFR 72.9(c)(1)	New or SO_2 Opt-in Units Commence Operation Date	New or SO_2 Opt-in Units Monitor Certification Deadline
001		Yes		
002		Yes		
004		Yes		
005		Yes		
		Yes		
		Yes		
		Yes		
		Yes		
		Yes		
		Yes		
		Yes		
		Yes		

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LANSING SMITH ELECTRIC GENERATING PLANT

Plant Name (from STEP 1)

STEP 3

Read the standard requirements.

Acid Rain Part Requirements.

(1) The designated representative of each Acid Rain source and each Acid Rain unit at the source shall:
(i) Submit a complete Acid Rain Part application (including a compliance plan) under 40 CFR Part 72 and Rules 62-214.320 and 330, F.A.C., in accordance with the deadlines specified in Rule 62-214.320, F.A.C.; and
(ii) Submit in a timely manner any supplemental information that the DEP determines is necessary in order to review an Acid Rain Part application and issue or deny an Acid Rain Part;
(2) The owners and operators of each Acid Rain source and each Acid Rain unit at the source shall:
(i) Operate the unit in compliance with a complete Acid Rain Part application or a superseding Acid Rain Part issued by the DEP; and
(ii) Have an Acid Rain Part.

Monitoring Requirements.

(1) The owners and operators and, to the extent applicable, designated representative of each Acid Rain source and each Acid Rain unit at the source shall comply with the monitoring requirements as provided in 40 CFR Part 75, and Rule 62-214.420, F.A.C.
(2) The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.
(3) The requirements of 40 CFR Part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.
(4) For applications including a SO_2 Opt-in unit, a monitoring plan for each SO_2 Opt-in unit must be submitted with this application pursuant to 40 CFR 74.14(a). For renewal applications for SO_2 Opt-in units include an updated monitoring plan if applicable under 40 CFR 75.53(b).

Sulfur Dioxide Requirements.

(1) The owners and operators of each source and each Acid Rain unit at the source shall:
(i) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)), or in the compliance subaccount of another Acid Rain unit at the same source to the extent provided in 40 CFR 73.35(b)(3), not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and
(ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.
(2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.
(3) An Acid Rain unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:
(i) Starting January 1, 2000, an Acid Rain unit under 40 CFR 72.6(a)(2); or
(ii) Starting on the later of January 1, 2000, or the deadline for monitor certification under 40 CFR Part 75, an Acid Rain unit under 40 CFR 72.6(a)(3).
(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.
(5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.
(6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain Part application, the Acid Rain Part, or an exemption under 40 CFR 72.7 or 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.
(7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements. The owners and operators of the source and each Acid Rain unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements.

(1) The designated representative of an Acid Rain unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR Part 77.
(2) The owners and operators of an Acid Rain unit that has excess emissions in any calendar year shall:
(i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR Part 77; and
(ii) Comply with the terms of an approved offset plan, as required by 40 CFR Part 77.

Recordkeeping and Reporting Requirements.

(1) Unless otherwise provided, the owners and operators of the source and each Acid Rain unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the EPA or the DEP:
(i) The certificate of representation for the designated representative for the source and each Acid Rain unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with Rule 62-214.350, F.A.C.; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;
(ii) All emissions monitoring information, in accordance with 40 CFR Part 75, provided that to the extent that 40 CFR Part 75 provides for a 3-year period for recordkeeping, the 3-year period shall apply;
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,

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Plant Name (from STEP 1)

STEP 3, Continued.

Recordkeeping and Reporting Requirements (cont)

(iv) Copies of all documents used to complete an Acid Rain Part application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.

(2) The designated representative of an Acid Rain source and each Acid Rain unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR Part 72, Subpart I, and 40 CFR Part 75.

Liability.

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain Part application, an Acid Rain Part, or an exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
(4) Each Acid Rain source and each Acid Rain unit shall meet the requirements of the Acid Rain Program.
(5) Any provision of the Acid Rain Program that applies to an Acid Rain source (including a provision applicable to the designated representative of an Acid Rain source) shall also apply to the owners and operators of such source and of the Acid Rain units at the source.
(6) Any provision of the Acid Rain Program that applies to an Acid Rain unit (including a provision applicable to the designated representative of an Acid Rain unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44 (Phase II repowering extension plans) and 40 CFR 76.11 (NO_x averaging plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR Part 75 (including 40 CFR 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one Acid Rain unit shall not be liable for any violation by any other Acid Rain unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.
(7) Each violation of a provision of 40 CFR Parts 72, 73, 74, 75, 76, 77, and 78 by an Acid Rain source or Acid Rain unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities.

No provision of the Acid Rain Program, an Acid Rain Part application, an Acid Rain Part, or an exemption under 40 CFR 72.7or 72.8 shall be construed as:
(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an Acid Rain source or Acid Rain unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;
(2) Limiting the number of allowances a unit can hold; *provided*, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act;
(3) Requiring a change of any kind in any state law regulating electric utility rates and charges, affecting any state law regarding such state regulation, or limiting such state regulation, including any prudence review requirements under such state law;
(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,
(5) Interfering with or impairing any program for competitive bidding for power supply in a state in which such program is established.

STEP 4
For SO_2 Opt-in units only.

In column "f" enter the unit ID# for every SO_2 Opt-in unit identified in column "a" of STEP 2.

For column "g" describe the combustion unit and attach information and diagrams on the combustion unit's configuration.

In column "h" enter the hours.

f	g	h (not required for renewal application)
Unit ID#	Description of the combustion unit	Number of hours unit operated in the six months preceding initial application

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LANSING SMITH ELECTRIC GENERATING PLANT
Plant Name (from STEP 1)

STEP 5

For SO_2 Opt-in units only.
(Not required for SO_2 Opt-in renewal applications.)

In column "i" enter the unit ID# for every SO_2 Opt-in unit identified in column "a" (and in column "f").

For columns "j" through "n," enter the information required under 40 CFR 74.20-74.25 and attach all supporting documentation required by 40 CFR 74.20-74.25.

i	J	k	l	m	n
Unit ID#	Baseline or Alternative Baseline under 40 CFR 74.20 (mmBtu)	Actual SO_2 Emissions Rate under 40 CFR 74.22 (lbs/mmBtu)	Allowable 1985 SO_2 Emissions Rate under 40 CFR 74.23 (lbs/mmBtu)	Current Allowable SO_2 Emissions Rate under 40 CFR 74.24 (lbs/mmBtu)	Current Promulgated SO_2 Emissions Rate under 40 CFR 74.25 (lbs/mmBtu)

STEP 6

For SO_2 Opt-in units only.

Attach additional requirements, certify and sign.

A. If the combustion source seeks to qualify for a transfer of allowances from the replacement of thermal energy, a thermal energy plan as provided in 40 CFR 74.47 for combustion sources must be attached.
B. A statement whether the combustion unit was previously an affected unit under 40 CFR 74.
C. A statement that the combustion unit is not an affected unit under 40 CFR 72.6 and does not have an exemption under 40 CFR 72.7, 72.8, or 72.14.
D. Attach a complete compliance plan for SO_2 under 40 CFR 72.40.
E. The designated representative of the combustion unit shall submit a monitoring plan in accordance with 40 CFR 74.61. For renewal application, submit an updated monitoring plan if applicable under 40 CFR 75.53(b).
F. The following statement must be signed by the designated representative or alternate designated representative of the combustion source: "I certify that the data submitted under 40 CFR Part 74, Subpart C, reflects actual operations of the combustion source and has not been adjusted in any way."

Signature | Date

STEP 7

Read the certification statement; provide name, title, owner company name, phone, and e-mail address; sign, and date.

Certification (for designated representative or alternate designated representative only)

I am authorized to make this submission on behalf of the owners and operators of the Acid Rain source or Acid Rain units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name **JAMES O. VICK** | Title **Director, Environmental Affairs**

Owner Company Name **Gulf Power Company**

Phone **(850) 444- 6311** | E-mail address **jovick@southernco.com**

Signature *James O Vick* | Date *5/13/14*

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Page 1

Florida Department of Environmental Protection

Phase II NO_X Compliance Plan

For more information, see instructions and refer to 40 CFR 76.9

This submission is: New ☐ Revised ☐ Renewal ☒ Page 1 of 2

STEP 1 Indicate plant name, state, and ORIS code from NADB, if applicable.	Lansing Smith Electric Generating Plant Plant Name	FL State	643 ORIS Code
STEP 2	Identify each affected Group 1 and Group 2 boiler using the boiler ID# from NADB, if applicable. Indicate boiler type: "CB" for cell burner, "CY" for cyclone, "DBW" for dry bottom wall-fired, "T" for tangentially fired, "V" for vertically fired, and "WB" for wet bottom. Indicate the compliance option selected for each unit.		

	ID# 001 Type T	ID# 002 Type T	ID# Type	ID# Type	ID# Type	ID# Type
(a) Standard annual average emission limitation of 0.50 lb/mmBtu (for Phase I dry bottom wall-fired boilers)	☐	☐	☐	☐	☐	☐
(b) Standard annual average emission limitation of 0.45 lb/mmBtu (for Phase I tangentially fired boilers)	☐	☐	☐	☐	☐	☐
(c) EPA-approved early election plan under 40 CFR 76.8 through 12/31/07 (also indicate above emission limit specified in plan)	☐	☐	☐	☐	☐	☐
(d) Standard annual average emission limitation of 0.46 lb/mmBtu (for Phase II dry bottom wall-fired boilers)	☐	☐	☐	☐	☐	☐
(e) Standard annual average emission limitation of 0.40 lb/mmBtu (for Phase II tangentially fired boilers)	☐	☐	☐	☐	☐	☐
(f) Standard annual average emission limitation of 0.68 lb/mmBtu (for cell burner boilers)	☐	☐	☐	☐	☐	☐
(g) Standard annual average emission limitation of 0.86 lb/mmBtu (for cyclone boilers)	☐	☐	☐	☐	☐	☐
(h) Standard annual average emission limitation of 0.80 lb/mmBtu (for vertically fired boilers)	☐	☐	☐	☐	☐	☐
(i) Standard annual average emission limitation of 0.84 lb/mmBtu (for wet bottom boilers)	☐	☐	☐	☐	☐	☐
(j) NO_x Averaging Plan (include NO_x Averaging form)	☒	☒	☐	☐	☐	☐
(k) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(A) (check the standard emission limitation box above for most stringent limitation applicable to any unit utilizing stack)	☐	☐	☐	☐	☐	☐

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Page 2

LANSING SMITH ELECTRIC GENERATING PLANT
Plant Name (from Step 1)

Page 2 of 2

STEP 2, cont'd.

	ID# 001 Type T	ID# 002 Type T	ID# Type	ID# Type	ID# Type	ID# Type
(l) Common stack pursuant to 40 CFR 75.17(a)(2)(i)(B) with NO_x Averaging (check the NO_x Averaging Plan box and include NO_x Averaging Form)	☒	☒	☐	☐	☐	☐
(m) EPA-approved common stack apportionment method pursuant to 40 CFR 75.17 (a)(2)(i)(C), (a)(2)(iii)(B), or (b)(2)	☐	☐	☐	☐	☐	☐
(n) AEL (include Phase II AEL Demonstration Period, Final AEL Petition, or AEL Renewal form as appropriate)	☐	☐	☐	☐	☐	☐
(o) Petition for AEL demonstration period or final AEL under review by U.S. EPA or demonstration period ongoing	☐	☐	☐	☐	☐	☐
(p) Repowering extension plan approved or under review	☐	☐	☐	☐	☐	☐

STEP 3
Read the standard requirements and certification, enter the name of the designated representative, sign and date.

Standard Requirements

General. This source is subject to the standard requirements in 40 CFR 72.9 (consistent with 40 CFR 76.8(e)(1)(i)). These requirements are listed in this source's Acid Rain Part of its Title V permit.

Special Provisions for Early Election Units

Nitrogen Oxides. A unit that is governed by an approved early election plan shall be subject to an emissions limitation for NO_x as provided under 40 CFR 76.8(a)(2) except as provided under 40 CFR 76.8(e)(3)(iii).

Liability. The owners and operators of a unit governed by an approved early election plan shall be liable for any violation of the plan or 40 CFR 76.8 at that unit. The owners and operators shall be liable, beginning January 1, 2000, for fulfilling the obligations specified in 40 CFR Part 77.

Termination. An approved early election plan shall be in effect only until the earlier of January 1, 2008 or January 1 of the calendar year for which a termination of the plan takes effect. If the designated representative of the unit under an approved early election plan fails to demonstrate compliance with the applicable emissions limitation under 40 CFR 76.5 for any year during the period beginning January 1 of the first year the early election takes effect and ending December 31, 2007, the permitting authority will terminate the plan. The termination will take effect beginning January 1 of the year after the year for which there is a failure to demonstrate compliance, and the designated representative may not submit a new early election plan. The designated representative of the unit under an approved early election plan may terminate the plan any year prior to 2008 but may not submit a new early election plan. In order to terminate the plan, the designated representative must submit a notice under 40 CFR 72.40(d) by January 1 of the year for which the termination is to take effect. If an early election plan is terminated any year prior to 2000, the unit shall meet, beginning January 1, 2000, the applicable emissions limitation for NO_x for Phase II units with Group 1 boilers under 40 CFR 76.7. If an early election plan is terminated on or after 2000, the unit shall meet, beginning on the effective date of the termination, the applicable emissions limitation for NO_x for Phase II units with Group 1 boilers under 40 CFR 76.7.

STEP 3, cont'd.

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its

DEP Form No. 62-210.900(1)(a)3. - Form Effective:03/11/2010 attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name James O. Vick	
Signature James O Vick	Date 5/13/14

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Effective:03/11/2010

Florida Department of Environmental Protection

Phase II NO_x Averaging Plan

For more information, refer to 40 CFR 76.11

This submission is: [ ] New [X] Revised

STEP 1

Identify the units participating in this averaging plan by plant name, state, and boiler ID# from NADB. In column (a), fill in each unit's applicable emission limitation from 40 CFR 76.5, 76.6, or 76.7. In column (b), assign an alternative contemporaneous annual emissions limitation in lb/mmBtu to each unit. In column (c), assign an annual heat input limitation in mmBtu to each unit. Continue to page 3 if necessary.

Plant Name	State	ID#	(a) Emission Limitation	(b) Alt. Contemp. Emission Limitation	(c) Annual Heat Input Limit
See Page 3.					

STEP 2

Use the formula to enter the Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan and the Btu-weighted annual average emission rate for the same units if they are operated in compliance with 40 CFR 76.5, 76.6, or 76.7. The former must be less than or equal to the latter.

Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan		Btu-weighted annual average emission rate for same units operated in compliance with 40 CFR 76.5, 76.6 or 76.7
0.46	≤	0.46

$$\frac{\sum_{i=1}^{n} (R_{Li} \ x \ HI_i)}{\sum_{i=1}^{n} HI_i} \leq \frac{\sum_{i=1}^{n} [R_{li} \ x \ HI_i]}{\sum_{i=1}^{n} HI_i}$$

Where,

R_{Li} = Alternative contemporaneous annual emissions limitation for unit i, in 16/mmBtu, as specified in column (b) of Step 1;

R_{li} = Applicable emission limitation for unit i, in lb/mmBtu, as specified in column (a) of Step 1;

HI_i = Annual heat input for unit i, in mmBtu, as specified in column (c) of Step 1;

n = Number of units in the averaging plan

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Effective: 3/16/08

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Participating Plants
Plant Name (from Step 1)

STEP 3

Mark one of the two options and enter dates.

☐ This plan is effective for calendar year ____________ through calendar year ______________ unless notification to terminate the plan is given.

☒ Treat this plan as 5 identical plans, each effective for one calendar year for the following calendar years: 2013, 2014, 2015, 2016, and 2017 unless notification to terminate one or more of these plans is given.

STEP 4

Read the special provisions and certification, enter the name of the designated representative, and sign and date.

Special Provisions

Emission Limitations

Each affected unit in an approved averaging plan is in compliance with the Acid Rain emission limitation for NO_x under the plan only if the following requirements are met:

(i) For each unit, the unit's actual annual average emission rate for the calendar year, in lb/mmBtu, is less than or equal to its alternative contemporaneous annual emission limitation in the averaging plan, and

(a) For each unit with an alternative contemporaneous emission limitation less stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year does not exceed the annual heat input limit in the averaging plan,

(b) For each unit with an alternative contemporaneous emission limitation more stringent than the applicable emission limitation in 40 CFR 76.5, 76.6, or 76.7, the actual annual heat input for the calendar year is not less than the annual heat input limit in the averaging plan, or

(ii) If one or more of the units does not meet the requirements of (i), the designated representative shall demonstrate, in accordance with 40 CFR 76.11(d)(1)(ii)(A) and (B), that the actual Btu-weighted annual average emission rate for the units in the plan is less than or equal to the Btu-weighted annual average rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitations in 40 CFR 76.5, 76.6, or 76.7.

(iii) If there is a successful group showing of compliance under 40 CFR 76.11(d)(1)(ii)(A) and (B) for a calendar year, then all units in the averaging plan shall be deemed to be in compliance for that year with their alternative contemporaneous emission limitations and annual heat input limits under (i).

Liability

The owners and operators of a unit governed by an approved averaging plan shall be liable for any violation of the plan or this section at that unit or any other unit in the plan, including liability for fulfilling the obligations specified in part 77 of this chapter and sections 113 and 411 of the Act.

Termination

The designated representative may submit a notification to terminate an approved averaging plan, in accordance with 40 CFR 72.40(d), no later than October 1 of the calendar year for which the plan is to be terminated.

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name Chris M. Hobson	
Signature CMHob	Date 9/24/12

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Effective: 3/16/08

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Southern Company Averaging Plan
Participating Plants

Plant Name (from Step 1)

STEP 1

Continue the identification of units from Step 1, page 1, here.

Plant Name	State	ID#	(a) Emission Limitation	(b) Alt. Contemp. Emission Limitation	(c) Annual Heat Input Limit
Barry	AL	1	0.40	0.57	9,573,262
Barry	AL	2	0.40	0.57	8,444,579
Barry	AL	3	0.40	0.57	14,942,231
Barry	AL	4	0.40	0.45	25,805,532
Barry	AL	5	0.40	0.45	40,593,564
Bowen	GA	1	0.45	0.42	45,172,982
Bowen	GA	2	0.45	0.43	53,594,364
Bowen	GA	3	0.45	0.43	62,569,415
Bowen	GA	4	0.45	0.43	62,052,526
Branch	GA	1	0.68	0.99	15,439,840
Branch	GA	2	0.50	0.72	20,343,750
Branch	GA	3	0.68	0.84	33,478,822
Branch	GA	4	0.68	0.84	29,022,426
Crist	FL	4	0.45	0.52	5,152,003
Crist	FL	5	0.45	0.60	5,166,828
Crist	FL	6	0.50	0.45	22,730,882
Crist	FL	7	0.50	0.45	37,802,017
Daniel	MS	1	0.45	0.33	42,016,226
Daniel	MS	2	0.45	0.33	35,236,767
Gadsden	AL	1	0.45	0.75	2,493,711
Gadsden	AL	2	0.45	0.75	2,994,848
Gaston	AL	1	0.50	0.52	15,024,772
Gaston	AL	2	0.50	0.52	12,841,184
Gaston	AL	3	0.50	0.52	16,760,315
Gaston	AL	4	0.50	0.52	16,256,383
Gaston	AL	5	0.45	0.48	54,734,917
Gorgas	AL	6	0.46	0.55	5,532,199
Gorgas	AL	7	0.46	0.55	5,961,385
Gorgas	AL	8	0.40	0.52	12,802,318
Gorgas	AL	9	0.40	0.52	14,142,803
Gorgas	AL	10	0.40	0.52	53,551,197

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Southern Company Averaging Plan
Participating Plants

Plant Name (from Step 1)

STEP 1

Continue the identification of units from Step 1, page 1, here.

Plant Name	State	ID#	(a) Emission Limitation	(b) Alt. Contemp. Emission Limitation	(c) Annual Heat Input Limit
Greene Co	AL	1	0.68	0.60	17,188,813
Greene Co	AL	2	0.46	0.60	19,335,661
Hammond	GA	1	0.50	0.83	6,507,399
Hammond	GA	2	0.50	0.83	7,473,271
Hammond	GA	3	0.50	0.83	6,418,029
Hammond	GA	4	0.50	0.45	29,877,962
Kraft	GA	1	0.45	0.58	3,102,564
Kraft	GA	2	0.45	0.58	2,903,977
Kraft	GA	3	0.45	0.58	5,763,920
L. Smith	FL	1	0.40	0.62	13,246,415
L. Smith	FL	2	0.40	0.44	14,354,271
McIntosh	GA	1	0.50	0.86	8,947,363
Miller	AL	1	0.46	0.37	55,901,155
Miller	AL	2	0.46	0.37	54,571,268
Miller	AL	3	0.46	0.28	59,761,399
Miller	AL	4	0.46	0.28	58,617,301
Mitchell	GA	3	0.45	0.62	5,826,708
Scherer	GA	1	0.40	0.50	73,945,647
Scherer	GA	2	0.40	0.50	73,618,266
Scherer	GA	3	0.45	0.29	54,991,840
Scherer	GA	4	0.40	0.30	54,991,840
Scholz	FL	1	0.50	0.68	2,022,943
Scholz	FL	2	0.50	0.77	2,056,474
Wansley	GA	1	0.45	0.41	65,813,417
Wansley	GA	2	0.45	0.42	58,305,654
Watson	MS	4	0.50	0.50	13,070,990
Watson	MS	5	0.50	0.65	34,351,664
Yates	GA	1	0.45	0.48	5,317,858
Yates	GA	2	0.45	0.48	4,737,232
Yates	GA	3	0.45	0.48	4,689,751
Yates	GA	4	0.45	0.40	8,272,959
Yates	GA	5	0.45	0.40	7,457,836
Yates	GA	6	0.45	0.33	22,590,915
Yates	GA	7	0.45	0.30	20,429,275

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Clean Air Interstate Rule Provisions

Clean Air Interstate Rule (CAIR).

Operated by: Gulf Power Company
Plant: Lansing Smith Electric Generating Plant
ORIS Code: 0643

The emissions units below are regulated under the Clean Air Interstate Rule.

EU No.	EPA Unit ID#	Brief Description
001	1	Boiler Number 1 - 1,944.8 million British thermal units (MMBtu)/hour
002	2	Boiler Number 2 - 2,246.2 MMBtu/hour
004	4	Combined Cycle Combustion Turbine Generator *Unit No. 1 (CC-1)*
005	5	Combined Cycle Combustion Turbine Generator *Unit No. 2 (CC-2)*
003	AA	Combustion Turbine A
	AB	Combustion Turbine B

Notes: ID# AA & AB are associated with FDEP ID # Unit 3 Oil fired Combustion Turbine.

Clean Air Interstate Rule Application. The Clean Air Interstate Rule Part Form submitted for this facility is a part of this permit. The owners and operators of these CAIR units as identified in this form must comply with the standard requirements and special provisions set forth in the CAIR Part Form (DEP Form No. 62-210.900(1)(b)) dated May 13, 2014, which is attached at the end of this section. [Chapter 62-213, F.A.C. and Rule 62-210.200, F.A.C.]

Clean Air Interstate Rule (CAIR) Part

For more information, see instructions and refer to 40 CFR 96.121, 96.122, 96.221, 96.222, 96.321 and 96.322; and Rule 62-296.470, F.A.C.

This submission is: ☐ New ☐ Revised ☒ Renewal

STEP 1

Identify the source by plant name and ORIS or EIA plant code

Plant Name:	State:	ORIS or EIA Plant Code:
Lansing Smith Electric Generating Plant	Florida	643

STEP 2

In column "a" enter the unit ID# for every CAIR unit at the CAIR source.

In columns "b," "c," and "d," indicate to which CAIR program(s) each unit is subject by placing an "X" in the column(s).

For new units, enter the requested information in columns "e" and "f.

a	b	c	d	e	f
Unit ID#	Unit will hold nitrogen oxides (NO_X) allowances in accordance with 40 CFR 96.106(c)(1)	Unit will hold sulfur dioxide (SO_2) allowances in accordance with 40 CFR 96.206(c)(1)	Unit will hold NO_X Ozone Season allowances in accordance with 40 CFR 96.306(c)(1)	New Units Expected Commence Commercial Operation Date	New Units Expected Monitor Certification Deadline
001	X	X	X		
002	X	X	X		
004	X	X	X		
005	X	X	X		
AA	X	X	X		
AB	X	X	X		
Note:	ID #AA & AB are	associated with	FDEP ID #Unit 3	Oil fired CT.	

DEP Form No. 62-210.900(1)(b) – Form
Effective: 3/16/08

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Lansing Smith Electric Generating Plant
Plant Name (from STEP 1)

STEP 3

Read the standard requirements.

CAIR NO_X ANNUAL TRADING PROGRAM

CAIR Part Requirements.

(1) The CAIR designated representative of each CAIR NO_X source and each CAIR NO_X unit at the source shall:
(i) Submit to the DEP a complete and certified CAIR Part form under 40 CFR 96.122 and Rule 62-296.470, F.A.C., in accordance with the deadlines specified in Rule 62-213.420, F.A.C.; and
(ii) [Reserved];
(2) The owners and operators of each CAIR NO_X source and each CAIR NO_X unit at the source shall have a CAIR Part included in the Title V operating permit issued by the DEP under 40 CFR Part 96, Subpart CC, and operate the source and the unit in compliance with such CAIR Part.

Monitoring, Reporting, and Recordkeeping Requirements.

(1) The owners and operators, and the CAIR designated representative, of each CAIR NO_X source and each CAIR NO_X unit at the source shall comply with the monitoring, reporting, and recordkeeping requirements of 40 CFR Part 96, Subpart HH, and Rule 62-296.470, F.A.C.
(2) The emissions measurements recorded and reported in accordance with 40 CFR Part 96, Subpart HH, shall be used to determine compliance by each CAIR NO_X source with the following CAIR NO_X Emissions Requirements.

NO_X Emission Requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR NO_X source and each CAIR NO_X unit at the source shall hold, in the source's compliance account, CAIR NO_X allowances available for compliance deductions for the control period under 40 CFR 96.154(a) in an amount not less than the tons of total NO_X emissions for the control period from all CAIR NO_X units at the source, as determined in accordance with 40 CFR Part 96, Subpart HH.
(2) A CAIR NO_X unit shall be subject to the requirements under paragraph (1) of the NO_X Requirements starting on the later of January 1, 2009, or the deadline for meeting the unit's monitor certification requirements under 40 CFR 96.170(b)(1) or (2) and for each control period thereafter.
(3) A CAIR NO_X allowance shall not be deducted, for compliance with the requirements under paragraph (1) of the NO_X Requirements, for a control period in a calendar year before the year for which the CAIR NO_X allowance was allocated.
(4) CAIR NO_X allowances shall be held in, deducted from, or transferred into or among CAIR NO_X Allowance Tracking System accounts in accordance with 40 CFR Part 96, Subparts FF and GG.
(5) A CAIR NO_X allowance is a limited authorization to emit one ton of NO_X in accordance with the CAIR NO_X Annual Trading Program. No provision of the CAIR NO_X Annual Trading Program, the CAIR Part, or an exemption under 40 CFR 96.105 and no provision of law shall be construed to limit the authority of the state or the United States to terminate or limit such authorization.
(6) A CAIR NO_X allowance does not constitute a property right.
(7) Upon recordation by the Administrator under 40 CFR Part 96, Subpart EE, FF, or GG, every allocation, transfer, or deduction of a CAIR NO_X allowance to or from a CAIR NO_X unit's compliance account is incorporated automatically in any CAIR Part of the source that includes the CAIR NO_X unit.

Excess Emissions Requirements.

If a CAIR NO_X source emits NO_X during any control period in excess of the CAIR NO_X emissions limitation, then:
(1) The owners and operators of the source and each CAIR NO_X unit at the source shall surrender the CAIR NO_X allowances required for deduction under 40 CFR 96.154(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable state law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of 40 CFR Part 96, Subpart AA, the Clean Air Act, and applicable state law.

Recordkeeping and Reporting Requirements.

(1) Unless otherwise provided, the owners and operators of the CAIR NO_X source and each CAIR NO_X unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time before the end of 5 years, in writing by the DEP or the Administrator.
(i) The certificate of representation under 40 CFR 96.113 for the CAIR designated representative for the source and each CAIR NO_X unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation under 40 CFR 96.113 changing the CAIR designated representative.
(ii) All emissions monitoring information, in accordance with 40 CFR Part 96, Subpart HH, of this part, provided that to the extent that 40 CFR Part 96, Subpart HH, provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the CAIR NO_X Annual Trading Program.
(iv) Copies of all documents used to complete a CAIR Part form and any other submission under the CAIR NO_X Annual Trading Program or to demonstrate compliance with the requirements of the CAIR NO_X Annual Trading Program.
(2) The CAIR designated representative of a CAIR NO_X source and each CAIR NO_X unit at the source shall submit the reports required under the CAIR NO_X Annual Trading Program, including those under 40 CFR Part 96, Subpart HH.

Lansing Smith Electric Generating Plant
Plant Name (from STEP 1)

STEP 3, Continued

Liability.

(1) Each CAIR NO_X source and each CAIR NO_X unit shall meet the requirements of the CAIR NO_X Annual Trading Program.
(2) Any provision of the CAIR NO_X Annual Trading Program that applies to a CAIR NO_X source or the CAIR designated representative of a CAIR NO_X source shall also apply to the owners and operators of such source and of the CAIR NO_X units at the source.
(3) Any provision of the CAIR NO_X Annual Trading Program that applies to a CAIR NO_X unit or the CAIR designated representative of a CAIR NO_X unit shall also apply to the owners and operators of such unit.

Effect on Other Authorities.

No provision of the CAIR NO_X Annual Trading Program, a CAIR Part, or an exemption under 40 CFR 96.105 shall be construed as exempting or excluding the owners and operators, and the CAIR designated representative, of a CAIR NO_X source or CAIR NO_X unit from compliance with any other provision of the applicable, approved State Implementation Plan, a federally enforceable permit, or the Clean Air Act.

CAIR SO_2 TRADING PROGRAM

CAIR Part Requirements.

(1) The CAIR designated representative of each CAIR SO_2 source and each CAIR SO_2 unit at the source shall:
(i) Submit to the DEP a complete and certified CAIR Part form under 40 CFR 96.222 and Rule 62-296.470, F.A.C., in accordance with the deadlines specified in Rule 62-213.420, F.A.C.; and
(ii) [Reserved];
(2) The owners and operators of each CAIR SO_2 source and each CAIR SO_2 unit at the source shall have a CAIR Part included in the Title V operating permit issued by the DEP under 40 CFR Part 96, Subpart CCC, for the source and operate the source and each CAIR unit in compliance with such CAIR Part.

Monitoring, Reporting, and Recordkeeping Requirements.

(1) The owners and operators, and the CAIR designated representative, of each CAIR SO_2 source and each SO_2 CAIR unit at the source shall comply with the monitoring, reporting, and recordkeeping requirements of 40 CFR Part 96 ,Subpart HHH, and Rule 62-296.470, F.A.C.
(2) The emissions measurements recorded and reported in accordance with 40 CFR Part 96, Subpart HHH, shall be used to determine compliance by each CAIR SO_2 source with the following CAIR SO_2 Emission Requirements.

SO_2 Emission Requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR SO_2 source and each CAIR SO_2 unit at the source shall hold, in the source's compliance account, a tonnage equivalent in CAIR SO_2 allowances available for compliance deductions for the control period, as determined in accordance with 40 CFR 96.254(a) and (b), not less than the tons of total sulfur dioxide emissions for the control period from all CAIR SO_2 units at the source, as determined in accordance with 40 CFR Part 96, Subpart HHH.
(2) A CAIR SO_2 unit shall be subject to the requirements under paragraph (1) of the Sulfur Dioxide Emission Requirements starting on the later of January 1, 2010 or the deadline for meeting the unit's monitor certification requirements under 40 CFR 96.270(b)(1) or (2) and for each control period thereafter.
(3) A CAIR SO_2 allowance shall not be deducted, for compliance with the requirements under paragraph (1) of the SO_2 Emission Requirements, for a control period in a calendar year before the year for which the CAIR SO_2 allowance was allocated.
(4) CAIR SO_2 allowances shall be held in, deducted from, or transferred into or among CAIR SO_2 Allowance Tracking System accounts in accordance with 40 CFR Part 96, Subparts FFF and GGG.
(5) A CAIR SO_2 allowance is a limited authorization to emit sulfur dioxide in accordance with the CAIR SO_2 Trading Program. No provision of the CAIR SO_2 Trading Program, the CAIR Part, or an exemption under 40 CFR 96.205 and no provision of law shall be construed to limit the authority of the state or the United States to terminate or limit such authorization.
(6) A CAIR SO_2 allowance does not constitute a property right.
(7) Upon recordation by the Administrator under 40 CFR Part 96, Subpart FFF or GGG, every allocation, transfer, or deduction of a CAIR SO_2 allowance to or from a CAIR SO_2 unit's compliance account is incorporated automatically in any CAIR Part of the source that includes the CAIR SO_2 unit.

Excess Emissions Requirements.

If a CAIR SO_2 source emits SO_2 during any control period in excess of the CAIR SO_2 emissions limitation, then:
(1) The owners and operators of the source and each CAIR SO_2 unit at the source shall surrender the CAIR SO_2 allowances required for deduction under 40 CFR 96.254(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable state law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of 40 CFR Part 96, Subpart AAA, the Clean Air Act, and applicable state law.

Plant Name (from STEP 1)	Lansing Smith Electric Generating Plant

STEP 3, Continued

Recordkeeping and Reporting Requirements.

(1) Unless otherwise provided, the owners and operators of the CAIR SO_2 source and each CAIR SO_2 unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time before the end of 5 years, in writing by the Department or the Administrator.
(i) The certificate of representation under 40 CFR 96.213 for the CAIR designated representative for the source and each CAIR SO_2 unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation under 40 CFR 96.213 changing the CAIR designated representative.
(ii) All emissions monitoring information, in accordance with 40 CFR Part 96, Subpart HHH, of this part, provided that to the extent that 40 CFR Part 96, Subpart HHH, provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the CAIR SO_2 Trading Program.
(iv) Copies of all documents used to complete a CAIR Part form and any other submission under the CAIR SO_2 Trading Program or to demonstrate compliance with the requirements of the CAIR SO_2 Trading Program.
(2) The CAIR designated representative of a CAIR SO_2 source and each CAIR SO_2 unit at the source shall submit the reports required under the CAIR SO_2 Trading Program, including those under 40 CFR Part 96, Subpart HHH.

Liability.

(1) Each CAIR SO_2 source and each CAIR SO_2 unit shall meet the requirements of the CAIR SO_2 Trading Program.
(2) Any provision of the CAIR SO_2 Trading Program that applies to a CAIR SO_2 source or the CAIR designated representative of a CAIR SO_2 source shall also apply to the owners and operators of such source and of the CAIR SO_2 units at the source.
(3) Any provision of the CAIR SO_2 Trading Program that applies to a CAIR SO_2 unit or the CAIR designated representative of a CAIR SO_2 unit shall also apply to the owners and operators of such unit.

Effect on Other Authorities.

No provision of the CAIR SO_2 Trading Program, a CAIR Part, or an exemption under 40 CFR 96.205 shall be construed as exempting or excluding the owners and operators, and the CAIR designated representative, of a CAIR SO_2 source or CAIR SO_2 unit from compliance with any other provision of the applicable, approved State Implementation Plan, a federally enforceable permit, or the Clean Air Act.

CAIR NO_x OZONE SEASON TRADING PROGRAM

CAIR Part Requirements.

(1) The CAIR designated representative of each CAIR NO_X Ozone Season source and each CAIR NO_x Ozone Season unit at the source shall:
(i) Submit to the DEP a complete and certified CAIR Part form under 40 CFR 96.322 and Rule 62-296.470, F.A.C., in accordance with the deadlines specified in Rule 62-213.420, F.A.C.; and
(ii) [Reserved];
(2) The owners and operators of each CAIR NO_X Ozone Season source required to have a Title V operating permit or air construction permit, and each CAIR NO_X Ozone Season unit required to have a Title V operating permit or air construction permit at the source shall have a CAIR Part included in the Title V operating permit or air construction permit issued by the DEP under 40 CFR Part 96, Subpart CCCC, for the source and operate the source and the unit in compliance with such CAIR Part.

Monitoring, Reporting, and Recordkeeping Requirements.

(1) The owners and operators, and the CAIR designated representative, of each CAIR NO_X Ozone Season source and each CAIR NO_x Ozone Season unit at the source shall comply with the monitoring, reporting, and recordkeeping requirements of 40 CFR Part 96, Subpart HHHH, and Rule 62-296.470, F.A.C.
(2) The emissions measurements recorded and reported in accordance with 40 CFR Part 96, Subpart HHHH, shall be used to determine compliance by each CAIR NO_X Ozone Season source with the following CAIR NO_X Ozone Season Emissions Requirements.

NO_x Ozone Season Emission Requirements.

(1) As of the allowance transfer deadline for a control period, the owners and operators of each CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit at the source shall hold, in the source's compliance account, CAIR NO_X Ozone Season allowances available for compliance deductions for the control period under 40 CFR 96.354(a) in an amount not less than the tons of total NO_X emissions for the control period from all CAIR NO_X Ozone Season units at the source, as determined in accordance with 40 CFR Part 96, Subpart HHHH.
(2) A CAIR NO_X Ozone Season unit shall be subject to the requirements under paragraph (1) of the NO_x Ozone Season Emission Requirements starting on the later of May 1, 2009 or the deadline for meeting the unit's monitor certification requirements under 40 CFR 96.370(b)(1),(2), or (3) and for each control period thereafter.
(3) A CAIR NO_X Ozone Season allowance shall not be deducted, for compliance with the requirements under paragraph (1) of the NO_X Ozone Season Emission Requirements, for a control period in a calendar year before the year for which the CAIR NO_X Ozone Season allowance was allocated.
(4) CAIR NO_X Ozone Season allowances shall be held in, deducted from, or transferred into or among CAIR NO_X Ozone Season Allowance Tracking System accounts in accordance with 40 CFR Part 96, Subparts FFFF and GGGG.
(5) A CAIR NO_X Ozone Season allowance is a limited authorization to emit one ton of NO_X in accordance with the CAIR NO_X Ozone Season Trading Program. No provision of the CAIR NO_X Ozone Season Trading Program, the CAIR Part, or an exemption under 40 CFR 96.305 and no provision of law shall be construed to limit the authority of the state or the United States to terminate or limit such authorization.
(6) A CAIR NO_X Ozone Season allowance does not constitute a property right.
(7) Upon recordation by the Administrator under 40 CFR Part 96, Subpart EEEE, FFFF or GGGG, every allocation, transfer, or deduction of a CAIR NO_X Ozone Season allowance to or from a CAIR NO_X Ozone Season unit's compliance account is incorporated automatically in any CAIR Part of the source that includes the CAIR NO_X Ozone Season unit.

Plant Name (from STEP 1)	Lansing Smith Electric Generating Plant

STEP 3, Continued

Excess Emissions Requirements.

If a CAIR NO_X Ozone Season source emits NO_X during any control period in excess of the CAIR NO_X Ozone Season emissions limitation, then:
(1) The owners and operators of the source and each CAIR NO_X Ozone Season unit at the source shall surrender the CAIR NO_X Ozone Season allowances required for deduction under 40 CFR 96.354(d)(1) and pay any fine, penalty, or assessment or comply with any other remedy imposed, for the same violations, under the Clean Air Act or applicable state law; and
(2) Each ton of such excess emissions and each day of such control period shall constitute a separate violation of 40 CFR Part 96, Subpart AAAA, the Clean Air Act, and applicable state law.

Recordkeeping and Reporting Requirements.

(1) Unless otherwise provided, the owners and operators of the CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time before the end of 5 years, in writing by the DEP or the Administrator.
(i) The certificate of representation under 40 CFR 96.313 for the CAIR designated representative for the source and each CAIR NO_X Ozone Season unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation under 40 CFR 96.113 changing the CAIR designated representative.
(ii) All emissions monitoring information, in accordance with 40 CFR Part 96, Subpart HHHH, of this part, provided that to the extent that 40 CFR Part 96, Subpart HHHH, provides for a 3-year period for recordkeeping, the 3-year period shall apply.
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the CAIR NO_X Ozone Season Trading Program.
(iv) Copies of all documents used to complete a CAIR Part form and any other submission under the CAIR NO_X Ozone Season Trading Program or to demonstrate compliance with the requirements of the CAIR NO_X Ozone Season Trading Program.
(2) The CAIR designated representative of a CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit at the source shall submit the reports required under the CAIR NO_X Ozone Season Trading Program, including those under 40 CFR Part 96, Subpart HHHH.

Liability.

(1) Each CAIR NO_X Ozone Season source and each CAIR NO_X Ozone Season unit shall meet the requirements of the CAIR NO_X Ozone Season Trading Program.
(2) Any provision of the CAIR NO_X Ozone Season Trading Program that applies to a CAIR NO_X Ozone Season source or the CAIR designated representative of a CAIR NO_X Ozone Season source shall also apply to the owners and operators of such source and of the CAIR NO_X Ozone Season units at the source.
(3) Any provision of the CAIR NO_X Ozone Season Trading Program that applies to a CAIR NO_X Ozone Season unit or the CAIR designated representative of a CAIR NO_X Ozone Season unit shall also apply to the owners and operators of such unit.

Effect on Other Authorities.

No provision of the CAIR NO_X Ozone Season Trading Program, a CAIR Part, or an exemption under 40 CFR 96.305 shall be construed as exempting or excluding the owners and operators, and the CAIR designated representative, of a CAIR NO_X Ozone Season source or CAIR NO_X Ozone Season unit from compliance with any other provision of the applicable, approved State Implementation Plan, a federally enforceable permit, or the Clean Air Act.

STEP 4

Read the certification statement; provide name, title, owner company name, phone, and e-mail address; sign, and date.

Certification (for designated representative or alternate designated representative only)

I am authorized to make this submission on behalf of the owners and operators of the CAIR source or CAIR units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name James O. Vick	Title Director, Environmental Affairs
Company Owner Name Gulf Power Company	
Phone (850) 444-6311	E-mail Address jovick@southernco.com
Signature James O Vick	Date 5/13/14

DEP Form No. 62-210.900(1)(b) – Form
Effective: 3/16/08

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SECTION VI. APPENDICES.

The Following Appendices Are Enforceable Part of This Permit:

Appendix A, Glossary.
Appendix CAM, Compliance Assurance Monitoring Plan.
Appendix I, List of Insignificant Emissions Units and/or Activities.
Appendix 40 CFR 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units.
Appendix NSPS, Subpart A - General Provisions.
Appendix NSPS, Subpart Da - Standards of Performance for Electric Utility Steam Generating Units.
Appendix NSPS, Subpart GG - Standards of Performance for Stationary Gas Turbines.
Appendix PA-1, Patrol Area.
Appendix RR, Facility-wide Reporting Requirements.
Appendix SO-1, Secretarial Order(s).
Appendix TR, Facility-wide Testing Requirements.
Appendix TV, Title V General Conditions.
Appendix U, List of Unregulated Emissions Units and/or Activities.

Appendix B
SO_2 Data Requirements Rule Modeling Report
Citrus County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 C.F.R. Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Duke Energy Florida (Duke) owns and operates the Crystal River Power Plant (CRPP), an electrical generating facility, in Crystal River, Florida under Title V Permit No. 0170004-049-AV issued by the Florida Department of Environmental Protection (Department). CRPP emitted 32,545 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around CRPP in Citrus County, Florida using air dispersion modeling, following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 C.F.R. Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts, which indicate that Citrus County is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around CRPP for the DRR.

3.2. Modeled Facilities

CRPP is the only DRR-applicable facility in Citrus County and the only significant source of SO_2 in the area. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to include in the modeling demonstration. All sources within 20 kilometers of the primary facility that had 2014 SO_2 emissions of at least 100 tons were included. All other sources within 35 kilometers were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern. Finally, for all sources not already identified

[1] *See* 40 C.F.R. 51.1202.
[2] *Guideline on Air Quality Models*. 40 C.F.R. Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf.
[4] *See* Appendix W to 40 C.F.R. 51, Section 3.2.

for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that there are no other sources of SO_2 emissions that have the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources within 35 kilometers of CRPP emitted less than 1 ton of SO_2 in 2014 (**Table 1**) and are represented in the added monitored background concentrations discussed in **Section 3.9**.

Figure 1: 2014 SO_2 emission sources in and around Citrus County, Florida.

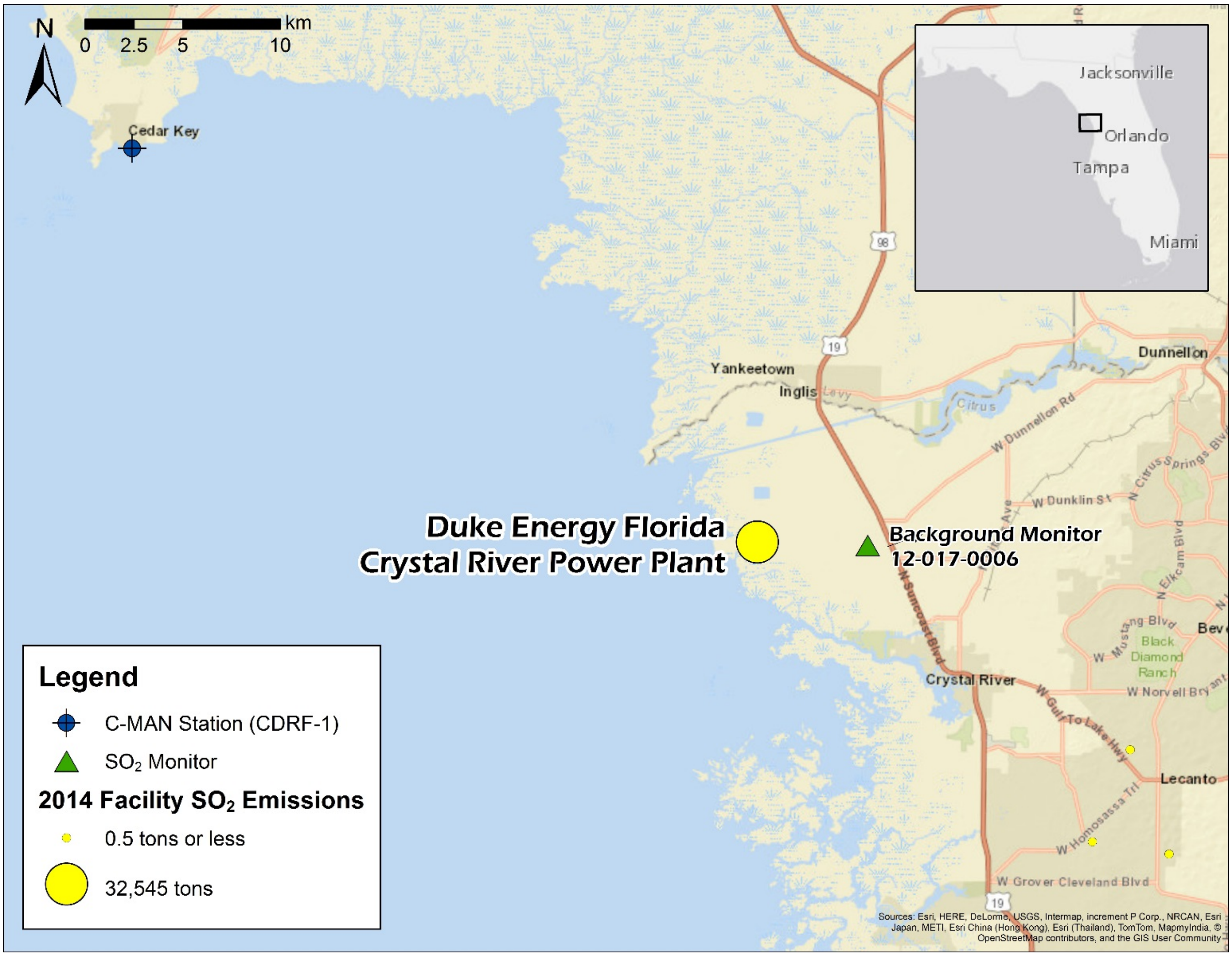


Table 1: 2014 sources of SO_2 emissions within 35 kilometers of Duke's CRPP.

Facility ID	Facility Name	Distance from CRPP (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
017-0004	Duke CRPP	0	0	32,545.10	Yes
017-0364	Precision Grading	23	460	0.08	No
017-0035	Florida Gas Transmission Station 26	20	400	0.50	No
017-0021	Central Materials	25	500	0.14	No

3.3. Meteorological Input Data

Though Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations, there is not a representative station near CRPP due to its location in a very rural area. The nearest NWS ASOS station at Hernando County Airport (BKV) is nearly 60 kilometers southeast and significantly further inland than CRPP. Due to Florida's uniform flat topography, the most important geographical influence on mesoscale meteorological conditions is proximity to the coastline. For these reasons, the Department determined that the BKV ASOS site would not be sufficiently representative of the atmospheric conditions found near CRPP and would need to be supplemented with surface observations from a more representative station.

The only meteorological station in the area with complete, representative, quality-controlled surface data is the Cedar Key Coastal-Marine Automated Network (C-MAN) station (CDRF-1) operated by the National Data Buoy Center (NDBC). This station is located approximately 38 kilometers northwest of CRPP in a similar coastal environment. CDRF-1 is a limited station that records only temperature, dew point, atmospheric pressure, and wind speed and direction. The Department input the 2012-2014 data for these parameters as onsite data into AERMET v.15181 along with the BKV dataset as NWS data using the ONSITE and SURFACE keywords respectively.

The raw data for the CDRF-1 station were retrieved from the NDBC station history site in text format. The raw data for BKV were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD). Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Ruskin, Florida (TBW) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD REFLEVEL SUBNWS – NWS data are substituted for missing onsite data
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 10 – Sets ASOS anemometer height to 10 meters

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The combined 2012-2014 CDRF-1/BKV dataset satisfies this completeness requirement.

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (February 2000).

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station (CDRF-1). The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The default seasonal categories for each month were changed to reflect the subtropical climate of Citrus County. All inputs to AERSURFACE are summarized in **Table 2**.

Table 2: AERSURFACE inputs for 2012-2014 CDRF-1 AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	29.1360
Meteorological Station Longitude (Degrees)	-83.0290
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	1,2
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	10,11,12
Located at an Airport	No
Arid Region	No
2012 Surface Moisture	Wet
2013 Surface Moisture	Average
2014 Surface Moisture	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around CRPP so that a comparison could be done to determine if the meteorological data recorded at CDRF-1 are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. Based on this analysis and the aforementioned geographical influences, the CDRF-1/BKV meteorological dataset was considered to be representative of the domain for this modeling demonstration.

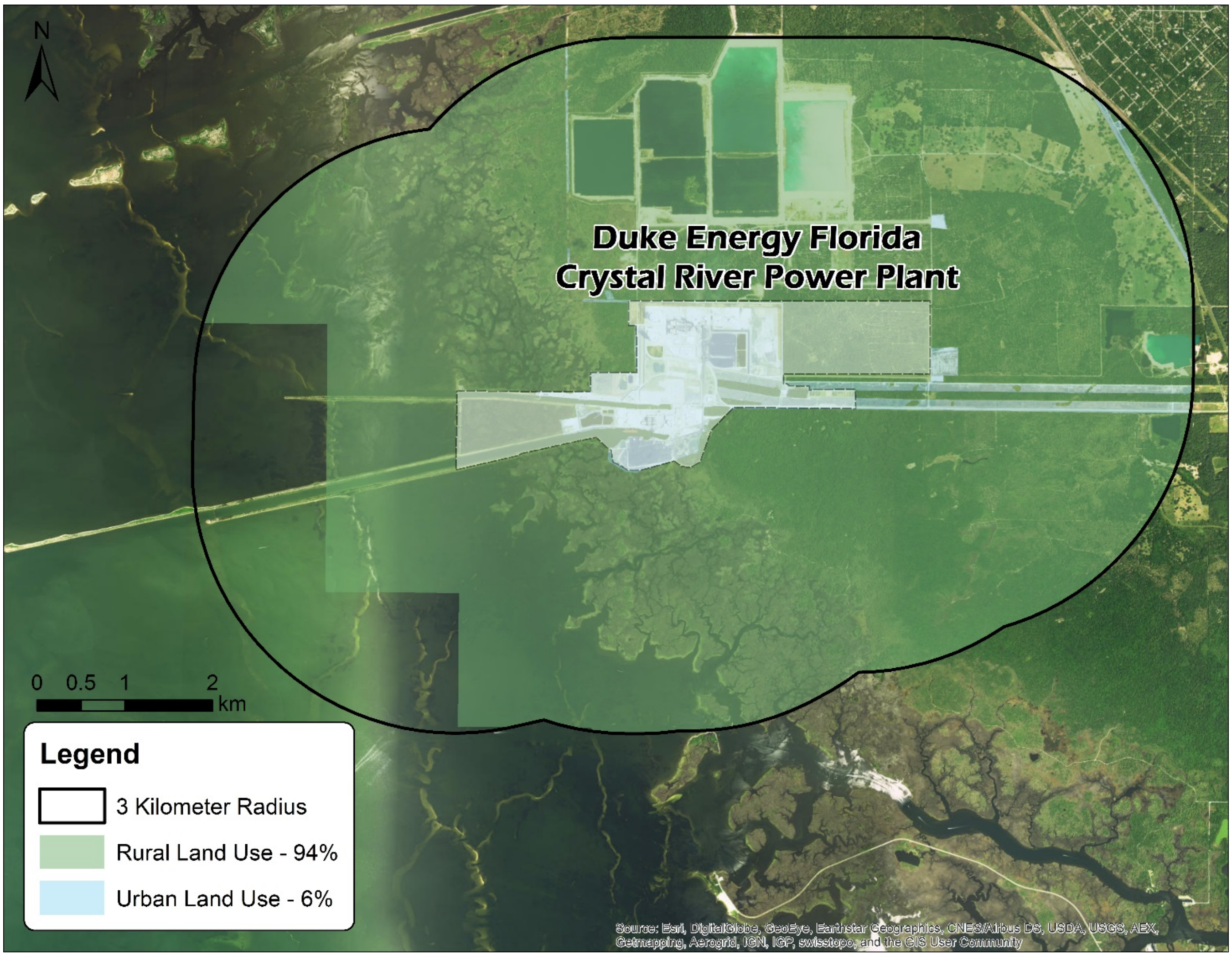
Table 3: Average surface characteristics from AERSURFACE for Citrus County.

Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Cedar Key C-MAN Station	0.11	0.11	0.037
Duke Crystal River Power Plant	0.13	0.21	0.214

3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] Auer's method requires an analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes a majority (94%) of the 3-km radius around CRPP.

Figure 2: Land use classification around Duke's Crystal River Power Plant in Citrus County.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

States Geological Survey (USGS) National Elevation Dataset (NED) with a 10-meter horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 meters. Receptor density then decreased in 2500-meter intervals. Receptors located within CRPP's fence line were removed and receptors were placed with 50-meter spacing along the fence line.

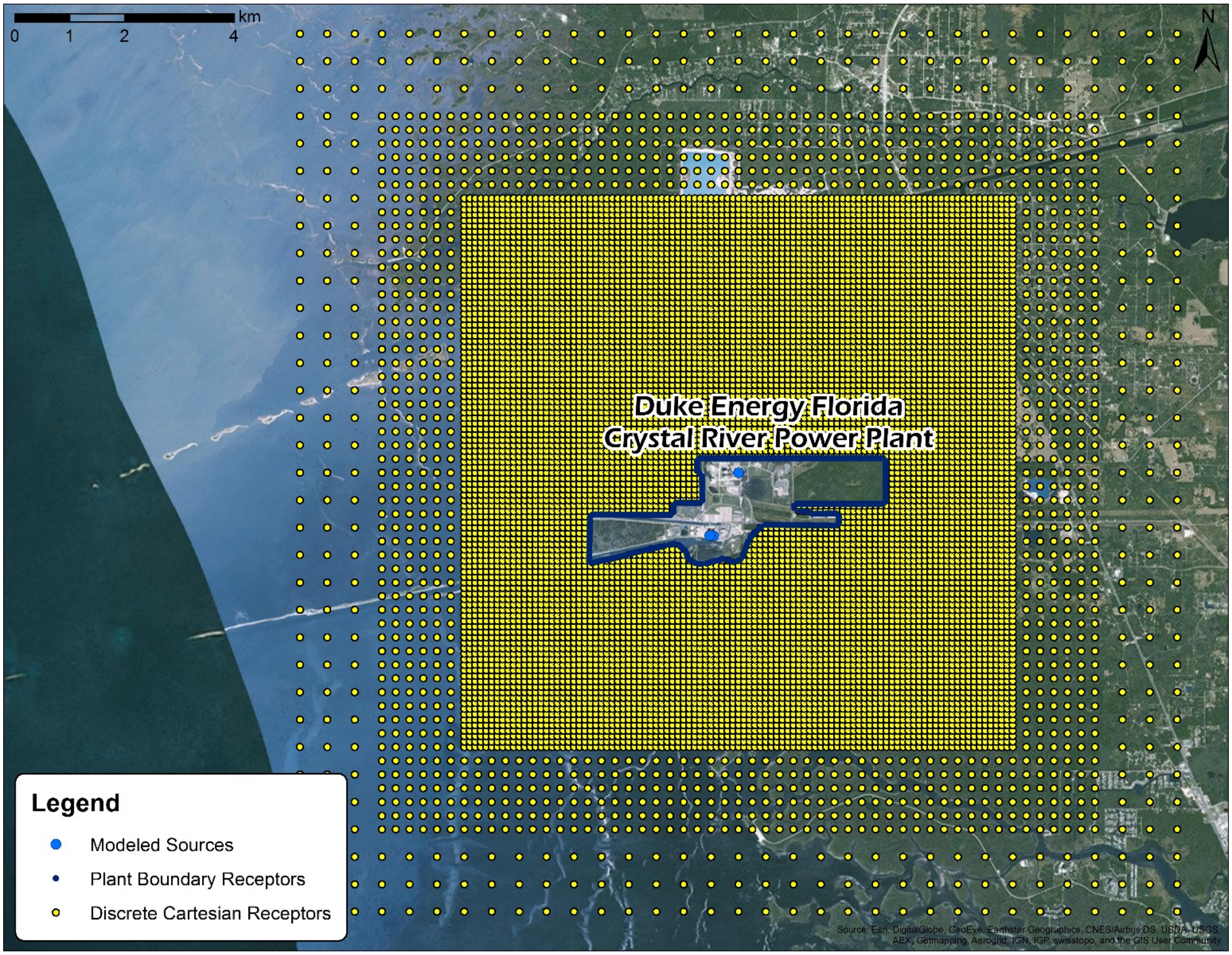
Initial modeling indicated that high concentrations were found in areas of insufficiently dense receptor placement. Accordingly, the grid was expanded to fully resolve the highest concentrations. The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 8 kilometers of CRPP. The receptor grid used in the Citrus County DRR modeling demonstration is described below in **Table 4** and **Figure 3**.

Table 4: Citrus County DRR modeling demonstration receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	Units 4 & 5 Stack
Unit UTM Zone	17N
Unit UTM Easting (m)	334,780.00
Unit UTM Northing (m)	3,205,567.00
Actual Stack Height (m)	167.60
Expected Distance to Max Concentration (m)	1,676
20 Times Stack Height (m)	3,352
100 m Receptor Spacing - Extent from the Origin (m)	5,000
250 m Receptor Spacing - Extent from the Origin (m)	6,500
500 m Receptor Spacing - Extent from the Origin (m)	8,000
Plant Boundary Receptor Spacing (m)	50
Total Receptors	11,460

[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

Figure 3: Receptor grid placement for the Citrus County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. 20 significant structures onsite at CRPP were included in the downwash analysis. Direction-specific downwash parameters for all stacks at CRPP were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use actual hourly emissions data to characterize the emissions from the four SO_2 emissions sources at CRPP. In July 2015, the Department requested that the facility provide hourly data for all units for the years 2012-2014. All data received were thoroughly checked for accuracy and representativeness and included in the modeling demonstration using the AERMOD keyword HOUREMIS. Missing data were substituted following the procedures outlined in 40 C.F.R. 75.33(b). A variety of small, intermittent emissions sources including fire pumps and emergency generators were not included because their emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

3.8.1. CRPP Modeled Units

SO_2 emissions from CRPP are from four coal-fired electric generating boilers. Units 1 and 2 are older units that are required by permit to retire by December 31, 2018. EPA recognized this scheduled closure in its determination that the two units were not subject to the "Round 2" designations in response to the EPA consent decree because they were "announced for retirement."[9] In February 2016, these units began burning cleaner, western bituminous coal to reduce emissions of hydrochloric acid (HCl) and mercury (Hg), among other substances, in order to comply with EPA's Mercury and Air Toxics Standard (MATS).[10] This coal has a much lower sulfur content, which has resulted in significantly lower SO_2 emissions. These reduced SO_2 emissions will continue until the units retire. In addition, operation of these units has decreased as a result of economic forces favoring natural gas-fired electric generating units. The combined gross load for both units has decreased from a 2014 peak of 9,775.89 MW-h/day to just 4,435.85 MW-h/day in 2016, a drop of over 54%.

Units 4 and 5 are newer, highly controlled boilers that emit significantly less SO_2 than Units 1 and 2. These units emit through a common chimney with closely proximate flues in which the plumes are scrubbed of SO_2 emissions via a flue-gas desulfurization (FGD) system. These separate flues were modeled as a single merged stack with an equivalent exit diameter due to the nearly instantaneous merging of the plumes upon exit from the individual flues (**Figure 4**). The equivalent exit diameter of the merged stack was calculated by determining the diameter of a circle with a cross-sectional area equal to that of the two flues summed. This procedure is necessary in order to replicate the actual dispersion of the combined plume. When two plumes merge in the atmosphere, the combined heat content increases the plume's buoyancy, which increases dispersion. AERMOD cannot simulate the interaction of individual plumes because it calculates dispersion for each modeled stack separately and then sums the resulting concentrations from each at the end. This can result in unrealistically high modeled concentrations.

Figure 4: Photo of the plumes from CRPP Units 4 and 5 merging upon exit from the shared stack.

In-stack continuous emissions monitoring systems (CEMS) record stack exit velocity, temperature, and flow rate on an hourly basis for each flue individually. The merged plume's exit velocity was calculated

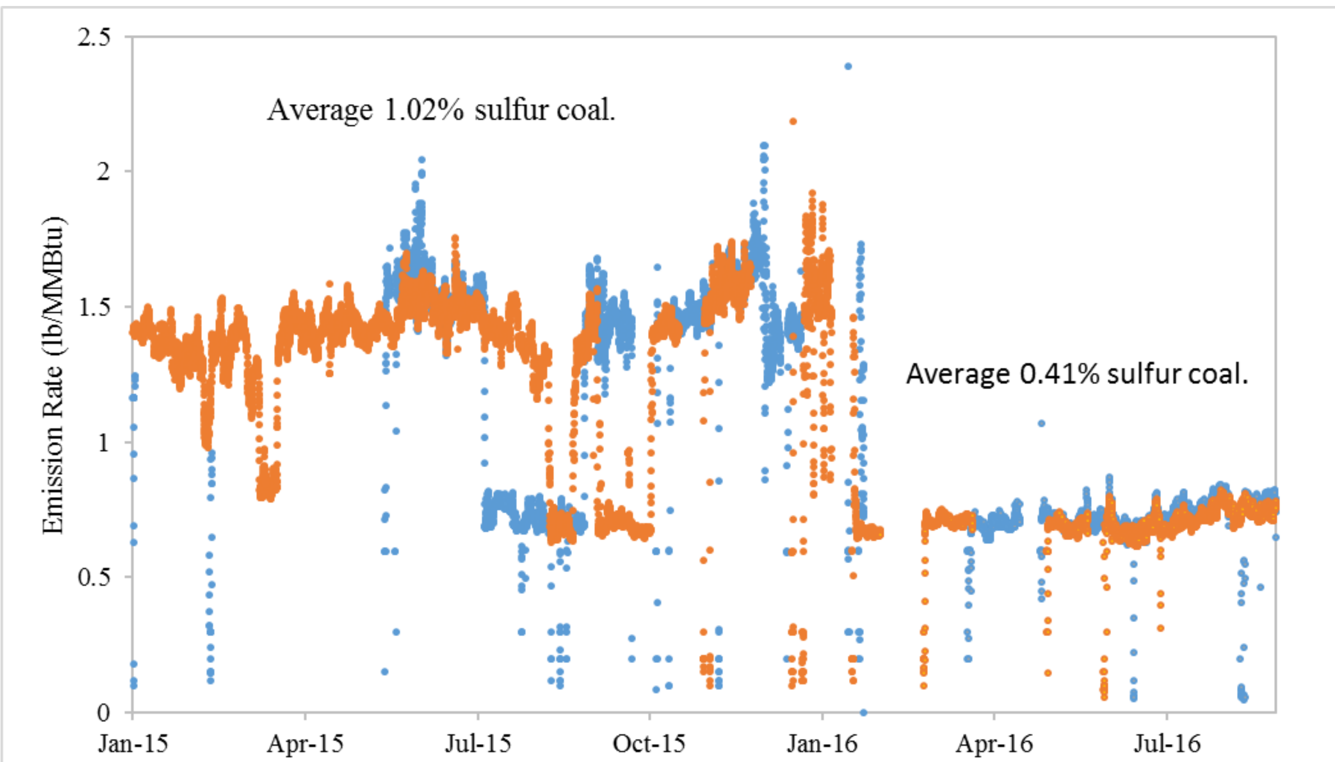
[8] *See* Modeling TAD, Section 5.5.
[9] *Sierra Club et al. v. McCarthy*, Civil Action No. 3:13-cv-3953-SI (N.D. Cal.), Document 163 (Filed 03/02/2015).
[10] *See* 40 C.F.R. 63 Subpart UUUUU

by summing the actual hourly flow rate of each unit and dividing by the area of the merged stack. The plume's exit temperature was calculated by performing a weighted average of each units' hourly temperature based on each unit's actual hourly flow rate.

3.8.2. Recent Operational Changes

It was previously noted that the largest sources of SO_2 at CRPP, Units 1 and 2, have recently begun burning low-sulfur coal resulting in significant SO_2 emissions reductions. The switch from coal with an average sulfur content of 1.02% to coal with an average sulfur content of 0.41% in February 2016 has resulted in an SO_2 emission rate reduction of more than 50% (**Figure 5**). This recent significant change in emissions from Units 1 and 2 means that the actual emissions data from 2012-2014 are no longer representative of the ambient concentrations in the area around CRPP and should not be used to characterize the area. Both units have an electrostatic precipitator (ESP) for controlling particulate matter (PM) emissions. ESPs are very sensitive to fuel changes and require resource intensive calibrations that can take months to complete before any fuel switch can occur. As such, the facility will continue to use the low-sulfur coal in Units 1 and 2 for the remainder of their lifespan (through 2018) for compliance with EPA's MATS rule.

Figure 5: Hourly SO_2 emission rate data for CRPP Units 1 and 2 from January 2015 to August 2016.



As there are not sufficient data available to characterize the current emissions regime for Units 1 and 2 using actual hourly data, the Department developed an emissions estimate for modeling purposes. The Department closely analyzed emissions data for Units 1 and 2 from the periods of 2012-2014 and 2016. and determined that the average SO_2 emission rate for Unit 1 decreased from 1.487 lb/MMBtu to 0.766 lb/MMBtu and Unit 2 decreased from 1.528 lb/MMBtu to 0.713 lb/MMBtu when the fuel switch was finalized in February 2016. The Department omitted 2015 data from the averaging, as these data included long periods during which low-sulfur coal was burned for testing purposes. These average rates of decrease – 48.5% for Unit 1 and 53.3% for Unit 2 – were then applied to the emission rates for all hours operated over the period of 2012-2014 to create a file of simulated-actual, low-sulfur coal emissions. This adjustment is appropriate for units that do not have an SO_2 control device. A change in fuel sulfur content is reflected in the SO_2 emissions with an equal magnitude as the significant majority of sulfur is oxidized to SO_2 during combustion. The Department then input this data file to AERMOD with all other parameters remaining unchanged. To enhance the conservatism of the model, the Department made no adjustment to reflect the reduced dispatch schedule of these units. In the model, operation of Unit 1 and Unit 2 are assumed to remain at the levels that the units operated in 2012 through 2014, which overestimates the units' projected actual use through to closure in 2018.

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[11] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[12] The stacks for Units 1 and 2 are the only stacks at CRPP that exceed GEP height. A summary of the modeled stack parameters for CRPP is presented below in **Table 5**.

Table 5: CRPP units' Citrus County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Unit 1	152 [a]	4.57	CEMS	CEMS	0.515 × CEMS [b]
Unit 2	152 [a]	4.88	CEMS	CEMS	0.467 × CEMS [b]
Units 4 and 5	167.64	13.15 [c]	CEMS [d]	CEMS [e]	CEMS [f]

a. Actual stack height is 151 meters.
b. Simulated-actual emissions data based on emission rate decrease due to the switch to low-sulfur coal.
c. Equivalent diameter (d) for merged stack: $15.25^2\pi + 15.25^2\pi = r^2\pi \rightarrow d = 2 \times \sqrt{15.25^2 + 15.25^2}$ = 43.13 ft = 13.15 m
d. Weighted average based on each unit's actual hourly flow rate.
e. Calculated based on total hourly flow rate from both units and the equivalent diameter.
f. Sum of emissions from both Units 4 and 5.

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[13] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-017-0006 for the period December 2013 to December 2015. EPA guidance recommends using three years of concurrent monitoring data to develop the background concentrations but that was not possible in this case as the monitor did not begin operation until December 2013 and is the only monitor in the area. As shown in **Figure 1**, the monitor is 6 kilometers east of CRPP. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from CRPP. In this case, any measurement recorded when the wind direction was from 225° to 314° was removed from the background calculation as shown in **Figure 6**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 6**.

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[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[12] *See* Modeling TAD, Section 6.1.
[13] *See* Modeling TAD, Section 8.1

Figure 6: 2013-2015 average SO_2 concentrations by wind direction for monitor 12-017-0006.

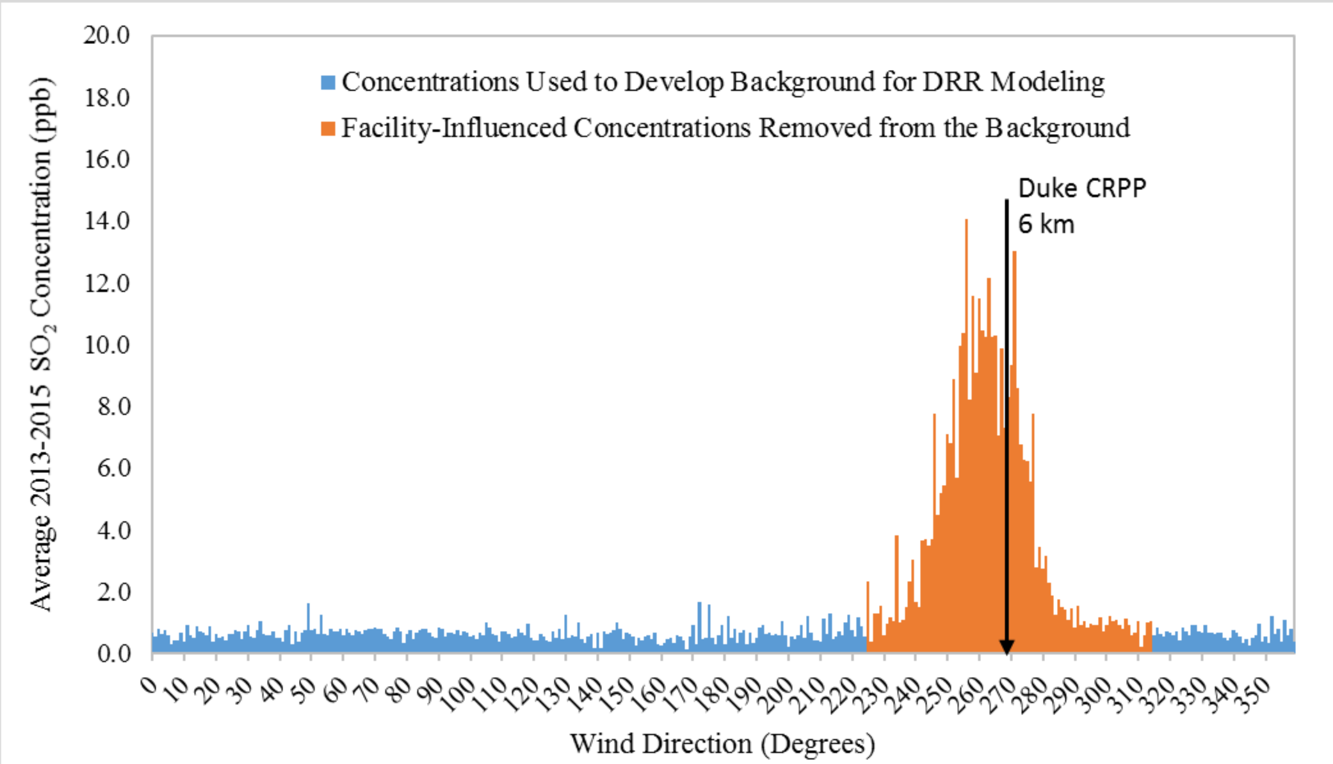


Table 6: 2013-2015 SO_2 background concentrations (ppb) by hour-of-day by season for the Citrus County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	1.00	1.50	1.50	2.00	12:00	1.67	1.50	10.50	2.50
1:00	0.67	1.50	1.50	2.00	13:00	1.33	1.50	10.00	2.50
2:00	0.67	1.50	1.50	2.00	14:00	1.00	2.00	1.50	3.50
3:00	0.67	1.50	1.50	2.00	15:00	1.67	2.00	7.50	2.00
4:00	0.67	1.50	1.50	2.00	16:00	1.00	1.50	1.50	2.00
5:00	0.67	1.50	1.50	2.00	17:00	0.67	1.50	1.50	2.00
6:00	1.00	2.00	1.50	2.50	18:00	0.67	1.00	4.00	2.00
7:00	0.67	1.50	1.50	2.00	19:00	0.67	1.50	2.50	2.50
8:00	0.67	2.50	2.00	2.00	20:00	1.00	7.00	2.00	3.50
9:00	1.00	2.50	7.50	2.50	21:00	0.67	3.50	1.50	2.50
10:00	2.00	5.50	4.50	3.50	22:00	1.33	2.50	3.50	3.00
11:00	2.00	2.00	3.00	3.00	23:00	1.33	1.50	1.50	2.00

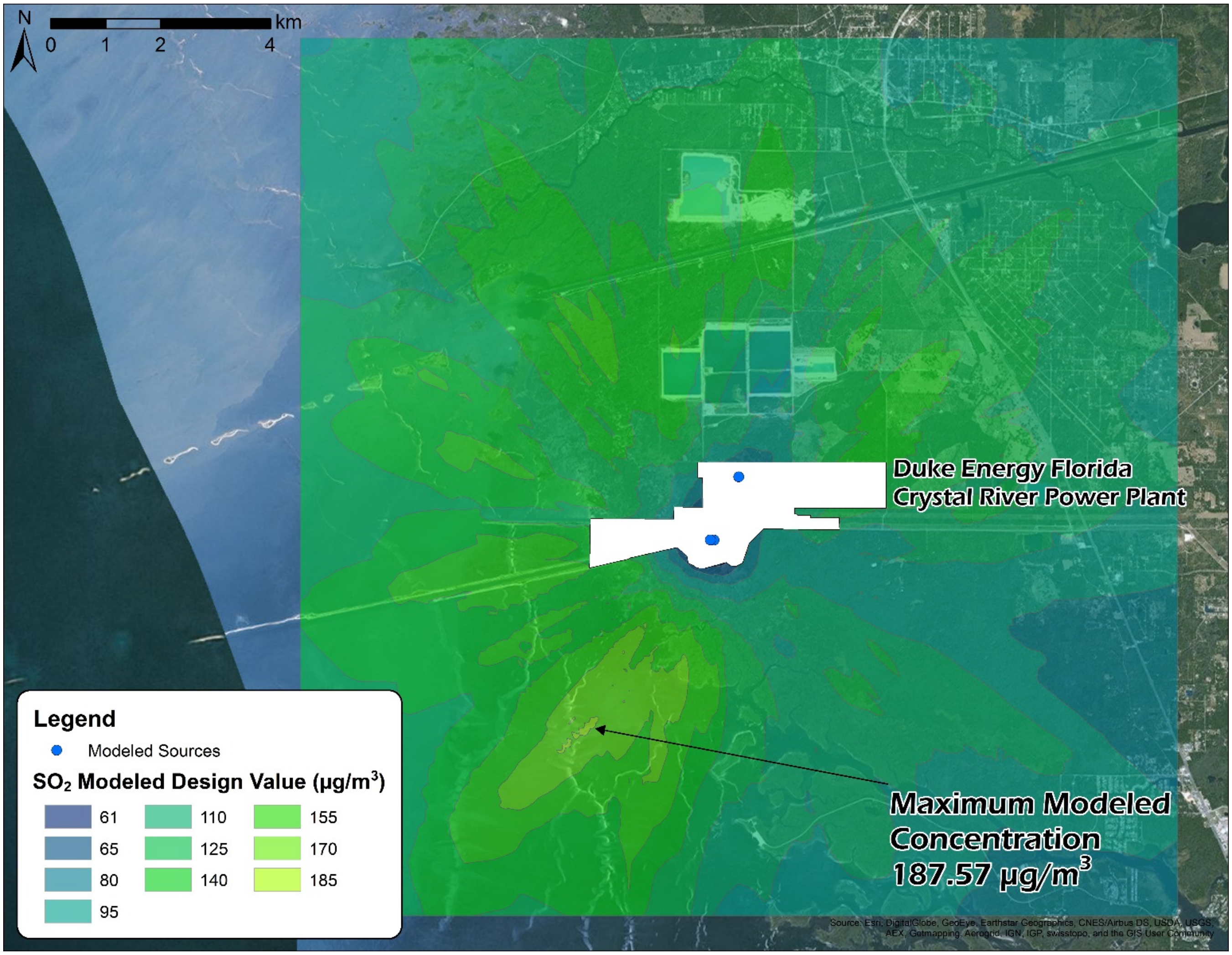
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around Duke's Crystal River Power Plant in Citrus County, Florida in order to satisfy the requirements of the DRR. The model was processed from 2012-2014 using simulated-actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. The results from this modeling demonstration are summarized in **Table 7** and **Figure 7** and indicate that all areas around CRPP are currently in attainment of the SO_2 NAAQS.

Table 7: Maximum modeled SO_2 design value in the Citrus County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (μg/m^3)				1-Hour SO_2 NAAQS	Percent of NAAQS
		Units 1 & 2	Units 4 & 5	Background	Total		
332,080.00	3,201,067.00	136.56	43.17	7.85	187.57	196.4	95.5%

Figure 7: Modeled SO_2 design values in the Citrus County DRR modeling demonstration.



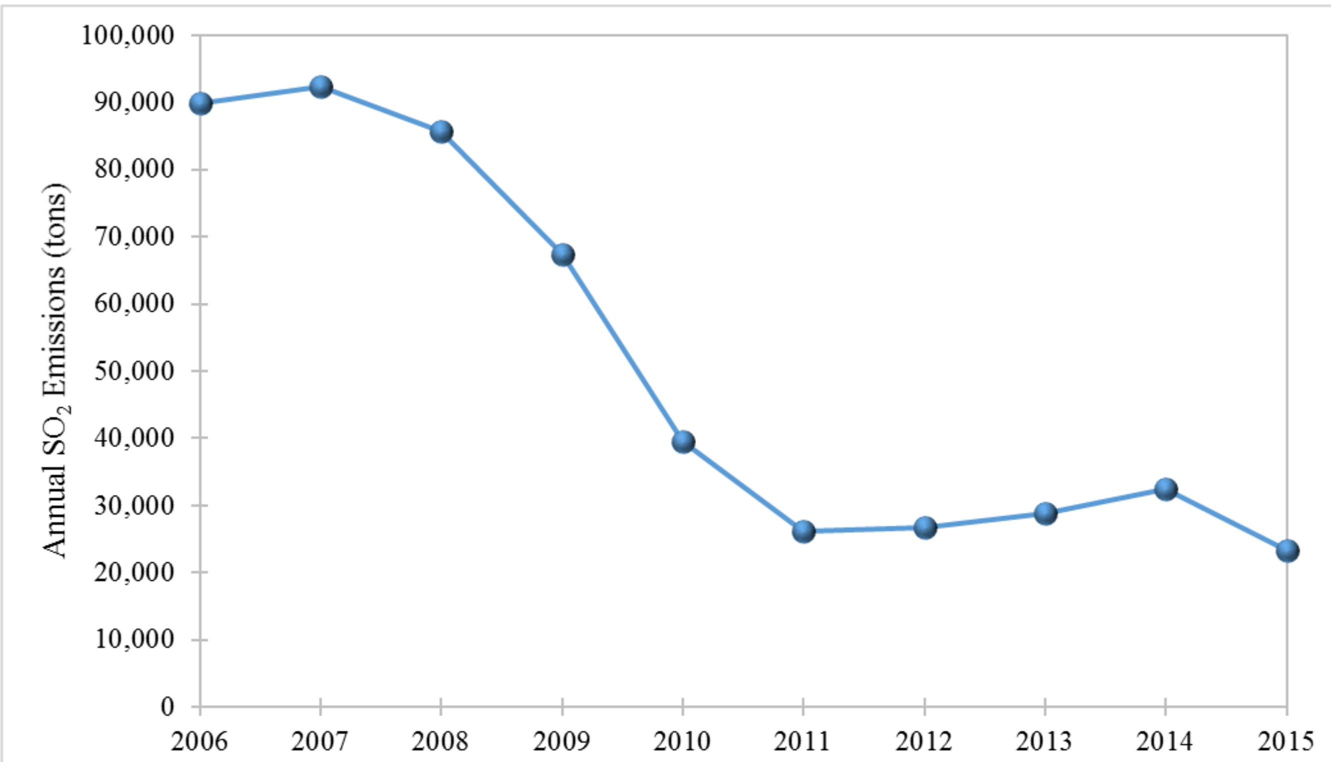
4.1. Continuing Review Obligations

Under the DRR, the Department has an obligation to review SO_2 emissions in the area annually for continued compliance with the NAAQS. It is anticipated that SO_2 concentrations in Citrus County will continue to decrease as they have since the installation of the FGD systems in 2009. The facility's SO_2 emissions declined by 75% from 2007 to 2015 (**Figure 8**). In addition, as previously mentioned, the largest sources of SO_2 at the facility, Units 1 and 2, will permanently retire in less than two years. The switch to low-sulfur coal for these units has already had a dramatic effect on the ambient concentrations in the area. While monitored concentrations exceeded the level of the NAAQS in 2014 and 2015, a decrease of nearly 50% of the maximum recorded concentrations was measured in 2016, reflecting the approximately 50% decrease in emissions from Units 1 and 2 (**Table 8**). Given these factors, the Department is confident that the downward trend of SO_2 emissions and concentrations in Citrus County will continue into the foreseeable future.

Table 8: 2015-2016 Monitored Daily Maximum 1-hour Average SO_2 (ppb).

Annual Concentration Rank	2015	2016	Percent Decrease
1st High	164	75	54%
2nd High	132	59	46%
3rd High	99	58	41%
4th High	96	47	51%

Figure 8: Annual SO2 emissions for Duke CRPP.



4.1.1. Future Allowables Modeling Demonstration

The Citrus County DRR modeling demonstration revealed that Units 4 and 5 are minor contributors to ambient SO_2 concentrations compared to Units 1 and 2. The maximum modeled design value for 2012-2014 for Units 4 and 5 alone was just 58.57 $\mu g/m^3$, or about 30% of the NAAQS. This is supported by the monitoring data showing that a decrease in emissions from 1 and 2 resulted in an equivalent decrease in the monitored maximum ambient concentrations despite the fact that Units 4 and 5 had no significant change in emissions or operation over that period. **Figure 9** below indicates a strong correlation between the monitored maximum ambient concentrations and emissions from Units 1 and 2 while **Figure 10** shows very little correlation with emissions from Units 4 and 5.

Figure 9: Monthly monitored maximum SO_2 concentrations from monitor 12-017-0006 vs. monthly total SO_2 emissions from CRPP Units 1 and 2.

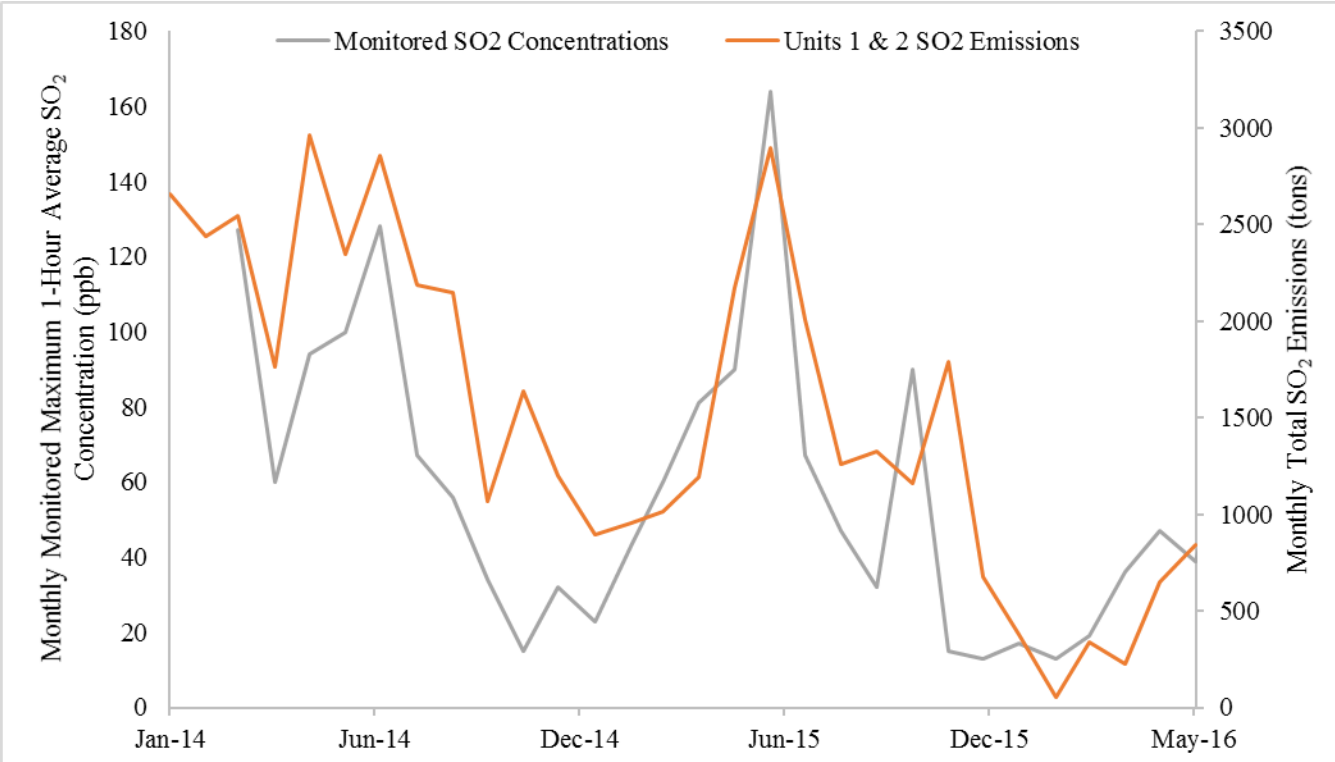
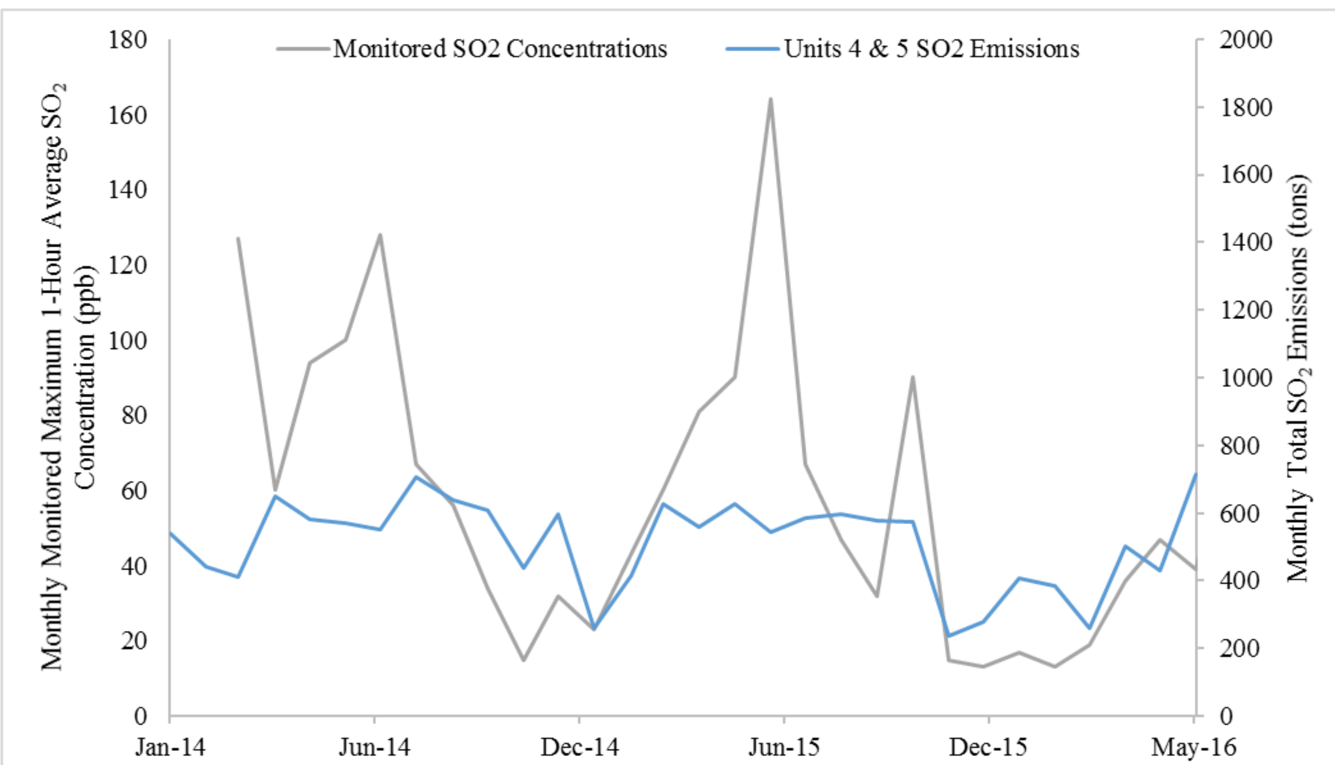


Figure 10: Monthly monitored maximum SO_2 concentrations from monitor 12-017-0006 vs. monthly total SO_2 emissions from CRPP Units 4 and 5.



Given this evidence suggesting that Units 1 and 2 are the primary contributors to both modeled and monitored elevated concentrations of SO_2, and the current changing state of operations for these units, it is appropriate to consider projected modeled SO_2 concentrations in the near future for the purposes of area designations. CRPP was recently issued a permit to advance the retirement date for Units 1 and 2 from December 31, 2020 to December 31, 2018 and to reduce the maximum permitted SO_2 emission rate for Units 4 and 5.[14] In addition, there are four natural gas-fired CCCTs coming online in 2018. A final modeling demonstration was performed that accounts for these changes and presents a January 1, 2019 maximum permitted emission rate scenario for CRPP, as summarized in **Table 9**.

Table 9: CRPP units' maximum permitted Citrus County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
CCCT Units 1-4[a]	54.86	6.7	10.7	350.00	17.7
Units 4 and 5	167.64	13.15	15.33	327.60	5,647.84 [b]
a. Four separate stacks with identical parameters. b. New permitted emission limit of 0.25 lb/MMBtu.					

4.1.1.1. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[15] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The SO_2 emission limits on Units 4 and 5 are based on 30-day averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 10**.

Table 10: Emissions variability analysis and equivalent emission rate calculations for CRPP.

Unit Description	99th Percentile Rate (lb/hr)		Ratio	Permitted	Equivalent
	1-hr	30-day	1-hr/30-day	Limit (lb/hr)	Limit (lb/hr)
Units 4 and 5	3,165.58	1,904.70	0.602	3,672.00	5,647.84

4.1.1.2. Future Allowables Modeling Demonstration Results

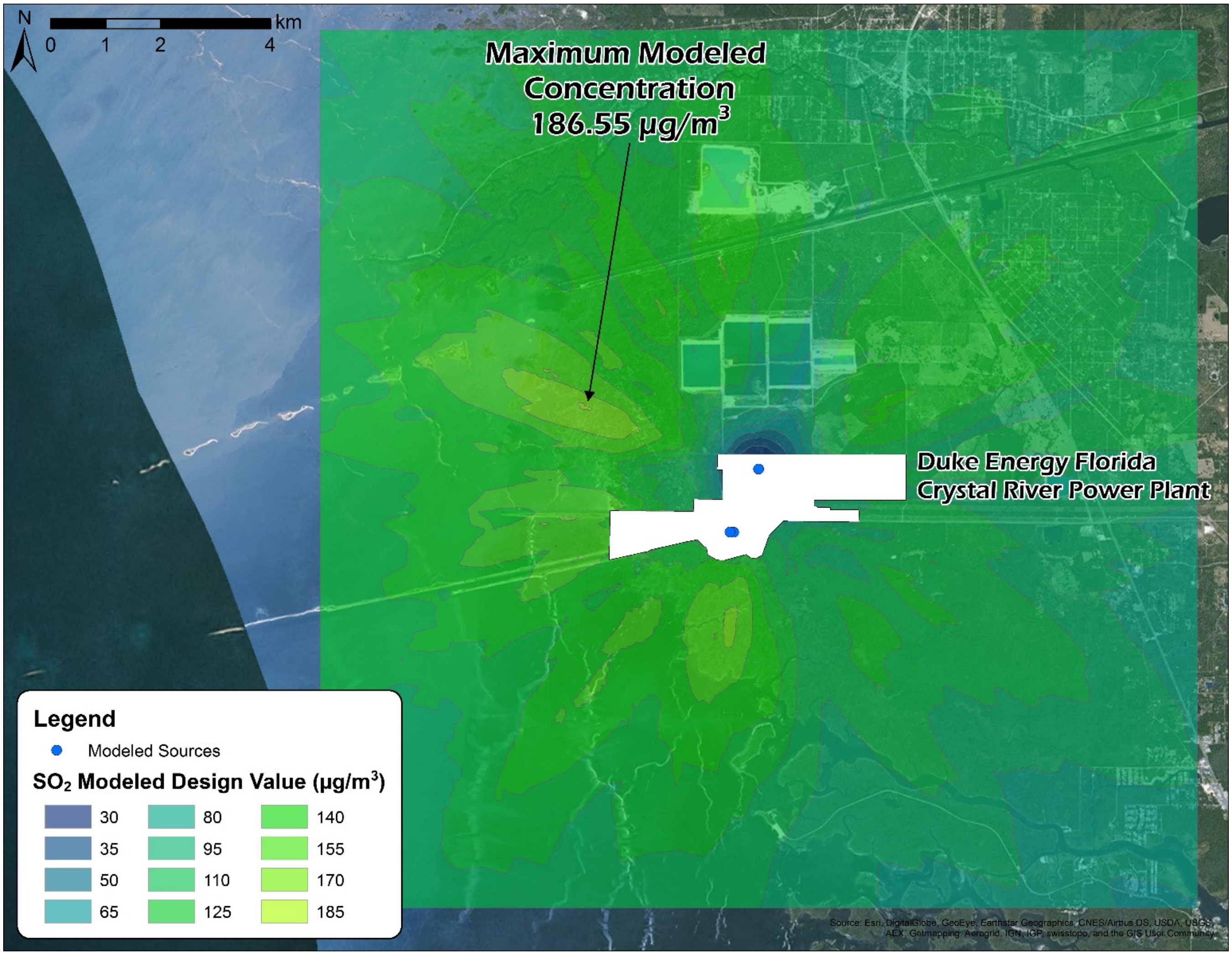
The results of the future allowables modeling demonstration are summarized in **Table 11** and **Figure 11** and indicate that all areas around CRPP will be well within attainment of the SO_2 NAAQS at any possible operating scenario in the future. The Department's continuing review obligations will end at that time.

[14] *See* Air Construction Permit No. 0170004-054-AC, issued by the Florida Department of Environmental Protection on January 5, 2017, attached to this Modeling Report as Appendix B-1.
[15] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html

Table 11: Maximum modeled SO_2 design value in the 2019 allowables Citrus County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (µg/m³)				1-Hour SO_2 NAAQS	Percent of NAAQS
		Units 4 & 5	CCCT Units	Background	Total		
331,680.00	3,206,667.00	181.24	2.26	3.05	186.55	196.4	95.0%

Figure 11: Modeled SO_2 design values in the 2019 allowables Citrus County DRR modeling demonstration.



Appendix B-1

Duke Energy Florida – Crystal River Power Plant

Air Construction Permit No. 0170004-054-AC

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

PERMITTEE

Duke Energy Florida, LLC (DEF)
Crystal River Power Plant

Authorized Representative:
Mr. Brian V. Powers, Station Manager

Permit Nos. 0170004-054-AC/PSD-FL-383G
Permit Expires: December 31, 2018
Air Construction Permit
Project: Minor Source Air Construction Permit & Revisions
Citrus County, Florida

PROJECT

This is the final air construction (AC) permit, which authorizes the shutdown of FFSG, Units 1 & 2 and revisions to previously issued AC/PSD permits (Project). This facility is an existing electric power generation facility categorized under Standard Industrial Classification No. 4911. The existing Crystal River Power Plant is in Citrus County at 15760 West Power Line Street in Crystal River, Florida. UTM coordinates are: Zone 17, 334.3 km East and 3204.5 km North. Latitude is: 28° 57' 34" North and Longitude is: 82° 42' 1" West.

This final permit is organized into the following sections: Section I (General Information), Section II (Requirements); and, Section III (Emission(s) Unit(s) Specific Conditions). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section IV of this permit. [As noted in the Final Determination provided with this final permit, only minor changes and clarifications were made to the draft permit.]

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is <u>not</u> subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality. A copy of this permit modification shall be filed with the referenced permit and shall become part of the permit.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

For:

Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

SA/dlr/sms

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the persons listed below.

Mr. Brian V. Powers, DEF: brian.powers@duke-energy.com
Mr. Jamie Hunter, DEF: jamie.hunter@duke-energy.com
Mr. Michael Ballenger, P.E., Trinity Consultants: mballinger@trinityconsultants.com
DEP SWD Office: SWD_Air@dep.state.fl.us and SWD_Air_Permitting@dep.state.fl.us
DEP Siting Coordination Office: SCO@dep.state.fl.us
Mr. Brian Himes, DEP OBP: brian.himes@dep.state.fl.us
Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us
EPA Region 4 NSR/PSD: NSRsubmittals@epa.gov

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

FACILITY DESCRIPTION

This existing facility consists of four coal-fired fossil fuel steam generating (FFSG) units with electrostatic precipitators; two natural draft cooling towers for FFSG Units 4 and 5; helper mechanical cooling towers for FFSG Units 1 and 2; coal, fly ash, and bottom ash handling facilities; limestone and gypsum material handling activities; hydrated lime storage and transfer system for Units 4 and 5; and, various fire pumps and generators. The facility is also authorized to operate a portable concrete batch plant (EU 033), as needed for on-site maintenance. The facility continuously operates low-NO_X burners, selective catalytic reduction systems (SCR), flue gas desulfurization systems (FGD) which includes limestone and gypsum material handling activities and acid mist mitigation (AMM) systems for existing Units 4 and 5, as authorized by permits No. 0170004-023-AC (PSD-FL-383C) and 0170004-037-AC (PSD-FL-383E). In conjunction with the new control equipment, Units 4 and 5 are now also authorized to burn a blend of bituminous/sub-bituminous coal.

Also included at this facility are miscellaneous insignificant emissions units and/or activities.

This project will affect the following *existing* permitted emissions units:

E.U. ID No.	Brief Description
001	Fossil Fuel Steam Generator (FFSG), Unit 1
002	FFSG, Unit 2
003	FFSG, Unit 5
004	FFSG, Unit 4

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- This facility operates units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

PROPOSED PROJECT

This project adds several new permit conditions while also changing conditions in several previously issued AC and PSD permits. The AC permit adds several conditions dealing with the future shutdown date of FFSG Units 1 & 2. In addition, previously issued AC/PSD permits have been revised regarding FFSG Units 5 & 4. These revisions lower the SO_2 emission limit for the units from 0.27 pounds per million British thermal units (lb/MMBtu) of heat input based on a 30-day rolling average to 0.25 lb/MMBtu based on a 30-day rolling average. Compliance with the revised SO_2 emission limit shall occur on or before December 31, 2017.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Minor Source Air Construction Permit Application received on November 18, 2016 (complete).

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The mailing address for the Office of Permitting and Compliance is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.
2. Compliance Authority: All documents related to compliance activities, such as reports, tests, and notifications, shall be submitted to the Compliance Authority. The Compliance Authority is listed on the cover page of the Title V air operation permit.
3. Appendices. The following Appendices are attached as part of this permit:
   a. Appendix A. Citation Formats and Definitions;
   b. Appendix B. General Conditions;
   c. Appendix C. Common Conditions; and,
   d. Appendix D. Common Testing Requirements.
4. Applicable Regulations, Forms and Application Procedures. Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and, Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 & 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions. For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications. The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) & 62-212.300(1)(a), F.A.C.]
7. Source Obligation. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification. [Rule 62-212.400(12), F.A.C.]
8. Construction. **This permit authorizes the proposed project.** The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Office of Permitting and Compliance prior to the expiration of this permit. [Rules 62-210.300(1), 62-4.070(4) 62-4.080, and 62-4.210, F.A.C.]
9. Application for Title V Air Operation Permit. **The permittee shall apply for a Title V air operation permit to incorporate the new, lower SO_2 emission limit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation under the new lower limit.** To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220 and Chapter 62-213, F.A.C.]

Subsection A. FFSG, Units 1 & 2 (Emission Units 001 & 002)

This subsection of the permit addresses the following emissions units:

E.U. ID No.	Brief Description
001	FFSG Unit 1
002	FFSG Unit 2

This subsection of the permit is for authorizing the shutdown of FFSG, Units 1 & 2.

PREVIOUS APPLICABLE REQUIREMENTS

1. Effect on Other Permits: The conditions of this permit supplement all previously issued air construction and operation permits for these emissions units. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions and regulations. [Rule 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.]

SHUTDOWN

2. Shutdown: Unless otherwise specified by the Department in writing, these emission units shall retire by December 31, 2018 and shall no longer operate after this date or in accordance with the date as specified in Condition 8., Section 2. Administrative Requirements of Permit No. 0170004-047-AC, whichever occurs first. [Applicant Request; Application No. 0170004-054-AC; and, Rules 62-4.160(2) & 62-210.200, *Definitions - Potential to Emit (PTE)*, F.A.C.]

   {Permitting note: The December 31, 2018 retirement date may be temporarily extended if the permittee and the Department in writing agree that a situation beyond the control of the permittee has occurred and the permittee can demonstrate that temporary continued operation of these units is necessary to maintain electric system reliability.}

REPORTING REQUIREMENTS

3. Reporting: The permittee shall notify the permitting and compliance authorities of the actual shutdown dates of the units. [Applicant Request; and, Application No. 0170004-054-AC.]

This subsection of the permit addresses the following emissions units:

E.U. ID No.	Brief Description
003	FFSG, Unit 5
004	FFSG, Unit 4

This subsection of the permit addresses revisions to the SO_2 emission limit that applies to FFSG, Units 5 & 4.

The revisions lower the SO_2 emission limit from 0.27 lb/MMBtu of heat input based on a 30-day rolling average to 0.25 lb/MMBtu of heat input based on a 30-day rolling average. Compliance with the revised SO_2 emission limit shall occur on or before December 31, 2017.

Permits Being Modified:	Permit No. 0170004-037-AC/PSD-FL-383F was the latest compilation of the permit revisions which revised and replaced Permit No. 0170004-026-AC/PSD-FL-383D. {Note: Permit No. 0170004-016-AC/PSD-FL-383 was the original permit and Permit No. 0170004-023-AC/PSD-FL-383C was a revision to the original permit.}
Affected Emission Units:	FFSG Units 5 & 4 (E.U. ID Nos. 003 & 004)

The affected specific condition as cited below is hereby changed as follows (the remainder of the permit remains unchanged as a result of this permitting action):

Specific Condition 3.A.9.b.

Specific Condition 3.A.9.b. is changed as follows:

{For simplified reading, the important revisions are emphasized with yellow highlight in this electronic document. ~~Strikethrough~~ is used to denote the deletion of text and double-underlines are used to denote the addition of text.}

9. Standards Based on CEMS: Including the emissions from the CBO unit, emissions from Units 4 and 5 each shall not exceed the following standards based on data collected by the CEMS.

   a. …

   b. *SO_2 Emissions*: As determined by CEMS data, SO_2 emissions shall not exceed 0.27 lb/MMBtu of heat input on or before December 31, 2017 and 0.25 lb/MMBtu of heat input after December 31, 2017 based on a 30-day rolling average for all periods of operation including startup, shutdown and malfunction. As determined by CEMS data, SO_2 emissions shall not exceed 1944.0 lb/hour per unit based on a 24-hour block average excluding startup, shutdown and malfunction of the FGD system. [Application Nos. 0170004-016-AC & 0170004-054-AC/PSD-FL-383G; Rules 62-4.070(3), 62-4.080 and 62-212.400(12), F.A.C.]

   {Permitting notes: Compliance with the revised SO_2 emission standard of 0.25 lb/MMBtu of heat input based on a 30-day rolling average for all period of operation including startup, shutdown, and malfunction shall occur after December 31, 2017. In addition, the more stringent SO_2 emission limit assures compliance with the less stringent, yet applicable SO_2 emission standard from NSPS 40 CFR 60, Subpart D.}

   …

The following are new conditions being added specifically for this part of the project, i.e., lowering of the SO_2 emission limit.

No new or modified equipment (physical changes) or changes in methods of operation associated with this part of the project (SO_2 emission limit reduction) are authorized under this permit.

PREVIOUS APPLICABLE REQUIREMENTS

1. Effect on Other Permits: The conditions of this permit supplement all previously issued air construction and operation permits for these emissions units. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions and regulations. [Rule 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.]

TESTING REQUIREMENTS

2. Initial Compliance Tests: These emission units shall use the previously certified SO_2 CEMS data to demonstrate initial compliance with the new SO_2 emission limit of 0.25 lb/MMBtu. The initial compliance tests shall consist of the initial 30-day rolling average using SO_2 CEMS data collected during the first 30 boiler operating days following December 31, 2017. [Rules 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.; and, Application No. 0170004-054-AC/PSD-FL-383G.]

REPORTING REQUIREMENTS

3. Test Reports: The permittee shall prepare and submit a report summarizing the results of the initial compliance demonstration. The report shall be submitted no later than 45 days following the conclusion of the demonstration period. Reports shall be prepared in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(10), F.A.C.; and, Application No. 0170004-054-AC/PSD-FL-383G.]

Appendix C
SO_2 Data Requirements Rule Modeling Report
Duval County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Jacksonville Electric Authority (JEA) owns and operates the combined Northside Generating Station (NGS) and St. Johns River Power Park (SJRPP) facility in Jacksonville, Florida under Title V Permit No. 0310045-042-AV issued by the Florida Department of Environmental Protection (Department). NGS/SJRPP emitted 20,978 tons of SO_2 from its nine electric generating units in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around NGS/SJRPP in Duval County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate Duval County is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around NGS/SJRPP for the DRR.

3.2. Modeled Facilities

NGS/SJRPP is the only DRR-applicable facility in Duval County. There are, however, a variety of small nearby SO_2 sources in Duval County and adjacent Nassau County. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subject to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration

[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.
[4] *See* Appendix W to 40 CFR 51, Section 3.2.

gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that Cedar Bay, Renessenz, Anchor Glass, and IFF Chemical in Jacksonville are the only other sources of SO_2 emissions that have the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). WestRock was not chosen despite exceeding the 20d screening approach because it is a DRR-applicable source that is fully addressed in the Nassau County modeling demonstration in **Appendix G** to this submittal. All other sources in Duval County emitted less than 50 tons of SO_2 in 2014 (**Table 1**) and are represented in the added monitored background concentrations discussed in **Section 3.9**.

Figure 1: 2014 SO_2 emission sources in Duval County, Florida.

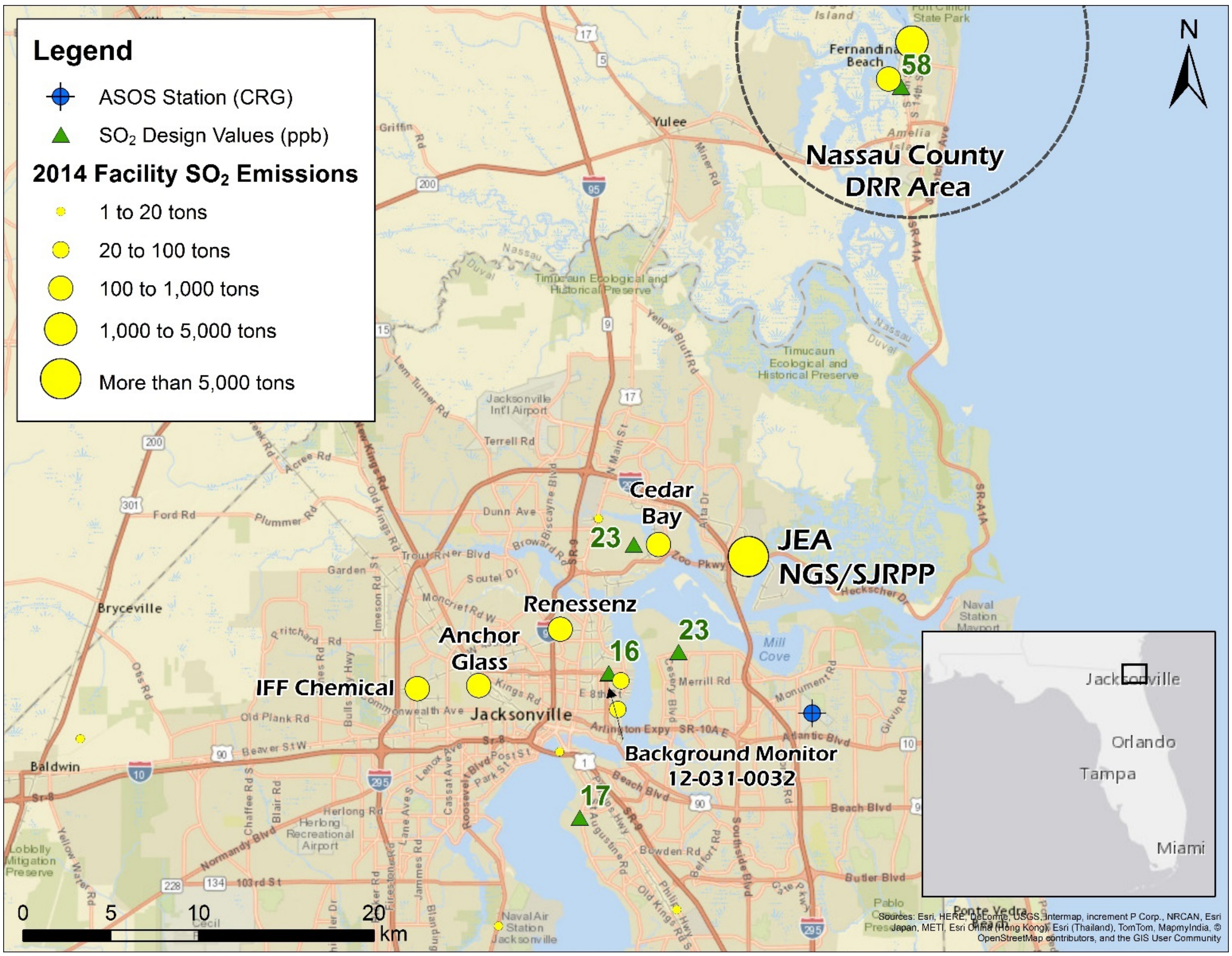


Table 1: Sources of SO_2 emissions greater than 10 tons in 2014 within 35 km of JEA's NGS/SJRPP Facility.

Facility ID	Facility Name	Distance from NGS/SJRPP (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
031-0045	JEA NGS/SJRPP Facility [a]	0	0	20,978.32	Yes
031-0337	Cedar Bay Generating Plant [a]	5	100	732.82	Yes
031-0166	JEA Buckman	11	220	37.05	No
031-0039	Renessenz Jacksonville Facility [a]	12	240	642.05	Yes
031-0050	Owens-Corning Jacksonville	12	240	45.91	No
031-0005	Anchor Glass Jacksonville Plant [a]	17	340	123.06	Yes
031-0071	IFF Chemical Holdings [a]	21	420	986.45	Yes
031-0043	Duval Asphalt Phillips Highway	21	420	8.81	No
089-0004	Rayonier Performance Fibers [b]	28	560	354.82	No
089-0003	WestRock Fernandina Beach [c]	31	620	3,477.17	Yes

a. Explicitly modeled facilities.
b. Rayonier is an explicitly modeled facility in the WestRock DRR report; **Appendix G** to this submittal.
c. WestRock is a DRR-applicable facility and is characterized in **Appendix G** to this submittal.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Jacksonville's Craig Municipal Airport (CRG) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location at the Jacksonville International Airport (JAX) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.15272
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 7.92 – Sets ASOS anemometer height to 7.92 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 CRG dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The default seasonal categories for each month were changed to reflect the subtropical climate of Duval County. All inputs to AERSURFACE are summarized in **Table 2**.

Table 2: AERSURFACE inputs for 2012-2014 CRG AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	30.337
Meteorological Station Longitude (Degrees)	-81.5126
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	1,2
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Average
Average Surface Moisture 2013	Dry
Average Surface Moisture 2014	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around NGS/SJRPP so that a comparison could be done to determine if the meteorological data recorded at CRG are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. Due to Florida's uniform flat topography, the most important geographical influence on mesoscale meteorological conditions is proximity to the coastline. CRG and NGS/SJRPP are approximately 12 km and 14 km from Northeast Florida's Atlantic Coast respectively. In addition, the airport is just 10 km southeast of NGS/SJRPP and the entire area has a flat, coastal plain topography. Based on this analysis, the CRG meteorological dataset was considered to be representative of the domain for this modeling demonstration.

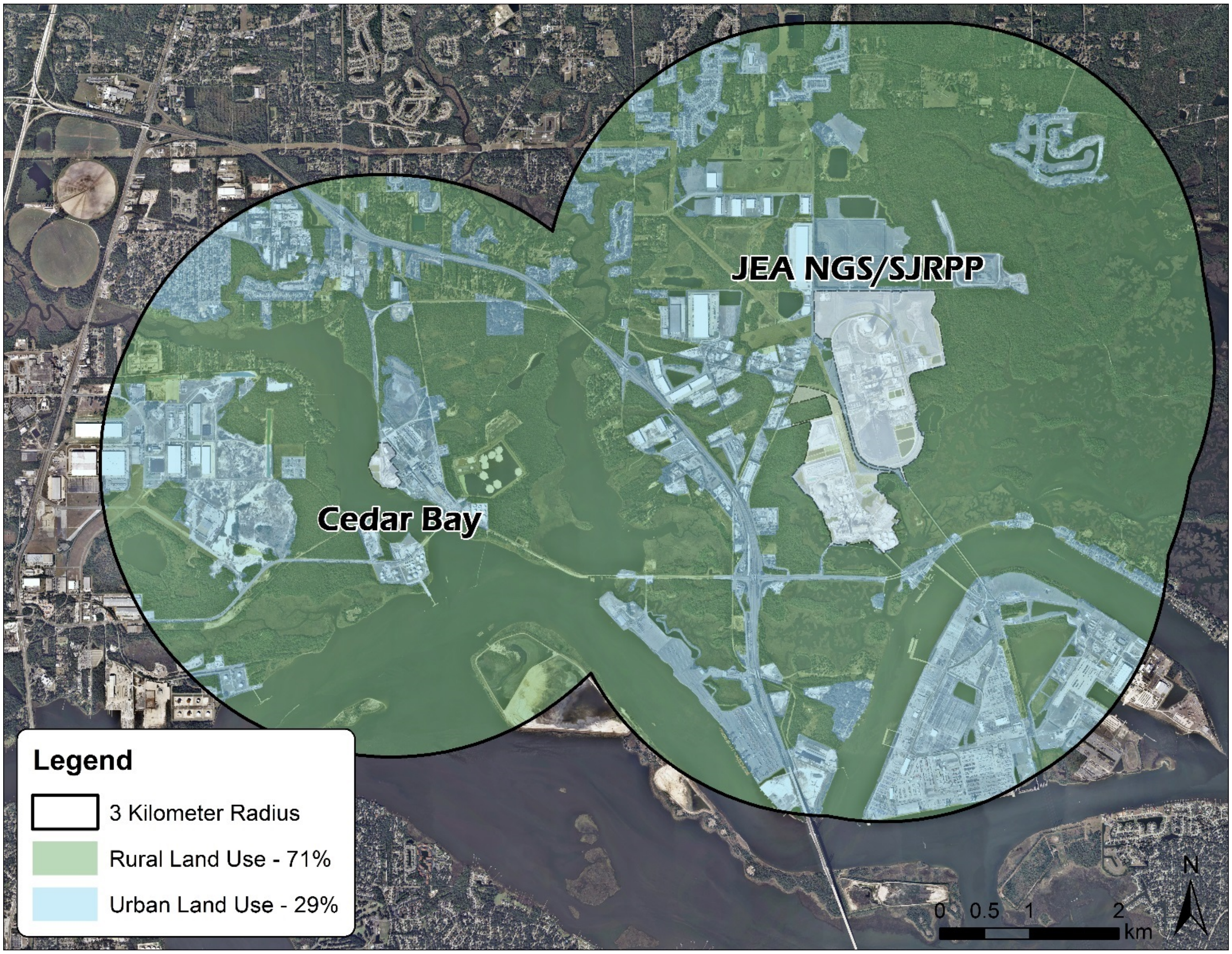
Table 3: Average surface characteristics from AERSURFACE for Duval County.

Location	Albedo	Bowen Ratio	Surface Roughness (z_0)
Craig Municipal Airport	0.15	0.51	0.114
JEA NGS/SJRPP Facility	0.14	0.30	0.296

3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes a majority (71%) of the combined 3-km radius around NGS/SJRPP and Cedar Bay.

Figure 2: Land use classification around JEA's NGS/SJRPP Facility in Duval County.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within NGS/SJRPP's fenceline were removed and receptors were placed with 50 m spacing along the fenceline. This grid placement was sufficient to fully resolve the maximum modeled concentrations in the Duval County modeling demonstration.

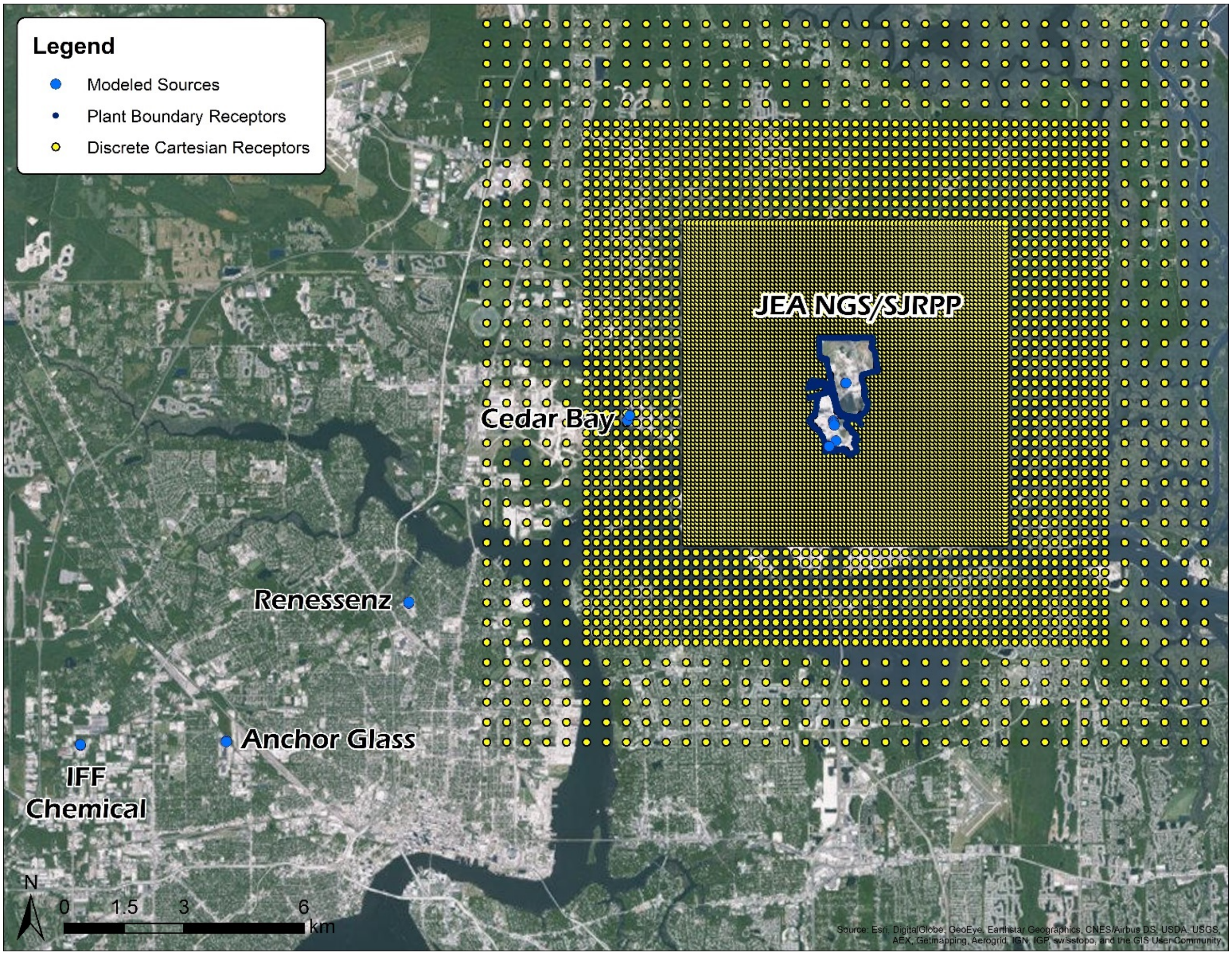
The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 9.5 km of NGS/SJRPP. The receptor grid used in the Duval County DRR modeling demonstration is described below in **Table 4** and **Figure 3**.

Table 4: Duval County DRR modeling demonstration receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	SJRPP Boiler 1
Unit UTM Zone	17N
Unit UTM Easting (m)	447,087.08
Unit UTM Northing (m)	3,366,660.94
Actual Stack Height (m)	195.07
Expected Distance to Max Concentration (m)	1,951
20 Times Stack Height (m)	3,901
100 m Receptor Spacing - Extent from the Origin (m)	4,000
250 m Receptor Spacing - Extent from the Origin (m)	6,500
500 m Receptor Spacing - Extent from the Origin (m)	9,000
Plant Boundary Receptor Spacing (m)	50
Total Receptors	8,991

[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

Figure 3: Receptor grid placement for the Duval County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. Twenty significant structures onsite at NGS/SJRPP and three structures at Cedar Bay were included in the downwash analysis. Direction-specific downwash parameters for all stacks at NGS/SJRPP and Cedar Bay were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use actual hourly emissions data to characterize the largest sources at NGS/SJRPP and some background sources. Three background facilities, Cedar Bay, IFF Chemical, and Anchor Glass, were characterized with their maximum permitted short-term emission rates. The hourly data for all units were requested from the facilities for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness. The hourly data were then included in the modeling demonstration using the AERMOD keyword HOUREMIS for the units that were characterized with actual emissions data. Missing hourly data from NGS/SJRPP were substituted following the procedures outlined in 40 CFR 75.33(b). A variety of small, intermittent emissions sources including fire pumps and emergency generators at all facilities were not included because their emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

3.8.1. NGS/SJRPP Modeled Units

SO_2 emissions from NGS/SJRPP are predominantly from four fossil fuel-fired electric generating boilers that operate mostly on coal. The two units at NGS are circulating fluidized bed (CFB) boilers that utilize limestone injection to the bed to eliminate most SO_2 emissions. The two units at SJRPP utilize flue-gas desulfurization (FGD) systems to scrub the plumes of SO_2 before the plumes leave the stacks. There are also four pre-NSPS simple-cycle combustion turbine (SCCT) peaker units at NGS that fire only fuel oil and have uncontrolled emissions. These units are rarely operated. Finally, there is also a pre-NSPS fossil fuel-fired electric generating boiler at NGS that fires mostly natural gas to control emissions. Given the low utilization of the peakers and the low sulfur content of natural gas, these five units typically constitute only about 1% of NGS/SJRPP's total SO_2 emissions. SO_2 emissions from all units are monitored by in-stack continuous emissions monitoring systems (CEMS).

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[9] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[10] The stacks for NGS Boilers 1 and 2 are the only stacks at NGS/SJRPP that exceed GEP height. A summary of the modeled stack parameters for NGS/SJRPP is presented below in **Table 5**.

Table 5: NGS/SJRPP units' Duval County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate
SJRPP Boiler 1	195.07	6.79	CEMS	CEMS	CEMS
SJRPP Boiler 2	195.07	6.79	CEMS	CEMS	CEMS
NGS Boiler 1	150.88 [a]	4.57	CEMS	CEMS	CEMS
NGS Boiler 2	150.88 [a]	4.57	CEMS	CEMS	CEMS
NGS Boiler 3	91.44	4.72	46.54	397.70	CEMS
NGS SCCT 3	9.14	3.93	45.09	699.80	CEMS
NGS SCCT 4	9.14	3.93	45.09	699.80	CEMS
NGS SCCT 5	9.14	3.93	45.09	699.80	CEMS
NGS SCCT 6	9.14	3.93	45.09	699.80	CEMS

a. The calculated GEP stack height is 137.03 m.

3.8.2. Cedar Bay Modeled Units

Cedar Bay is an electrical generating facility with three predominantly coal-fired CFB boilers on site that exhaust through a single shared stack. Limestone is injected to the beds to control SO_2 emissions. There are also three fuel oil-fired absorber dryer systems (ADS) for drying limestone and ash. These

[8] *See* Modeling TAD, Section 5.5.
[9] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[10] *See* Modeling TAD, Section 6.1.

small units are limited to 0.05% sulfur fuel oil and therefore emit very little SO_2. The modeled parameters for these six units are summarized in **Table 6**. The actual stack height for the boilers exceeds the calculated GEP height so the GEP height was input. The ADS stack heights are less than their GEP heights.

Table 6: Cedar Bay units' Duval County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler A	114.00 [a]	4.04	36.93	402.59	388.37
Boiler B	114.00 [a]	4.04	36.93	402.59	382.03
Boiler C	114.00 [a]	4.04	36.93	402.59	379.14
ADS 1	19.20	1.3	12.0	355.0	0.85
ADS 2	19.20	1.3	12.0	355.0	0.85
ADS 3 [b]	19.20	1.3	16.0	344.0	0.71

a. The actual height of the common stack is 133.81 m.
b. ADS 3 exhausts to the ADS 2 stack.

3.8.2.1. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[11] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The SO_2 emission limits for three of the modeled sources at Cedar Bay are based on 3-hour averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 7**.

Table 7: Emissions variability analysis and equivalent emission rate calculations for Cedar Bay.

Unit Description	99th Percentile Rate (lb/hr) 1-hr	99th Percentile Rate (lb/hr) 3-hr	Ratio 1-hr/3-hr	Permitted Limit (lb/hr)	Equivalent Limit (lb/hr)
Boiler A	280.10	252.84	0.903	350.70	388.37
Boiler B	259.52	238.33	0.918	350.70	382.03
Boiler C	254.28	235.30	0.925	350.70	379.14

3.8.3. Renessenz Modeled Units

Renessenz is an industrial organic chemical plant with three steam-generating boilers on site that operate on a combination of natural gas, ultra-low sulfur diesel (ULSD), and process-derived fuels (PDF). In addition, these units are authorized to incinerate vapors from the vapor collection system. The actual emissions data were derived from hourly and daily fuel usage and monthly average vapor incineration. The sulfur content of the PDF was based on the most recent test of the fuel and the assumption that all sulfur in the fuel is converted to SO_2. The facility maintains records of vapor incineration monthly. The

[11] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html

monthly total vapor incineration was then allocated to each unit hourly based on the proportion incinerated in that unit. The modeled parameters for these units are summarized in **Table 8**. The actual stack heights for both stacks are less than the calculated GEP stack heights.

Table 8: Renessenz units' Duval County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 1	38.10	1.16	23.29	449.82	Natural Gas: Hourly at 0.6 lb/MMscf
Boiler 6 [a]	38.10	1.55	22.70	449.82	PDF: Daily at measured Sulfur content
Boiler 7 [a]	38.10	1.55	22.70	449.82	Vapor Incineration: Monthly total
a. Boilers 6 and 7 exhaust to a common stack.					

3.8.4. Anchor Glass Modeled Units

Anchor Glass manufactures container glass primarily for the food and beverage industry. SO_2 emissions are from two natural gas and propane-fired glass melting furnaces. The modeled parameters for these two units are summarized in **Table 9**. The actual stack heights for both units are less than the calculated GEP stack heights.

Table 9: Anchor Glass units' Duval County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Furnace 3	36.28	1.70	4.88	560.90	44.24
Furnace 4	38.93	1.58	5.09	541.50	36.50

3.8.5. IFF Chemical Modeled Units

IFF Chemical is an industrial organic chemical plant with three steam-generating boilers on site that operate on a combination of natural gas, fuel oils, and process-derived fuels (PDF). In addition, Boilers 2 and 3 are authorized to incinerate vapors from the vapor collection system. Each unit has a permitted short-term SO_2 emission rate based on fuel sulfur content. However, these limits do not account for emissions from incinerating vapors for Boilers 2 and 3. Therefore, as a conservative estimate, the facility's annual SO_2 cap, 1,549 tons, was divided by 8,760 and distributed amongst those two units, disregarding any possible emissions from Boiler 1. These emission rates are more than three-times higher than the permitted rates based on fuel sulfur content and are considered to be a very conservative estimate. The modeled parameters for these three units are summarized in **Table 10**. The actual stack heights for all three units are less than the calculated GEP stack heights.

Table 10: IFF Chemical units' Duval County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 1	22.86	0.76	14.32	338.20	27.48
Boiler 2	20.00	1.22	11.71	588.70	176.83 [a]
Boiler 3	20.00	1.22	11.71	588.70	176.83 [a]
a. Permitted short-term emission rate based on fuel sulfur content is 53.56 lb/hr.					

3.9. Background Concentrations

The City of Jacksonville operates a robust SO_2 monitoring network in Duval County. There are currently four operational monitors within 20 km of NGS/SJRPP and all have current design values of less than 1/3 of the SO_2 NAAQS (**Figure 1**). The Department chose to use monitoring station No. 12-031-0032 to develop a set of background concentrations to account for all SO_2 sources not explicitly modeled.[12] As shown in **Figure 1**, the monitor is just 10 km southwest of NGS/SJRPP in Downtown Jacksonville. This monitor was chosen due to its close proximity to the cluster of both modeled and un-modeled background SO_2 sources in Jacksonville.

The data used to develop the background concentrations were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for the period February 2012 to December 2014[13]. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from any modeled source. In this case, there are too many modeled sources to filter the data for all of them. Therefore, only measurements recorded when the wind direction was from NGS/SJRPP (0° to 90°) were removed from the background calculation as shown in **Figure 4**. This is a conservative approach as it results in a certain level of double-counting emissions from the explicitly modeled background facilities to the west of the monitor. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 11**.

[12] *See* Modeling TAD, Section 8.1

[13] Monitoring station 12-031-0032 had data quality issues in January 2012.

Figure 4: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-031-0032.

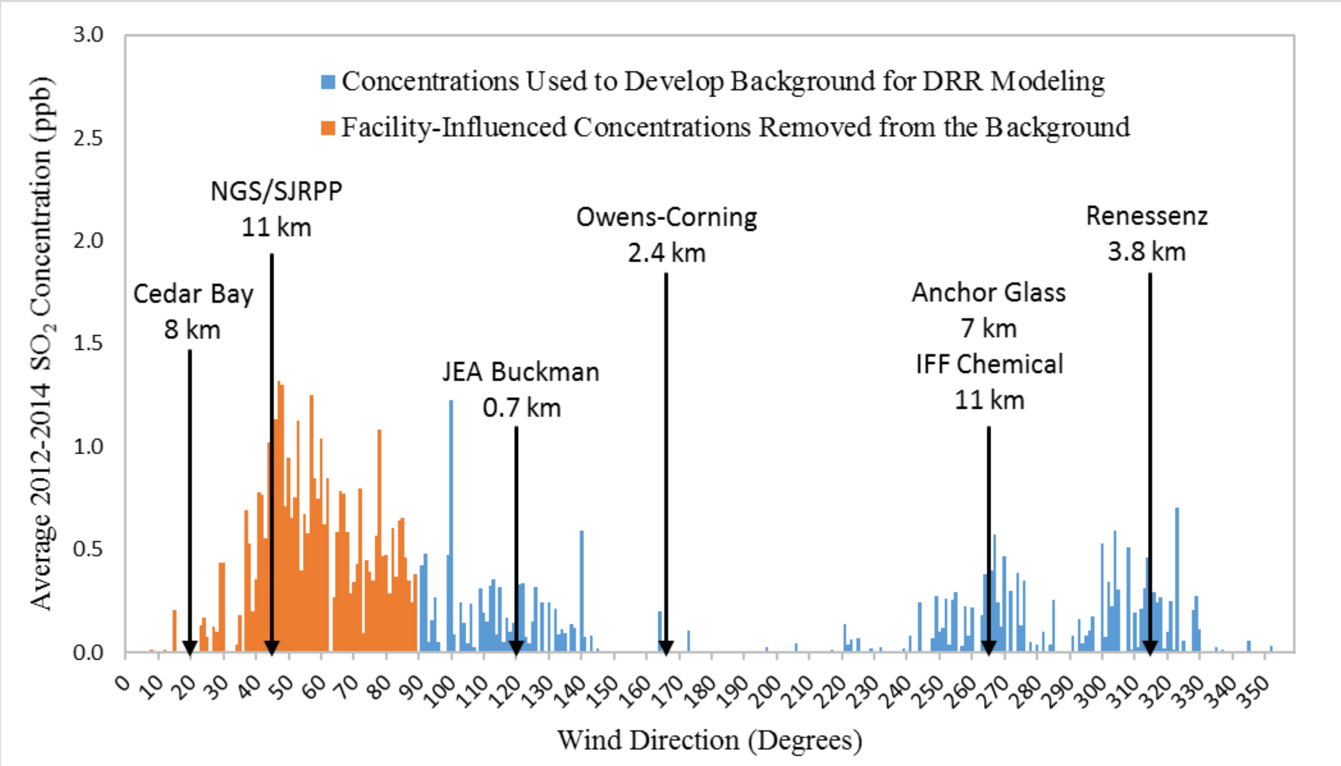


Table 11: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Duval County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	4.00	1.00	1.00	2.00	12:00	7.00	3.00	1.33	3.67
1:00	4.67	0.67	1.33	1.33	13:00	5.00	1.67	1.00	3.33
2:00	3.67	1.00	0.67	1.33	14:00	4.00	1.33	1.67	2.67
3:00	4.33	1.00	0.67	1.67	15:00	4.33	2.00	1.33	2.00
4:00	4.00	1.00	1.33	2.00	16:00	4.67	1.67	1.33	3.33
5:00	4.33	1.00	1.67	2.00	17:00	4.67	2.33	1.67	3.00
6:00	4.00	1.33	2.00	2.00	18:00	2.67	1.67	2.00	2.67
7:00	5.67	1.33	4.67	2.00	19:00	3.67	1.33	2.67	3.67
8:00	5.33	2.33	2.67	2.67	20:00	3.33	2.00	1.33	2.00
9:00	4.33	2.00	3.00	6.33	21:00	4.33	1.00	1.00	1.67
10:00	4.33	2.33	3.00	6.67	22:00	4.67	1.00	1.00	3.33
11:00	5.67	3.00	1.67	3.00	23:00	5.33	1.00	1.00	4.67

4. Modeling Summary and Results

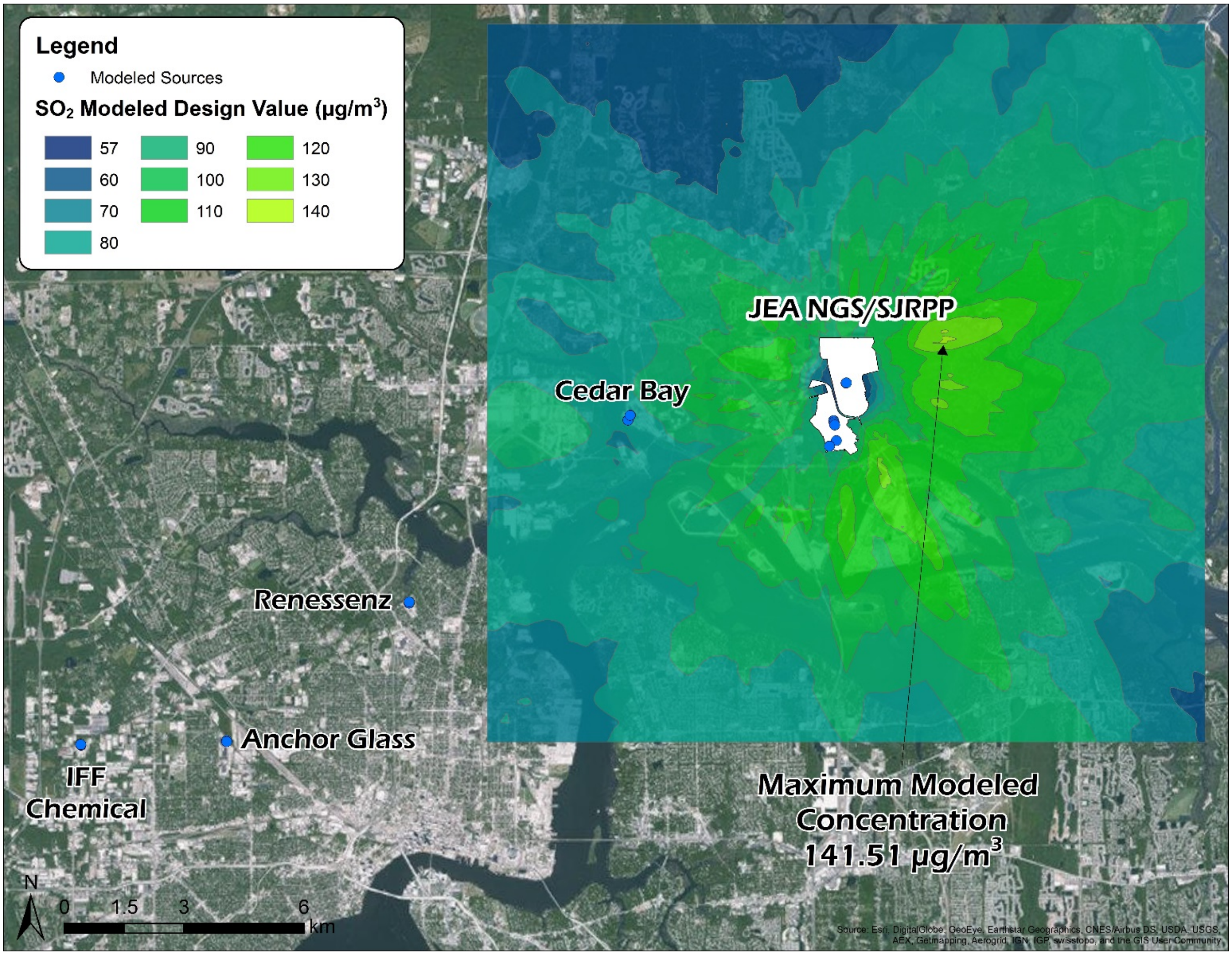
The EPA-recommended dispersion model AERMOD was used to evaluate the area around JEA's Combined Northside Generating Station and St. Johns River Power Park facility in Duval County, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS.

The results summarized in **Table 12** and **Figure 5** indicate that Duval County is in attainment of the SO_2 NAAQS.

Table 12: Maximum modeled SO_2 design value in the Duval County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (µg/m³)				1-Hour SO_2 NAAQS	Percent of NAAQS
		NGS/SJRPP	Others	Background	Total		
449,687.09	3,367,761.00	106.69	22.02	12.79	141.51	196.4	72.1%

Figure 5: Modeled SO_2 design values in the Duval County DRR modeling demonstration.

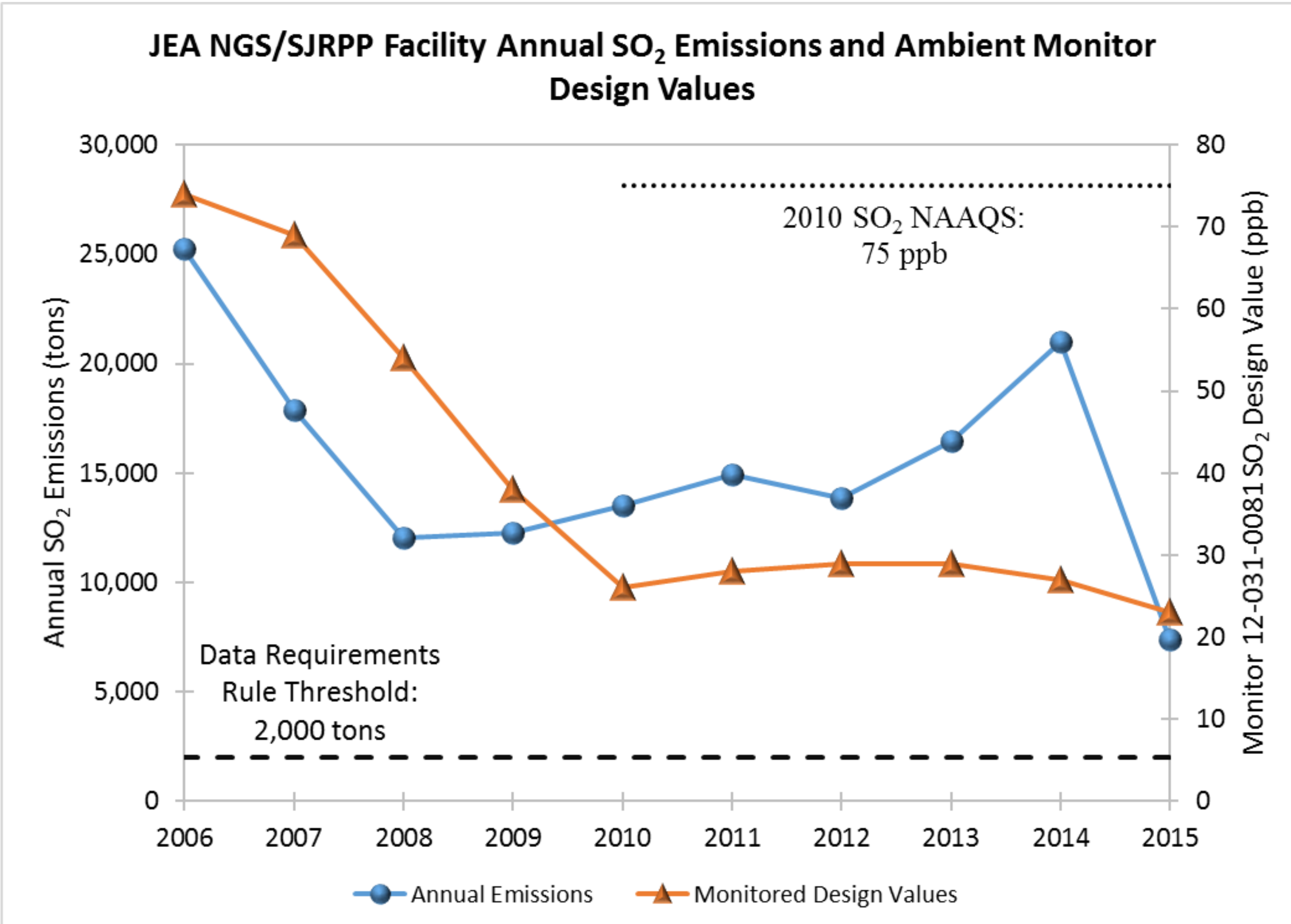


4.1. Continuing Review Obligations

The DRR modeling demonstration for Duval County shows that the area is well within attainment of the 2010 SO_2 NAAQS, supporting the robust local ambient monitoring data. Under the DRR, the Department has a continuing obligation to review SO_2 emissions in the area annually for continued compliance with the NAAQS. It is expected that the ambient concentrations and emissions of SO_2 in Duval County will continue to fall as they have for at least the past decade (**Figure 6**). 2015 emissions of SO_2 at NGS/SJRPP were more than 70% less than in 2014. It is anticipated that the implementation of a variety of national rules and regulations (particularly the Mercury and Air Toxics Standard) and economic forcing will result in the maintenance or even further reduction of these lower levels of SO_2

emissions ensuring continued compliance with the NAAQS. In addition, the Cedar Bay facility is anticipated to permanently cease operations in early 2017.

Figure 6: 2006-2015 NGS/SJRPP SO_2 emissions and monitor 12-031-0081 SO_2 design values.



Appendix D
SO_2 Data Requirements Rule Modeling Report
Escambia County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Gulf Power Company (Gulf) owns and operates Crist Electric Generating Station (Crist), an electrical generating facility, in Pensacola, Florida under Title V Permit No. 0330045-044-AV issued by the Florida Department of Environmental Protection (Department). Crist emitted 2,820 tons of SO_2 from its four electric generating boilers in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around Crist in Escambia County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate Escambia County is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around Crist for the DRR.

3.2. Modeled Facilities

Crist is the only DRR-applicable facility in Escambia County. There are, however, a variety of small nearby SO_2 sources in both Escambia County and adjacent Santa Rosa County. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration

[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf.
[4] *See* Appendix W to 40 CFR 51, Section 3.2.

gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that the International Paper (IP) facility located approximately 10 km to the northwest is the only other source of SO_2 emissions that has the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources within 35 km of Crist emitted less than 25 tons of SO_2 in 2014 (**Table 1**) and are represented in the added monitored background concentrations discussed in **Section 3.9**.

Figure 1: 2014 SO_2 emission sources in and around Escambia County, Florida.

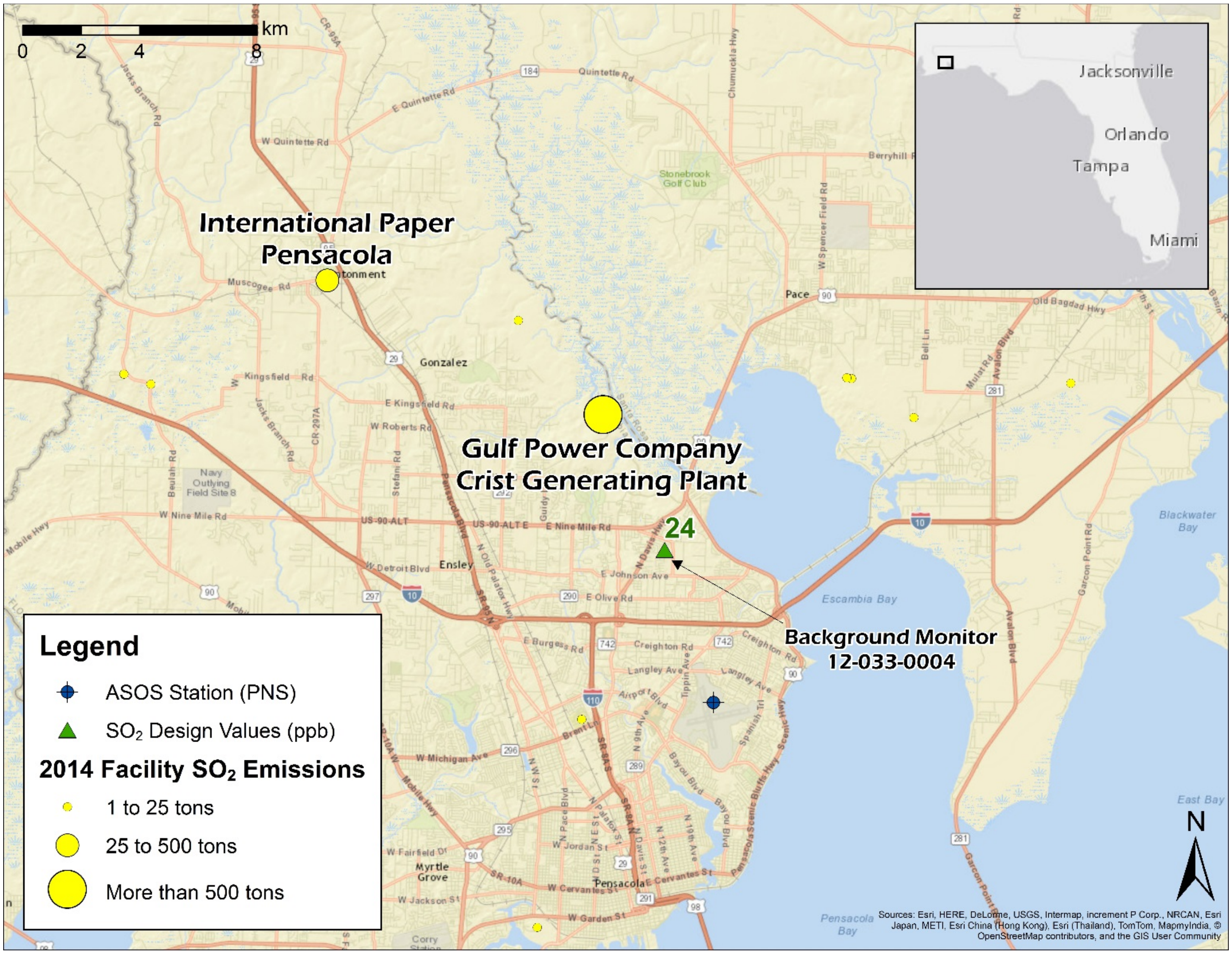


Table 1: Sources of SO_2 emissions greater than 1 ton in 2014 within 35km of Gulf Power's Crist Generating Plant.

Facility ID	Facility Name	Distance from Crist (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
033-0045	Gulf Power Crist Plant [a]	0	0	2,819.60	Yes
033-0040	Ascend Performance Materials	5	100	15.72	No
113-0173	Gulf Power Pea Ridge Plant	8	160	2.58	No
113-0004	Taminco US Pace Plant	9	180	10.67	No
033-0042	International Paper Pensacola [a]	10	200	127.13	No
113-0168	Santa Rosa Energy Center	11	220	1.06	No
033-0286	Gulf Power Perdido Landfill	16	320	1.66	No
113-0014	Petro Blackjack Jay Facility	33	660	24.35	No

a. Explicitly modeled facility.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Pensacola International Airport (PNS) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Slidell, Louisiana (LIX) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 10 – Sets ASOS anemometer height to 10m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 PNS dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

default seasonal categories for each month were changed to reflect the subtropical climate of Escambia County. All inputs to AERSURFACE are summarized in **Table 2**.

Table 2: AERSURFACE inputs for 2012-2014 PNS AERMET dataset.

Parameter	**Value**
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	30.478
Meteorological Station Longitude (Degrees)	-87.1868
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	1,2
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Average
Average Surface Moisture 2013	Wet
Average Surface Moisture 2014	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around Crist so that a comparison could be done to determine if the meteorological data recorded at PNS are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. Due to Florida's uniform flat topography, the most important geographical influence on mesoscale meteorological conditions is proximity to the coastline, and both Crist and PNS are located approximately the same distance from Escambia Bay. In addition, the airport is just 10 kilometers south-southeast of Crist, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the PNS meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Escambia County.

Location	**Albedo**	**Bowen Ratio**	**Surface Roughness (z_0)**
Pensacola International Airport	0.14	0.42	0.083
Gulf Power Crist Plant	0.14	0.35	0.342

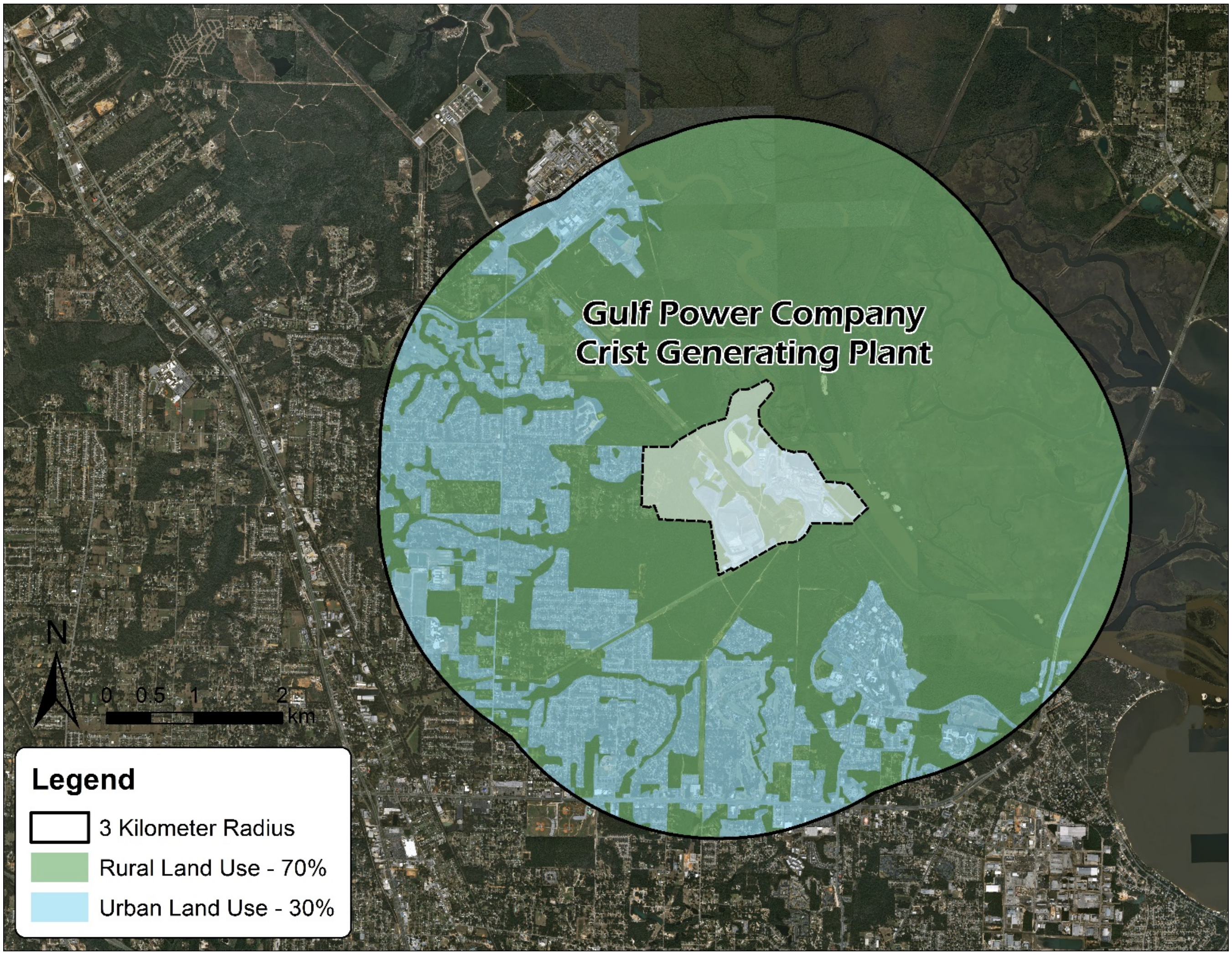
3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes a majority (70%) of the 3-km radius around Crist.

Figure 2: Land use classification around Gulf Power's Crist Plant in Escambia County.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level

1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within Crist's fenceline were removed and receptors were placed with 50 m spacing along the fenceline. This grid placement was sufficient to fully resolve the maximum modeled concentrations in the Escambia County modeling demonstration.

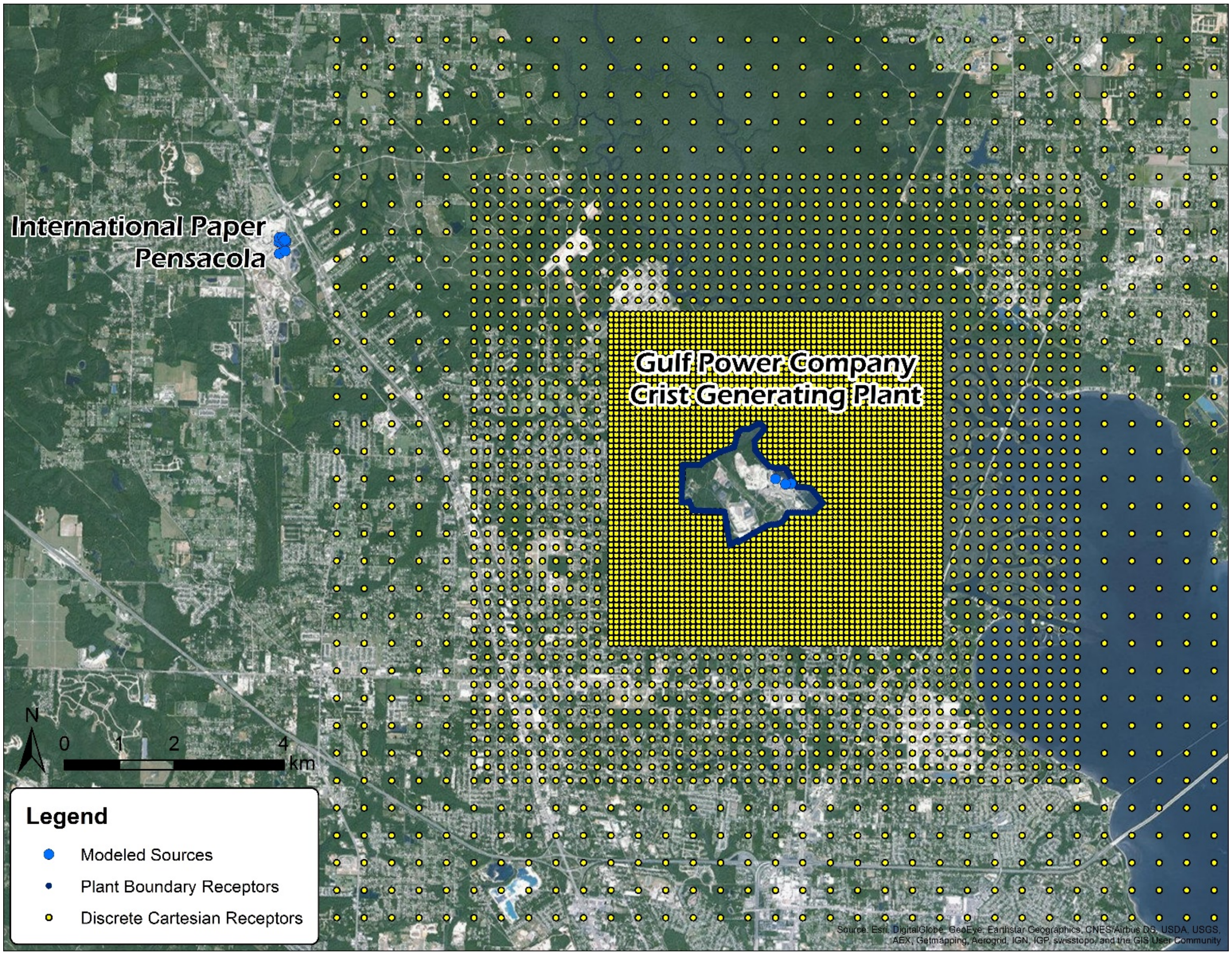
The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 8 km of Crist. The receptor grid used in the Escambia County DRR modeling demonstration is described below in **Table 4** and **Figure 3**.

Table 4: Escambia County DRR modeling demonstration receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	Boilers 4-7 Combined FGD Stack
Unit UTM Zone	16N
Unit UTM Easting (m)	478,250.42
Unit UTM Northing (m)	3,381,610.45
Actual Stack Height (m)	149.40
Expected Distance to Max Concentration (m)	1,494
20 Times Stack Height (m)	2,988
100 m Receptor Spacing - Extent from the Origin (m)	3,000
250 m Receptor Spacing - Extent from the Origin (m)	5,500
500 m Receptor Spacing - Extent from the Origin (m)	8,000
Plant Boundary Receptor Spacing (m)	50
Total Receptors	5,596

[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

Figure 3: Receptor grid placement for the Escambia County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. Eleven significant structures onsite at Crist were included in the downwash analysis. Direction-specific downwash parameters for all stacks at Crist were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use actual hourly emissions data to characterize every explicitly modeled source in Escambia County. The hourly data for all units were requested from the facilities for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness and then included in the modeling demonstration using the AERMOD keyword HOUREMIS. Missing hourly data from Crist were substituted following the procedures outlined in 40 CFR 75.33(b). A variety of small, intermittent emissions sources including fire pumps and emergency generators at both facilities were not included because their emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

3.8.1. Crist Modeled Units

SO_2 emissions from Crist are from four predominantly coal-fired electric generating boilers. These four units emit through a common stack where the plume is scrubbed of SO_2 emissions via a flue-gas desulfurization (FGD) system. There are also two bypass stacks for use when the FGD system is not operational. Although emissions occurred from all three stacks during the modeled period, the bypass stacks were rarely utilized. SO_2 emissions from these units are monitored by in-stack continuous emissions monitoring systems (CEMS). The CEMS record total SO_2 emissions and stack exit velocity and temperature on an hourly basis.

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[9] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[10] The FGD stack is the only stack at Crist that exceeds GEP height. A summary of the modeled stack parameters for Crist is presented below in **Table 5**.

Table 5: Crist units' Escambia County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate
Boilers 4-7 FGD Stack	149.4 [a]	10.7	CEMS	CEMS	CEMS
Boilers 4-5 Bypass Stack	137.2	5.5	CEMS	CEMS	CEMS
Boilers 6-7 Bypass Stack	137.2	7.1	CEMS	CEMS	CEMS
a. The calculated good engineering practice (GEP) stack height is 145.7 m.[11]					

3.8.2. IP Modeled Units

IP is a Kraft pulp and paper mill that has ten SO_2-emitting units on site including one unit, Power Boiler #5, that did not operate during the modeled period. SO_2 emissions from these units were either recorded with a CEMS or estimated using fuel throughput or heat input data and a variety of emission factors. All data were either recorded or estimated on an hourly basis. A summary of the modeled stack parameters for IP is presented below in **Table 6**. Actual stack heights are less than the calculated GEP stack height for all units.

---

[8] *See* Modeling TAD, Section 5.5.

[9] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised),* (June 1985).

[10] *See* Modeling TAD, Section 6.1.

[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised),* (June 1985).

Table 6: IP units' Escambia County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate Sources and Factors
Power Boiler 3	65.01	2.44	7.62	335.93	CEMS [a]
Power Boiler 4	67.36	3.66	10.21	335.37	CEMS [a]
Power Boiler 6	38.10	2.59	14.42	449.82	0.60 lb/MMscf Natural Gas [b]
Thermal Oxidizer	30.48	0.91	8.13	319.26	0.40 lb/hr [c]
Lime Kiln	41.45	1.98	8.53	342.59	0.38 lb/hr [c]
Recovery Boiler 1	55.41	2.74	27.18	516.48	0.60 lb/MMscf Natural Gas [b] 0.24 lb/ton Black Liquor Solids [d]
Recovery Boiler 2	55.41	2.74	24.38	499.82	0.60 lb/MMscf Natural Gas [b] 0.07 lb/ton Black Liquor Solids [d]
Smelt Dissolving Tank 1	52.40	1.22	8.53	349.82	0.006 lb/ton Black Liquor Solids [e]
Smelt Dissolving Tank 2	52.40	1.22	10.06	344.26	0.006 lb/ton Black Liquor Solids [e]

a. Short instances of missing data were filled using fuel usage data and AP-42 emission factors.
b. EPA AP-42 Table 1.4-2
c. Annual stack test emission rate applied to all hours operating.
d. Annual stack test emission factor.
e. NCASI emission factor.

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[12] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-033-0004 for the period January 2012 to December 2014. As shown in **Figure 1**, the monitor is just 5 km southeast of Crist. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from either Crist or IP. In this case, any measurement recorded when the wind direction was from 290° to 19° was removed from the background calculation as shown in **Figure 4**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 7**.

[12] *See* Modeling TAD, Section 8.1

Figure 4: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-033-0004.

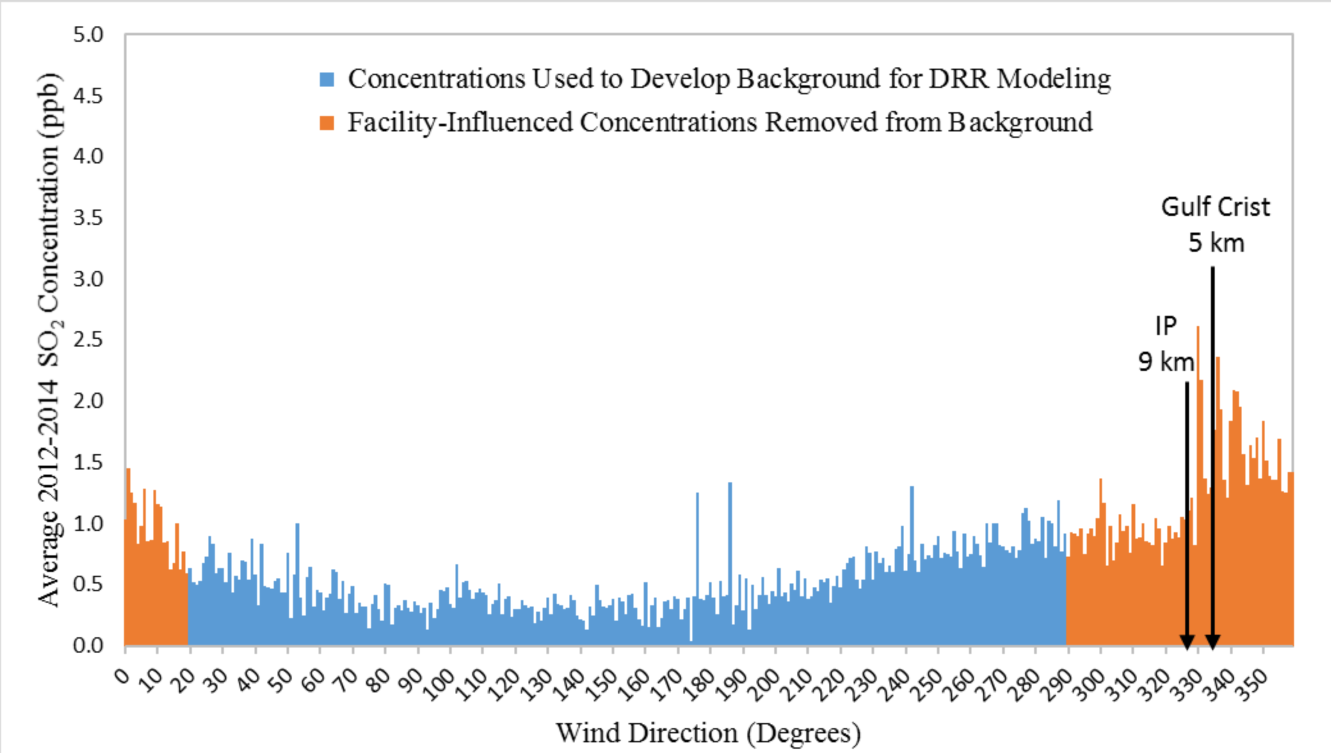


Table 7: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Escambia County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	1.00	1.33	2.00	1.33	12:00	2.67	1.67	2.33	5.67
1:00	1.33	1.00	1.67	1.33	13:00	2.00	1.67	2.33	4.00
2:00	1.33	1.00	1.67	1.33	14:00	2.33	2.00	2.00	2.33
3:00	1.33	1.00	1.67	1.33	15:00	2.33	1.33	2.33	2.33
4:00	1.33	1.00	2.00	1.33	16:00	1.67	2.00	2.33	1.67
5:00	1.33	1.00	2.00	1.33	17:00	1.67	1.67	2.67	2.00
6:00	1.33	1.67	2.00	1.33	18:00	2.33	1.67	2.00	2.33
7:00	2.00	2.33	2.67	2.33	19:00	8.00	2.00	4.33	3.67
8:00	2.33	3.33	3.33	2.00	20:00	2.33	1.33	2.33	2.33
9:00	4.33	3.00	3.00	3.00	21:00	1.67	1.00	1.67	1.33
10:00	3.67	3.33	3.33	3.00	22:00	1.67	1.00	1.67	1.33
11:00	3.33	2.33	2.67	3.00	23:00	2.00	1.33	2.00	1.33

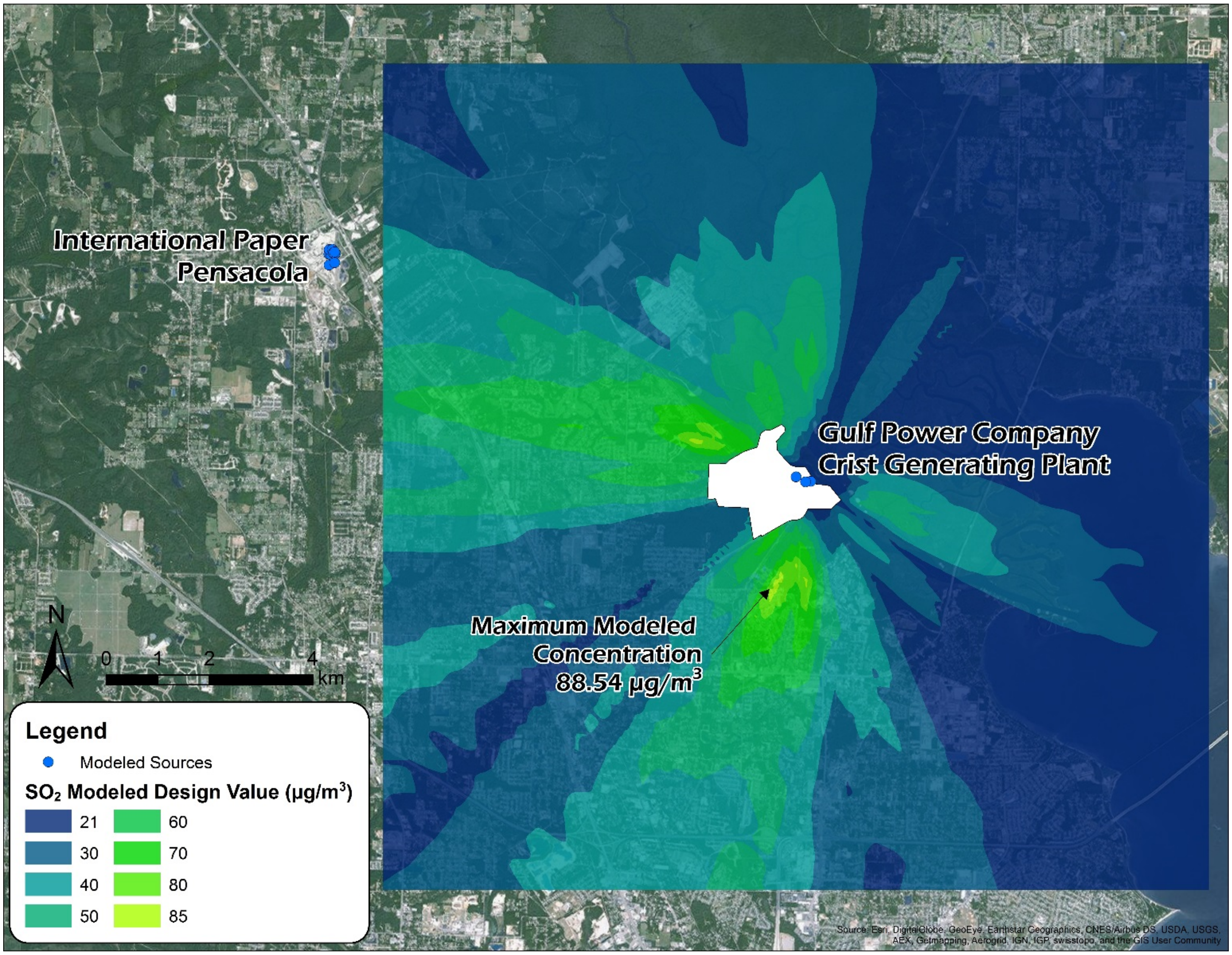
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around Gulf Power Company's Crist Generating Station in Escambia County, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. The results summarized in **Table 8** and **Figure 5** indicate that Escambia County is in attainment of the SO_2 NAAQS.

Table 8: Maximum modeled SO_2 design value in the Escambia County DRR modeling demonstration.

UTM 16N Easting (m)	UTM 16N Northing (m)	Max Modeled Design Value (μg/m³)				1-Hour SO_2 NAAQS	Percent of NAAQS
		Crist	IP	Background	Total		
477,850.41	3,379,510.50	80.69	0.00	7.85	88.54	196.4	45%

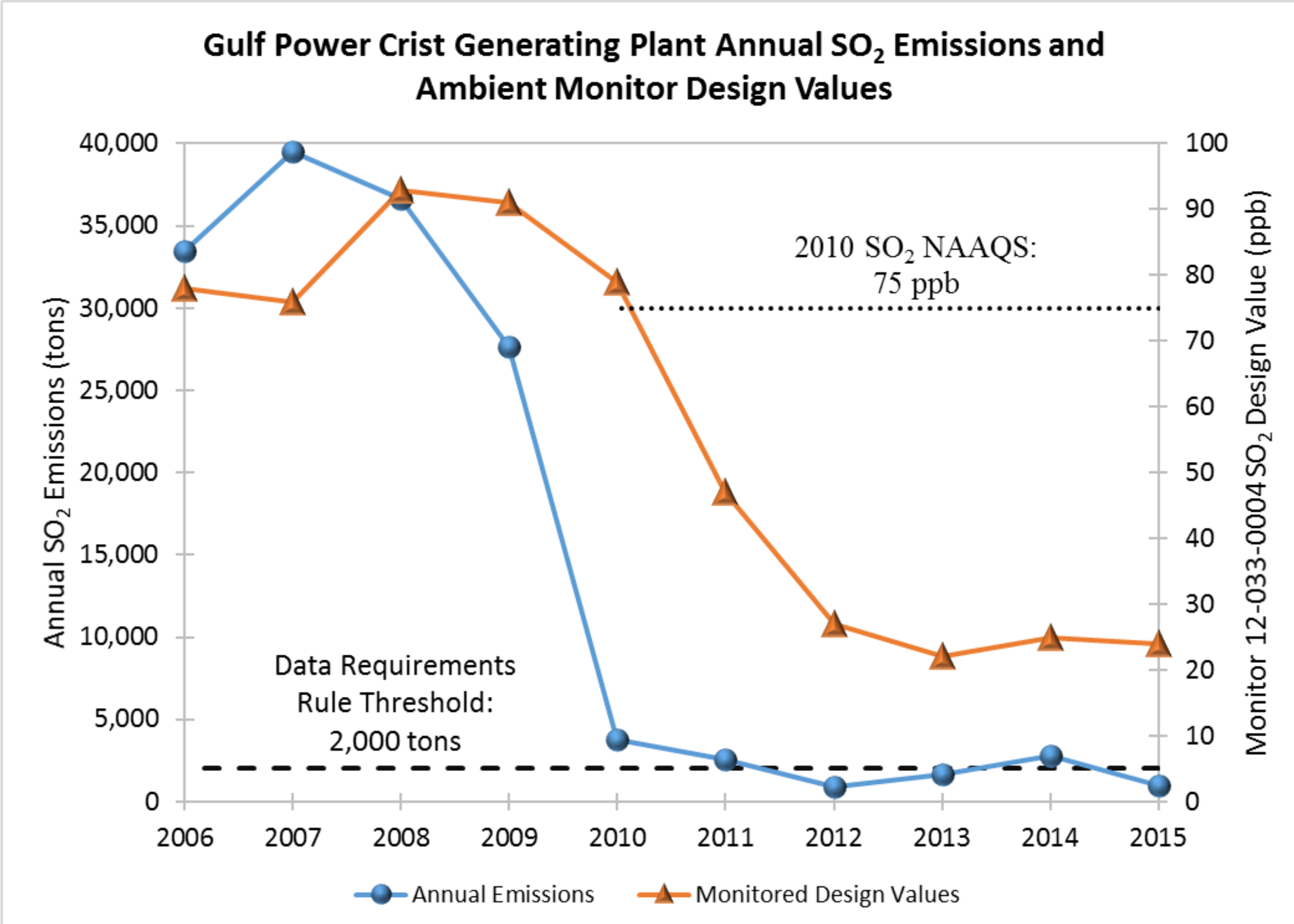
Figure 5: Modeled SO_2 design values in the Escambia County DRR modeling demonstration.



4.1. Continuing Review Obligations

The DRR modeling demonstration for Escambia County shows that the area is well within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. In fact, the modeled design value is so low – less than 50% of the NAAQS – that while the local SO_2 monitor will be maintained, the Department has no continuing obligation under the DRR to review and model the area annually. It should be noted that the Department used 2014 emissions to determine which sources were subject to the DRR and 2014 was the only year since 2011 that Crist exceeded the DRR threshold of 2,000 tons (**Figure 6**). 2015 emissions of SO_2 at Crist were 65% less than 2014. It is anticipated that the implementation of a variety of national rules and regulations (particularly the Mercury and Air Toxics Standard) and economic forcing will result in the maintenance or even further reduction of these low levels of SO_2 emissions ensuring continued compliance with the NAAQS.

Figure 6: 2006-2015 Crist SO_2 emissions and monitor 12-033-0004 SO_2 design values.



Appendix E
SO_2 Data Requirements Rule Modeling Report
Hamilton County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

PotashCorp owns and operates the White Springs Agricultural Chemicals Suwannee River/Swift Creek Complex (PCS), a phosphate fertilizer manufacturing plant, in White Springs, Florida under Title V Permit No. 0470002-095-AV issued by the Florida Department of Environmental Protection (Department). PCS emitted 2,487 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around PCS in Hamilton County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate Hamilton County is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around PCS for the DRR.

3.2. Modeled Facilities

PCS is the only DRR-applicable facility and only source of SO_2 emissions in Hamilton County since the Suwannee River side of the complex shutdown in 2014. There are, however, some small nearby SO_2 sources in neighboring Suwannee County. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers

[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf.
[4] *See* Appendix W to 40 CFR 51, Section 3.2.

(d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that there are no other sources of SO_2 emissions that have the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources within 35 km of PCS emitted less than six tons of SO_2 in 2014 (**Table 1**) and are represented in the added monitored background concentrations discussed in **Section 3.9**.

Figure 1: 2014 SO_2 emission sources in and around Hamilton County, Florida.

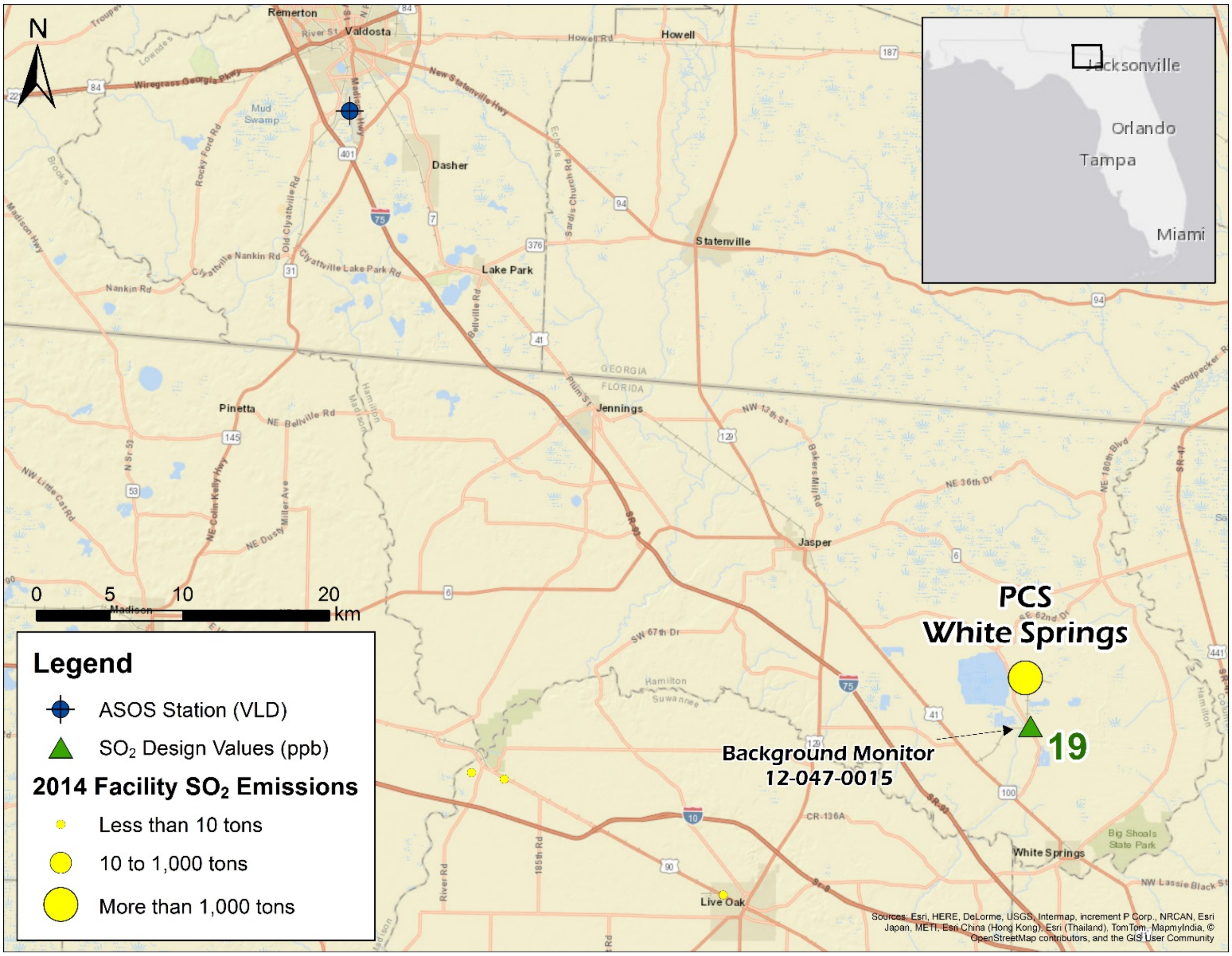


Table 1: Sources of SO_2 emissions within 35 km of PCS.

Facility ID	Facility Name	Distance from PCS (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
047-0002	PCS White Springs	0	0	2,487.19	Yes
121-0007	Pilgrim's Pride Live Oak Feed Mill	21	420	0.01	No
121-0018	Pilgrim's Pride Live Oak Poultry Plant	30	600	5.50	No
121-0003	Duke Energy Suwannee River Plant	32	640	3.33	No

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Valdosta Regional Airport (VLD) in Valdosta, Georgia were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Tallahassee, Florida (TAE) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 10 – Sets ASOS anemometer height to 10 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 VLD dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The default seasonal categories for each month were changed to reflect the subtropical climate of Hamilton County. All inputs to AERSURFACE are summarized in **Table 2**.

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

Table 2: AERSURFACE inputs for 2012-2014 VLD AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	30.7830
Meteorological Station Longitude (Degrees)	-83.2770
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	1,2
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Wet
Average Surface Moisture 2013	Wet
Average Surface Moisture 2014	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around PCS so that a comparison could be done to determine if the meteorological data recorded at VLD are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. In addition, the airport is 53 km northwest of PCS, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the VLD meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Hamilton County.

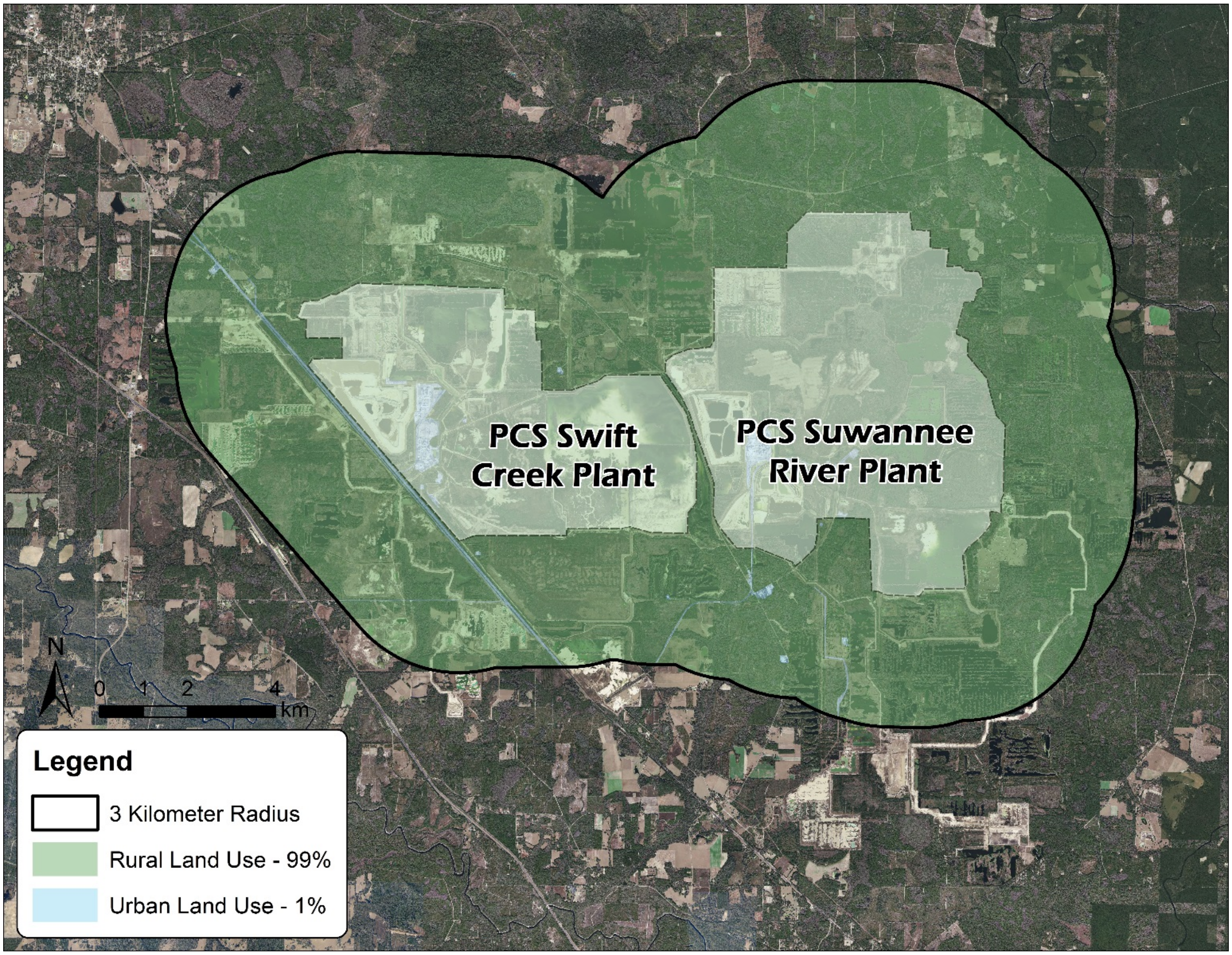
Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Valdosta Regional Airport	0.16	0.44	0.048
PCS White Springs	0.15	0.42	0.234

3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes a majority (98%) of the 3-km radius around PCS.

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

Figure 2: Land use classification around PCS in Hamilton County.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the

[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

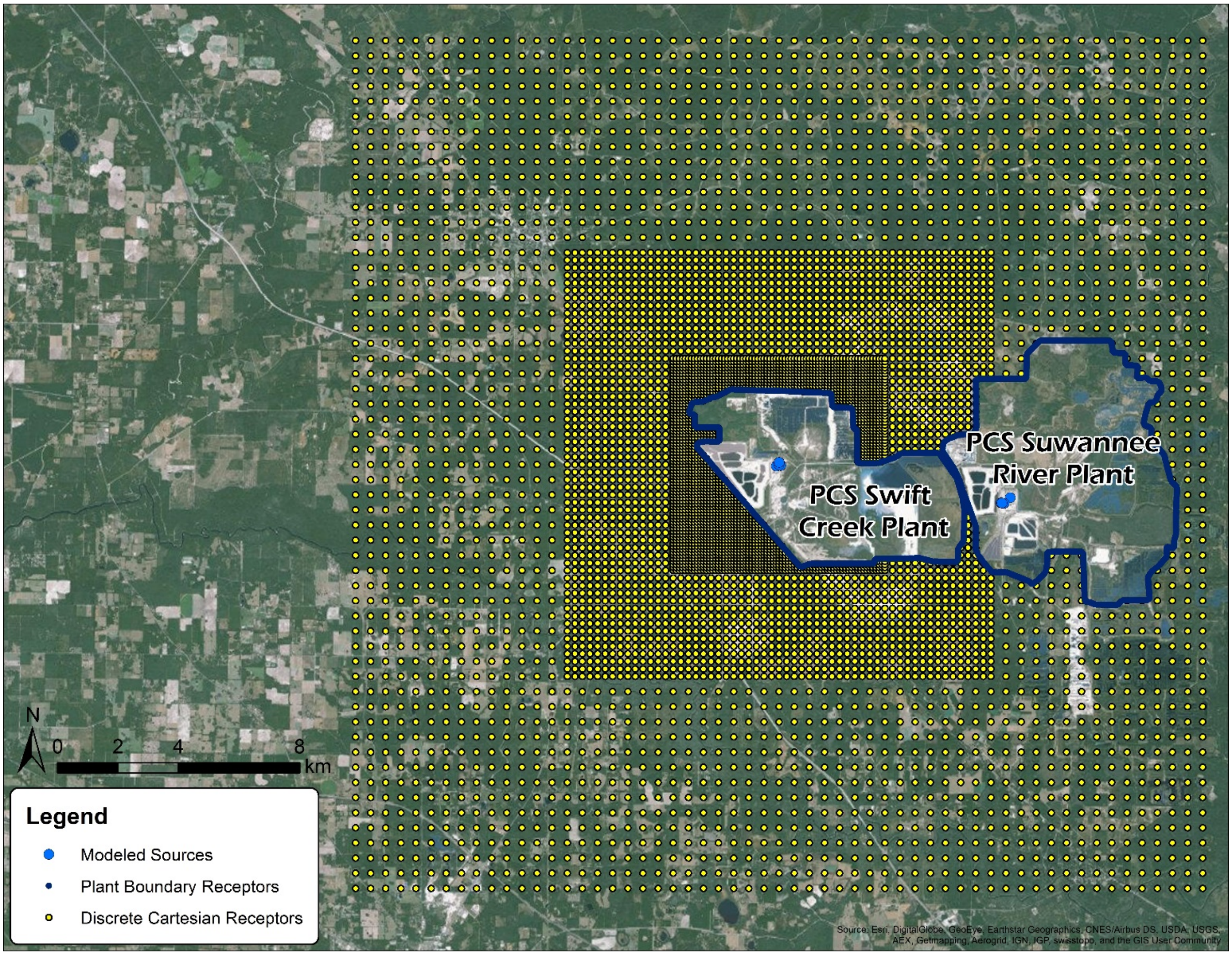
tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within the PCS fenceline were removed and receptors were placed with 50 m spacing along the fenceline. Given the significant amount of contiguous mining land owned by PCS (the property boundaries encompass an area nearly 20 km across), this receptor spacing was not considered to be sufficient because it did not span the entire length of the property boundary. The receptor grid was then expanded to include all areas within 14 km of the largest emissions units at the PCS Swift Creek Plant.

The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process. The receptor grid used in the Hamilton County DRR modeling demonstration is described below in **Table 4** and **Figure 3**.

Table 4: Hamilton County DRR modeling demonstration receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	Sulfuric Acid Plant E
Unit UTM Zone	17N
Unit UTM Easting (m)	321,089.70
Unit UTM Northing (m)	3,370,331.20
Actual Stack Height (m)	59.50
Expected Distance to Max Concentration (m)	595
20 Times Stack Height (m)	1,190
100 m Receptor Spacing - Extent from the Origin (m)	3,500
250 m Receptor Spacing - Extent from the Origin (m)	7,000
500 m Receptor Spacing - Extent from the Origin (m)	14,000
Plant Boundary Receptor Spacing (m)	50
Total Receptors	8,164

Figure 3: Receptor grid placement for the Hamilton County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. 17 significant structures onsite at PCS were included in the downwash analysis. Direction-specific downwash parameters for all stacks at PCS were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

SO_2 emissions from the PCS Swift Creek Plant are mainly from two sulfuric acid plants (SAPs). The SAPs burn elemental sulfur to create SO_2 which is then oxidized to SO_3 over a catalyst bed and absorbed into sulfuric acid. A portion of the SO_2 is not oxidized and is emitted to the atmosphere. Emissions from both SAPs are monitored by in-stack continuous emissions monitors systems (CEMS). There is also a molten sulfur handling system and a new natural gas-fired auxiliary boiler that contribute a small amount of SO_2 emissions. The Department chose to characterize the SAPs using actual hourly emissions data and all other sources using their maximum permitted short-term emission limits.

The hourly data for all units were requested from the facility for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness and then included in the modeling demonstration using the AERMOD keyword HOUREMIS. Missing data were substituted with the unit's maximum permitted emission rate. A variety of small, intermittent emissions sources including fire pumps and emergency generators were not included because their emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[9] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[10] The stack heights for all units at PCS are less than or equal to the GEP height for each. A summary of the modeled stack parameters for PCS is presented below in **Table 5**.

Table 5: PCS units' Hamilton County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
SAP E	59.50	2.59	10.54	342.0	CEMS
SAP F	59.50	2.59	10.54	342.0	CEMS
Aux Boiler E	15.24	1.62	15.42	466.48	0.15
Molten Sulfur Handling System	7.62	0.18	0.64	366.48	2.4
Aux Boilers C & D [a,b]	31.70	1.98	7.62	490.00	257.4
No. 1 (Y) DAP/MAP [a]	36.58	2.13	12.19	322.04	11.1
No. 2 (Z) DAP/MAP	42.67	2.44	9.45	322.04	11.8
X-Train Dical [a]	36.58	2.13	12.19	322.04	11.1

a. These four units are located at the Suwannee River Plant and were shut down in 2014.
b. Auxiliary boilers C & D share a common stack.

3.8.1. Suwannee River Plant

The Suwannee River Plant on the east side of the PCS White Springs Suwannee River/Swift Creek Complex mostly shutdown in 2014. The main sources of SO_2 at that facility, SAP C and SAP D, were permanently shut down and dismantled. There are four smaller SO_2 emission sources that are located at this plant that remain permitted but are permanently shut down and one very small active emission unit. Despite the fact that these units have not operated for over two years, the Department chose to include them in the modeling demonstration at their maximum permitted short-term emission rates given their current permitted status. This is of course a highly conservative approach.

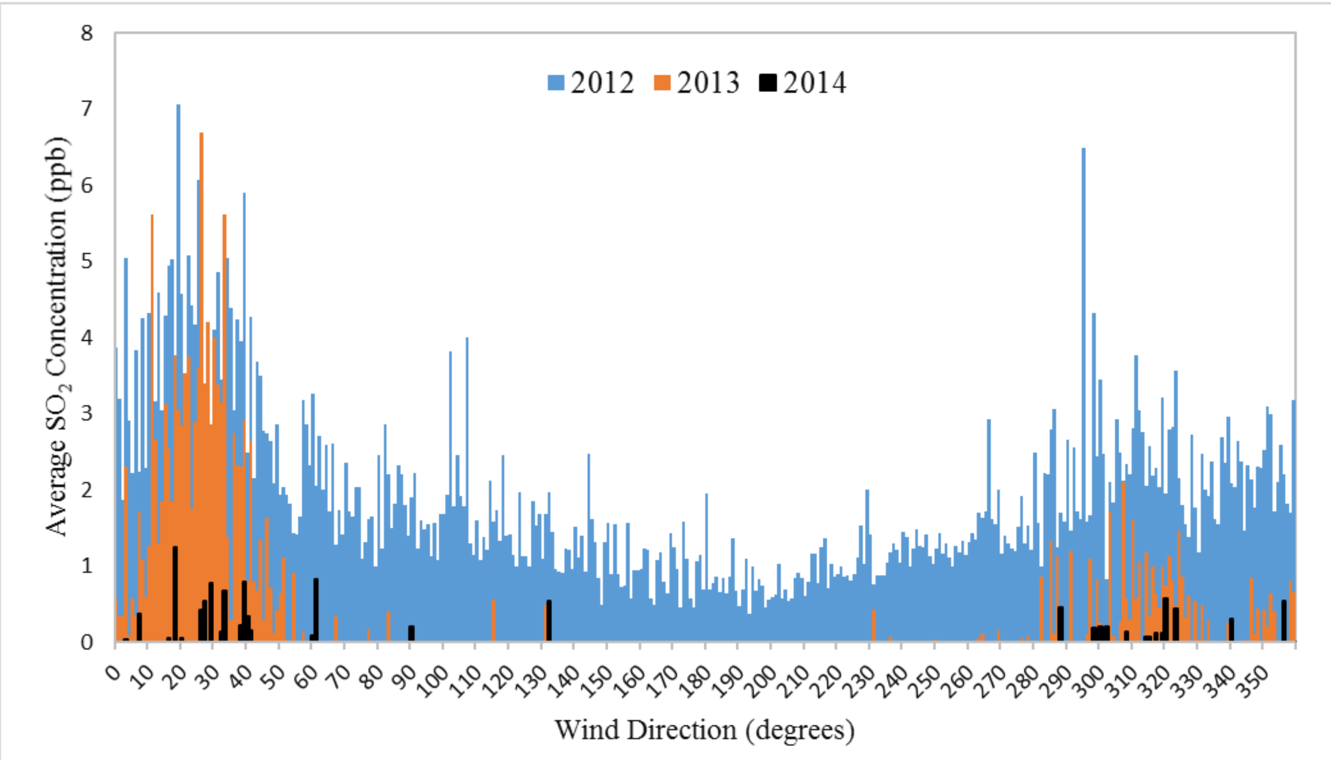
3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[11] The data used were obtained from the

[8] *See* Modeling TAD, Section 5.5.
[9] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[10] *See* Modeling TAD, Section 6.1.
[11] *See* Modeling TAD, Section 8.1

Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-047-0015 for the period January 2014 to December 2015. EPA guidance recommends using three years of concurrent monitoring data to develop the background concentrations but that was deemed inappropriate for this situation as monitoring values decreased drastically in 2014 with the shutdown of the PCS Suwannee River Plant just 3 km from the monitor (**Figure 4**). As such, all available monitoring data that were not influenced by the closed plant, 2014-2015, were used to develop the background concentrations.

Figure 4: 2012-2014 average annual SO_2 concentrations by wind direction for monitor 12-047-0015.



As shown in **Figure 1**, the monitor is 9 km southeast of PCS. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from PCS. In this case, any measurement recorded when the wind direction was from 256° to 344° was removed from the background calculation as shown in **Figure 5**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 6**.

Figure 5: 2014-2015 maximum SO_2 concentrations by wind direction for monitor 12-047-0015.

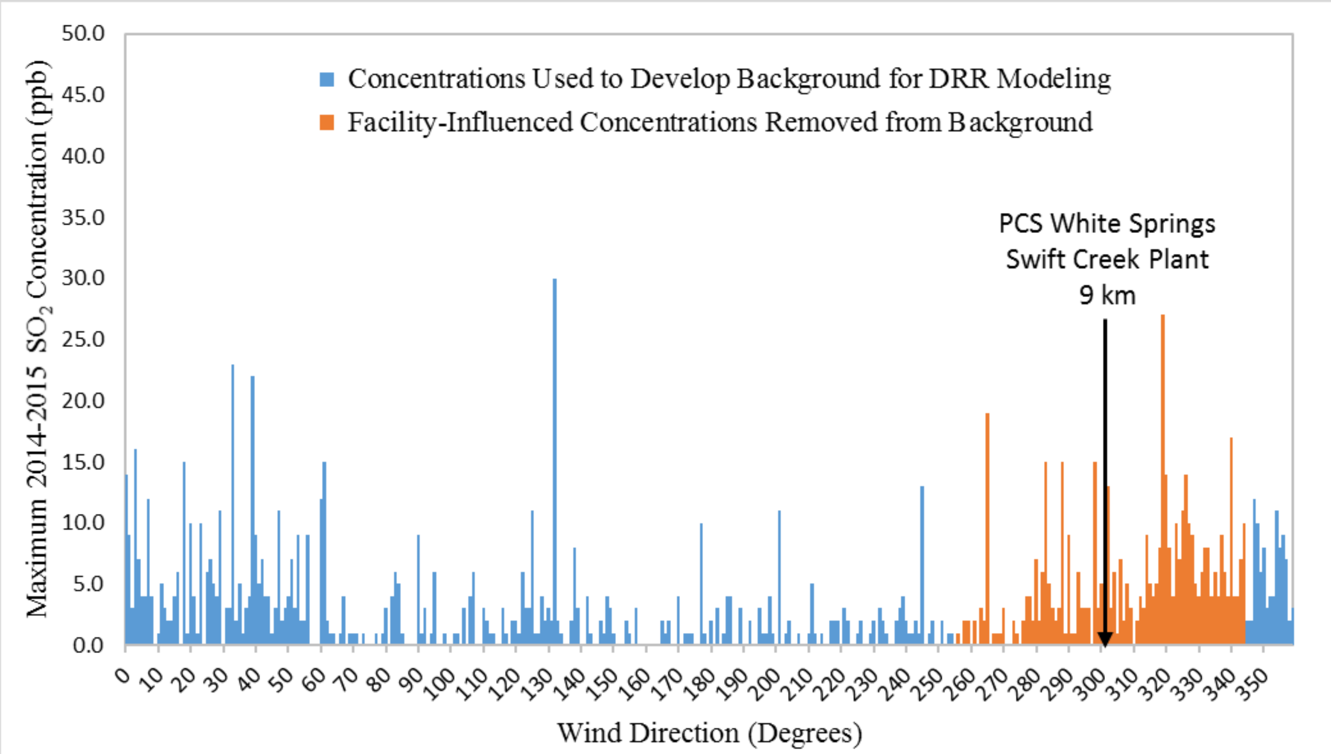


Table 6: 2014-2015 SO_2 background concentrations (ppb) by hour-of-day by season for the Hamilton County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	1.50	0.00	0.00	0.00	12:00	2.50	2.00	2.00	1.00
1:00	1.50	0.00	0.00	0.00	13:00	4.00	3.50	0.50	0.50
2:00	1.00	0.00	0.00	0.00	14:00	2.00	2.50	1.50	0.00
3:00	1.50	1.00	1.00	0.00	15:00	1.50	1.50	0.50	0.00
4:00	1.00	3.00	1.00	0.00	16:00	0.50	1.00	0.50	0.00
5:00	1.50	3.50	5.50	0.00	17:00	0.50	1.00	1.00	0.00
6:00	1.00	1.50	5.50	0.00	18:00	0.00	0.50	0.50	0.00
7:00	2.00	2.00	4.00	0.00	19:00	0.50	0.00	1.50	0.50
8:00	1.00	2.00	4.00	0.50	20:00	1.00	0.00	1.00	1.00
9:00	2.50	3.00	3.00	0.50	21:00	1.50	0.00	0.50	0.00
10:00	2.50	3.50	3.00	1.00	22:00	1.00	0.00	0.50	0.50
11:00	4.00	2.50	3.50	0.50	23:00	2.50	0.00	0.00	0.00

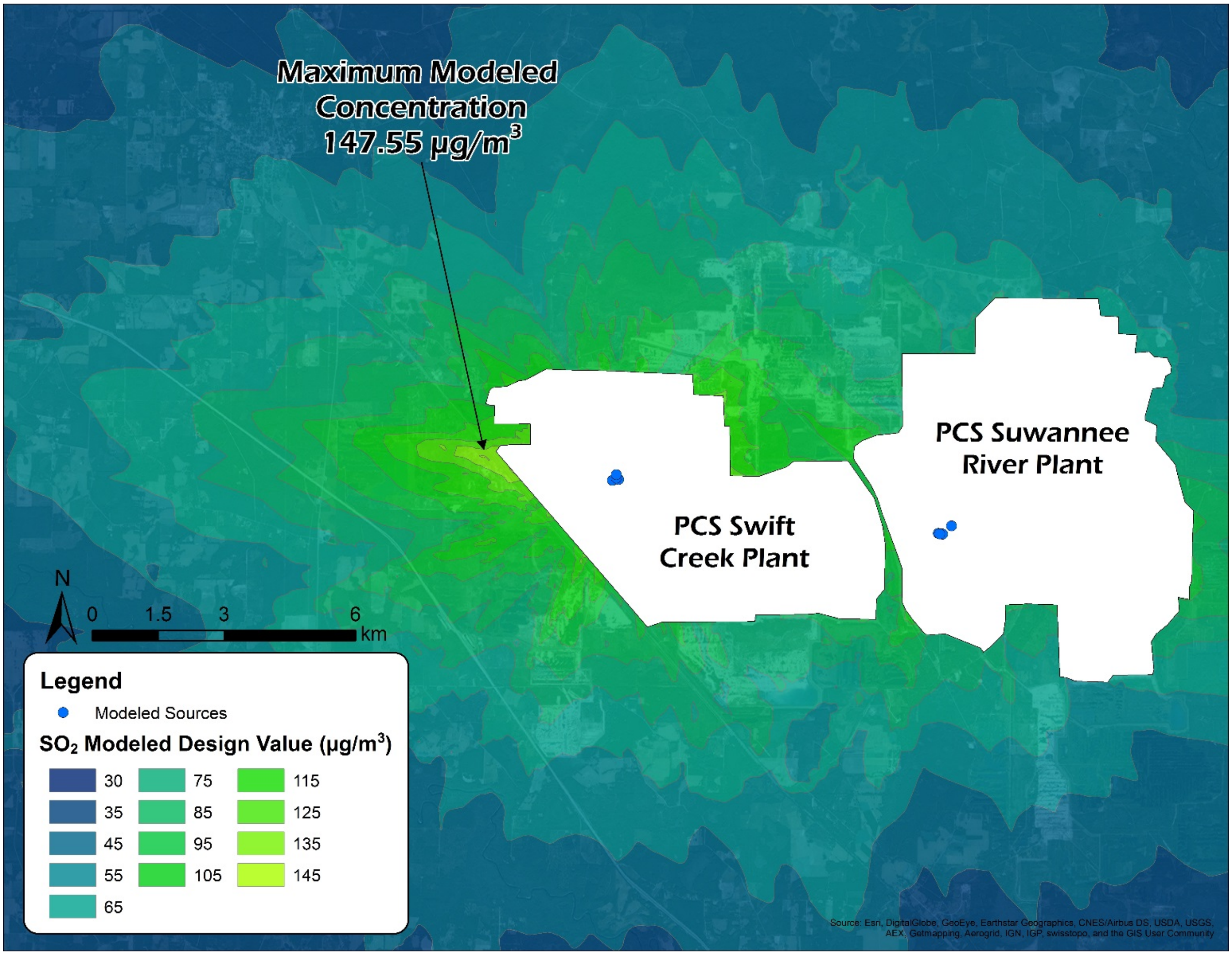
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around the PCS Suwannee River/Swift Creek Complex in Hamilton County, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99^{th} percentile (4^{th} high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. The results summarized in **Table 7** and **Figure 6** indicate that Hamilton County is in attainment of the SO_2 NAAQS.

Table 7: Maximum modeled SO_2 design value in the Hamilton County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (μg/m³)			1-Hour SO_2 NAAQS	Percent of NAAQS
		PCS	Background	Total		
323,425.50	3,372,203.12	144.93	2.62	147.55	196.4	75.1%

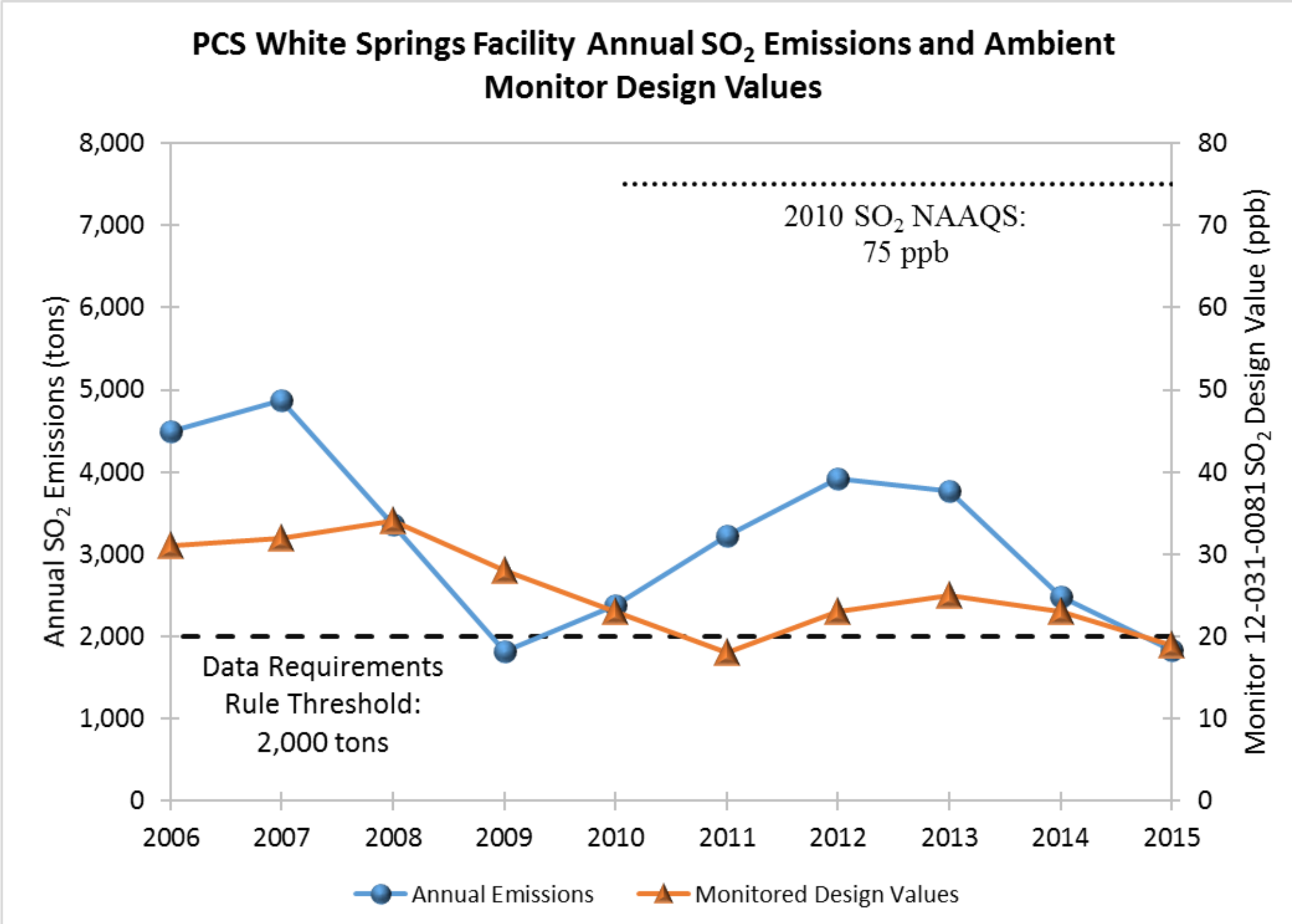
Figure 6: Modeled SO_2 design values in the Hamilton County DRR modeling demonstration.



4.1. Continuing Review Obligations

The DRR modeling demonstration for Hamilton County shows that the area is well within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. Under the DRR, the Department has a continuing obligation to review SO_2 emissions in the area annually for continued compliance with the NAAQS. It is anticipated that SO_2 concentrations in Hamilton County will continue to decrease as they have since the shutdown of the Suwannee River Plant. The facility's SO_2 emissions declined by more than 50% from 2013 to 2015 and actually fell below the DRR threshold of 2,000 tons in 2015 (**Figure 7**). In addition, the facility is scheduled to implement a significant SO_2 emissions reduction project over the next three years as part of a consent decree with EPA. Given these factors, the Department is confident that the downward trend of SO_2 emissions and concentrations in Hamilton County will continue into the foreseeable future.

Figure 7: 2006-2015 PCS SO_2 emissions and monitor 12-047-0015 SO_2 design values.



4.1.1. EPA Consent Decree SO_2 Reduction Project

The SO_2 reduction project required by PCS' consent decree with EPA involves upgrading the two SAPs to meet new emission limits that are more than 35% less than their current limits (**Table 8**). The fist SAP will be upgraded in 2017 followed by the second unit in 2019. An additional modeling demonstration characterizing the area using these new maximum permitted emission rates (**Table 9**) is provided here as evidence of the improving state of the air quality in Hamilton County and the continued compliance with the SO_2 NAAQS.

Table 8: Current and future SO_2 emission limits for PCS' SAPs.

Unit Description	Current Permitted Emission Limit (lb/ton H_2SO_4)	Future Consent Decree Emission Limit (lb/ton H_2SO_4)	Compliance Date
SAP E	4.0 24-hr Block Average	2.6 3-hr Rolling Average	1/1/2018
SAP F	4.0 24-hr Block Average	2.6 3-hr Rolling Average	1/1/2020

Table 9: PCS units' Hamilton County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
SAP E	59.5	2.59	10.54	342.0	278.64
SAP F	59.5	2.59	10.54	342.0	290.28
Aux Boiler E	15.24	1.615	15.42	466.48	0.15
Molten Sulfur Handling System	7.62	0.183	0.64	366.48	2.4
Aux Boilers C & D	31.70	1.98	7.62	490.00	257.4
No. 1 (Y) DAP/MAP	36.58	2.13	12.19	322.04	11.1
No. 2 (Z) DAP/MAP	42.67	2.44	9.45	322.04	11.8
X-Train Dical	36.58	2.13	12.19	322.04	11.1

4.1.1.1. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[12] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The new SO_2 emission limits on both SAPs are based on 3-hour averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 10**.

Table 10: Emissions variability analysis and equivalent emission rate calculations.

Unit Description	99th Percentile Rate (lb/hr)		Ratio	Permitted	Equivalent
	1-hr	3-hr	1-hr/3-hr	Limit (lb/hr)	Limit (lb/hr)
SAP E	375.25	364.79	0.972	270.83	278.64
SAP F	405.94	378.77	0.933	270.83	290.28

4.1.2. Future Allowables Modeling Demonstration Results

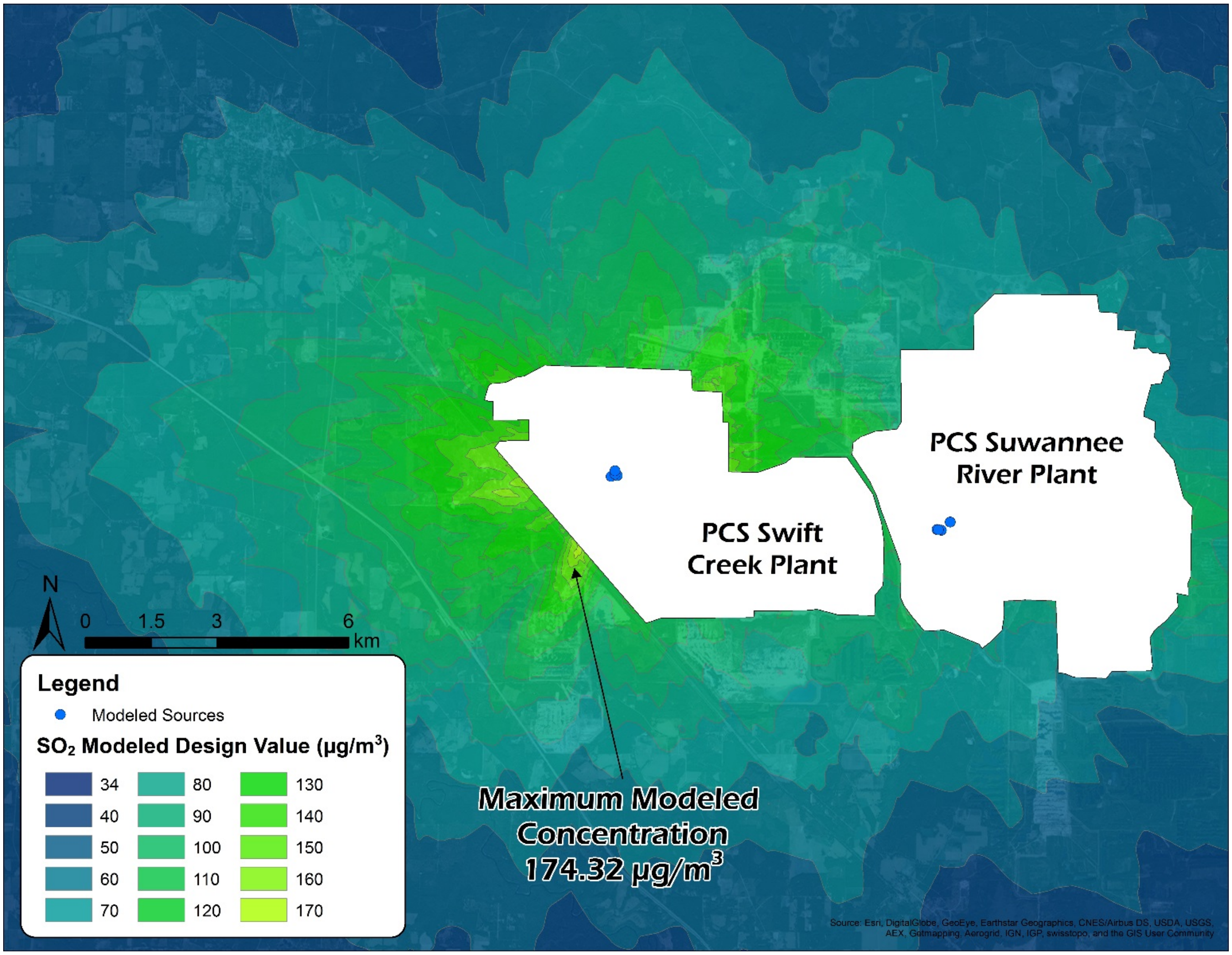
Once this project is complete, modeling indicates that the facility will be in compliance with the NAAQS at its maximum permitted short-term emission limits as shown in **Table 11** and **Figure 8**. The Department's continuing review obligations under the DRR will end at that time.

Table 11: Maximum modeled future SO_2 design value for PCS' consent decree emission limits.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (μg/m^3)			1-Hour SO_2 NAAQS	Percent of NAAQS
		PCS	Background	Total		
323,425.50	3,372,203.12	167.35	6.98	174.32	196.4	88.8%

[12] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html

Figure 8: Modeled future SO_2 design values for PCS' consent decree emission limits.



Appendix F
SO_2 Data Requirements Rule Modeling Report
Hillsborough County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Tampa Electric Company (TECO) owns and operates the Big Bend Station (Big Bend), an electric generating facility in Gibsonton, Florida operating under Title V Permit No. 0570039-083-AV issued by the Florida Department of Environmental Protection (Department). Big Bend emitted 11,157 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around Big Bend in Hillsborough County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate Hillsborough County is in attainment of the 2010 SO_2 NAAQS.

2.1. Hillsborough County SO_2 Nonattainment Area

It should be noted that Big Bend lies just outside of the Hillsborough County SO_2 nonattainment area (**Figure 1**). This nonattainment area was designated in 2013 based on ambient monitoring data in Gibsonton.[4] The Department worked in tandem with the facility identified as responsible for the elevated SO_2 concentrations at the monitor, Mosaic Fertilizer's Riverview Facility (Mosaic Riverview), and Big Bend, identified as a significant contributor, to develop a comprehensive nonattainment area plan to bring the area back into attainment with the NAAQS as expeditiously as practicable. The plan was recently proposed for approval by EPA and has nearly been completed at both facilities.[5] This is reflected in the monitored concentrations at the nonattainment area reference monitor, which have decreased nearly 40% since 2012 and have been in compliance with the NAAQS since 2015.

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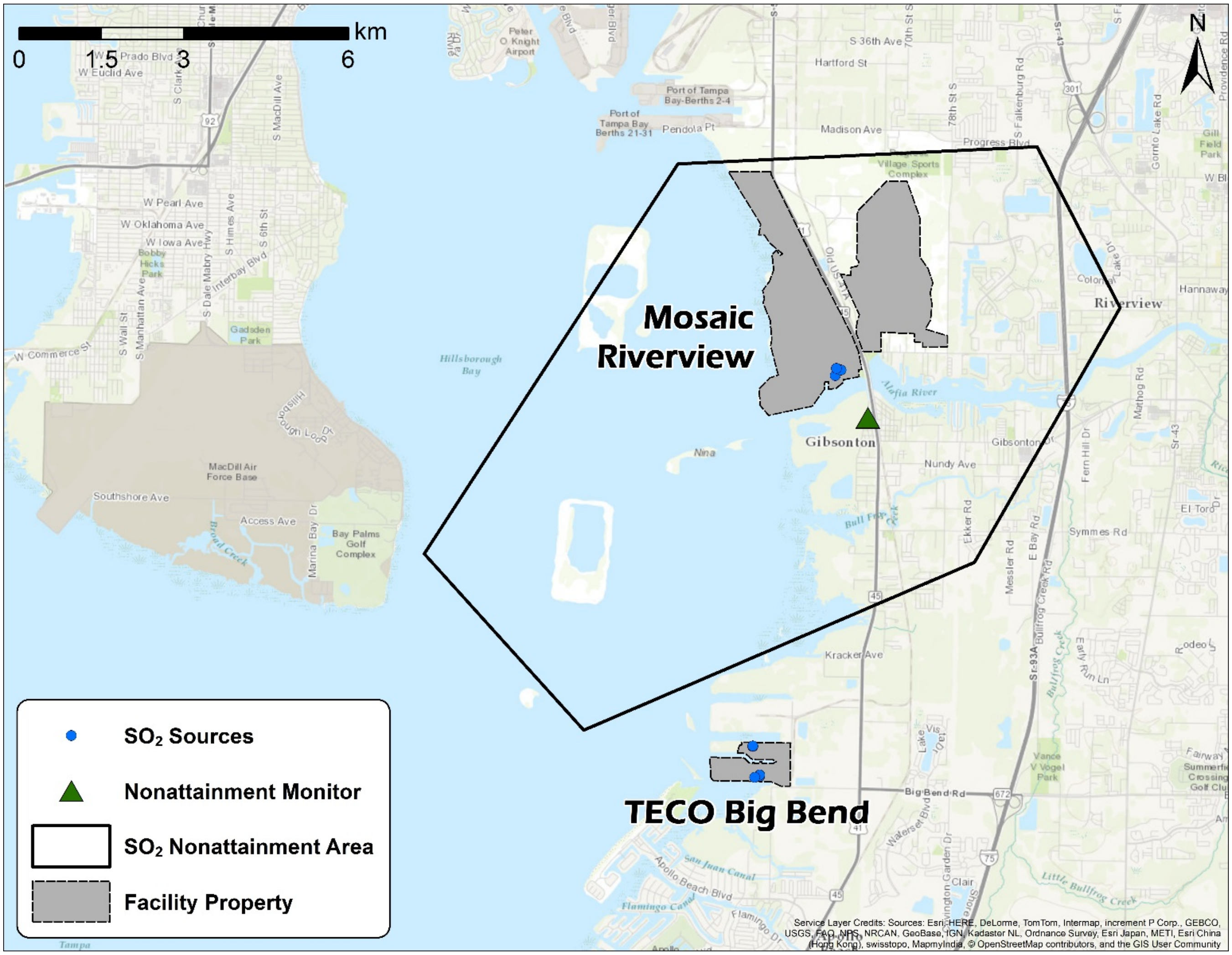
[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.
[4] *See* 40 CFR 81.310.
[5] *See* 81 Fed. Reg. 57,522.

Figure 1: Hillsborough County, Florida 2010 SO_2 Nonattainment Area.



3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[6] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around Big Bend for the DRR.

3.2. Modeled Facilities

Big Bend is the only DRR-applicable facility in Hillsborough County. There are, however, a variety of smaller nearby SO_2 sources in both Hillsborough County and adjacent Pinellas, Polk, Sarasota, and Manatee Counties. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the

[6] *See* Appendix W to 40 CFR 51, Section 3.2.

modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that Mosaic Riverview and Envirofocus, located approximately 7.5 km and 19 km to the north respectively, are the only other sources that have the potential to cause a significant concentration gradient in the area of interest (**Figure 2**). All other sources in the area (**Table 1**) are represented in the added monitored background concentrations discussed in **Section 3.9**. While the FPL Manatee Power Plant (FPL) 22 km south in Manatee County is technically above the 20d threshold, an analysis of monitored ambient SO_2 concentrations between TECO and FPL indicates that there is no measurable impact from FPL in the area of interest. This is also discussed further in **Section 3.9.**

Figure 2: 2014 SO_2 emission sources greater than 1 ton in and around Hillsborough County.

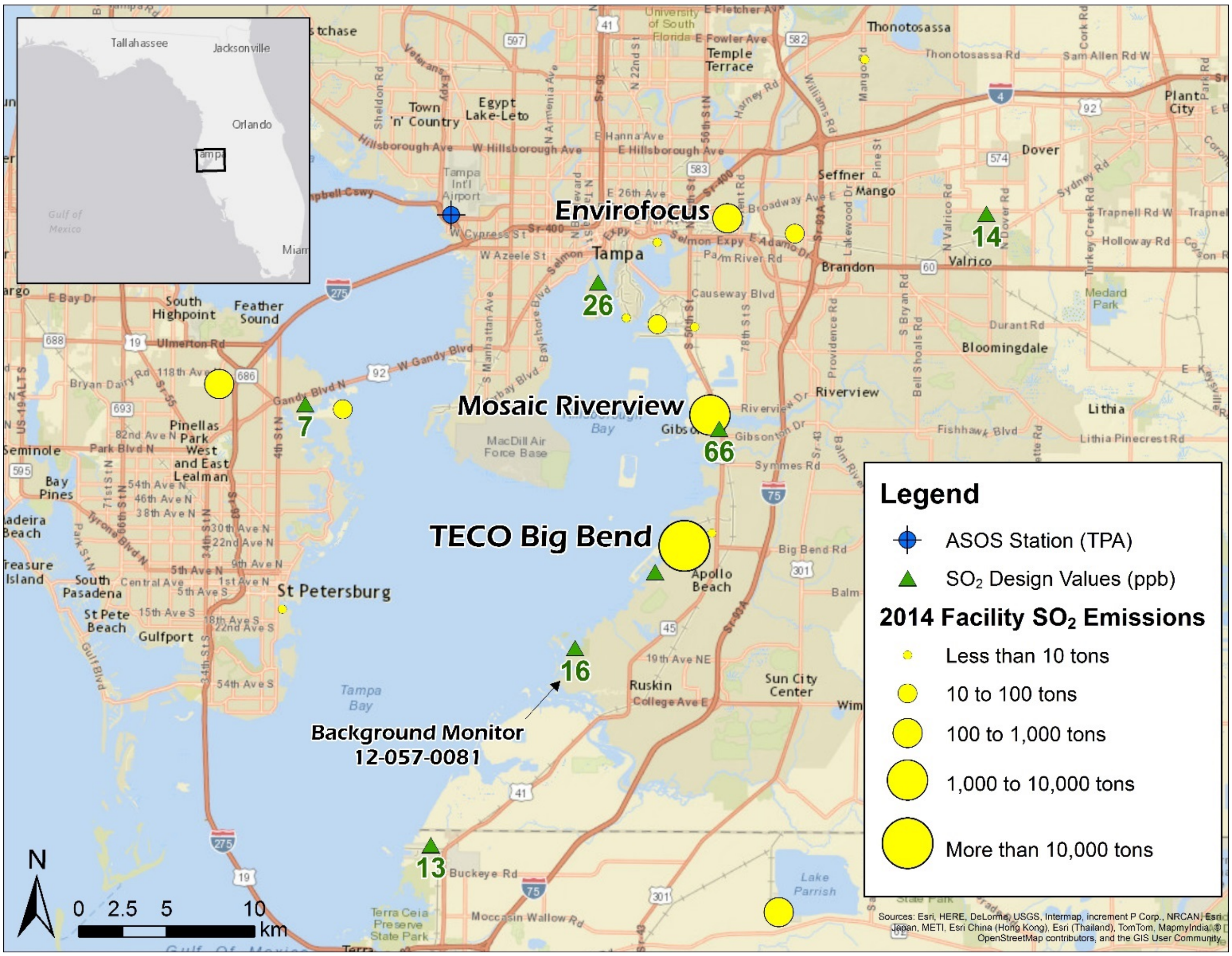


Table 1: All sources of SO_2 emissions greater than 5 tons in 2014 within 35 km of Big Bend.

Facility ID	Facility Name	Distance from Big Bend (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
057-0039	TECO Big Bend [a]	0	0	11,156.71	Yes
057-0008	Mosaic Riverview [a]	8	160	2,209.13	Yes
057-0040	TECO Bayside Power Station	13	260	15.19	No
057-0127	McKay Bay Refuse-to-Energy	18	360	7.06	No
057-0261	Hillsborough County RRF	19	380	13.89	No
057-0057	Envirofocus Technologies [a]	19	380	164.96	No
103-0011	Duke Energy Bartow Plant	21	420	16.29	No
081-0010	FPL Manatee Power Plant	22	440	454.26	Yes
103-0117	Pinellas County RRF	28	560	187.97	No

a. Explicitly modeled facility.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Tampa International Airport (TPA) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Ruskin, Florida (TBW) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 7.92 – Sets ASOS anemometer height to 7.92 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[7] The 2012-2014 TPA dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The

[7] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

default seasonal categories for each month were changed to reflect the subtropical climate of Hillsborough County. All inputs to AERSURFACE are summarized in **Table 2**.

Table 2: AERSURFACE inputs for 2012-2014 TPA AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	27.9633
Meteorological Station Longitude (Degrees)	-82.5400
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	0
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	1,2,10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Wet
Average Surface Moisture 2013	Wet
Average Surface Moisture 2014	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around Big Bend so that a comparison could be done to determine if the meteorological data recorded at TPA are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. Due to Florida's uniform flat topography, the most important geographical influence on mesoscale meteorological conditions is proximity to the coastline, and both TPA and Big Bend are located on the coast of Tampa Bay. In addition, the airport is just 23 km northwest of Big Bend, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the TPA meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Hillsborough County.

Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Tampa International Airport	0.15	0.44	0.061
TECO Big Bend	0.14	0.28	0.077

3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[8] The Auer method requires an

[8] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 3** below, rural land use constitutes a majority (73%) of the 3-km radius around Big Bend.

Figure 3: Land use classification around Big Bend in Hillsborough County.

3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level

1-hour impact of SO_2 will be approximately 10 times the source release height.[9] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within Big Bend's fenceline were removed and receptors were placed with 50 m spacing along the fenceline.

Initial modeling indicated that high concentrations were found in an area of insufficiently dense receptor placement near Mosaic Riverview. Accordingly, an additional nested grid of receptors with 100 m spacing was placed in this area to fully resolve the highest concentrations. The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 8 km of Big Bend. The receptor grid used in the Hillsborough County DRR modeling demonstration is described below in **Table 4, Table 5,** and **Figure 4**.

Table 4: Hillsborough County DRR modeling demonstration main receptor grid description.

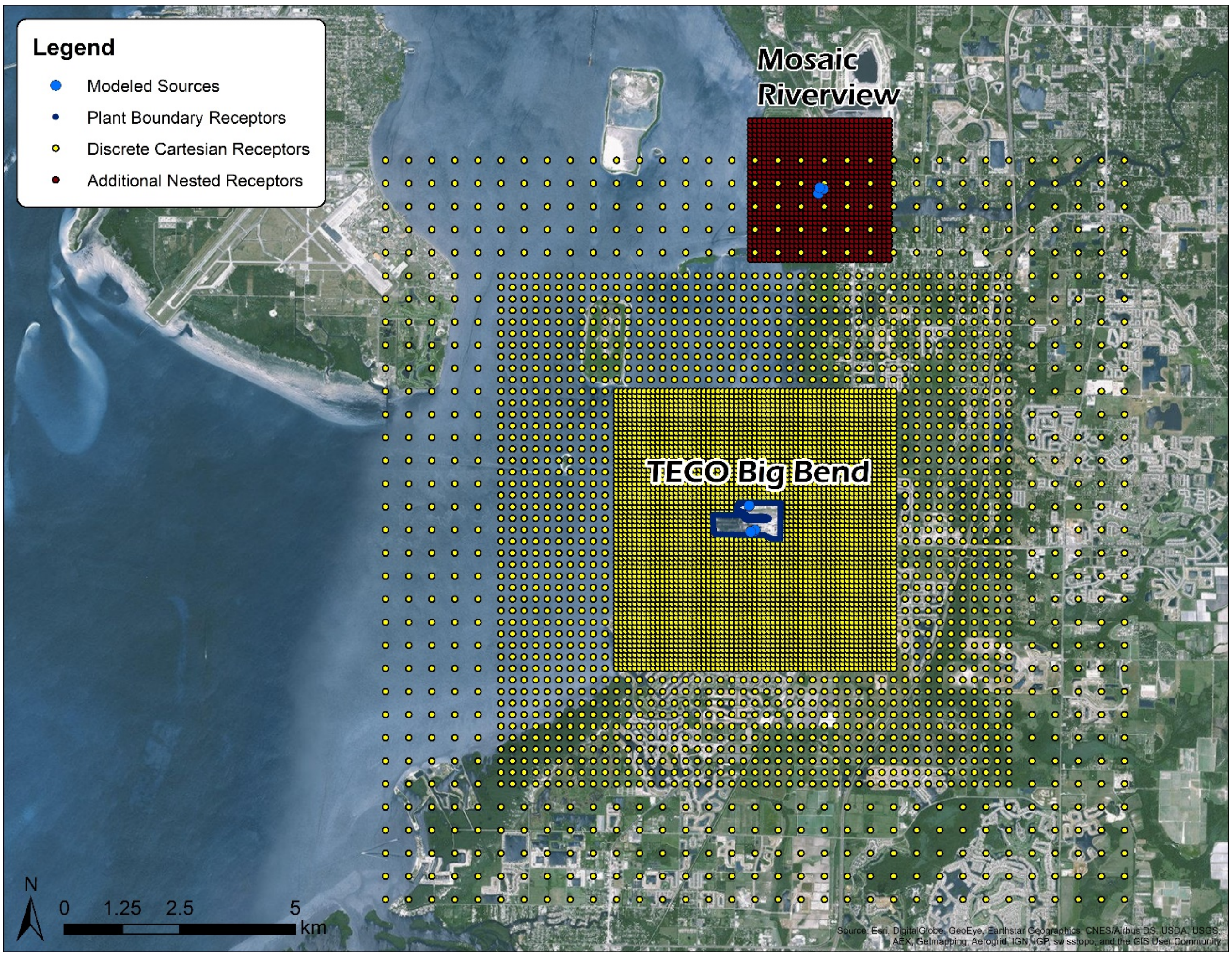
Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	Boiler No. 4
Unit UTM Zone	17N
Unit UTM Easting (m)	361,795.00
Unit UTM Northing (m)	3,075,245.00
Actual Stack Height (m)	149.40
Expected Distance to Max Concentration (m)	1,494
20 Times Stack Height (m)	2,988
100 m Receptor Spacing - Extent from the Origin (m)	3,000
250 m Receptor Spacing - Extent from the Origin (m)	5,500
500 m Receptor Spacing - Extent from the Origin (m)	8,000
Plant Boundary Receptor Spacing (m)	50
Total Receptors	5,726

[9] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

Table 5: Hillsborough County DRR modeling demonstration nested receptor grid description

Receptor Grid Parameter	Value/Description
UTM Zone	17N
SW Corner UTM Easting (m)	361,700.00
SW Corner UTM Northing (m)	3,081,100.00
Total East-West Extent (m)	3,000
Total North-South Extent (m)	3,000
Receptor Spacing (m)	100
Total Receptors	961

Figure 4: Receptor grid placement for the Hillsborough County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. Thirteen structures onsite at Big Bend and 38 structures at Riverview were included in the downwash analysis. Direction-specific downwash parameters for all stacks at Big Bend were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use maximum permitted short-term emission rates to characterize all modeled sources. A variety of small, intermittent emissions sources including fire pumps and emergency generators at all facilities were not included because their emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[10]

3.8.1. Big Bend Modeled Units

SO_2 emissions from Big Bend are mostly from four predominantly coal-fired electric generating boilers. All four units utilize flue-gas desulfurization (FGD) systems that remove most of the SO_2 before the plumes leave the stacks. As a part of the Hillsborough County nonattainment area plan, Big Bend began complying with a 3,162 lb/hr emission rate cap on its four boilers on June 1, 2016. This cap was distributed to each of the units for modeling purposes based on the relative size (maximum permitted heat input) of each unit. There are also two natural gas-fired simple-cycle combustion turbine (SCCT) peakers that contribute a small amount of additional emissions. Emissions from all units are monitored by continuous emissions monitoring systems (CEMS).

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[11] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[12] The stack heights for all units at Big Bend are less than or equal to the GEP height for each. A summary of the modeled stack parameters for Big Bend is presented below in **Table 6**.

Table 6: Big Bend units' Hillsborough County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boilers 1 & 2 [a]	149.4	8.8	18.3	325.9	2,052.56 [b]
Boiler 3	149.4	7.3	15.6	325.9	1,051.45 [c]
Boiler 4	149.4	7.3	18.1	325.9	1,106.38 [d]
SCCT 4A	18.3	2.9	29.7	715.4	1.9
SCCT 4B	18.3	2.9	29.7	715.4	1.9

a. Boilers 1 and 2 exhaust through a common stack.
b. 3,162 lb/hr 30-day cap ÷ 0.751 1-hr equivalency ratio × (8,033 MMBtu ÷ 16,478 MMBtu total)
c. 3,162 lb/hr 30-day cap ÷ 0.751 1-hr equivalency ratio × (4,115 MMBtu ÷ 16,478 MMBtu total)
d. 3,162 lb/hr 30-day cap ÷ 0.751 1-hr equivalency ratio × (4,330 MMBtu ÷ 16,478 MMBtu total)

[10] *See* Modeling TAD, Section 5.5.
[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[12] *See* Modeling TAD, Section 6.1.

3.8.2. Mosaic Riverview Modeled Units

Mosaic Riverview is a phosphate fertilizer manufacturing plant that has three sulfuric acid plants (SAPs) on site that account for the vast majority of the facility's SO_2 emissions. The SAPs burn elemental sulfur to create SO_2 which is then oxidized to SO_3 over a catalyst bed and absorbed into sulfuric acid. A portion of the SO_2 is not oxidized and is emitted to the atmosphere. Emissions from all three SAPs are monitored by CEMS.

The previously mentioned nonattainment area plan involves a significant amount of work currently being done at the site to reduce SO_2 emissions under air construction permit 0570008-080-AC issued by the Department. Most of the work, which involves upgrading catalyst beds to increase oxidation efficiency and increasing stack heights to improve dispersion at all three SAPs, has been completed. However, a final stack height increase on SAP 9 is not scheduled to be completed until November 2017 and is therefore not reflected in this modeling demonstration. The emission limits imposed by the nonattainment area plan involve two caps based on the number of units operating. SAPs typically operate at a very steady level and do not have a significant amount of downtime. Therefore, the applicable cap for when all three units are operating, 575 lb/hr 24-hour block averaging time, was split among the three units based on the relative production capacity of each unit. This scenario is reflective of the typical operation of the facility. Actual stack heights are less than or equal to the calculated GEP stack height for all units. A summary of the modeled stack parameters for Mosaic Riverview is presented below in **Table 7**.

Table 7: Mosaic Riverview units' Hillsborough County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
SAP No. 7	65.0	2.29	12.64	340.0	205.03 [a]
SAP No. 8	65.0	2.44	13.08	347.0	172.99 [b]
SAP No. 9	45.7	2.74	13.66	341.0	217.84 [c]

a. 575 lb/hr 24-hr cap ÷ 0.965 1-hr equivalency ratio × (3,200 tons per day (tpd) H_2SO_4 ÷ 9,300 tpd total)
b. 575 lb/hr 24-hr cap ÷ 0.965 1-hr equivalency ratio × (2,700 tpd H_2SO_4 ÷ 9,300 tpd total)
c. 575 lb/hr 24-hr cap ÷ 0.965 1-hr equivalency ratio × (3,400 tpd H_2SO_4 ÷ 9,300 tpd total)

3.8.3. Envirofocus Modeled Units

Envirofocus is a lead-acid battery recycling facility. SO_2 emissions from the facility are mostly a byproduct of the recycling process and are released to the atmosphere through several stacks. Most of these stacks emit a negligible amount of SO_2 and are not modeled. The process stack, which serves the feed dryer, reverb furnace, and blast furnace, and the hygiene baghouse stack account for the vast majority of the facility's SO_2 emissions and were characterized using their two-unit maximum permitted emissions cap. An analysis of CEMS data from both units over the period 2012-2014 showed that the process stack accounts for approximately 15% of the hourly emissions on average with the baghouse stack accounting for the rest. The cap was distributed to these two units based on that ratio. This approach is a good approximation of the maximum emissions regime for these units given their significant distance from Big Bend (nearly 20 km), their relatively small size compared to other sources in the area, and their proximity to each other (less than 40 m apart). The actual heights of both stacks are less than the calculated GEP stack heights. A summary of the modeled stack parameters for Envirofocus is presented below in **Table 8**.

Table 8: Envirofocus units' Hillsborough County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Process Stack	39.62	1.52	13.60	336.67	62.72 [a]
Hygiene Baghouse Stack	39.62	1.52	20.81	325.33	467.39 [b]

a. 202.24 lb/hr 30-day cap ÷ 0.469 1-hr equivalency ratio × 14.56%
b. 202.24 lb/hr 30-day cap ÷ 0.370 1-hr equivalency ratio × 85.44%

3.8.4. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[13] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The SO_2 emission limits for most of the modeled sources are based longer-term averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 9**.

Table 9: Emissions variability analysis and equivalent emission rate calculations for Mosaic Riverview and Envirofocus.

Unit Description	99th Percentile Rate (lb/hr) 1-hr Average	Long-term	Ratio Long-term/1-hr	Permitted Long-Term Limit (lb/hr)	Equivalent 1-hr Average Limit (lb/hr)
TECO Boilers [a]	4,507.53	3,385.33	0.751	3,162 30-day	4,210.39
Mosaic Three SAP Cap [b]	957.44	924.00	0.965	575 24-hour	595.85
Envirofocus Process Stack [c]	261.16	122.60	0.469	29.44 30-day	62.72
Envirofocus Baghouse Stack [c]	159.17	58.85	0.370	172.80 30-day	467.39

a. New nonattainment plan derived emission limit for all four boilers.
b. New nonattainment plan derived emission limit for the operation of all three SAPs.
c. The two stacks at Envirofocus have a combined emission cap of 202.24 lb/hr. Over the period 2012-2014, the process stack accounted for an average of 14.56% of the hourly emissions while the baghouse stack accounted for the other 85.44%. This ratio was used to distribute the cap between the two units.

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[14] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-057-0081 for

[13] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html
[14] *See* Modeling TAD, Section 8.1

the period January 2012 to December 2014. As shown in **Figure 2**, the monitor is just 8.5 km southwest of Big Bend. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from Big Bend, Mosaic Riverview, or Envirofocus. In this case, any measurement recorded when the wind direction was from 344° to 90° was removed from the background calculation as shown in **Figure 5**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 10**. As previously mentioned, **Figure 5** indicates that based on the placement of the monitor between Big Bend and FPL Manatee, during the 2012-2014 period there was no measurable ambient SO_2 impact in the modeled area from the FPL Manatee facility.

Figure 5: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-057-0081.

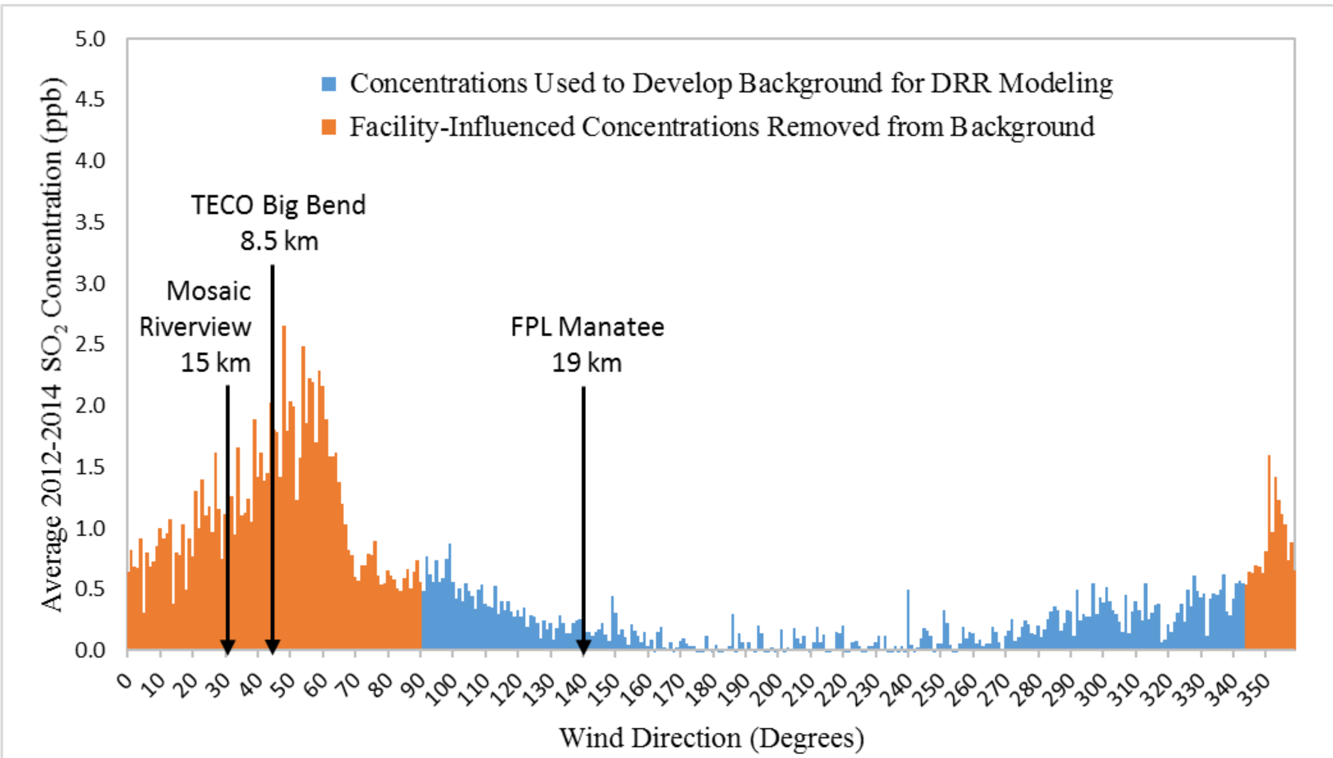


Table 10: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Hillsborough County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	1.33	1.33	1.00	2.33	12:00	3.67	2.67	3.33	3.67
1:00	1.33	1.00	0.67	1.33	13:00	4.33	3.00	3.67	3.33
2:00	1.00	0.67	1.00	1.67	14:00	2.67	2.00	2.67	3.00
3:00	2.33	0.67	1.00	1.00	15:00	2.00	1.33	1.67	2.33
4:00	1.00	0.33	1.00	1.33	16:00	2.67	1.33	1.67	2.33
5:00	1.00	0.33	1.00	1.33	17:00	2.00	1.33	1.33	1.67
6:00	1.33	0.67	2.00	1.67	18:00	2.00	1.00	1.00	1.67
7:00	1.33	1.67	2.00	2.00	19:00	2.00	1.00	0.67	1.33
8:00	2.00	2.67	2.00	4.33	20:00	3.00	1.00	1.33	2.33
9:00	4.33	1.33	2.67	4.00	21:00	2.00	1.67	1.33	2.00
10:00	4.00	1.33	2.00	3.67	22:00	2.00	6.67	7.00	2.00
11:00	2.67	2.00	1.33	3.67	23:00	1.67	2.00	1.33	2.33

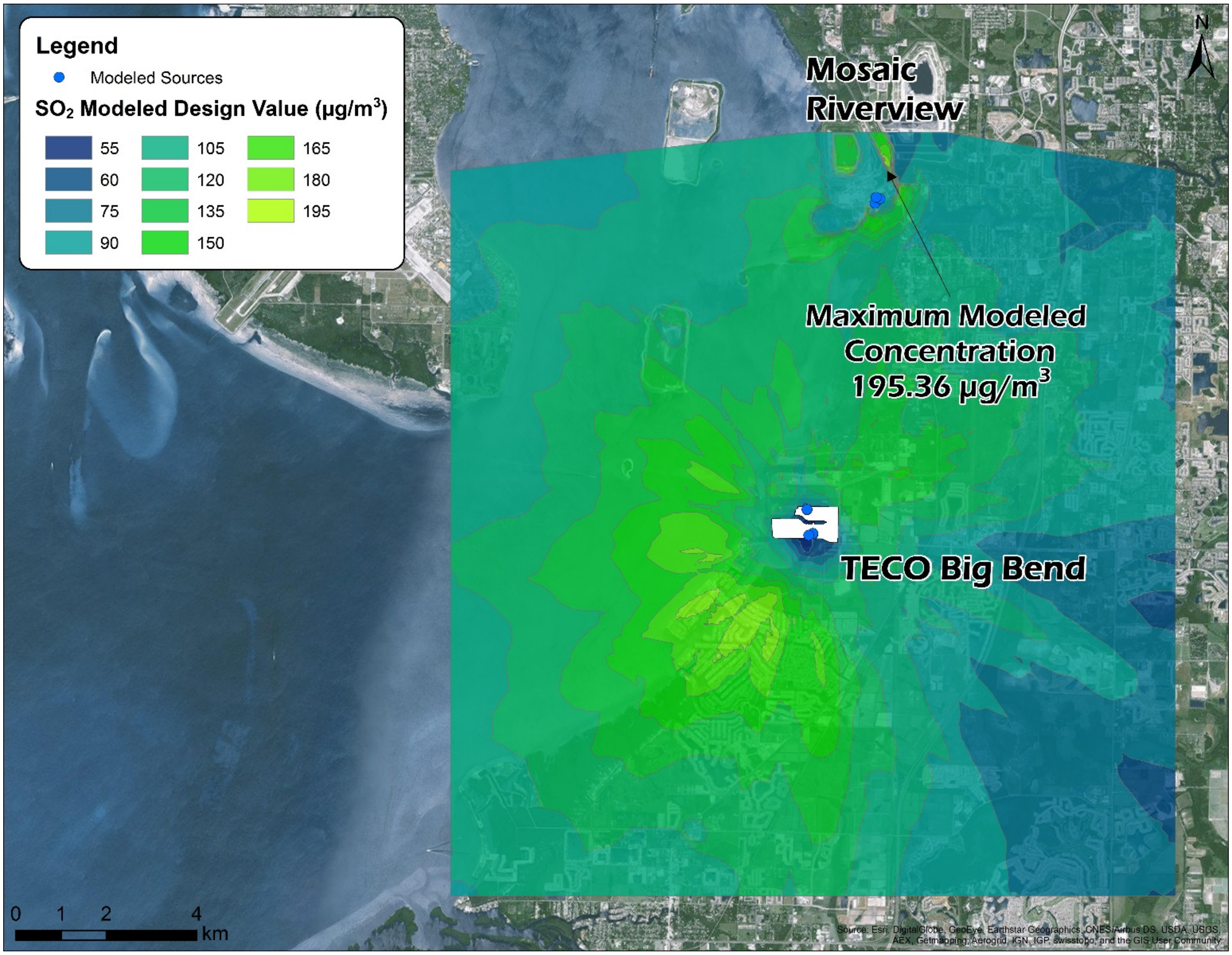
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around TECO's Big Bend Station in Hillsborough County, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using maximum permitted short-term emission rates and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. Post-processing was performed to subtract the ambient impact from Mosaic Riverview's units to receptors located within Mosaic Riverview's fenceline. The results summarized in **Table 11** and **Figure 6** indicate that Hillsborough County is in attainment of the SO_2 NAAQS.

Table 11: Maximum modeled SO_2 design value in the Hillsborough County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (µg/m^3)					1-Hour SO_2 NAAQS	Percent of NAAQS
		Big Bend	River-view	Enviro-focus	Back-ground	Total		
363,400.00	3,083,400.00	65.23	124.25	0.06	5.82	195.36	196.4	99.5%

Figure 6: Modeled SO_2 design values in the Hillsborough County DRR modeling demonstration.

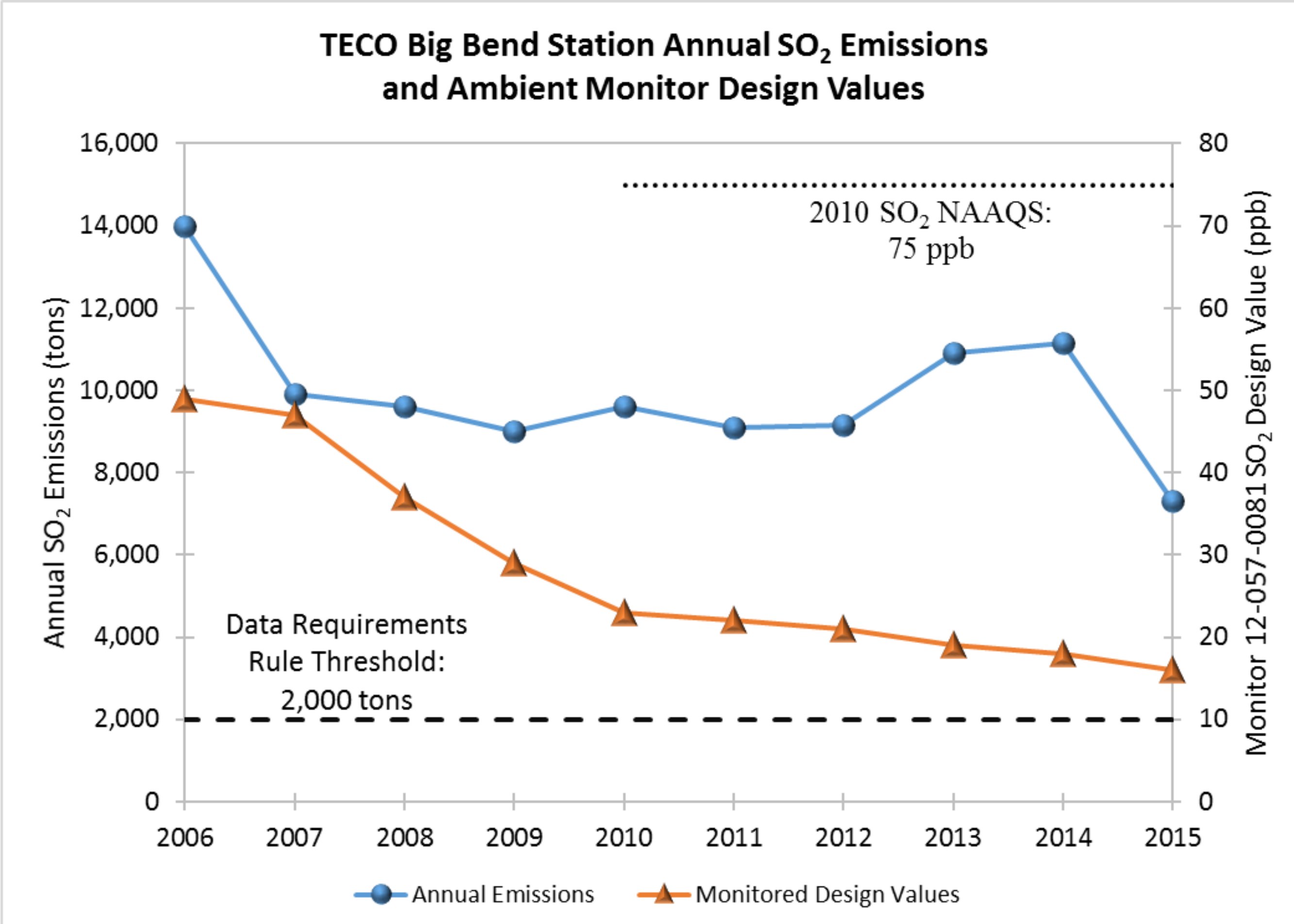


4.1. Continuing Review Obligations

The DRR modeling demonstration for Hillsborough County shows that the area is within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. While the local monitor will remain in place, the Department has no continuing obligation under the DRR to review SO_2 emissions in the area annually for continued compliance with the NAAQS because every modeled unit's maximum permitted short-term emission rates were used in the modeling demonstration.

It is expected that the ambient concentrations and emissions of SO_2 in Hillsborough County will continue to fall as they have for at least the past decade (**Figure 7**). 2015 emissions of SO_2 at Big Bend were 34% less than in 2014 and 21% less at Mosaic Riverview. The previously mentioned emissions cap that Big Bend began complying with in June 2016 represents a 52% decrease in the allowable emission rates for these units. It is anticipated that the continued implementation of the Hillsborough County SO_2 nonattainment area plan at Mosaic Riverview through 2017 will result in even further reductions of these lower levels of SO_2 concentrations ensuring continued compliance with the NAAQS.

Figure 7: 2006-2015 Big Bend SO_2 emissions and monitor 12-057-0081 SO_2 design values.



Appendix G

SO_2 Data Requirements Rule Modeling Report

Nassau County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

WestRock CP, LLC's Fernandina Beach Mill (WestRock) is a fully integrated Kraft linerboard mill in Fernandina Beach, Florida operating under Title V Permit No. 0890003-048-AV issued by the Florida Department of Environmental Protection (Department). WestRock emitted 3,477 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around WestRock in Nassau County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate Nassau County is in attainment of the 2010 SO_2 NAAQS.

2.1. Nassau County SO_2 Nonattainment Area

It should be noted that WestRock lies just outside of the Nassau County SO_2 nonattainment area (**Figure 1**). This nonattainment area was designated in 2013 based on ambient monitoring data in Fernandina Beach.[4] The Department worked in tandem with the facility identified as responsible for the elevated SO_2 concentrations at the monitor, Rayonier Performance Fibers Fernandina Sulfite Mill (Rayonier), and WestRock, identified as a significant contributor, to develop a comprehensive nonattainment area plan to bring the area back into attainment with the NAAQS as expeditiously as practicable. The plan was recently proposed for approval by EPA and has nearly been completed at both facilities.[5] This is reflected in the monitored concentrations at the nonattainment area reference monitor which have decreased over 50% since 2012 and have been in compliance with the NAAQS since 2013.

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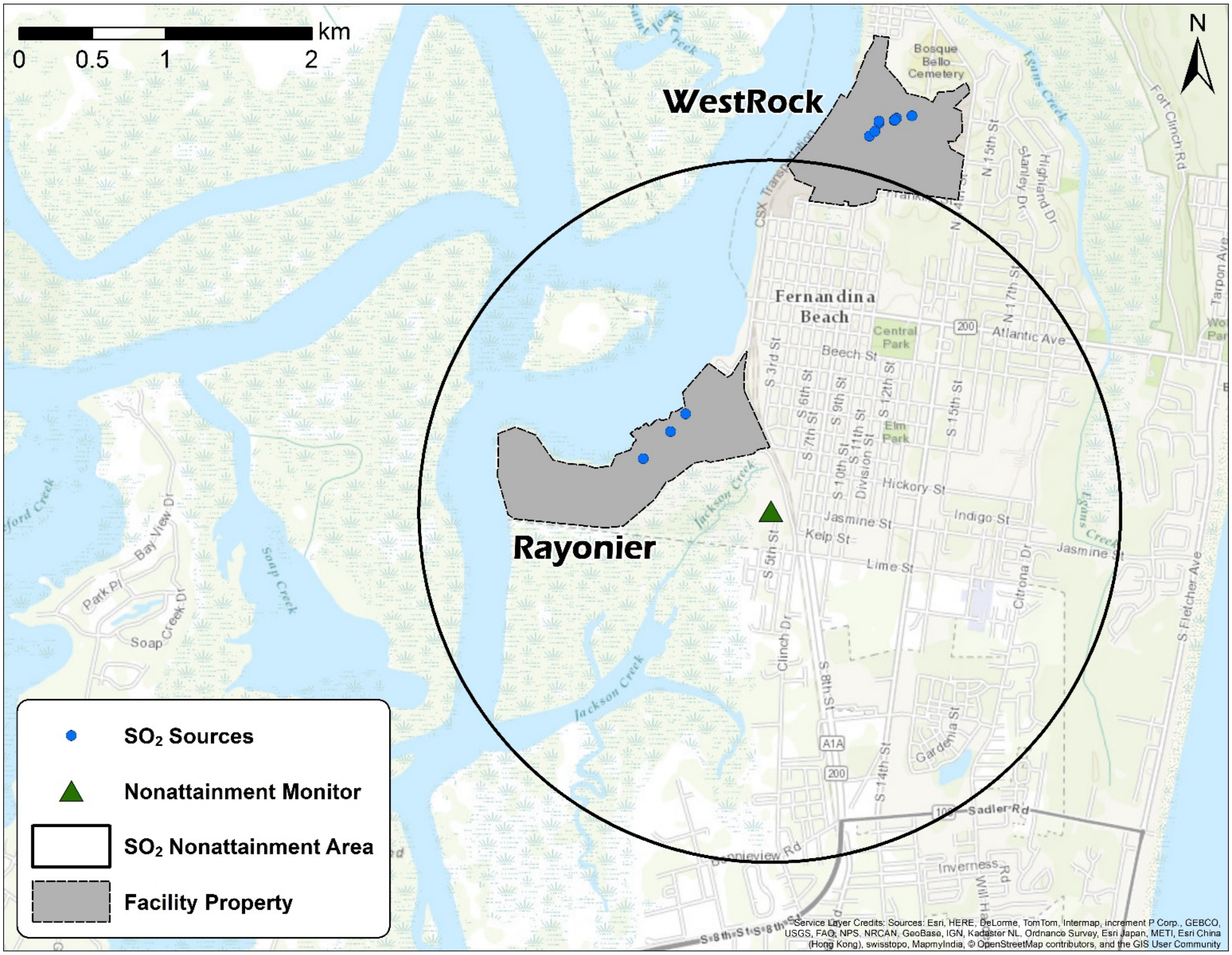
[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.
[4] *See* 40 CFR 81.310.
[5] *See* 81 Fed. Reg. 57,535.

Figure 1: Nassau County, Florida 2013 SO_2 Nonattainment Area.



3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[6] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around WestRock for the DRR.

3.2. Modeled Facilities

WestRock is the only DRR-applicable facility and one of only three point sources of SO_2 in Nassau County. There are, however, a variety of nearby SO_2 sources in both Nassau County and adjacent Duval County. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling

[6] *See* Appendix W to 40 CFR 51, Section 3.2.

demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that Rayonier, located approximately 3km to the southwest, is the only other significant source of SO_2 emissions within 30 km and the only one that has the potential to cause a significant concentration gradient in the area of interest (**Figure 2**). All other sources in the area (**Table 1**) are represented in the added monitored background concentrations discussed in **Section 3.9**. While the JEA Northside/St. Johns River Power Park (JEA) and Cedar Bay facilities, both more than 30 km to the south, are technically above the 20d threshold, they were not explicitly included in the modeling demonstration. The reasoning for this decision is based mainly on the fact that these facilities were included in the DRR modeling demonstration for Duval County with JEA being the primary facility in the demonstration. This demonstration is included as **Appendix C** to this submittal. In addition, an analysis of monitored ambient SO_2 concentrations between WestRock and these facilities indicates that there is essentially no measurable impact from these facilities in the area of interest. This is also discussed further in **Section 3.9.**

Figure 2: 2014 SO_2 emission sources greater than 1 ton in and around Nassau County.

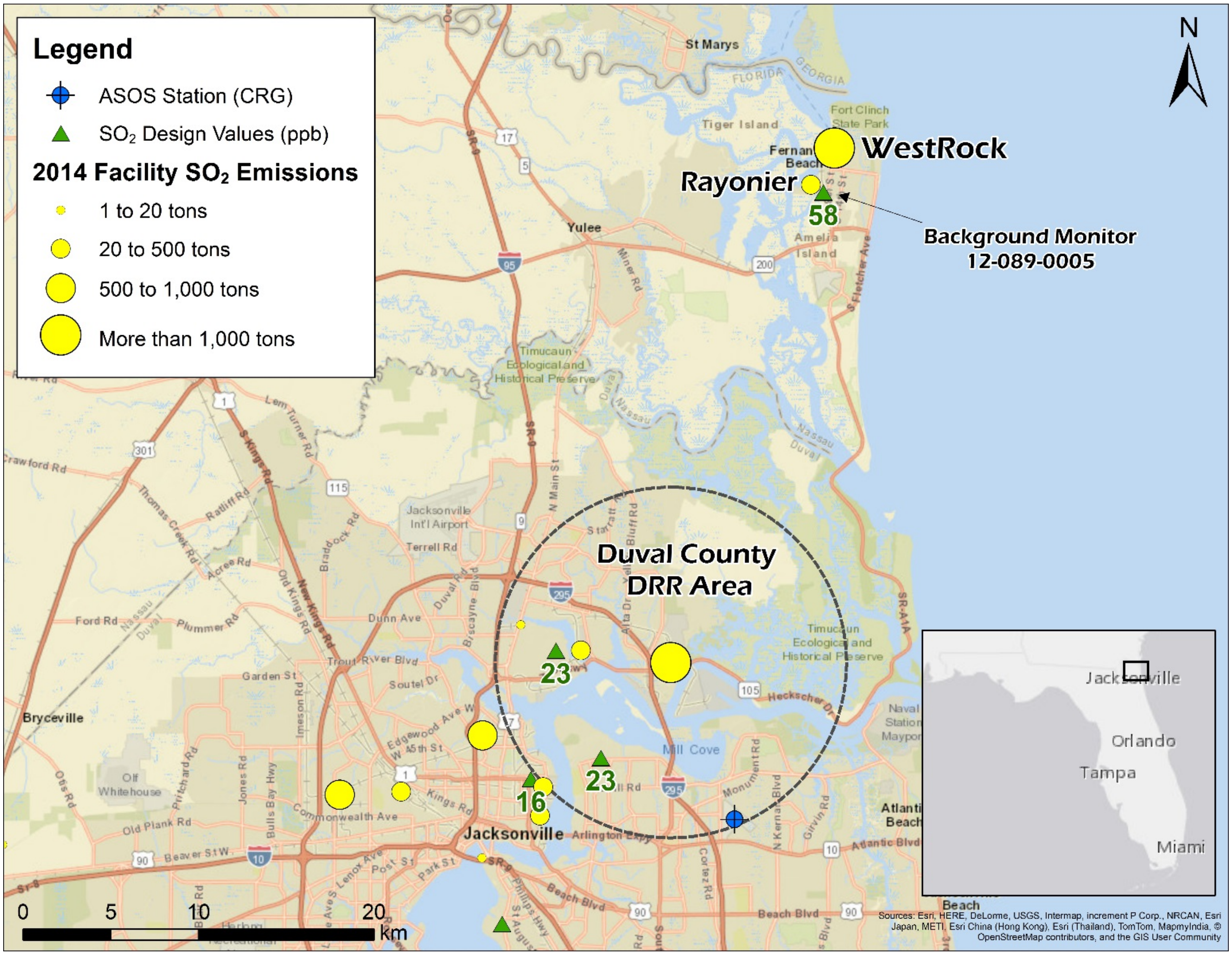


Table 1: All sources of SO_2 emissions greater than 1 ton in 2014 within 35 km of WestRock.

Facility ID	Facility Name	Distance from WestRock (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
089-0003	WestRock [a]	0	0	3,477.17	Yes
089-0004	Rayonier [a]	3	60	354.82	Yes
031-0045	JEA NGS/SJRPP	30	600	20,978.32	Yes
031-0337	Cedar Bay Generating Plant	32	640	732.82	Yes
031-0006	Anheuser-Busch Jacksonville	33	660	8.76	No

a. Explicitly modeled facility.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Jacksonville's Craig Municipal Airport (CRG) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location at Jacksonville International Airport (JAX) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.15272
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 7.92 – Sets ASOS anemometer height to 7.92 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[7] The 2012-2014 CRG dataset satisfies this completeness requirement.

EPA Region 4 suggested that the Department consider using meteorological data from the Northeast Florida Regional Airport (SGJ) in St. Augustine, FL due to its similar distance from the coastline. The Department compiled the 2012-2014 AERMET dataset for this site, which is an older automated weather observing system (AWOS) station, and found that it did not meet the 90% data completeness requirements for the second quarter of 2013. In addition, this site does not have the high resolution one-minute ASOS wind data that CRG has. Modeling demonstrations performed in Nassau County, including the previously discussed nonattainment area plan, have traditionally relied on meteorological data from JAX as that is the closest ASOS station. However, since the most important geographical influence on mesoscale meteorological conditions in Florida is proximity to the coastline (sea breeze influences), the Department opted to utilize the CRG dataset due to that site being significantly closer to the coast than JAX.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The default seasonal categories for each month were changed to reflect the subtropical climate of Nassau County. All inputs to AERSURFACE are summarized in **Table 2**.

[7] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

Table 2: AERSURFACE inputs for 2012-2014 CRG AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	30.337
Meteorological Station Longitude (Degrees)	-81.5126
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	1,2
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Average
Average Surface Moisture 2013	Dry
Average Surface Moisture 2014	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around WestRock so that a comparison could be done to determine if the meteorological data recorded at CRG are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. In addition, the airport is just 39 km southwest of WestRock, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the CRG meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Nassau County.

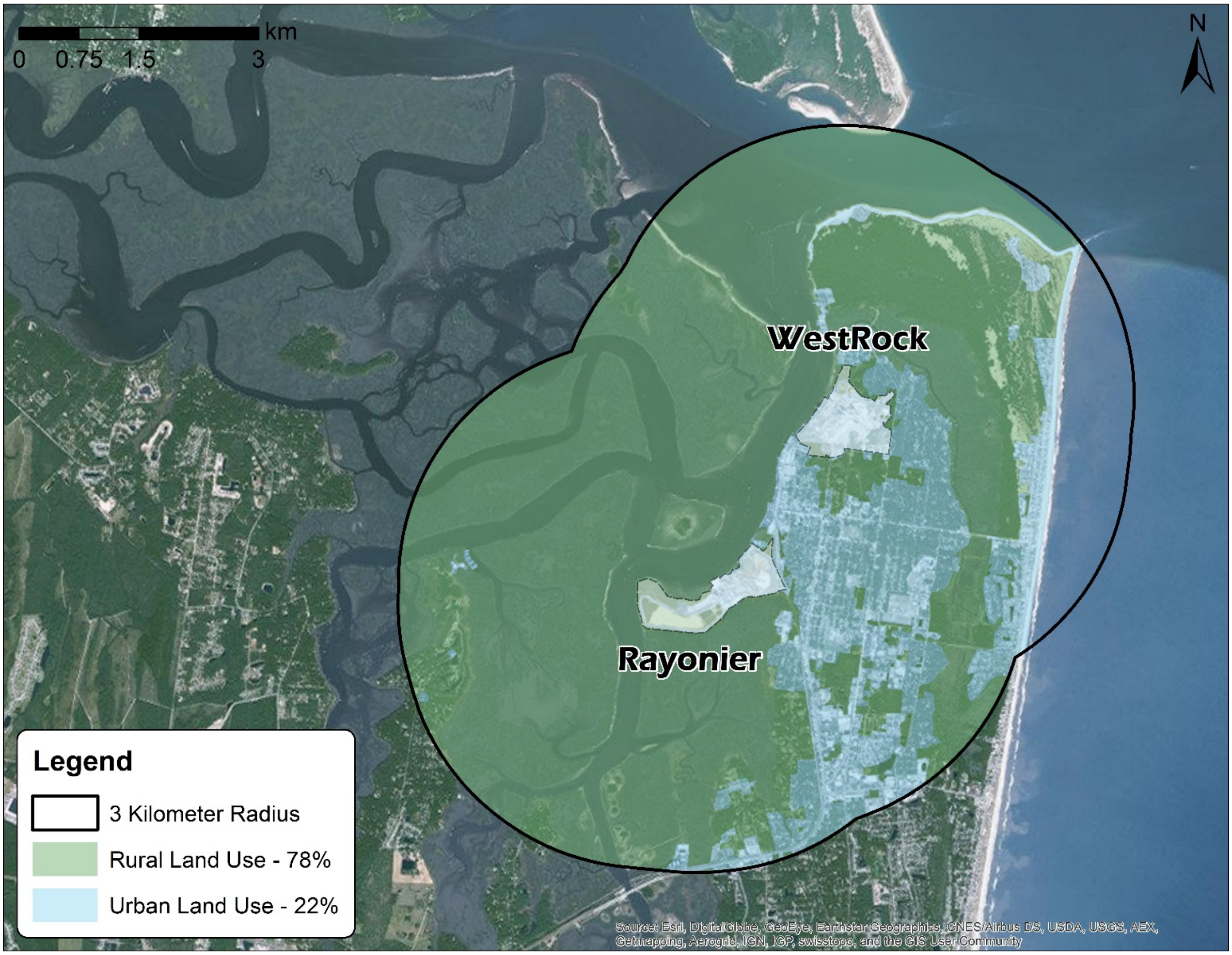
Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Craig Municipal Airport	0.15	0.51	0.114
WestRock	0.12	0.17	0.237

3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[8] The Auer method requires an analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 3** below, rural land use constitutes a majority (78%) of the 3-km radius around WestRock.

[8] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

Figure 3: Land use classification around WestRock in Nassau County.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[9] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the

[9] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

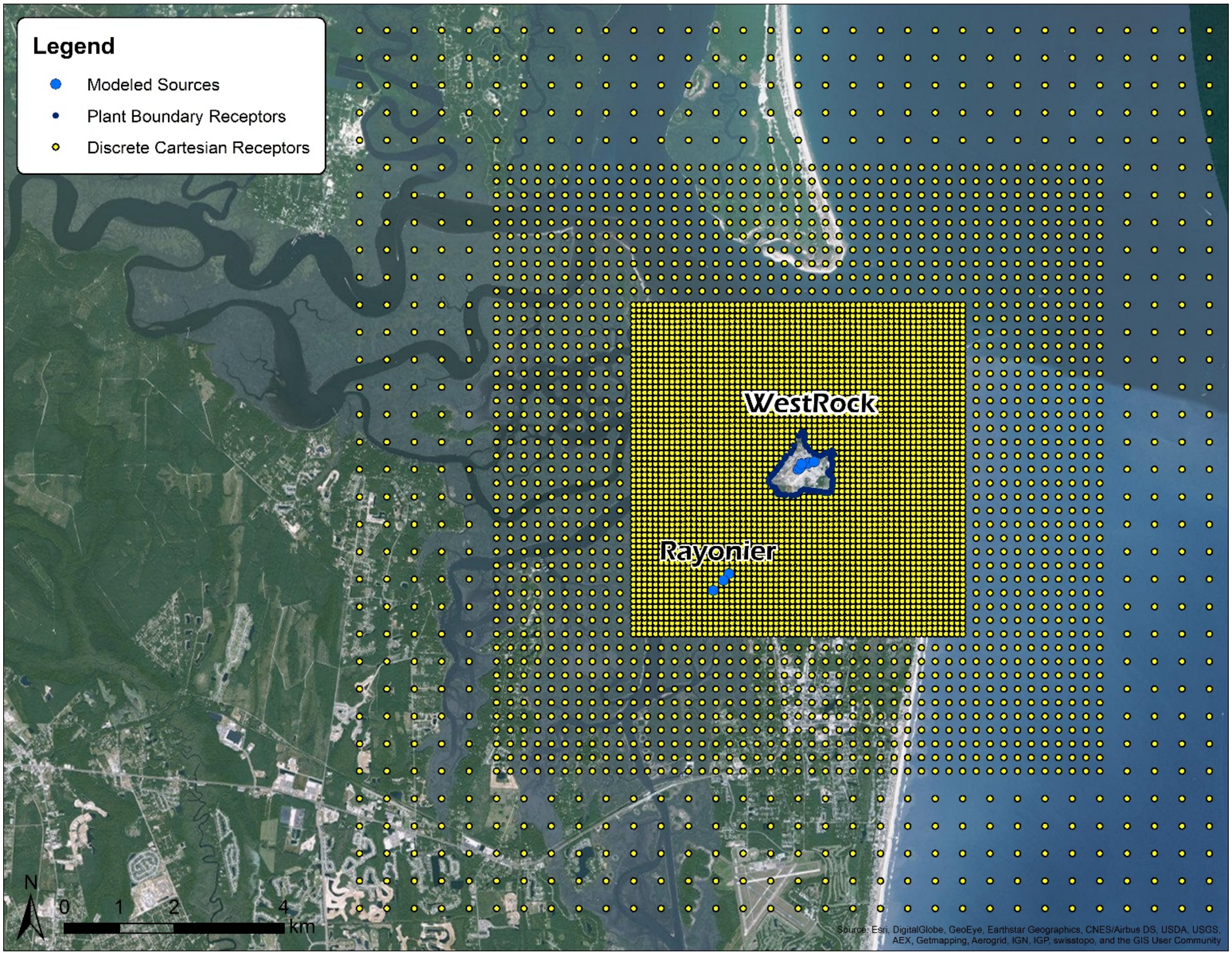
tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within WestRock's fenceline were removed and receptors were placed with 50 m spacing along the fenceline. This grid placement was sufficient to fully resolve the maximum modeled concentrations in the Nassau County modeling demonstration.

The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 8 km of WestRock. The receptor grid used in the Nassau County DRR modeling demonstration is described below in **Table 4** and **Figure 4**.

Table 4: Nassau County DRR modeling demonstration receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	No. 7 Power Boiler
Unit UTM Zone	17N
Unit UTM Easting (m)	456,256.65
Unit UTM Northing (m)	3,394,391.51
Actual Stack Height (m)	104.44
Expected Distance to Max Concentration (m)	1,044
20 Times Stack Height (m)	2,089
100 m Receptor Spacing - Extent from the Origin (m)	3,000
250 m Receptor Spacing - Extent from the Origin (m)	5,500
500 m Receptor Spacing - Extent from the Origin (m)	8,000
Plant Boundary Receptor Spacing (m)	50
Total Receptors	5,718

Figure 4: Receptor grid placement for the Nassau County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. 42 structures onsite at WestRock and twelve structures at Rayonier were included in the downwash analysis. Direction-specific downwash parameters for all stacks at WestRock were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use actual hourly emissions data to characterize every explicitly modeled source in Nassau County except for three units at WestRock. The hourly data for all units were requested from the facilities for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness. The hourly data were then included in the modeling demonstration using the AERMOD keyword HOUREMIS for the units that were characterized with actual emissions data. A variety of small, intermittent emissions sources including fire pumps and emergency generators at both facilities were not included because their emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[10]

3.8.1. WestRock Modeled Units

SO_2 emissions from WestRock are mostly from a coal-fired power boiler, a carbonaceous fuel-fired power boiler, and two recovery boilers. Emissions from these units were characterized using actual hourly data. There are also two smelt dissolving tanks and a lime kiln that contribute a small amount of additional emissions. These units were characterized using their maximum permitted short-term emission rates. The previously mentioned nonattainment area plan involves a significant amount of work currently being done at the site to reduce SO_2 emissions under air construction permit 0890003-046-AC issued by the Department. Some of this work will not be completed until late 2017. Consequently, some of the lower emission limits imposed by this permit cannot be used in this demonstration because they will not be federally enforceable by January 13, 2017 as required by the DRR.

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[11] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[12] The stack heights for all units at WestRock are less than or equal to the GEP height for each. A summary of the modeled stack parameters for WestRock is presented below in **Table 5**.

[10] *See* Modeling TAD, Section 5.5.
[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[12] *See* Modeling TAD, Section 6.1.

Table 5: WestRock units' Nassau County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 4 Smelt Dissolving Tank	75.90	1.83	6.75	347.00	1.03
No. 5 Smelt Dissolving Tank	87.83	1.22	13.20	349.00	1.18
No. 4 Lime Kiln	30.63	1.52	23.00	466.00	21.00
No. 5 Recovery Boiler North Stack	87.98	2.74	15.20	495.00	0.22 lb/ton Black Liquor Solids [a] 266.9 lb/kgal Oil [b]
No. 5 Recovery Boiler South Stack	87.98	2.74	15.20	495.00	
No. 4 Recovery Boiler	76.30	3.51	15.40	501.00	
No. 7 Power Boiler	104.44	3.96	14.72	476.00	23.9 lb/ton Coal [c] 0.6 lb/MMscf Natural Gas [b] 142 lb/kgal Oil [b]
No. 5 Power Boiler	79.25	2.90	17.11	493.00	CEMS [d]

a. NCASI TB 1020
b. EPA AP-42
c. Stack Test Data
d. Several short instances of missing data were filled linearly using the bounding hours.

3.8.2. Rayonier Modeled Units

Rayonier is a unique chemical cellulose mill that has three SO_2-emitting units on site. The mill is subject to the previously mentioned nonattainment area plan and has fully implemented the required changes. Emissions from all three onsite sources are monitored by CEMS. Data from these CEMS from 2012-2014 were used to characterize Rayonier in the modeling demonstration. Actual stack heights are less than or equal to the calculated GEP stack height for all units. A summary of the modeled stack parameters for Rayonier is presented below in **Table 6**.

Table 6: Rayonier units' Nassau County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity [a] (m/s)	Exit Temp [a] (K)	SO_2 Emission Rate (lb/hr)
No. 6 Power Boiler	57.91	3.05	16.26	414.10	CEMS
Recovery Boiler	76.20	2.23	15.99	318.60	CEMS
Vent Gas Scrubber	54.86	1.52	5.64	299.70	CEMS
a. Values change annually based on latest stack test data.					

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[13] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-089-0005 for the period January 2012 to December 2014. As shown in **Figure 2**, the monitor is just 2.5 km south of WestRock. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from WestRock or Rayonier. In this case, any measurement recorded when the wind direction was from 263° to 62° was removed from the background calculation as shown in **Figure 5**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 7**. As previously mentioned, **Figure 5** indicates that given the placement of the monitor between WestRock and JEA and Cedar Bay, during the 2012-2014 period there was essentially no measurable ambient SO_2 impact in the modeled area from these facilities.

[13] *See* Modeling TAD, Section 8.1

Figure 5: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-107-1008.

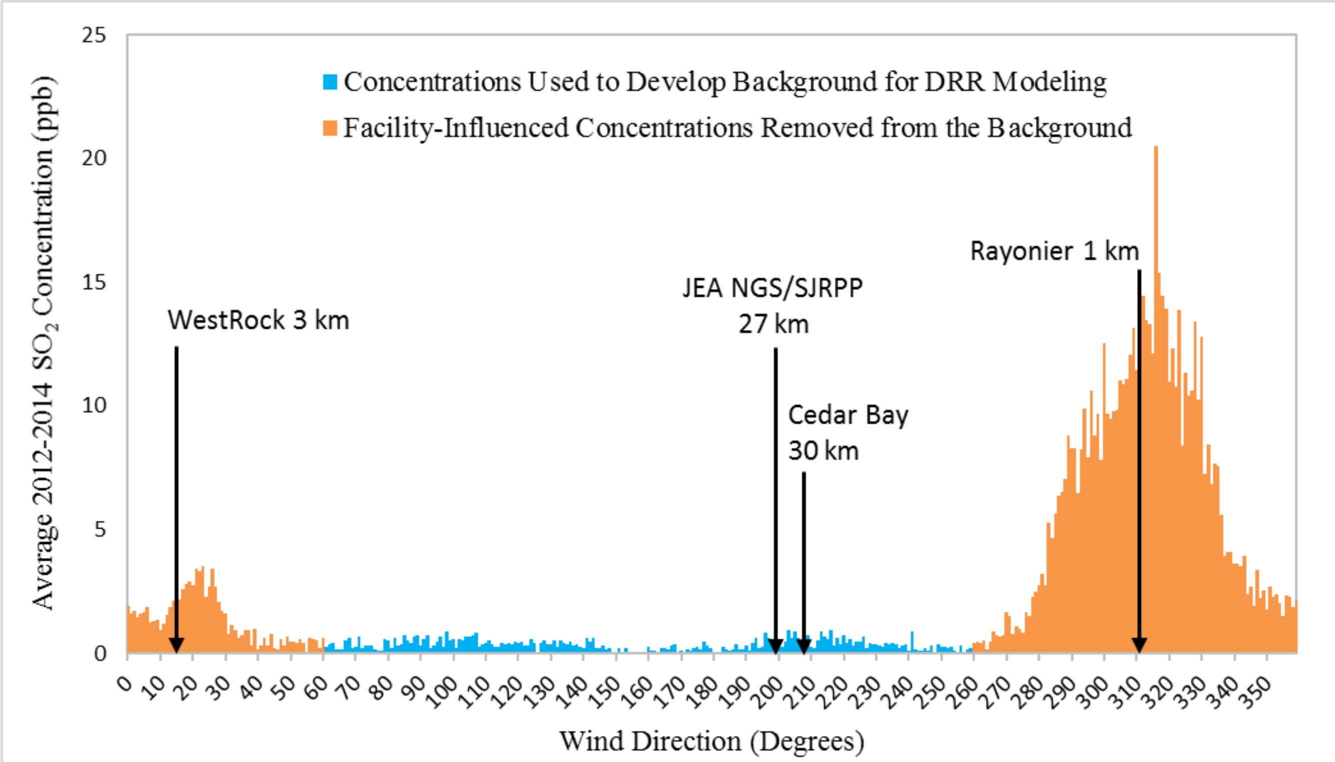


Table 7: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Nassau County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	2.0	1.3	2.3	4.3	12:00	4.7	3.0	4.0	4.3
1:00	2.3	1.7	2.0	4.7	13:00	3.3	3.0	2.7	3.0
2:00	3.0	1.3	2.0	2.7	14:00	2.7	3.3	2.3	3.3
3:00	3.3	1.3	2.0	3.0	15:00	3.7	2.0	2.3	3.7
4:00	2.3	1.7	2.3	4.0	16:00	2.7	2.3	2.7	2.7
5:00	2.7	1.3	2.7	5.0	17:00	1.7	1.3	2.0	3.0
6:00	2.7	1.7	2.3	6.7	18:00	2.3	2.0	2.7	2.7
7:00	2.7	1.7	4.0	4.3	19:00	1.7	1.7	2.3	2.7
8:00	2.3	3.3	3.7	4.0	20:00	2.0	1.7	1.7	2.3
9:00	3.7	5.0	6.7	4.0	21:00	2.0	1.3	2.3	3.0
10:00	4.0	4.0	5.3	5.7	22:00	2.3	1.3	1.3	3.3
11:00	5.7	4.0	6.0	4.7	23:00	2.0	1.7	3.0	2.7

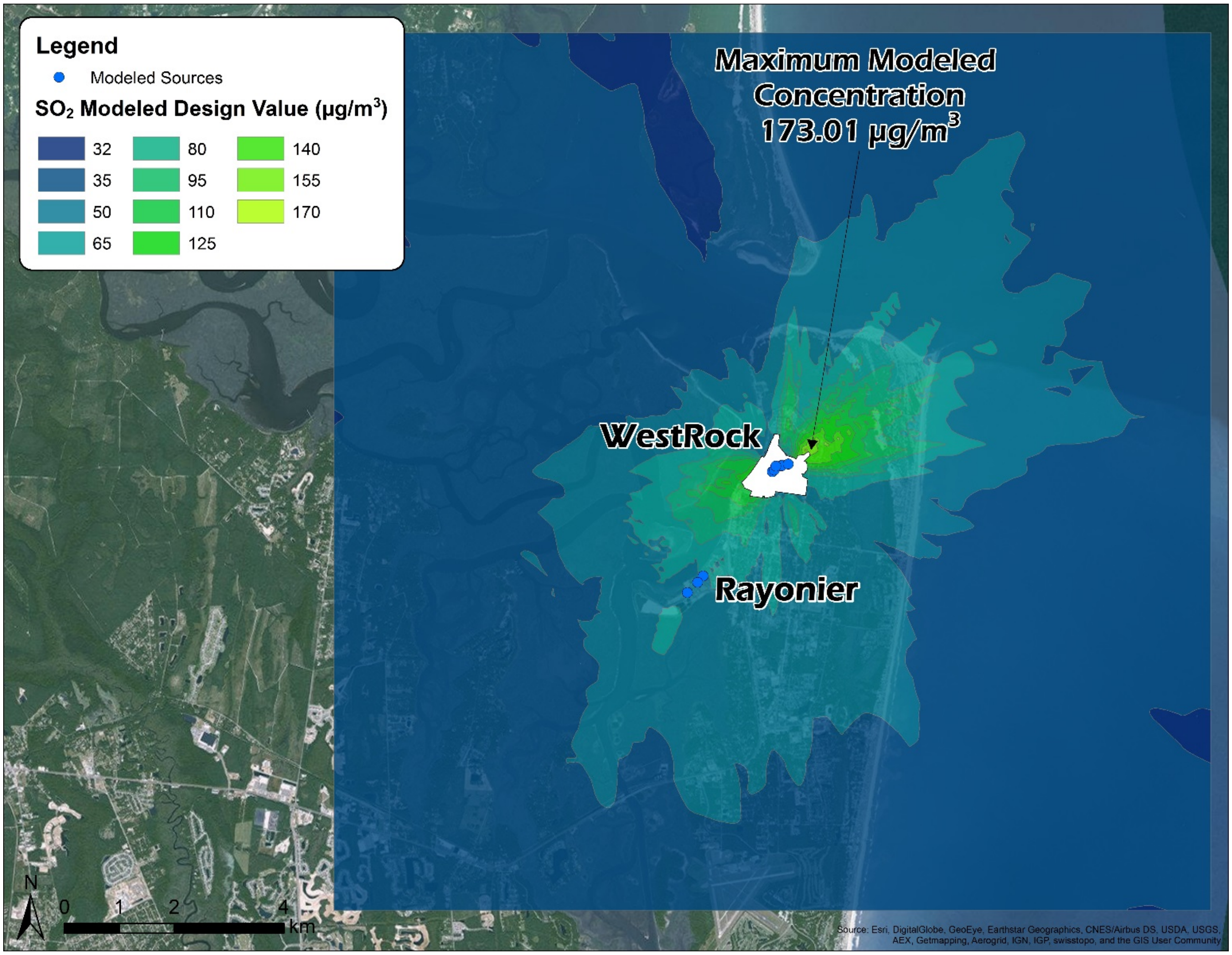
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around WestRock's Mill in Nassau County, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. The results summarized in **Table 8** and **Figure 6** indicate that Nassau County is in attainment of the SO_2 NAAQS.

Table 8: Maximum modeled SO_2 design value in the Nassau County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (μg/m³)				1-Hour SO_2 NAAQS	Percent of NAAQS
		WestRock	Rayonier	Background	Total		
456,931.69	3,394,729.11	159.82	0.02	13.17	173.01	196.4	88.1%

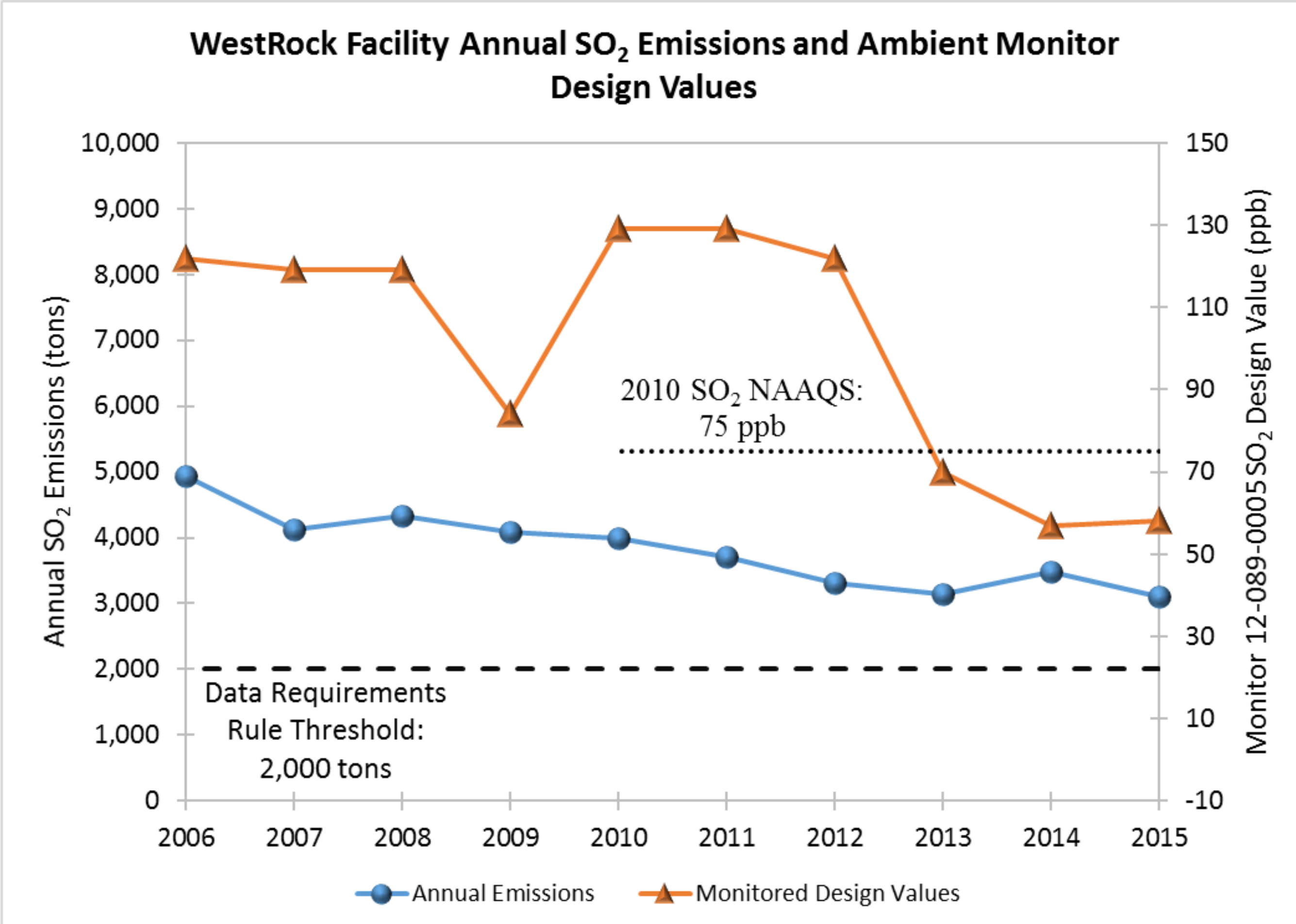
Figure 6: Modeled SO_2 design values in the Nassau County DRR modeling demonstration.



4.1. Continuing Review Obligations

The DRR modeling demonstration for Nassau County shows that the area is well within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. Under the DRR, the Department has a continuing obligation to review SO_2 emissions in the area annually for continued compliance with the NAAQS. It is expected that the ambient concentrations and emissions of SO_2 in Nassau County will continue to fall as they have for at least the past decade (**Figure 7**). 2015 emissions of SO_2 at WestRock were 11% less than in 2014. It is anticipated that the continued implementation of the Nassau County SO_2 nonattainment area plan through 2017 and the recently permitted construction of the LignoTech Facility at Rayonier (that will sequester much of Rayonier's sulfur into a commercial product) will result in further reductions of these lower levels of SO_2 emissions ensuring continued compliance with the NAAQS.

Figure 7: 2006-2015 WestRock SO_2 emissions and monitor 12-107-1008 SO_2 design values.



Appendix H
SO_2 Data Requirements Rule Modeling Report
Orange County, Florida

Division of Air Resource Management
Florida Department of Environmental Protection
January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

The Orlando Utilities Commission (OUC) owns and operates Curtis H. Stanton Energy Center (Stanton), an electrical generating facility, in Orlando, Florida under Title V Permit No. 0950137-044-AV issued by the Florida Department of Environmental Protection (Department). Stanton emitted 2,533 tons of SO_2 mainly from its two electric generating boilers in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around Stanton in Orange County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate Orange County is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around Stanton for the DRR.

3.2. Modeled Facilities

Stanton is the only DRR-applicable facility in Orange County. There are, however, a variety of small nearby SO_2 sources in Orange County and the adjacent Brevard and Seminole Counties. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a

[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf.
[4] *See* Appendix W to 40 CFR 51, Section 3.2.

significant concentration gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that there are no other sources of SO_2 emissions that have the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources within 35 km of Stanton emitted less than 50 tons of SO_2 in 2014 (**Table 1**) and are represented in the added monitored background concentrations discussed in **Section 3.9**.

Figure 1: 2014 SO_2 emission sources in and around Orange County, Florida.

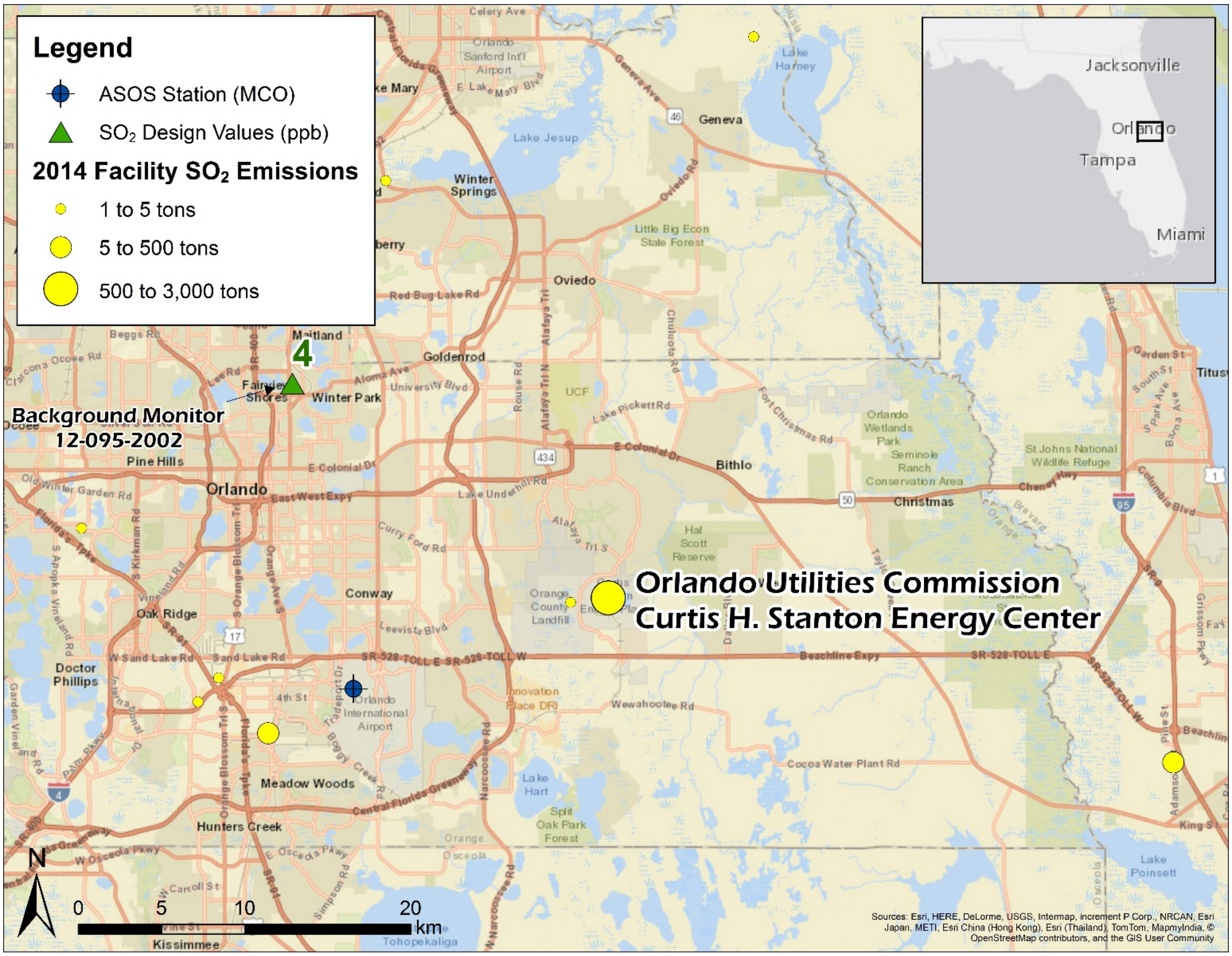


Table 1: Sources of SO_2 emissions greater than 1 ton in 2014 within 35 km of OUC's Stanton Energy Center.

Facility ID	Facility Name	Distance from Stanton (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
095-0137	OUC Stanton Energy Center	0	0	2,533.00	Yes
095-0113	Orange County Solid Waste Facility	2	40	3.67	No
095-1259	Middlesex Asphalt Orange Plant #1	22	440	17.39	No
095-0203	Orlando Cogen Limited, L.P.	25	500	2.20	No
095-0128	JYP Orlando, LLC	26	520	3.56	No
117-0019	Preferred Materials Asphalt Plant	29	580	3.20	No
095-0190	Florida Gas Station 18	32	640	3.20	No
009-0069	Brevard County Central Disposal	35	700	41.29	No
117-0084	Seminole County Osceola Landfill	35	700	3.39	No

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Orlando International Airport (MCO) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Ruskin, Florida (TBW) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 7.92 – Sets ASOS anemometer height to 7.92 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 MCO dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

default seasonal categories for each month were changed to reflect the subtropical climate of Orange County. All inputs to AERSURFACE are summarized in **Table 2**.

Table 2: AERSURFACE inputs for 2012-2014 MCO AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	28.4182
Meteorological Station Longitude (Degrees)	-81.3241
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	0
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	10,11,12,1,2
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Dry
Average Surface Moisture 2013	Dry
Average Surface Moisture 2014	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around Stanton so that a comparison could be done to determine if the meteorological data recorded at MCO are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. In addition, the airport is just 17 km southwest of Stanton, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the MCO meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Orange County.

Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Orlando International Airport	0.16	0.57	0.071
OUC Stanton Energy Center	0.15	0.48	0.214

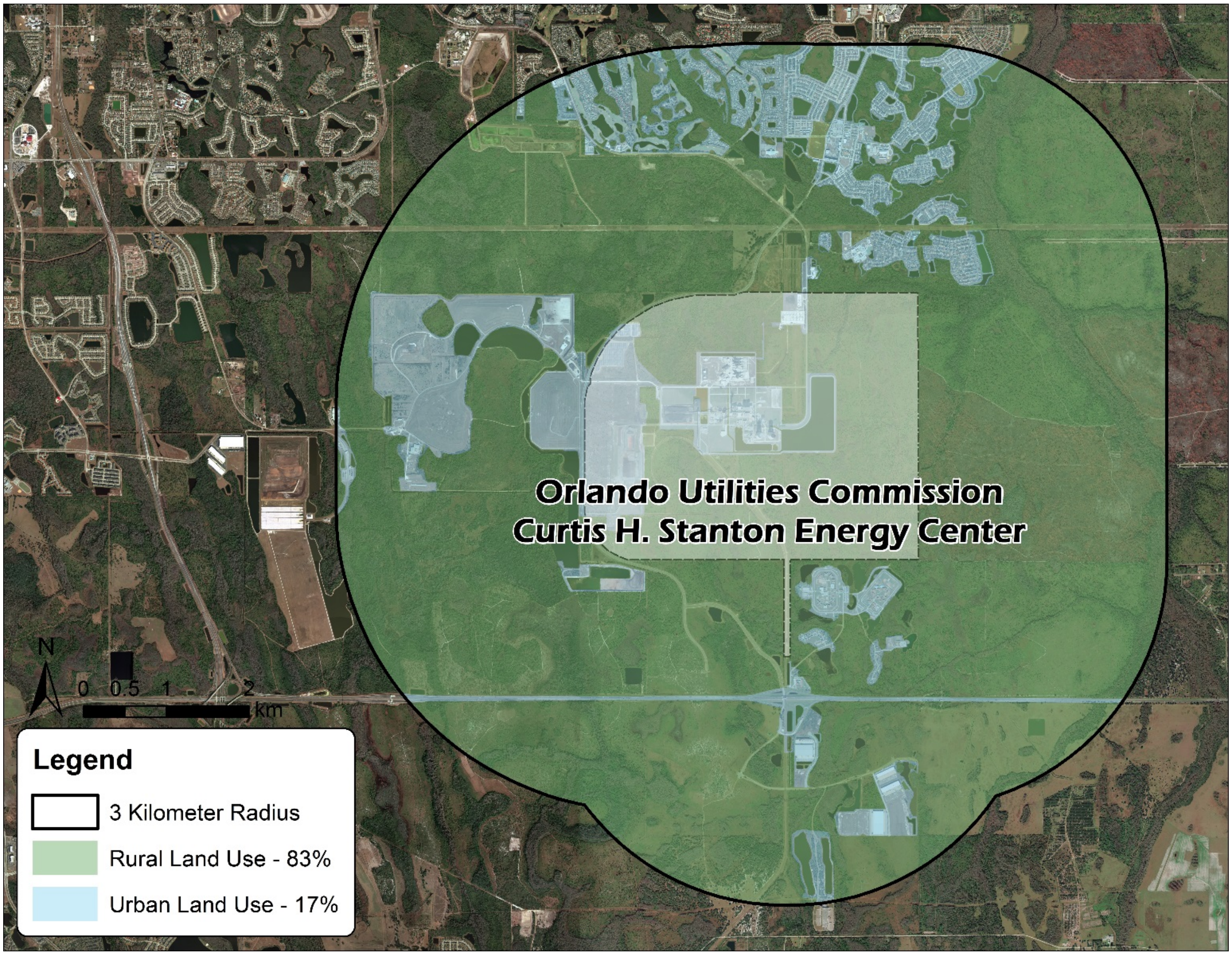
3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an analysis of the land use within a 3 km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes a majority (83%) of the 3 km radius around Stanton.

Figure 2: Land use classification around OUC's Stanton Energy Center in Orange County.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance,

[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at:

the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within Stanton's fenceline were removed and receptors were placed with 50 m spacing along the fenceline. This grid placement was sufficient to fully resolve the maximum modeled concentrations in the Orange County modeling demonstration.

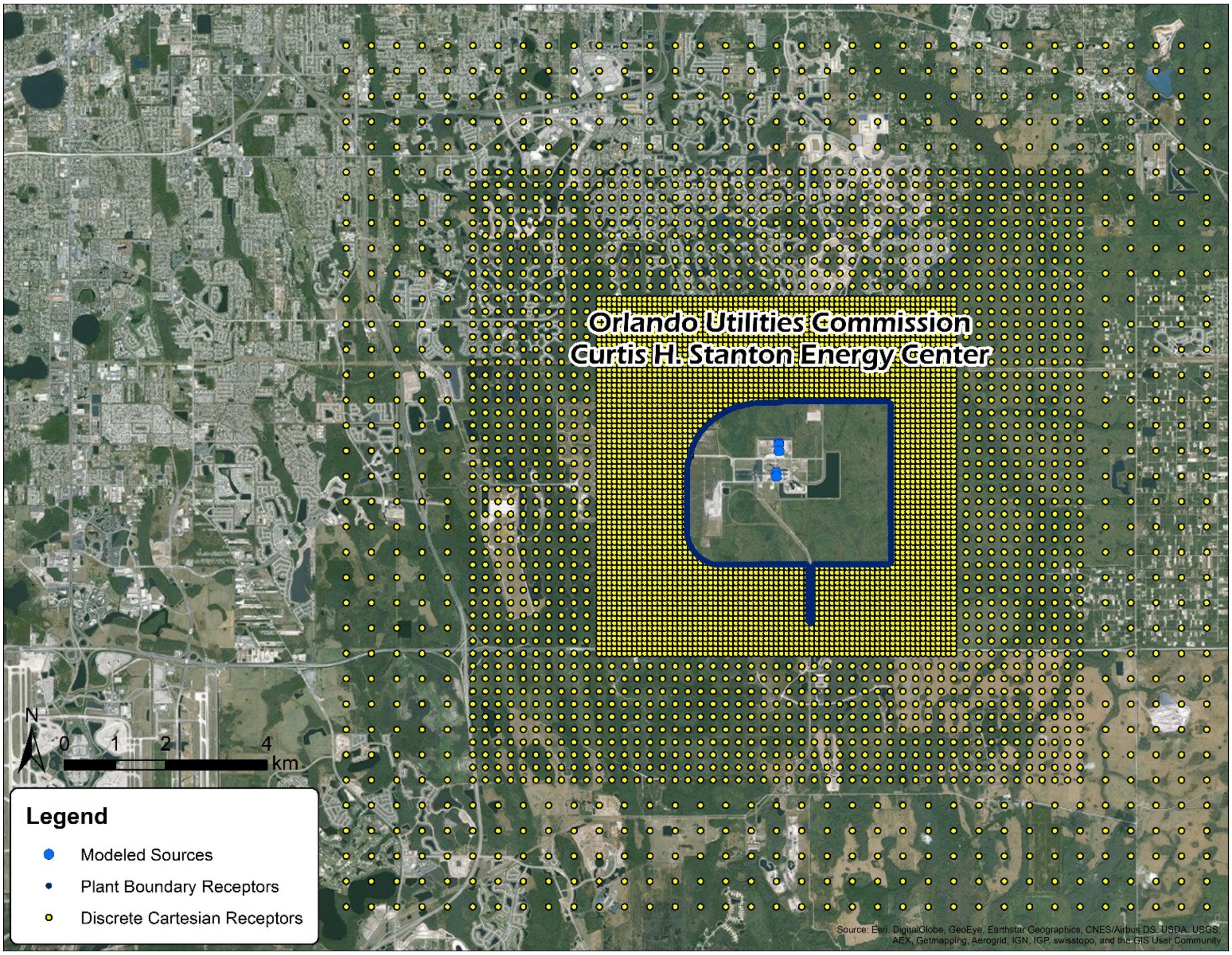
The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 8.5 km of Stanton. The receptor grid used in the Orange County DRR modeling demonstration is described below in **Table 4** and **Figure 3**.

Table 4: Orange County DRR modeling demonstration receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	Boiler 2 Stack
Unit UTM Zone	17N
Unit UTM Easting (m)	483,587.80
Unit UTM Northing (m)	3,150,662.10
Actual Stack Height (m)	167.64
Expected Distance to Max Concentration (m)	1,676
20 Times Stack Height (m)	3,353
100 m Receptor Spacing - Extent from the Origin (m)	3,500
250 m Receptor Spacing - Extent from the Origin (m)	6,000
500 m Receptor Spacing - Extent from the Origin (m)	8,500
Plant Boundary Receptor Spacing (m)	50
Total Receptors	6,297

http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

Figure 3: Receptor grid placement for the Orange County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. 26 significant structures onsite at Stanton were included in the downwash analysis. Direction-specific downwash parameters for all stacks at Stanton were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use maximum permitted short-term emission limits to characterize all sources at Stanton. SO_2 emissions from Stanton are mainly from two predominantly coal-fired electric generating boilers. Each unit emits through one of two nearly identical stacks where the plumes are scrubbed of SO_2 emissions via a flue-gas desulfurization (FGD) system. There are also three combined-cycle combustion turbines (CCCT) at Stanton that are fired with a combination of natural gas, low-sulfur diesel, and ultra-low sulfur diesel (ULSD). Given the low sulfur content of these fuels, SO_2 emissions from the CCCTs are typically well under 1% of Stanton's total emissions. The facility has opted to satisfy its requirements under the Mercury and Air Toxics Standard (MATS) by meeting the 0.20 lb SO_2/MMBtu surrogate limit on both coal-fired boilers.[8] For the purposes of the DRR, the facility recently obtained a permit that makes this limit federally enforceable on both units.[9] A variety of small, intermittent emissions sources including fire pumps and emergency generators were not included because their emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations.[10]" SO_2 emissions from all units are monitored by in-stack continuous emissions monitoring systems (CEMS).

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[11] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[12] The stack heights for all units at Stanton are less than or equal to the GEP height for each. A summary of the modeled stack parameters for Stanton is presented below in **Table 5**.

Table 5: Stanton units' Orange County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 1	167.6	5.79	25.45	325.9	2,055.67
Boiler 2	167.6	5.79	23.47	324.3	1,613.45
CCCT 1A	62.5	5.5	22.92	414.8	102.56
CCCT 2A	62.5	5.5	22.92	414.8	102.56
CCCT B	62.5	5.5	16.67	406.5	12.86

3.8.1. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[13] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The new SO_2 emission limits on Boilers 1 and 2 are based on 30-day averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 9**.

[8] *See* 40 C.F.R. 63 Subpart UUUUU.
[9] *See* Air Construction Permit No. 0950137-050-AC, issued by the Florida Department of Environmental Protection on January 10, 2017, attached to this Modeling Report as Appendix H-1.
[10] *See* Modeling TAD, Section 5.5.
[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[12] *See* Modeling TAD, Section 6.1.
[13] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html

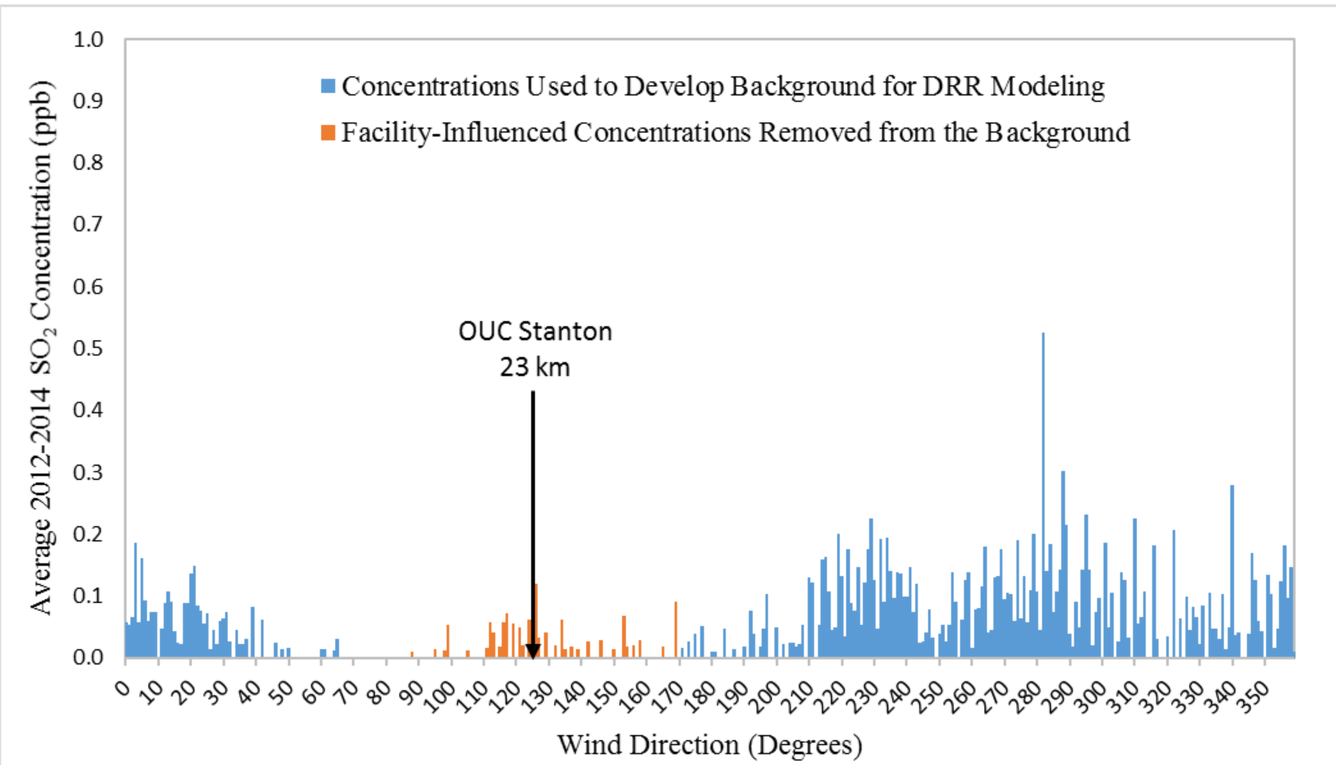
Table 6: Emissions variability analysis and equivalent emission rate calculations for Stanton.

Unit Description	99th Percentile Rate (lb/hr) 1-hr	99th Percentile Rate (lb/hr) 30-day	Ratio 1-hr/30-day	Permitted Limit (lb/hr)	Equivalent Limit (lb/hr)
Boiler 1	1,209.85	565.16	0.467	960	2,055.67
Boiler 2	1,072.47	637.60	0.595	960	1,613.45

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[14] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-095-2002 for the period January 2012 to December 2014. As shown in **Figure 1**, the monitor is 23 km northwest of Stanton in Downtown Orlando. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from Stanton. In this case, any measurement recorded when the wind direction was from 80° to 169° was removed from the background calculation as shown in **Figure 4**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 6**.

Figure 4: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-095-2002.



[14] *See* Modeling TAD, Section 8.1

Table 7: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Orange County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	0.67	0.33	0.33	0.00	12:00	2.00	0.33	0.33	0.67
1:00	0.67	0.67	1.00	0.00	13:00	1.33	0.67	0.33	0.67
2:00	1.00	0.33	0.33	0.00	14:00	1.00	0.00	0.00	0.67
3:00	0.67	0.00	0.67	0.00	15:00	1.00	0.00	0.00	0.67
4:00	0.67	0.00	1.33	0.67	16:00	1.33	0.67	0.00	0.67
5:00	0.67	0.00	0.67	0.33	17:00	1.00	0.00	0.00	0.33
6:00	0.67	0.33	1.67	0.33	18:00	1.00	0.00	0.00	0.00
7:00	0.67	0.00	2.67	1.00	19:00	1.00	0.33	0.33	0.33
8:00	1.00	0.67	1.67	1.00	20:00	0.67	0.33	0.00	0.67
9:00	2.33	1.33	1.67	1.00	21:00	1.00	0.33	0.33	0.67
10:00	2.67	1.33	1.33	1.67	22:00	1.00	0.00	0.00	0.33
11:00	2.67	0.67	0.67	1.33	23:00	1.00	0.00	0.00	0.00

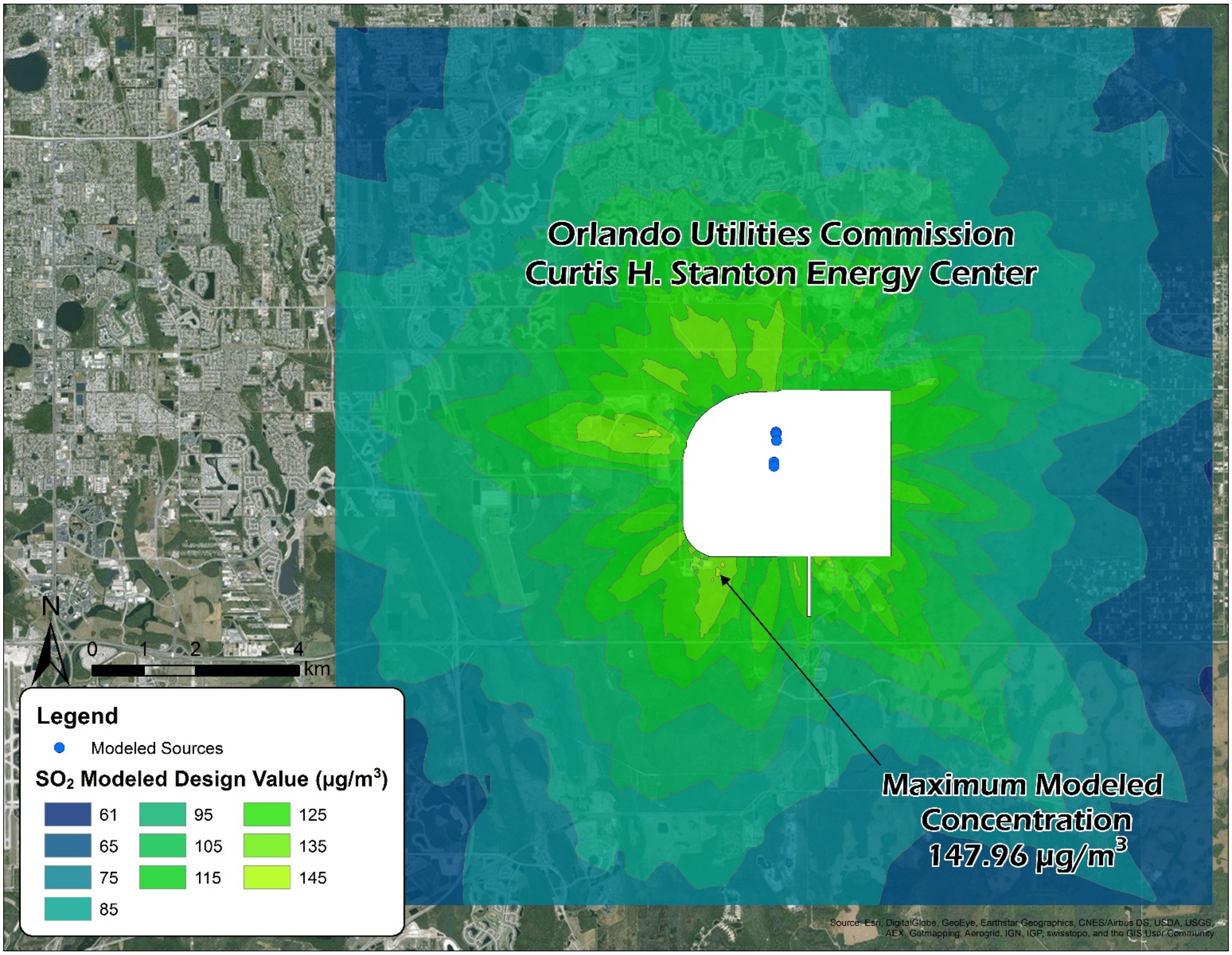
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around Orlando Utilities Commission's Stanton Energy Center in Orange County, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using maximum permitted short-term emission limits and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. The results summarized in **Table 7** and **Figure 5** indicate that Orange County is in attainment of the SO_2 NAAQS.

Table 8: Maximum modeled SO_2 design value in the Orange County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value ($\mu g/m^3$)			1-Hour SO_2 NAAQS	Percent of NAAQS
		Stanton	Background	Total		
482,487.81	3,148,662.00	144.76	3.20	147.96	196.4	75.3%

Figure 5: Modeled SO_2 design values in the Orange County DRR modeling demonstration.

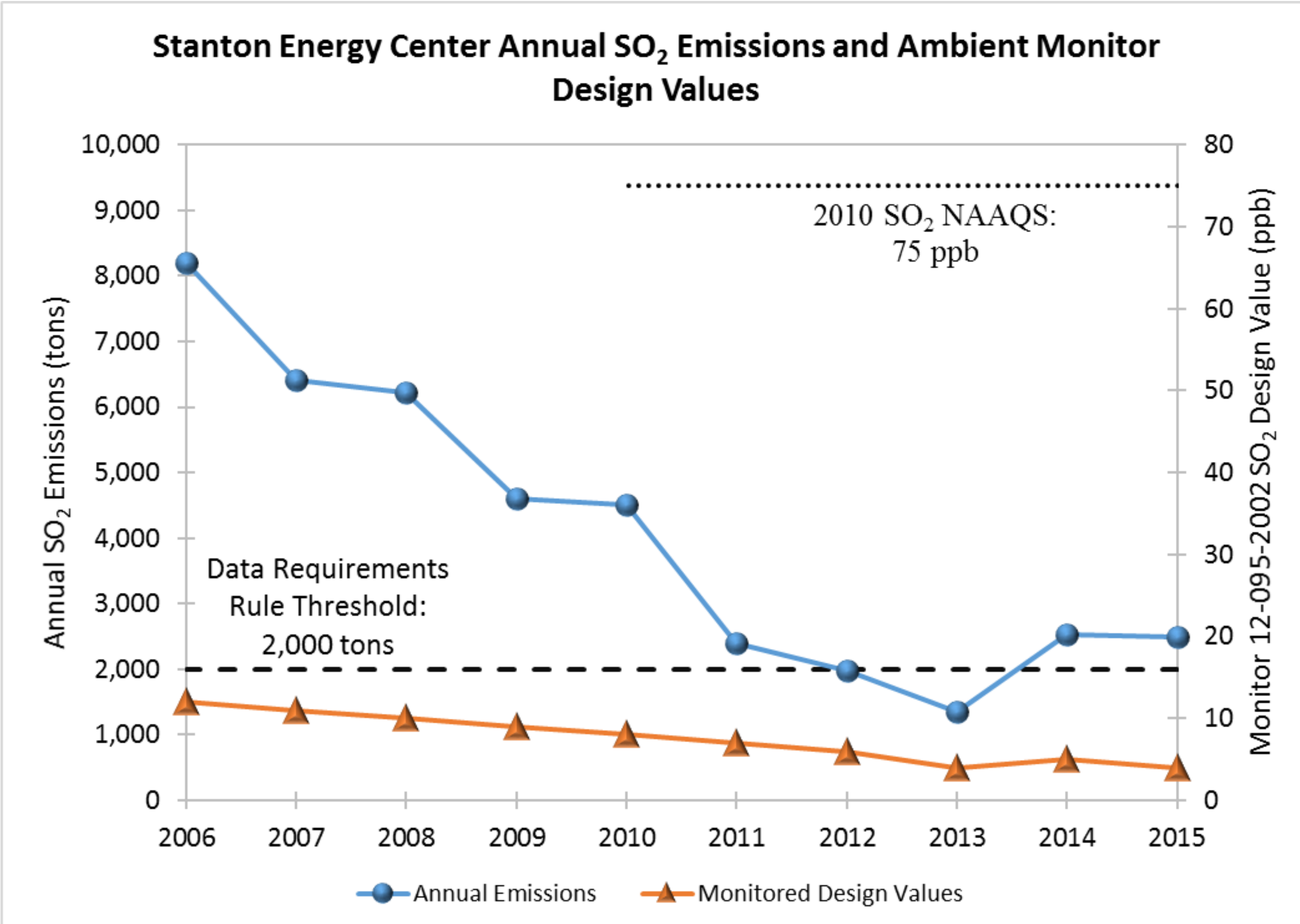


4.1. Continuing Review Obligations

The DRR modeling demonstration for Orange County shows that the area is within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. While the local monitor will remain in place, the Department has no continuing obligation under the DRR to review SO_2 emissions in the area annually for continued compliance with the NAAQS because Stanton's maximum permitted short-term emission rates were used in the modeling demonstration.

Ambient concentrations and emissions of SO_2 have declined steadily for the past decade in Orange County (**Figure 6**). It is anticipated that the implementation of a variety of national rules and regulations (particularly MATS) and economic forcing will likely result in the maintenance or even further reduction of these lower levels of SO_2 emissions ensuring continued compliance with the NAAQS.

Figure 6: 2006-2015 Stanton SO_2 emissions and monitor 12-095-2002 SO_2 design values.



Appendix H-1

Orlando Utilities Commission – Stanton Energy Center

Air Construction Permit No. 0950137-050-AC

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

PERMITTEE

Orlando Utilities Commission (OUC)
Stanton Energy Center

Authorized Representative:
Mr. Chip Merriam, Vice President

Permit No. 0950137-050-AC/PSD-FL-084B
Permit Expires: December 31, 2017
Air Construction Permit
Project: Minor Source Air Construction Permit - Revisions
Orange County, Florida

PROJECT

This is the final air construction (AC) permit, which authorizes revisions to previously issued AC/PSD permits (Project). This facility is an existing electric power generation facility categorized under Standard Industrial Classification No. 4911. The existing Stanton Energy Center is located in Orange County at 5100 South Alafaya Trail in Orlando, Florida. UTM coordinates are: Zone 17, 483.6 km East and 3151.1 km North. Latitude is: 28° 29' 17" North; and, Longitude is: 81° 10' 03" West.

This final permit is organized into the following sections: Section I (General Information), Section II (Requirements); and, Section III (Emission(s) Unit(s) Specific Conditions). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section IV of this permit. [As noted in the Final Determination provided with this final permit, only minor changes and clarifications were made to the draft permit.]

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality. A copy of this permit modification shall be filed with the referenced permit and shall become part of the permit.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

For:

Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

SA/dlr/sms

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the persons listed below.

Mr. Chip Merriam, OUC: cmerriam@ouc.com
Mr. David R. Báez, OUC: dbaez@ouc.com
Mr. Michael Ballenger, P.E.: mballenger@trinityconsultants.com
Mr. Gregory Terry, P.E., Gulf Power Company: gnterry@southernco.com
Ms. Susan Kennedy, QEP, Gulf Power Company: skennedy@southernco.com
DEP CD Office: DEP_CD@dep.state.fl.us
Mr. John M. Kasper, P.E., Orange County EPD: john.kasper@ocfl.net
DEP Siting Coordination Office: SCO@dep.state.fl.us
Mr. Brian Himes, DEP OBP: brian.himes@dep.state.fl.us
Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us
U.S. EPA Region 4 NSR/PSD: nsrsubmittals@epa.gov

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

FACILITY DESCRIPTION

This facility consists of: two fossil fuel fired steam electric generating stations Unit Nos. 1 & 2 (E.U. ID Nos. 001 & 002); Stanton Unit A which consists of two nominal 170 megawatts (MW), General Electric "F" Class (PG7241FA) combustion turbine-electrical generators with two supplementary fired heat recovery steam generators (HRSG) (E.U. ID Nos. 025 & 026); Stanton Unit B which consists of one nominal 150 MW General Electric 7241 FA combustion turbine-electrical generator (CTG) with a supplementary fired heat recovery steam generator (HRSG) with natural gas fueled duct burners, and a nominal 150 MW steam turbine generator (STG) (E.U. ID No. 037); and, ancillary & auxiliary equipment.

Also included at this facility are miscellaneous insignificant emissions units and/or activities.

This project will affect the following *existing* permitted emissions units:

E.U. ID No.	Brief Description
001	Fossil Fuel Steam Generator (FFSG), Unit #1
002	FFSG, Unit #2

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- This facility operates units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

PROPOSED PROJECT

This project is for a minor source air construction (AC) permit for revisions to previously issued AC/PSD permits. The previously issued AC/PSD permits being revised pertain to FFSG, Units #1 & 2.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Minor Source Air Construction Permit Application received on November 22, 2016 (complete).

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The mailing address for the Office of Permitting and Compliance is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities, such as reports, tests, and notifications, shall be submitted to the Compliance Authority. The Compliance Authority is listed on the cover page of the Title V air operation permit.

3. Appendices. The following Appendices are attached as part of this permit:
   a. Appendix A. Citation Formats and Definitions;
   b. Appendix B. General Conditions;
   c. Appendix C. Common Conditions; and,
   d. Appendix D. Common Testing Requirements.

4. Applicable Regulations, Forms and Application Procedures. Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and, Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 & 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions. For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications. The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) & 62-212.300(1)(a), F.A.C.]

7. Source Obligation. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification. [Rule 62-212.400(12), F.A.C.]

8. Construction. **This permit authorizes the proposed project.** The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Office of Permitting and Compliance prior to the expiration of this permit. [Rules 62-210.300(1), 62-4.070(4) 62-4.080, and 62-4.210, F.A.C.]

This subsection of the permit addresses the following emissions units:

E.U. ID No.	Brief Description
001	FFSG, Unit #1
002	FFSG, Unit #2

This subsection of the permit addresses revisions to the SO_2 emission limits that apply to FFSG, Units # 1 & 2.

The revisions are for the addition of an SO_2 emission limit. This emission limit is based on an allowable SO_2 emissions rate that demonstrates compliance with the SO_2 National Ambient Air Quality Standard (NAAQS) in response to the U.S. Environmental Protection Agency's (U.S. EPA's) Data Requirements Rule (DRR) for future demonstration periods. Compliance with the new SO_2 emission limit shall occur on or before **January 13, 2017**.

Permits Being Modified:	PSD-FL-084. {Note: PSD-FL-084A was a revision to the original permit.}
Affected Emission Units:	FFSG, Units # 1 & 2 (E.U. ID Nos. 001 & 002)

The affected specific condition as cited below is hereby changed as follows (the remainder of the permit remains unchanged as a result of this permitting action):

Specific Condition 2.

Specific Condition 2. is changed as follows:

{For simplified reading, the important revisions are emphasized with yellow highlight in this electronic document. ~~Strikethrough~~ is used to denote the deletion of text and double-underlines are used to denote the addition of text.}

2. Emissions for each unit shall not exceed the allowable emission limits listed in the following Table for SO_2, PM, NOx and visible emissions. …

Allowable Emission Limits

Pollutant	lb/MMBtu
PM	0.03
SO_2	1.14 (3 hr. average) and 90 percent reduction (30 day rolling average); and, 0.20 lb/million BTU heat input (30-boiler operating day average, as determined by CEMS) after ***January 13, 2017***. *{Permitting notes: Compliance with the new SO_2 emission standard of 0.20 lb/MMBtu of heat input based on a 30-boiler operating day average for all period of operation excluding startup and shutdown shall occur after **January 13, 2017**. In addition, the more stringent SO_2 emission limit assures compliance with the less stringent, yet applicable SO_2 emission standard from NSPS 40 CFR 60, Subpart Da.}*

…

The following are new conditions being added specifically for this part of the project, i.e., addition of the SO_2 emission limit.

No new or modified equipment (physical changes) or changes in methods of operation associated with this part of the project (SO_2 emission limit addition) are authorized under this permit.

PREVIOUS APPLICABLE REQUIREMENTS

1. Effect on Other Permits: The conditions of this permit supplement all previously issued air construction and operation permits for these emissions units. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions and regulations. [Rule 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.]

CONFIRMATION REQUIREMENTS

2. Initial Confirmation: These emission units shall use the previously certified SO_2 CEMS data to confirm compliance with the new SO_2 emission limit of 0.20 lb/MMBtu. The initial compliance confirmation shall consist of the initial 30-day rolling average using SO_2 CEMS data collected during the first 30 boiler operating days following **January 13, 2017**. [Rules 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.; and, Application No. 0950137-050-AC/PSD-FL-084B.]

REPORTING REQUIREMENTS

3. Reports: The permittee shall prepare and submit a report summarizing the results of the initial confirmation demonstration. The report shall be submitted no later than 45 days following the conclusion of the demonstration period. Reports shall be prepared in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(10), F.A.C.; and, Application No. 0950137-050-AC/PSD-FL-084B.]

Appendix I
SO_2 Data Requirements Rule Modeling Report
Bartow, Polk County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Mosaic Fertilizer owns and operates a phosphate fertilizer manufacturing plant (Mosaic Bartow) in Bartow, Florida under Title V Permit No. 1050046-038-AV issued by the Florida Department of Environmental Protection (Department). Mosaic Bartow emitted 4,046 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around Mosaic Bartow in Polk County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate that the portion of Polk County around Bartow is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around Mosaic Bartow for the DRR.

3.2. Modeled Facilities

Mosaic Bartow is one of three DRR-applicable facilities in Polk County. The other two facilities, Mosaic Fertilizer's New Wales (Mosaic New Wales) facility and Lakeland Electric's C. D. McIntosh, Jr. Power Plant (McIntosh), are 16 km southwest and 19 km north of Mosaic Bartow respectively. Initial modeling indicated that the distances between these three facilities were too large to include all three in a single combined DRR modeling demonstration for all of Polk County. Instead, three individual modeling demonstrations were performed and each facility was evaluated separately for inclusion as a background source with respect to the other two facilities. Both Mosaic New Wales and McIntosh were chosen to be included in the Bartow DRR modeling demonstration.

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[1] *See* 40 CFR 51.1202.

[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.

[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.

[4] *See* Appendix W to 40 CFR 51, Section 3.2.

There are also a variety of smaller nearby SO_2 sources in both Polk County and adjacent Hardee and Hillsborough Counties. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that, in addition to Mosaic New Wales and McIntosh, Wheelabrator Ridge Energy (Wheelabrator), Mosaic Fertilizer's South Pierce facility (Mosaic South Pierce), and Tampa Electric Company's Polk Power Station (TECO Polk) are the only other sources that have the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources in the area (**Table 1**) are represented in the added monitored background concentrations discussed in **Section 3.9**.

Figure 1: 2014 SO_2 emission sources greater than 1 ton in and around Bartow.

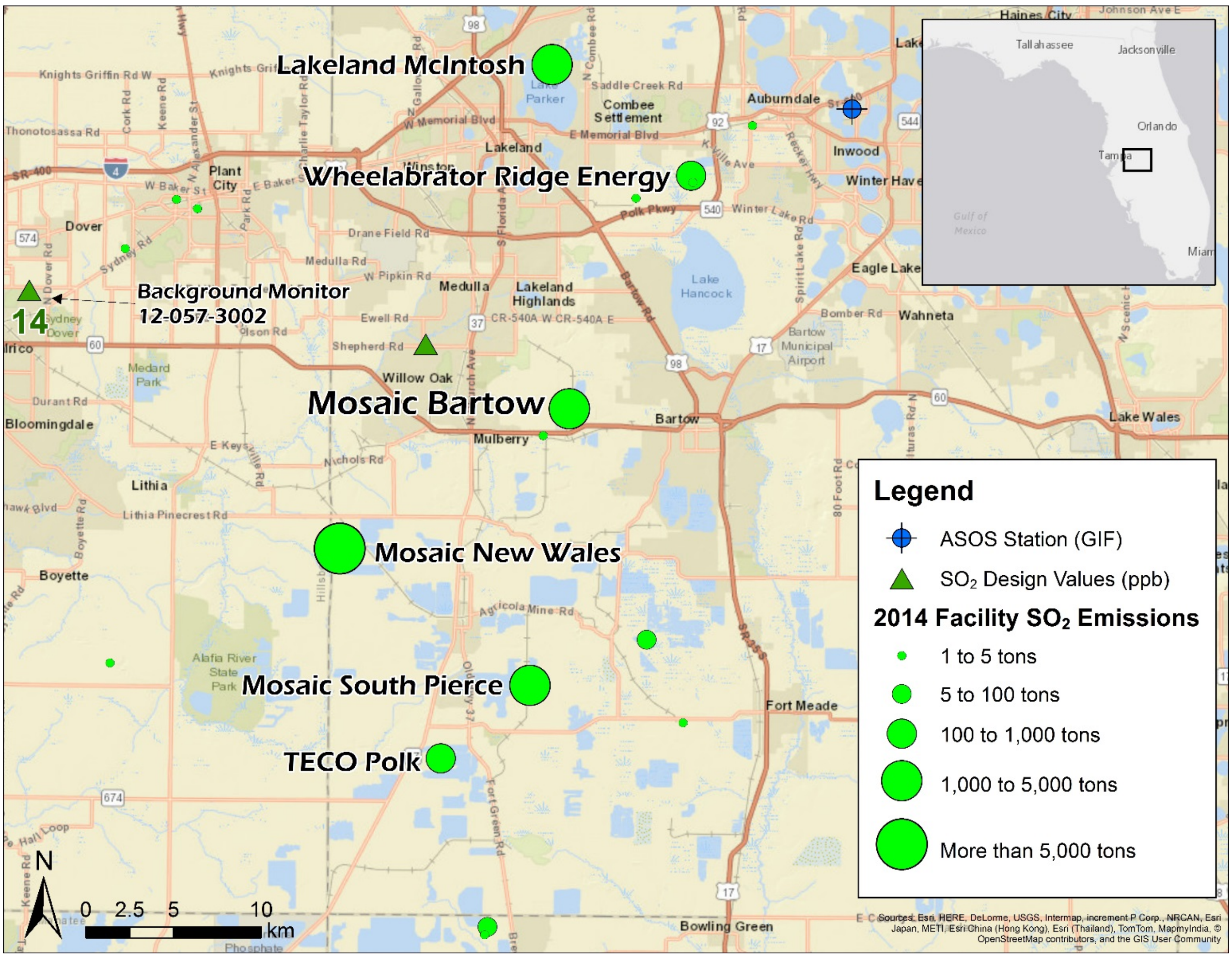


Table 1: All sources of SO_2 emissions greater than 5 tons in 2014 within 35 km of Mosaic Bartow.

Facility ID	Facility Name	Distance from Mosaic Bartow (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
105-0046	Mosaic Fertilizer Bartow [a,b]	0	0	4,045.72	Yes
105-0234	Duke Hines Energy Complex	14	280	23.72	No
105-0216	Wheelabrator Ridge Energy [a]	15	300	213.77	No
105-0055	Mosaic Fertilizer South Pierce [a]	15	300	1,731.77	Yes
105-0059	Mosaic Fertilizer New Wales [a,b]	15	300	7,126.50	Yes
105-0004	Lakeland Electric McIntosh [a,b]	19	380	2,156.63	Yes
105-0233	TECO Polk Power Station [a]	21	420	1,245.17	Yes
049-0340	Seminole Midulla Station	30	600	5.84	No

a. Explicitly modeled facility.
b. DRR-applicable facility.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Winter Haven Municipal Airport (GIF) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Ruskin, Florida (TBW) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 10 – Sets ASOS anemometer height to 10 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 GIF dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

default seasonal categories for each month were changed to reflect the subtropical climate of Polk County. All inputs to AERSURFACE are summarized in **Table 2**.

Table 2: AERSURFACE inputs for 2012-2014 GIF AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	28.062
Meteorological Station Longitude (Degrees)	-81.754
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	0
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	1,2,10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Average
Average Surface Moisture 2013	Dry
Average Surface Moisture 2014	Average

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around Mosaic Bartow so that a comparison could be done to determine if the meteorological data recorded at GIF are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. In addition, the airport is just 23 km northeast of Mosaic Bartow, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the GIF meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Bartow.

Location	Albedo	Bowen Ratio	Surface Roughness (z_0)
Winter Haven Municipal Airport	0.15	0.40	0.042
Mosaic Fertilizer Bartow	0.16	0.50	0.140

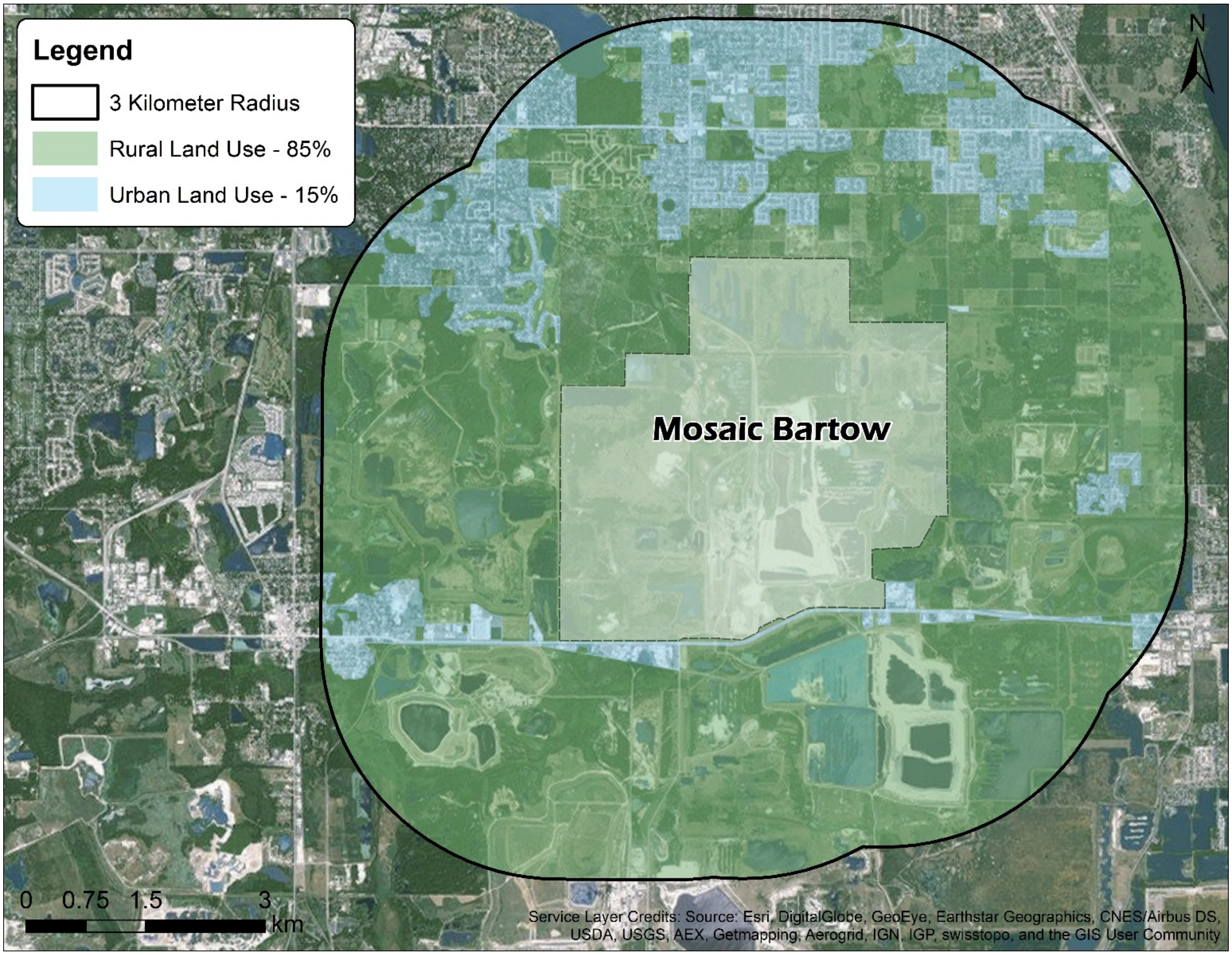
3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes a majority (85%) of the 3-km radius around Mosaic Bartow.

Figure 2: Land use classification around Mosaic Bartow in Bartow.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance,

[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at:

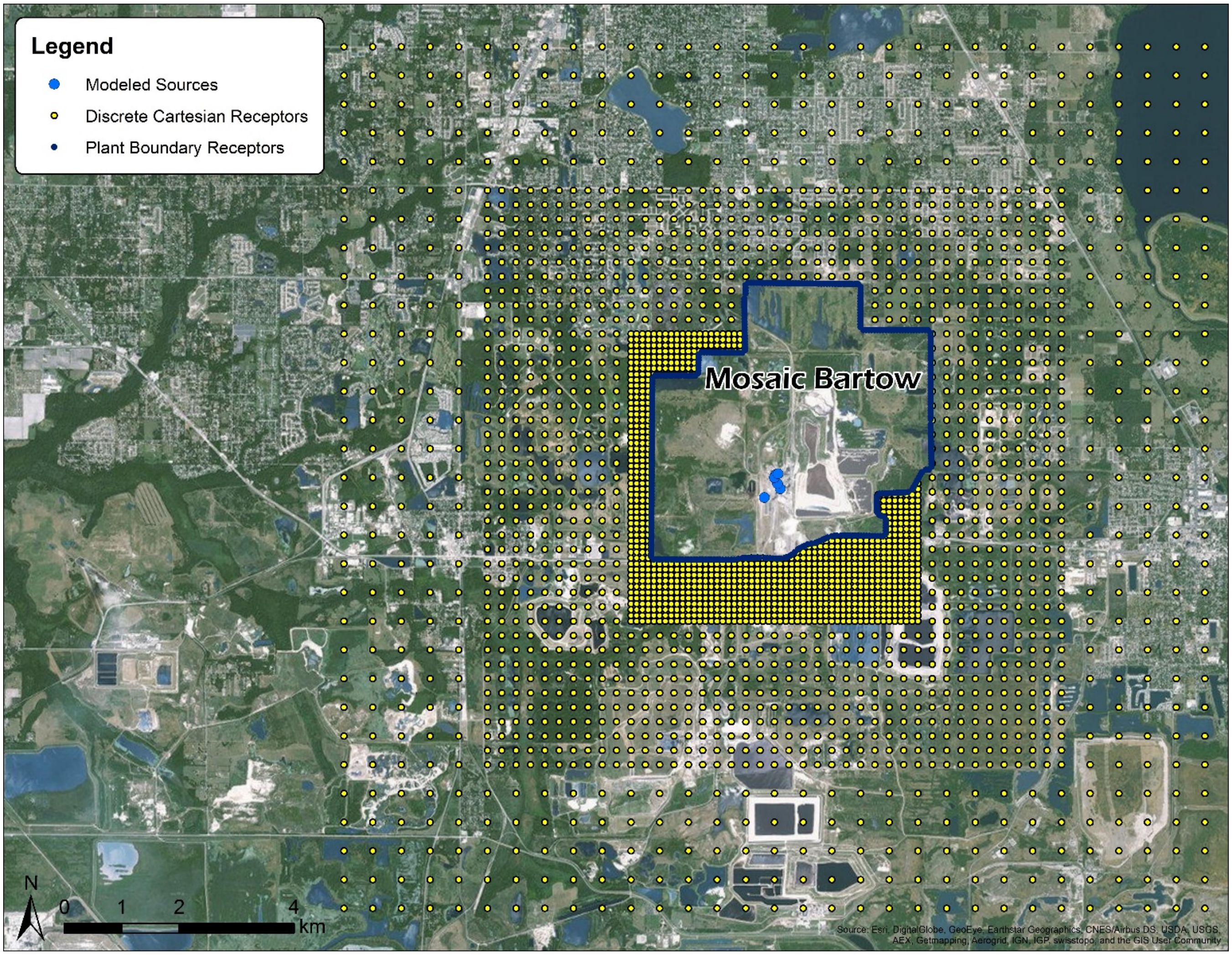
the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within Mosaic Bartow's fenceline were removed and receptors were placed with 50 m spacing along the fenceline. The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 7.5 km of Mosaic Bartow. The receptor grid used in the Bartow DRR modeling demonstration is described below in **Table 4** and **Figure 3**.

Table 4: Bartow DRR modeling demonstration main receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	SAP 5
Unit UTM Zone	17N
Unit UTM Easting (m)	409,655.34
Unit UTM Northing (m)	3,087,320.67
Actual Stack Height (m)	60.96
Expected Distance to Max Concentration (m)	610
20 Times Stack Height (m)	1,219
100 m Receptor Spacing - Extent from the Origin (m)	2,500
250 m Receptor Spacing - Extent from the Origin (m)	5,000
500 m Receptor Spacing - Extent from the Origin (m)	7,500
Plant Boundary Receptor Spacing (m)	50
Total Receptors	3,092

http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

Figure 3: Receptor grid placement for the Bartow DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. 28 significant structures onsite at Mosaic Bartow were included in the downwash analysis. Direction-specific downwash parameters for all stacks at Mosaic Bartow were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use actual hourly emissions data to characterize most modeled sources and maximum permitted short-term emission rates for a few smaller and/or more distant sources. The hourly data for all units were requested from the facilities for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness. The hourly data were then included in the modeling demonstration using the AERMOD keyword HOUREMIS for the units that were characterized with actual emissions data. A variety of small, intermittent emissions sources including fire pumps and emergency generators at all facilities were not included because their

emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

3.8.1. Mosaic Bartow Modeled Units

Mosaic Bartow is a phosphate fertilizer manufacturing plant that has three sulfuric acid plants (SAPs) on site that account for the vast majority of the facility's SO_2 emissions. The SAPs burn elemental sulfur to create SO_2 which is then oxidized to SO_3 over a catalyst bed and absorbed into sulfuric acid. A portion of the SO_2 is not oxidized and is emitted to the atmosphere. The Department chose to characterize the three SAPs using actual hourly emissions data. The data used were obtained from in-stack continuous emissions monitoring systems (CEMS). As is the case with other phosphate fertilizer manufacturing plants in the area, Bartow is slated to make changes to the facility in the near future to comply with a forthcoming EPA consent decree to reduce SO_2 emissions from the SAPs. This work is expected to significantly decrease the facility's emissions over the next few years.

There are also two ammonium phosphate fertilizer plants and a sulfur handling system on-site that contribute a small amount of additional SO_2 emissions. These three units were characterized using their maximum permitted short-term emission rates.

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[9] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[10] The stack heights for all units at Mosaic Bartow are less than or equal to the GEP height for each. A summary of the modeled stack parameters for Mosaic Bartow is presented below in **Table 5**.

Table 5: Mosaic Bartow units' Bartow DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 4 SAP	60.96	2.07	18.60	355.37	CEMS [a]
No. 6 SAP	60.96	2.07	18.60	355.37	CEMS [a]
No. 5 SAP	60.96	2.07	18.60	355.37	CEMS [a]
No. 3 Fertilizer Plant	30.18	2.29	16.21	330.37	8.40
Sulfur Handling System	15.20	1.00	1.00	330.00	2.54
No. 4 Fertilizer Plant	42.67	3.32	16.33	328.71	0.02
a. Short periods of missing data were filled with the last valid measurement.					

3.8.2. Mosaic South Pierce Modeled Units

Mosaic South Pierce is a smaller phosphate fertilizer manufacturing plant with just two SAPs on site. Again both units were characterized using actual hourly emissions data from CEMS, and actual stack heights are less than or equal to the calculated GEP stack heights. A summary of the modeled stack parameters for Mosaic South Pierce is presented below in **Table 6**.

---

[8] *See* Modeling TAD, Section 5.5.

[9] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).

[10] *See* Modeling TAD, Section 6.1.

Table 6: Mosaic South Pierce units' Bartow DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 10 SAP	43.89	2.74	12.10	355.37	CEMS [a]
No. 11 SAP	43.89	2.74	12.10	355.37	CEMS [a]
a. Short periods of missing data were filled with the last valid measurement.					

3.8.3. Mosaic New Wales Modeled Units

Mosaic New Wales is another phosphate fertilizer manufacturing plant in Polk County. The five SAPs at the facility were all characterized using actual hourly emissions data recorded by CEMS. Actual stack heights are less than or equal to the calculated GEP stack height for all units. A summary of the modeled stack parameters for Mosaic New Wales is presented below in **Table 7**.

Table 7: Mosaic New Wales units' Bartow DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 1 SAP	60.96	2.59	15.24	349.82	CEMS [a]
No. 2 SAP	60.96	2.59	15.24	349.82	CEMS [a]
No. 3 SAP	60.96	2.59	15.24	349.82	CEMS [a]
No. 4 SAP	60.66	2.59	15.24	349.82	CEMS [a]
No. 5 SAP	60.66	2.59	15.24	349.82	CEMS [a]
a. Short periods of missing data were filled with the last valid measurement.					

3.8.4. Wheelabrator Modeled Units

Wheelabrator is a small electric generating facility with a single steam generating boiler that fires a combination of wood, yard waste, landfill gas, and tires. SO_2 emissions are controlled by a spray dryer absorber (spraying of atomized lime slurry into the flue gas). This unit was characterized with its maximum permitted short-term emission rate. The actual stack height is above the calculated GEP stack height so the lower GEP height was modeled since the source was characterized with its maximum permitted emission rate. A summary of the modeled stack parameters for Wheelabrator is presented below in **Table 8**.

Table 8: Wheelabrator units' Bartow DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 1	65.00 [a]	3.05	18.74	406.5	166.67
a. Actual stack height is 99 m.					

3.8.5. TECO Polk Modeled Units

TECO Polk is an electrical generating facility with a variety of SO_2 emission sources. The largest source is a combined-cycle combustion turbine (CCCT) that primarily fires gasified coal (syngas). There are also four simple-cycle combustion turbines (SCCT) that mostly run on natural gas and a small SAP. The SCCT units are currently under construction for conversion to CCCTs. An emergency flare that is only utilized intermittently to burn syngas during startup, shutdown, and malfunction of the solid fuel gasification system (SFGS) and/or CCCT was included due to its large emission rate. All TECO Polk sources were characterized using their maximum permitted short-term emission rates and all stack heights are less than or equal to the calculated GEP height for each unit. A summary of the modeled stack parameters for TECO Polk is presented below in **Table 9**.

Table 9: TECO Polk units' Bartow DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
CCCT No. 1	45.72	5.79	23.10	444.30	454.78
SFGS Flare	81.50 [a]	7.86	20.00	1,272.04	2,378.0
SAP	60.65	1.98	8.84	355.40	55.37
SCCT 2A	34.75	5.50	51.80	831.90	98.1
SCCT 2B	34.75	5.50	51.80	831.90	98.1
SCCT 2C	34.75	5.50	51.80	831.90	9.5
SCCT 2D	34.75	5.50	51.80	831.90	9.5

a. Calculated effective release height: 45.72 m stack plus flare height.

The SFGS flare typically operates less than 150 hours per year but is also the second largest source of SO_2 emissions behind the CCCT at TECO Polk. Emergency and intermittent sources are not typically modeled because, as previously mentioned, they do not operate often enough to significantly contribute to the distribution of 1-hour average concentrations. However, due to the large amount of SO_2 that this flare emits when it does operate, the Department felt it was necessary to include it in the modeling demonstration. The flare was modeled according to EPA guidance and using its maximum annual average emission rate from the period 2012-2014 for 8,760 hours per year.[11]

3.8.6. McIntosh Modeled Units

SO_2 emissions from McIntosh, an electrical generating facility, are mostly from two fossil fuel-fired electric generating boilers. Boiler 2 primarily combusts natural gas but is also permitted to fire low-sulfur fuel oil. Boiler 3 is predominantly operated on coal and SO_2 emissions are controlled via a flue-gas desulfurization (FGD) system. There are also two combustion turbines, one SCCT peaker and one CCCT unit (Unit 5), that contribute a small amount of additional SO_2 emissions. The facility has opted to satisfy its requirements under the Mercury and Air Toxics Standard (MATS) by firing mostly natural gas in Boiler 2 and by meeting the 0.20 lb SO_2/MMBtu surrogate limit on Boiler 3. For the purposes of the DRR, the facility recently obtained a permit that makes the surrogate limit on Boiler 3 federally enforceable.[12]

Boiler 2 is the only McIntosh unit that the Department chose to characterize using actual hourly emissions data. The data used were obtained from an in-stack continuous emissions monitoring system (CEMS) that records hourly plume exit velocity, exit temperature, and SO_2 emission rate. Missing hourly data were substituted following the procedures outlined in 40 CFR 75.33(b). The Unit 5 stack is above GEP height so its calculated GEP height was modeled. All other stacks are less than or equal to their GEP height. A summary of the modeled stack parameters for McIntosh is presented below in **Table 10**.

[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-92-024, *Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants) (Revised)*, (December 1992).
[12] Air permit 1050004-044-AC, Florida Department of Environmental Protection, Issued November 29, 2016.

Table 10: McIntosh units' Bartow DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 2	47.90	3.20	CEMS	CEMS	CEMS
Boiler 3	76.20	5.50	28.02	324.80	1,348.00
CCCT 5	68.70 [a]	6.10	20.56	359.30	127.00
SCCT 1	10.70	4.10	26.34	755.40	164.01
a. Actual stack height is 91.4 m.					

3.8.7. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[13] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The SO_2 emission limits for three of the modeled sources are based on longer-term averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 11**.

Table 11: Emissions variability analysis and equivalent emission rate calculations for all sources.

Unit Description	99th Percentile Rate (lb/hr)		Ratio	Permitted Limit (lb/hr)	Equivalent Limit (lb/hr)
	1-hr	Long-Term			
McIntosh Unit 3	3,773.97	2,027.54	0.537	728.00 30-day[a]	1,355.68
TECO Polk SAP	-	-	0.900 [b]	49.83 24-hour	55.37
TECO Polk CCCT	420.08	329.78	0.785	357.00 30-day	454.78
Wheelabrator Boiler 1	179.68	70.95	0.395	65.00 30-day	164.56
a. New emission limit based on MATS SO_2 surrogate.					
b. No hourly data available for the SAP. Ratio is a conservative estimate based on similar units in the state.					

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[14] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-057-3002 for the period January 2012 to December 2014. As shown in **Figure 1**, the monitor is 33 km southwest of Mosaic Bartow in a rural area away from any large sources of SO_2. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from Mosaic Bartow or any modeled background source. In this case, any measurement recorded when the wind direction was from

[13] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html
[14] *See* Modeling TAD, Section 8.1

23° to 174° was removed from the background calculation as shown in **Figure 4**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 12**.

Figure 4: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-057-3002.

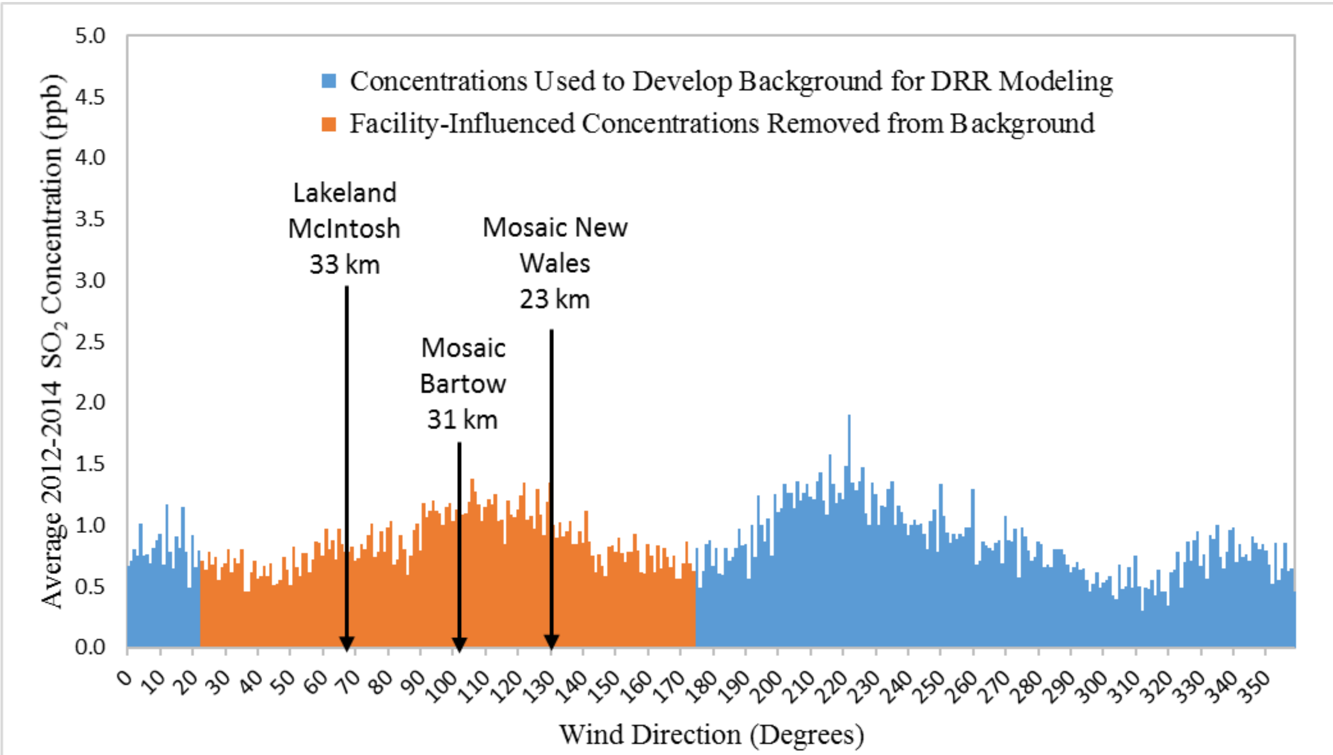


Table 12: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Bartow DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	1.67	1.33	1.33	2.67	12:00	3.67	4.00	3.33	3.00
1:00	2.33	1.67	1.67	2.00	13:00	4.33	2.67	2.33	3.67
2:00	2.00	1.33	1.67	3.33	14:00	4.00	2.33	3.00	2.33
3:00	1.33	1.33	1.67	2.67	15:00	3.67	3.33	3.00	2.67
4:00	1.67	1.33	2.00	3.67	16:00	3.33	2.33	3.00	2.00
5:00	1.33	1.33	1.33	3.33	17:00	4.33	3.67	2.00	2.33
6:00	1.67	1.33	1.33	1.67	18:00	4.33	5.33	2.67	2.33
7:00	2.00	2.67	2.33	4.00	19:00	3.67	6.00	2.00	2.00
8:00	2.33	3.33	3.00	7.33	20:00	4.00	4.33	1.67	2.00
9:00	3.33	3.33	4.00	3.00	21:00	2.33	2.67	1.67	2.00
10:00	4.67	3.00	3.00	3.00	22:00	2.00	1.33	1.67	1.00
11:00	2.67	4.67	3.67	2.67	23:00	2.00	1.33	2.00	1.67

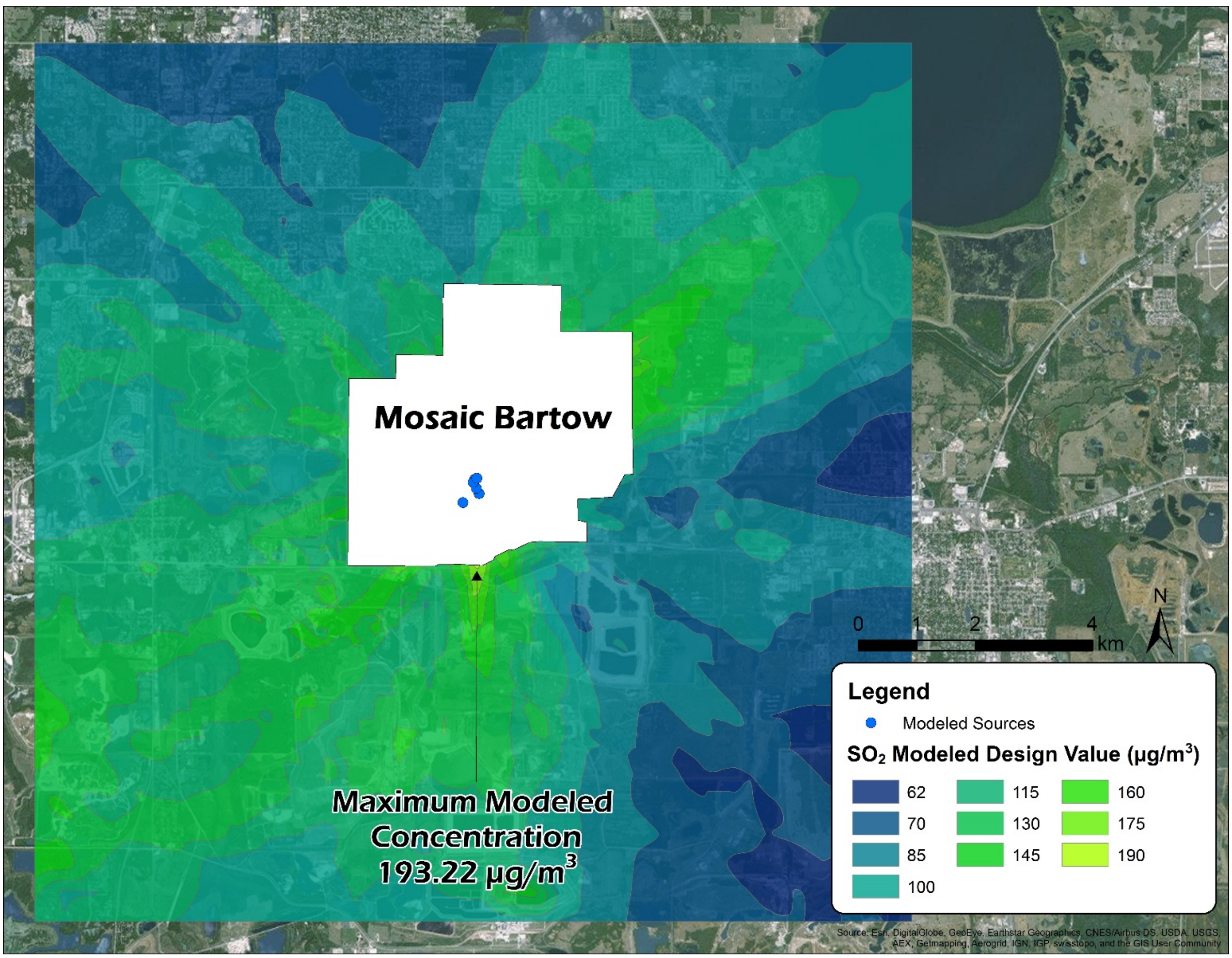
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around Mosaic's Bartow Facility in Bartow, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. The results summarized in **Table 13** and **Figure 5** indicate that the Bartow area is in attainment of the SO_2 NAAQS. It is noted that there are open contours present at the far southwestern corner of the modeling domain. This area is thoroughly addressed in the DRR modeling demonstration for the Mulberry area, **Appendix K** to this submittal, and was therefore not analyzed further in this demonstration.

Table 13: Maximum modeled SO_2 design value in the Bartow DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (µg/m^3)				1-Hour SO_2 NAAQS	Percent of NAAQS
		Mosaic Bartow	Others	Background	Total		
409,721.55	3,085,907.82	154.60	31.36	7.26	193.22	196.4	98.4%

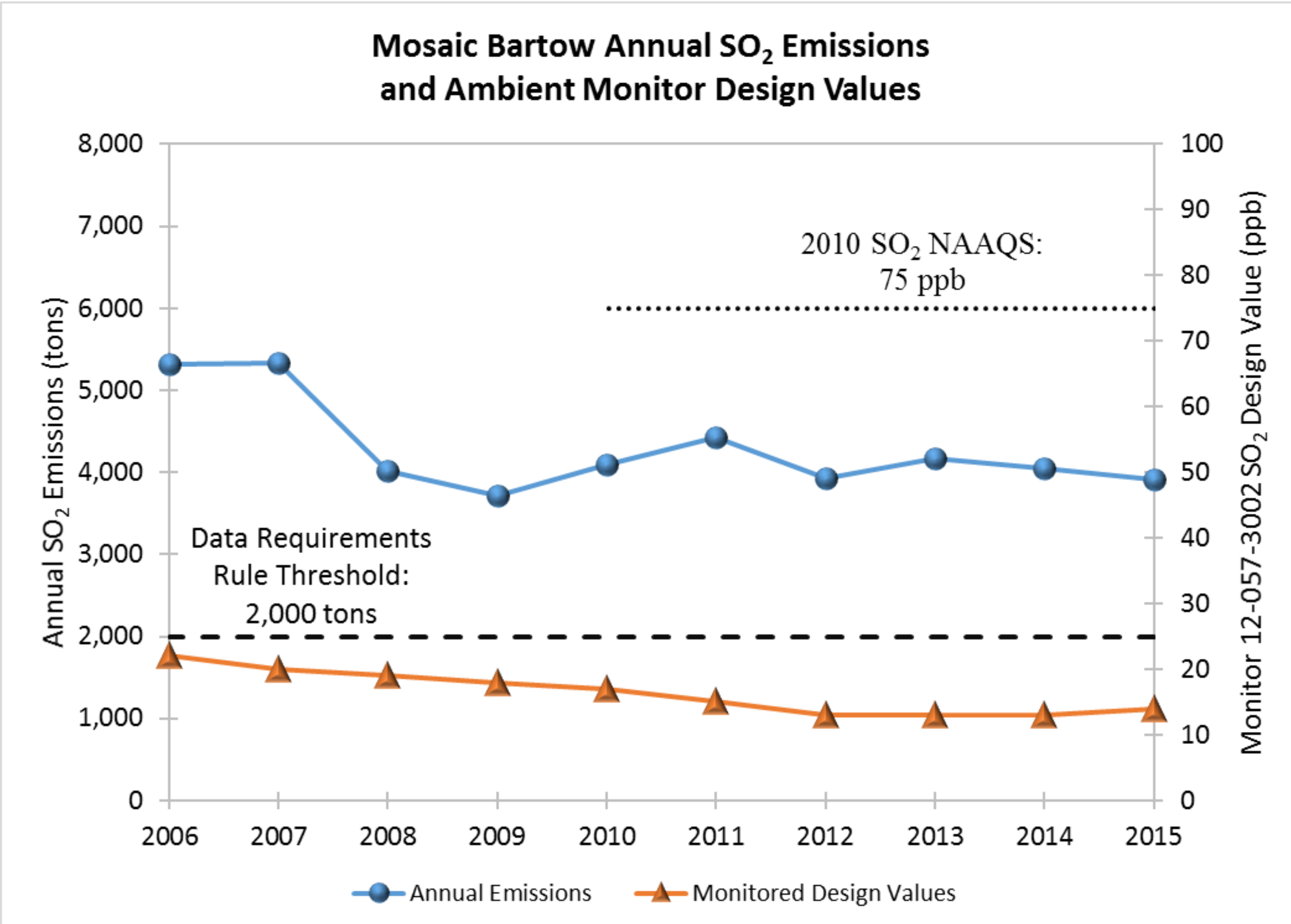
Figure 5: Modeled SO_2 design values in the Bartow DRR modeling demonstration.



4.1. Continuing Review Obligations

The DRR modeling demonstration for Bartow shows that the area is within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. Under the DRR, the Department has a continuing obligation to review SO_2 emissions in the area annually for continued compliance with the NAAQS because actual emissions data were used to characterize sources in the demonstration. Emissions of SO_2 in the Bartow area have been fairly steady for several years (**Figure 6**). However, it is expected that both the ambient concentrations and emissions of SO_2 will begin to decrease in the near future due to, among other things, the implementation of MATS and the previously mentioned forthcoming EPA consent decree at all three Mosaic facilities in Polk County.

Figure 6: 2006-2015 Mosaic Bartow SO_2 emissions and monitor 12-057-3002 SO_2 design values.



Appendix J
SO_2 Data Requirements Rule Modeling Report
Lakeland, Polk County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Lakeland Electric owns and operates the C. D. McIntosh, Jr. Power Plant (McIntosh), an electric generating facility in Lakeland, Florida operating under Title V Permit No. 1050004-033-AV issued by the Florida Department of Environmental Protection (Department). McIntosh emitted 2,157 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around McIntosh in Polk County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate that the portion of Polk County around Lakeland is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around McIntosh for the DRR.

3.2. Modeled Facilities

McIntosh is one of three DRR-applicable facilities in Polk County. The other two facilities, Mosaic Fertilizer's Bartow (Mosaic Bartow) and New Wales (Mosaic New Wales) facilities, are 19 km and 30 km south of McIntosh respectively. Initial modeling indicated that the distances between these three facilities were too large to include all three in a single combined DRR modeling demonstration for all of Polk County. Instead, three individual modeling demonstrations were performed and each facility was evaluated separately for inclusion as a background source with respect to the other two facilities. For the Lakeland DRR modeling demonstration, Mosaic Bartow was included and Mosaic New Wales was not included.

[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.
[4] *See* Appendix W to 40 CFR 51, Section 3.2.

There are also a variety of smaller nearby SO_2 sources in both Polk County and adjacent Hillsborough County. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that, in addition to Bartow, Wheelabrator Ridge Energy, and Mosaic Fertilizer's Plant City facility (Mosaic Plant City) are the only other sources that have the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources in the area (**Table 1**) are represented in the added monitored background concentrations discussed in **Section 3.9**. While the Mosaic New Wales and South Pierce facilities, both more than 30 km to the south, are technically above the 20d threshold, they were not explicitly included in the modeling demonstration. The reasoning for this decision is based mainly on the fact that these facilities were included in the DRR modeling demonstrations for both Bartow and Mulberry with New Wales being the primary facility in the Mulberry demonstration. These demonstrations are included as **Appendix I** and **Appendix K** to this submittal. In addition, an analysis of monitored ambient SO_2 concentrations between McIntosh and these facilities indicates that it is unlikely that there is a significant impact from these facilities in the area of interest. This is discussed further in **Section 3.9.**

Figure 1: 2014 SO_2 emission sources greater than 1 ton in and around Lakeland.

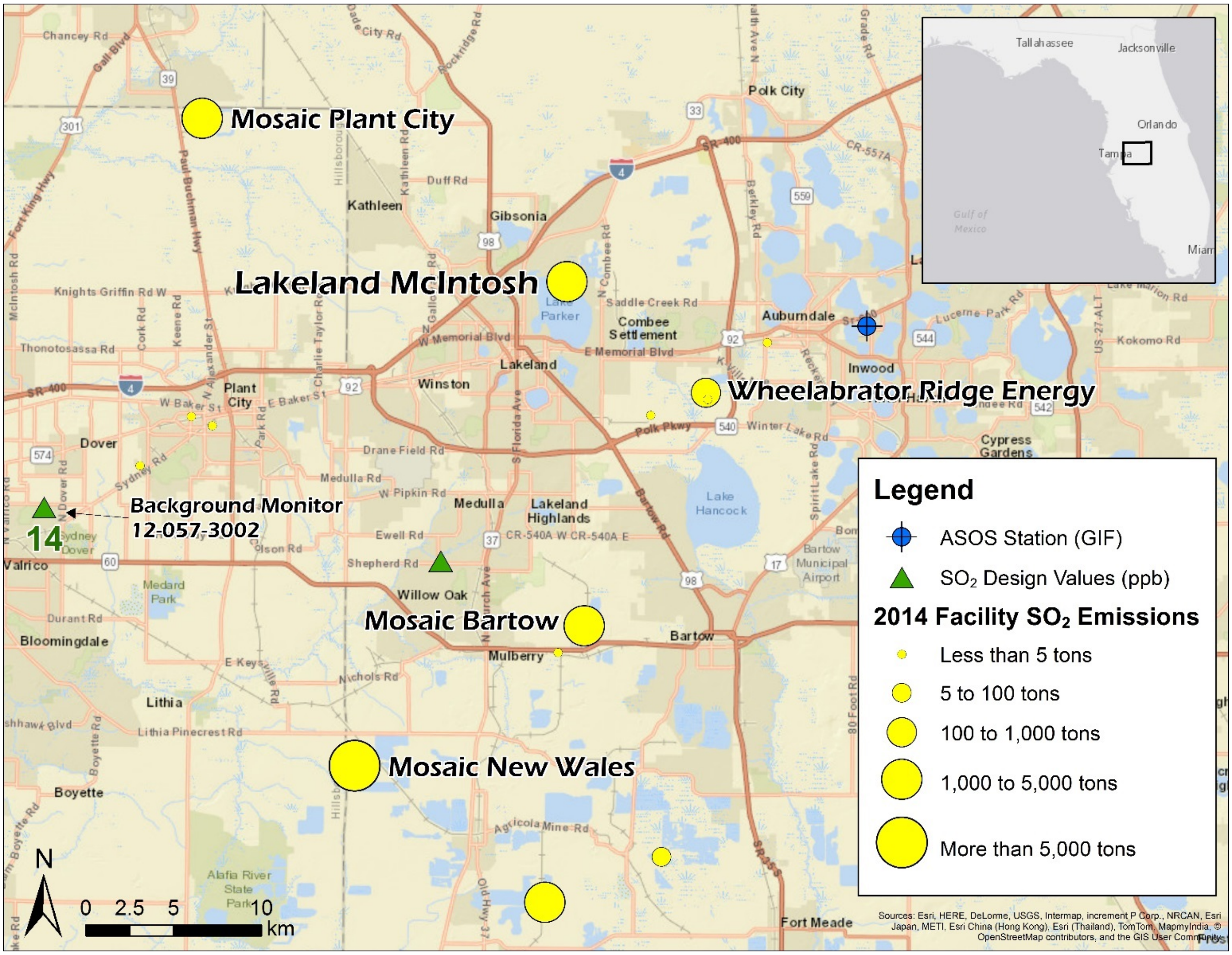


Table 1: All sources of SO_2 emissions greater than 5 tons in 2014 within 35 km of McIntosh.

Facility ID	Facility Name	Distance from McIntosh (km) (d)	20d	2014 SO_2 Emissions (tons)	Q > 20d
105-0004	Lakeland Electric McIntosh [a]	0	0	2,156.63	Yes
105-0216	Wheelabrator Ridge Energy [a]	10	200	213.77	Yes
105-0046	Mosaic Fertilizer Bartow [a,b]	19	380	4,045.72	Yes
057-0005	Mosaic Fertilizer Plant City [a]	24	480	1,784.01	Yes
105-0059	Mosaic Fertilizer New Wales [b]	30	600	7,126.50	Yes
105-0234	Duke Hines Energy Complex	33	660	23.72	No
105-0055	Mosaic Fertilizer South Pierce	33	660	1,731.77	Yes

a. Explicitly modeled facility.
b. DRR-applicable facility.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Winter Haven Municipal Airport (GIF) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Ruskin, Florida (TBW) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 10 – Sets ASOS anemometer height to 10 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 GIF dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The default seasonal categories for each month were changed to reflect the subtropical climate of Polk County. All inputs to AERSURFACE are summarized in **Table 2**.

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

Table 2: AERSURFACE inputs for 2012-2014 GIF AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	28.062
Meteorological Station Longitude (Degrees)	-81.754
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	0
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	1,2,10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Average
Average Surface Moisture 2013	Dry
Average Surface Moisture 2014	Average

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around McIntosh so that a comparison could be done to determine if the meteorological data recorded at GIF are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. In addition, the airport is just 16 km east of McIntosh, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the GIF meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Lakeland.

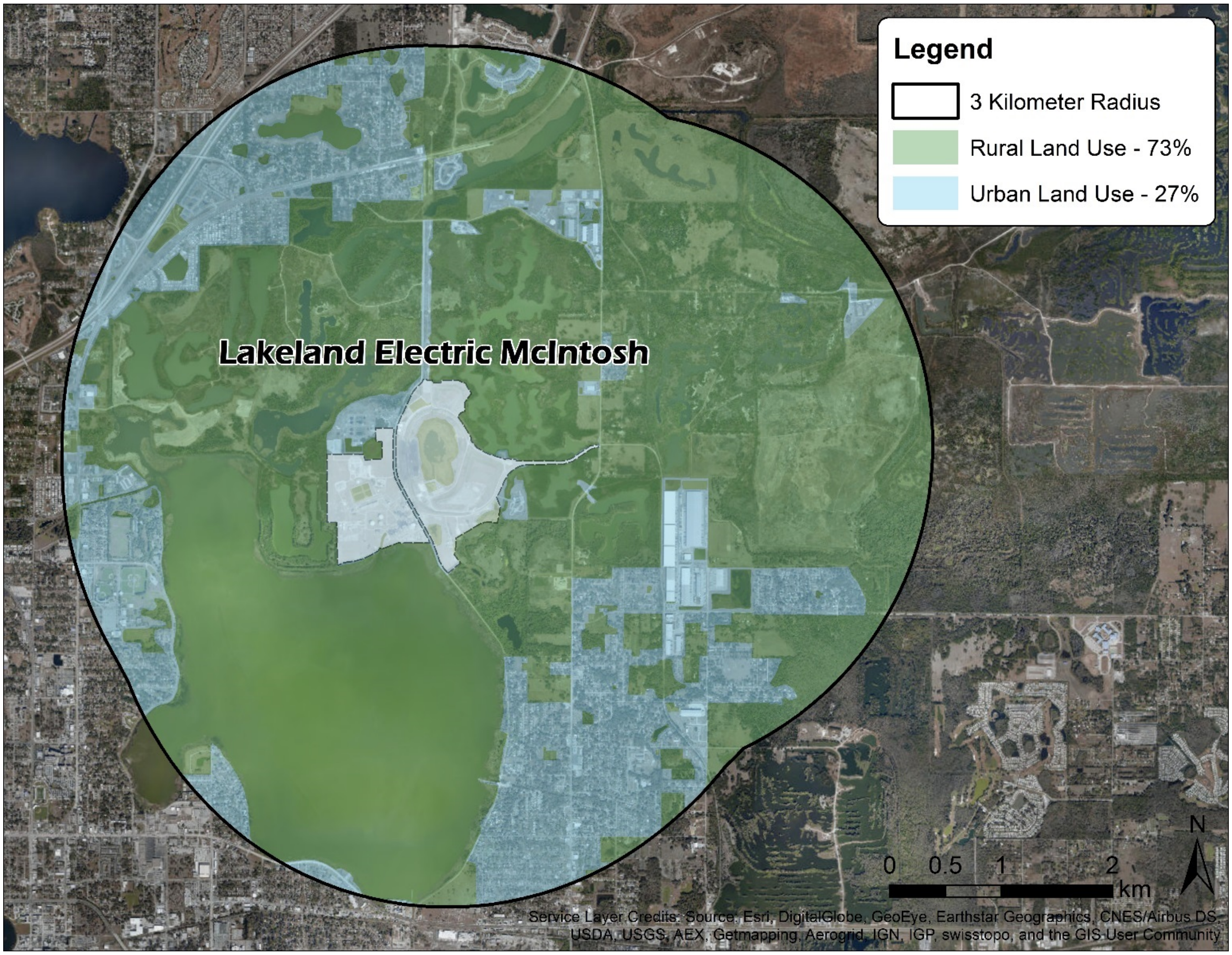
Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Winter Haven Municipal Airport	0.15	0.40	0.042
Lakeland Electric McIntosh	0.16	0.50	0.108

3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 3** below, rural land use constitutes a majority (73%) of the 3-km radius around McIntosh.

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

Figure 2: Land use classification around McIntosh in Lakeland.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the

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[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within McIntosh's fenceline were removed and receptors were placed with 50 m spacing along the fenceline.

Initial modeling indicated that high concentrations were found in an area of insufficiently dense receptor placement near the northwest corner of the receptor grid. Accordingly, an additional nested grid of receptors with 100 m spacing was placed in this area to fully resolve the highest concentrations. The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 7.5 km of McIntosh. The receptor grid used in the Lakeland DRR modeling demonstration is described below in **Table 4, Table 5,** and **Figure 4**.

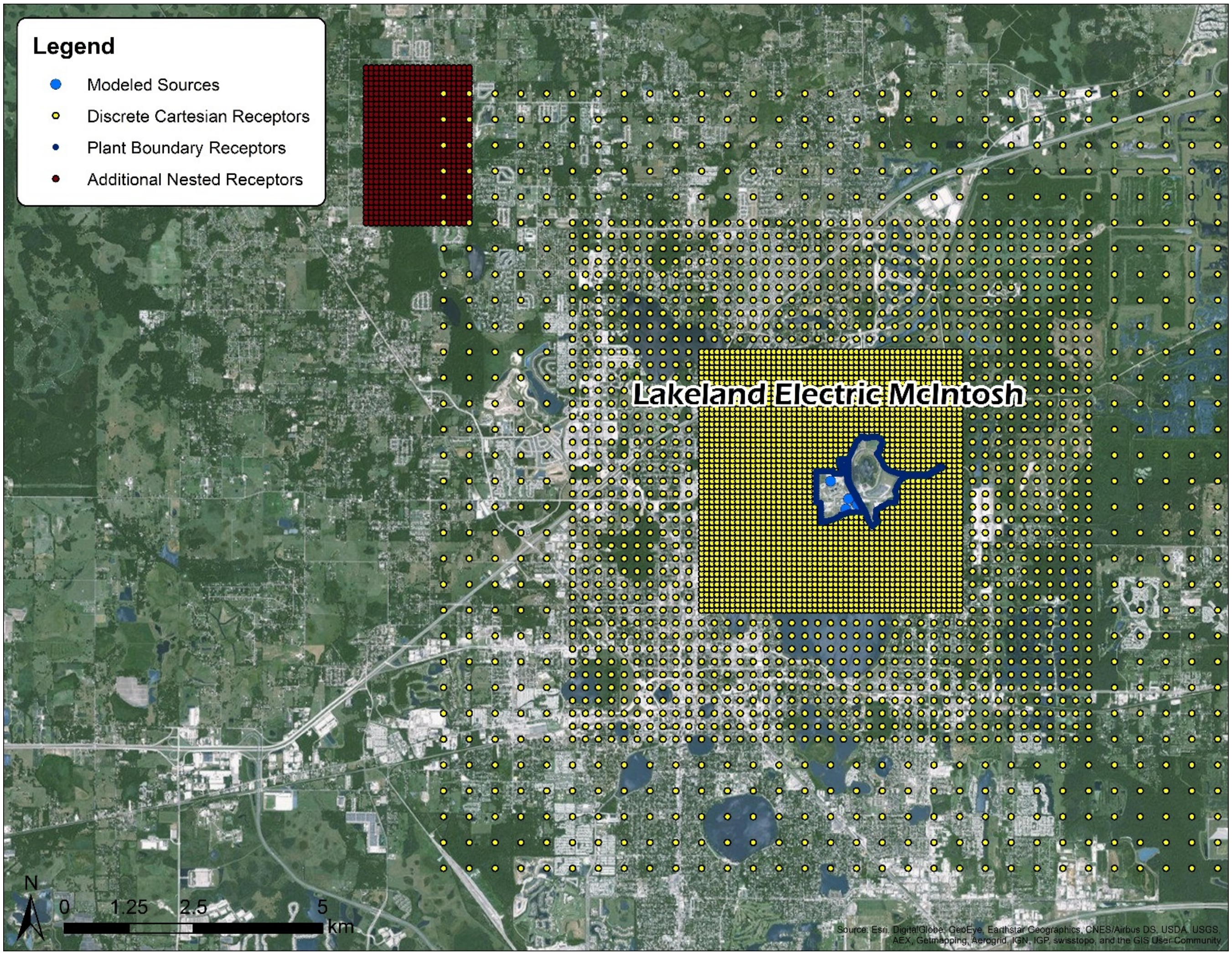
Table 4: Lakeland DRR modeling demonstration main receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	Unit 5
Unit UTM Zone	17N
Unit UTM Easting (m)	408,848.00
Unit UTM Northing (m)	3,106,897.00
Actual Stack Height (m)	91.40
Expected Distance to Max Concentration (m)	914
20 Times Stack Height (m)	1,828
100 m Receptor Spacing - Extent from the Origin (m)	2,500
250 m Receptor Spacing - Extent from the Origin (m)	5,000
500 m Receptor Spacing - Extent from the Origin (m)	7,500
Plant Boundary Receptor Spacing (m)	50
Total Receptors	4,472

Table 5: Lakeland DRR modeling demonstration nested receptor grid description

Receptor Grid Parameter	Value/Description
UTM Zone	17N
SW Corner UTM Easting (m)	399,848.00
SW Corner UTM Northing (m)	3,111,897.00
Total East-West Extent (m)	2,000
Total North-South Extent (m)	3,000
Receptor Spacing (m)	100
Total Receptors	651

Figure 3: Receptor grid placement for the Lakeland DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. Eleven significant structures onsite at McIntosh were included in the downwash analysis. Direction-specific downwash parameters for all stacks at McIntosh were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use maximum permitted short-term emission rates for all modeled sources except one unit at McIntosh which will be characterized with actual hourly emissions data. The hourly data for all units were requested from the facilities for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness. The hourly data were then included in the modeling demonstration using the AERMOD keyword HOUREMIS for the units that were characterized with actual emissions data. A variety of small, intermittent emissions sources including fire pumps and emergency generators at all facilities were not included because their

emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

3.8.1. McIntosh Modeled Units

SO_2 emissions from McIntosh are mostly from two fossil fuel-fired electric generating boilers. Boiler 2 primarily combusts natural gas but is also permitted to fire low-sulfur fuel oil. Boiler 3 is predominantly operated on coal and SO_2 emissions are controlled via a flue-gas desulfurization (FGD) system. There are also two combustion turbines, one simple-cycle (SCCT) peaker and one combined-cycle (CCCT) unit (Unit 5), that contribute a small amount of additional SO_2 emissions. The facility has opted to satisfy its requirements under the Mercury and Air Toxics Standard (MATS) by firing mostly natural gas in Boiler 2 and by meeting the 0.20 lb SO_2/MMBtu surrogate limit on Boiler 3.[9] For the purposes of the DRR, the facility recently obtained a permit that makes the surrogate limit on Boiler 3 federally enforceable at all times.[10] Boiler 2 is the only unit in the Lakeland DRR modeling demonstration that the Department chose to characterize using actual hourly emissions data. The data used were obtained from an in-stack continuous emissions monitoring system (CEMS) that records hourly plume exit velocity, exit temperature, and SO_2 emission rate. Missing hourly data were substituted following the procedures outlined in 40 CFR 75.33(b).

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[11] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[12] The stack for Unit 5 is the only stack at McIntosh that exceeds GEP height. A summary of the modeled stack parameters for McIntosh is presented below in **Table 6**.

Table 6: McIntosh units' Lakeland DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 2	47.90	3.20	CEMS	CEMS	CEMS
Boiler 3	76.20	5.50	28.02	324.80	1,355.68
CCCT 5	68.70 [a]	6.10	20.56	359.30	127.00
SCCT 1	10.70	4.10	26.34	755.40	164.01
a. Actual stack height is 91.4 m.					

3.8.2. Mosaic Bartow Modeled Units

Mosaic Bartow is a phosphate fertilizer manufacturing plant that has three sulfuric acid plants (SAPs) on site that account for the vast majority of the facility's SO_2 emissions. The SAPs burn elemental sulfur to create SO_2 which is then oxidized to SO_3 over a catalyst bed and absorbed into sulfuric acid. A portion of the SO_2 is not oxidized and is emitted to the atmosphere. Emissions from all three SAPs are

[8] *See* Modeling TAD, Section 5.5.
[9] *See* 40 C.F.R. 63 Subpart UUUUU.
[10] See Air Construction Permit No. 1050004-044-AC, issued by the Florida Department of Environmental Protection on November 29, 2016, and attached to this Modeling Report as Appendix J-1.
[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[12] *See* Modeling TAD, Section 6.1.

monitored by CEMS. Actual stack heights are less than or equal to the calculated GEP stack height for all units. A summary of the modeled stack parameters for Mosaic Bartow is presented below in **Table 7**.

Table 7: Mosaic Bartow units' Lakeland DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 4 SAP	60.96	2.07	18.60	355.37	449.51
No. 6 SAP	60.96	2.07	18.60	355.37	443.53
No. 5 SAP	60.96	2.07	18.60	355.37	435.07

3.8.3. Mosaic Plant City Modeled Units

Mosaic Plant City is also a phosphate fertilizer manufacturing plant. The four SAPs account for nearly all of the facility's SO_2 emissions. Emissions from all four SAPs are monitored by CEMS. Actual stack heights are less than or equal to the calculated GEP stack height for all units. A summary of the modeled stack parameters for Mosaic Plant City is presented below in **Table 8**.

Table 8: Plant City units' Lakeland DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
A SAP	33.53	1.52	22.80	302.00	88.45
B SAP	33.53	1.52	22.80	302.00	104.83
C SAP	60.96	2.44	14.22	343.00	307.29
D SAP	60.96	2.44	14.71	345.00	307.92

3.8.4. Wheelabrator Modeled Units

Wheelabrator is a small electric generating facility with a single steam generating boiler that fires a combination of wood, yard waste, landfill gas, and tires. SO_2 emissions are controlled by a spray dryer absorber (spraying of atomized lime slurry into the flue gas). The actual stack height is above the calculated GEP stack height so the lower GEP height was modeled. A summary of the modeled stack parameters for Wheelabrator is presented below in **Table 7**.

Table 9: Wheelabrator units' Lakeland DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 1	65.00	3.05	18.74	406.5	164.56

3.8.5. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[13] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission

[13] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html

rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The SO_2 emission limits for several of the modeled sources are based on longer-term averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 9**.

Table 10: Emissions variability analysis and equivalent emission rate calculations for all sources.

Unit Description	99th Percentile Rate (lb/hr)		Ratio	Permitted Limit (lb/hr)	Equivalent Limit (lb/hr)
	1-hr	Long-Term			
McIntosh Unit 3	3,773.97	2,027.54	0.537	728.00 30-day[a]	1,355.68
Bartow SAP 4	408.57	393.97	0.964	433.33 24-hr	449.51
Bartow SAP 6	441.98	431.91	0.977	433.33 24-hr	443.53
Bartow SAP 5	436.59	434.92	0.996	433.33 24-hr	435.07
Plant City SAP A	74.60	63.97	0.857	75.80 24-hr	88.45
Plant City SAP B	84.52	75.24	0.890	93.30 24-hr	104.83
Plant City SAP C	279.21	275.48	0.987	303.30 24-hr	307.29
Plant City SAP D	291.11	286.67	0.985	303.30 24-hr	307.92
Wheelabrator Boiler 1	179.68	70.95	0.395	65.00 30-day	164.56

a. New emission limit based on MATS SO_2 surrogate.

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[14] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-057-3002 for the period January 2012 to December 2014. As shown in **Figure 2**, the monitor is 33 km southwest of McIntosh in a rural area away from any large sources of SO_2. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from McIntosh, Bartow, or Plant City. In this case, any measurement recorded when the wind direction was from 23° to 111° was removed from the background calculation as shown in **Figure 5**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 10**. As previously mentioned, **Figure 5** indicates that during the 2012-2014 period there was not a significant ambient SO_2 impact in the area near the monitor from Mosaic New Wales or Mosaic South Pierce. The monitor is 7 km closer than McIntosh is to the large Mosaic New Wales facility, further supporting the reasoning that both Mosaic New Wales and the much smaller Mosaic South Pierce are unlikely to have a significant impact in the modeled area of interest.

[14] *See* Modeling TAD, Section 8.1

Figure 4: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-057-3002.

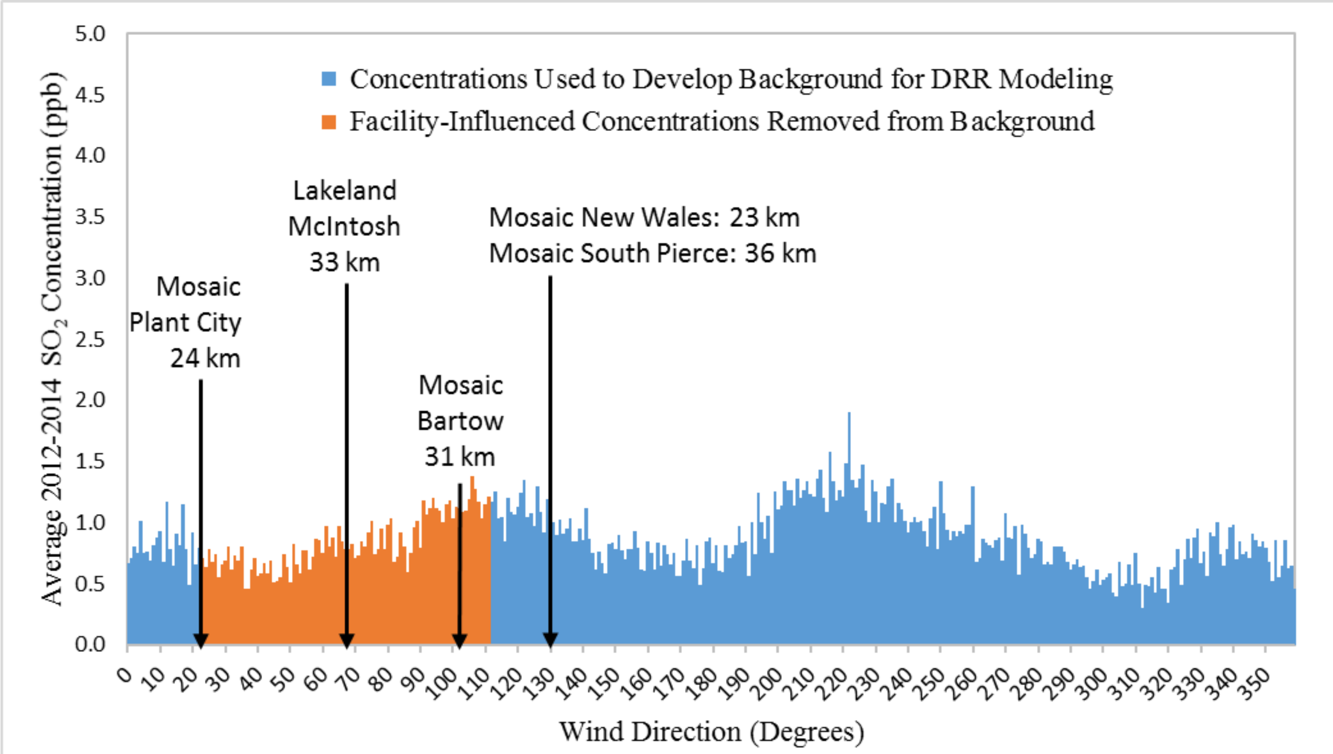


Table 11: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Lakeland DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	3.33	1.67	1.67	2.67	12:00	4.00	4.67	4.00	3.33
1:00	3.00	2.33	2.33	3.00	13:00	5.33	3.33	3.00	3.67
2:00	3.00	2.33	1.67	3.33	14:00	4.33	3.00	3.00	2.33
3:00	2.00	2.33	1.67	4.67	15:00	3.67	3.33	3.00	2.67
4:00	1.67	2.33	2.00	5.33	16:00	4.00	2.67	3.33	2.33
5:00	1.33	1.67	1.67	3.33	17:00	4.33	3.67	2.67	2.33
6:00	1.67	2.00	1.67	2.00	18:00	4.67	5.33	2.67	2.67
7:00	2.00	2.67	3.67	4.67	19:00	3.67	6.33	2.33	2.33
8:00	2.33	4.67	5.67	9.33	20:00	4.33	4.33	1.67	2.00
9:00	5.67	4.67	6.33	6.67	21:00	2.67	3.33	2.00	2.00
10:00	7.00	3.67	4.67	4.67	22:00	2.33	2.00	2.00	1.67
11:00	4.33	4.67	4.00	3.33	23:00	2.67	2.33	2.67	1.67

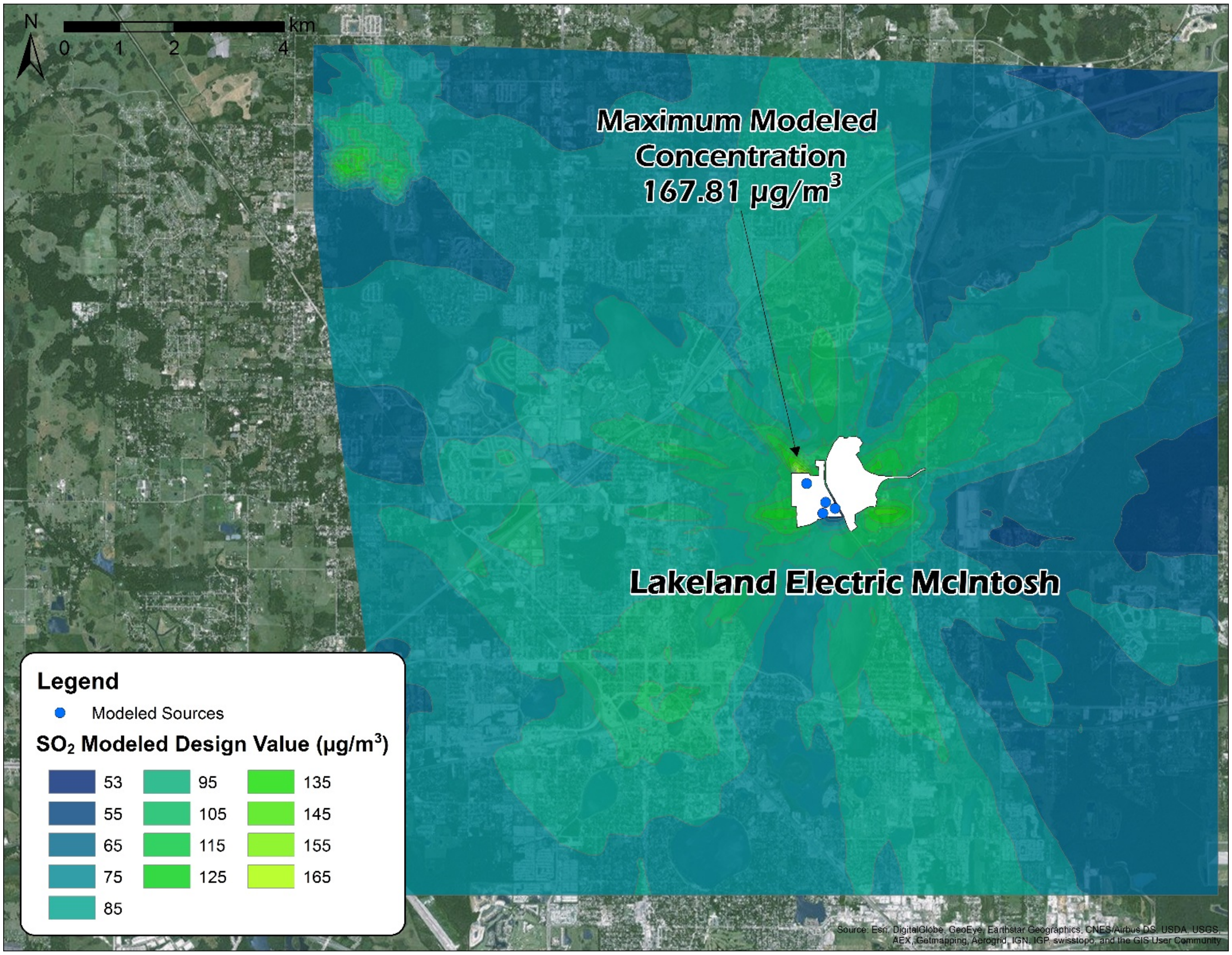
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around Lakeland Electric's McIntosh Plant in Lakeland, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. The results summarized in **Table 11** and **Figure 6** indicate that the Lakeland area is in attainment of the SO_2 NAAQS.

Table 12: Maximum modeled SO_2 design value in the Lakeland DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (μg/m³)				1-Hour SO_2 NAAQS	Percent of NAAQS
		McIntosh	Others	Background	Total		
408,764.75	3,107,086.59	161.39	0.03	6.39	167.81	196.4	85.4%

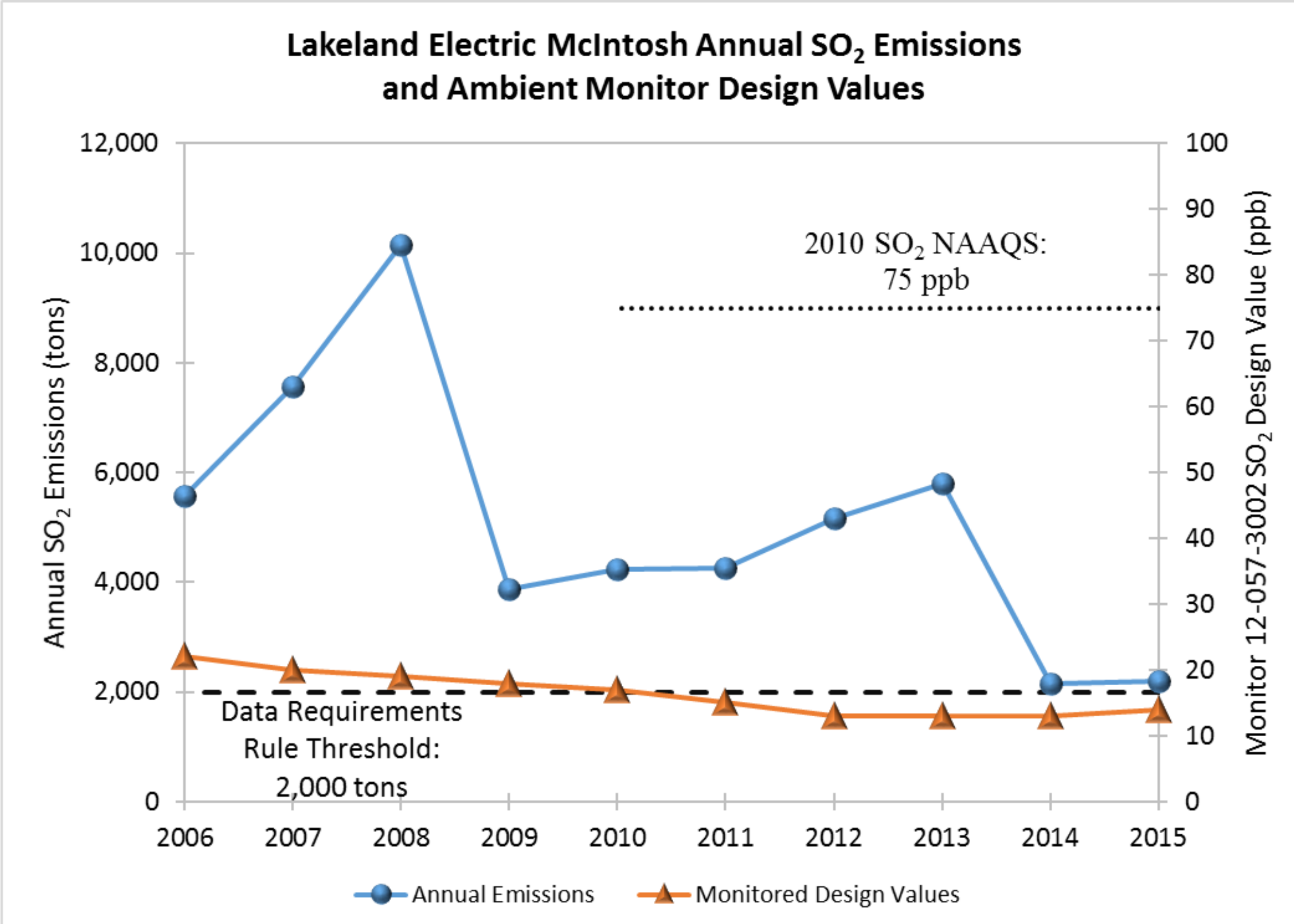
Figure 5: Modeled SO_2 design values in the Lakeland DRR modeling demonstration.



4.1. Continuing Review Obligations

The DRR modeling demonstration for Lakeland shows that the area is well within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. Under the DRR, the Department has a continuing obligation to review SO_2 emissions in the area annually for continued compliance with the NAAQS because one unit was characterized with actual emissions data. It is expected that the ambient concentrations and emissions of SO_2 in Lakeland will continue to fall as they have for at least the past decade (**Figure 7**). 2014 emissions of SO_2 at McIntosh were 63% less than in 2013. These lower levels of emissions are expected to be maintained or even further deceased due to the implementation of MATS at McIntosh and a forthcoming EPA consent decree at Bartow.

Figure 6: 2006-2015 McIntosh SO_2 emissions and monitor 12-057-3002 SO_2 design values.



Appendix J-1
City of Lakeland Electric – C. D. McIntosh, Jr. Power Plant
Air Construction Permit No. 1050004-044-AC

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

PERMITTEE

City of Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33801-5079

Authorized Representative:
Mr. Ronald Kremann, Production Manager

Air Permit No. 1050004-044-AC
Permit Expires: 06/01/2017
Minor Air Construction Permit
C. D. McIntosh, Jr. Power Plant
SO_2 Reduction Project

PROJECT

This is the final air construction permit, which specifies a sulfur dioxide (SO_2) emissions limit for the existing fossil fuel fired electric generating unit (McIntosh Unit 3) at the Lakeland Electric, C. D. McIntosh, Jr. Power Plant, which will reduce SO_2 emissions and ambient impacts from the facility. The existing C. D. McIntosh, Jr. Power Plant is an electric generating utility categorized under Standard Industrial Classification No. 4911. The existing facility is located in Polk County at 3030 East Lake Parker Drive in Lakeland, Florida. The UTM coordinates are Zone 17, 409.0 kilometers (km) East and 3106.2 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

For:
Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Construction Permit package was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Mr. Ronald Kremann, Production Manager, Lakeland Electric: ron.kremann@lakelandelectric.com
Mr. Nedin Bahtic, P.E., Lakeland Electric: nedin.bahtic@lakelandelectric.com
Mr. Sal Mohammad, P.E., Golder Associates Inc.: smohammad@golder.com
DEP Siting Office: SCO@dep.state.fl.us
DEP SWD Permitting: SWD_AIR_Permitting@dep.state.fl.us
DEP SWD Compliance: SWD_AIR@dep.state.fl.us
Ms. Natasha Hazziez, EPA Region 4: hazziez.natasha@epa.gov
Ms. Ana Oquendo, EPA Region 4: oquendo.ana@epa.gov
Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

FACILITY DESCRIPTION

This City of Lakeland Electric operates the existing C.D. McIntosh, Jr. Power Plant. The C.D. McIntosh, Jr., Power Plant is a nominal 618.7 megawatt (MW) located in Polk County at 3030 East Lake Parker Drive in Lakeland, Florida. The power plant consists of a 20 MW gas turbine peaking unit (Unit 1), two fossil fuel fired electric generating units, 114.7 MW (Unit 2) and 364 MW (Unit 3), 120 MW combined cycle stationary combustion turbine (Unit 5), three diesel fired engines, three cooling towers, coal handling, processing and storage systems, fly ash handling and storage system, limestone handling and storage system, and, fuel oil storage tanks.

The existing facility consists of the following emissions units (EU).

EU No.	Brief Description
Regulated Emissions Units	
004	Gas Turbine Peaking Unit 1
005	McIntosh Unit 2 - Fossil Fuel Fired Steam Generator
006	McIntosh Unit 3 - Fossil Fuel Fired Steam Generator
008	Diesel drive coal tunnel sump engine
010	Fire water UPS diesel No. 32
011	CT startup diesel
028	McIntosh Unit 5 - 370 MW Combined Cycle Stationary Combustion Turbine
Unregulated Emissions Units and Activities	
007	Tanks with greater than 10,000 gallon capacity installed prior to July 23, 1984
014	General purpose painting
015	Parts Cleaning
016	Sand Blasting (Maintenance only)
017	Wastewater Treatment Tank
018	Three Cooling Towers (Units 2 and 3)
019	Northside Waste Water Treatment Facility - Wastewater treatment processes and tanks
020	Northside Waste Water Treatment Facility - Four emergency diesel generators
021	Northside Waste Water Treatment Facility - Chemical and petroleum storage
022	Northside Waste Water Treatment Facility - Miscellaneous activities
023	Coal processing and conveying system
024	Coal storage system
025	Coal transfer and loading system
026	Limestone handling and storage system
027	Fly ash handling and storage system
029	1.05 million gallon storage tank for McIntosh Unit 5, subject only to the reporting requirements of 40 CFR 60, Subpart Kb
030	Mechanical Draft Cooling Tower
033	Portable pumps and welding equipment

PROPOSED PROJECT

Lakeland Electric is requesting an SO_2 emissions limit of 0.20 pound per million British thermal units (lb/MMBtu) based on a 30-operating day rolling average for the fossil fuel fired steam generator, McIntosh Unit 3. The new established emission limit will reduce emissions of SO_2.

The following existing emissions unit (EU) will be affected by this project.

EU No.	Description
006	McIntosh Unit 3 - Fossil Fuel Fired Steam Generator

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- The facility operates units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The facility does operate units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60.
- The facility does operate units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance in the Division of Air Resource Management of the Department of Environmental Protection (Department). The Office of Permitting and Compliance mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District at: 13051 North Telecom Parkway, Temple Terrace, Florida 33637-0926.

3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); Appendix C (Common Conditions); Appendix D (Common Testing Requirements); E (NESHAP Subpart A); and F (NESHAP Subpart UUUUU).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Construction and Expiration. The expiration date shown on the first page of this permit provides time to complete the physical construction activities authorized by this permit, complete any necessary compliance testing, and obtain an operation permit. Notwithstanding this expiration date, all specific emissions limitations and operating requirements established by this permit shall remain in effect until the facility or emissions unit is permanently shut down. For good cause, the permittee may request that a permit be extended. Pursuant to Rule 62-4.080(3), F.A.C., such a request shall be submitted to the Permitting Authority in writing before the permit expires. [Rules 62-4.070(3) & (4), 62-4.080 & 62-210.300(1), F.A.C.]

B. McIntosh Unit 3 – Fossil Fuel Fired Steam Generator (EU 006)

This section of the permit addresses the following emissions unit.

EU No.	Emission Unit Description
006	McIntosh Unit 3 - Fossil Fuel Fired Steam Generator

McIntosh Unit 3 is a dry bottom wall-fired fossil fuel fired steam generator with a maximum design heat input capacity of 3,640 MMBtu/hour and a nominal design electrical generating capacity of 364 MW. Unit 3 fires coal, natural gas, propane, and No. 2 fuel oil with a maximum sulfur content of 0.5% by weight. The following control equipment is used to reduce emissions: electrostatic precipitator (ESP) to control particulate matter (PM) emissions; a flue gas desulfurization system (FGD) to control SO_2 emissions; and low NO_X burners (LNB) and an over-fire air (OFA) system to control nitrogen oxide (NO_X) emissions. Unit 3 is equipped with a carbon monoxide, NO_X, SO_2, and PM continuous emissions monitoring systems (CEMS) to continuously monitor emissions. The McIntosh Unit 3 began commercial operation in 1982. The stack parameters are: 250 feet in height: 18 feet in diameter; 125 °F exit temperature; and, stack gas flow rate of 1,260,536 actual cubic feet per minute.

{Permitting Note: The emissions unit is regulated under Acid Rain, Phase II; Rule 62-296.405(2), F.A.C., Fossil Fuel Steam Generators with More than 250 MMBtu/hour Heat Input; Rule 212.400(6), F.A.C., PSD; Rule 62-212.400(6), F.A.C., Best Available Control Technology (BACT) Determination; Compliance Assurance Monitoring (CAM), adopted and incorporated by reference in Rule 62-204.800, F.A.C.; Rule 62-296.470, F.A.C., Clean Air Interstate Rule (CAIR); NSPS Subpart A (General Provisions) and Subpart D (Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971) of 40 CFR 60, adopted and incorporated by reference in Rule 62-204.800(8)(b)1., F.A.C.; and NESHAP Subpart A (General Provisions) and Subpart UUUUU (NESHAP: Coal- and Oil-Fired Electric Utility Steam Generating Units) of 40 CFR 63 , adopted and incorporated by reference in Rule 62-204.800(8)(b)1., F.A.C..}

PREVIOUS APPLICABLE REQUIREMENTS

1. Other Permits: The conditions of this permit supplement all previously issued air construction and operation permits for these emissions units. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions and regulations. [Rule 62-4.070, F.A.C.]

EMISSIONS STANDARDS

2. SO_2 Emissions: Emissions of SO_2 from the McIntosh Unit 3 - Fossil Fuel Fired Steam Generator (EU 006) shall not exceed 0.20 lb/MMBtu based on a 30-operating day rolling average. Compliance with this SO_2 emissions limit shall be demonstrated by data collected from the existing SO_2 CEMS. [Application, Rules 62-4.070(1) and (3), F.A.C.; and NESHAP Subpart UUUUU]

MONITORING AND COMPLIANCE REQUIREMENTS

3. SO_2 CEMS: The permittee shall use the existing SO_2 CEMS to demonstrate continuous compliance with the SO_2 emissions limit specified in Specific Condition **2**. The existing SO_2 CEMS shall continue to meet and follow the quality assurance and quality control requirements outlined in the facility's Title V air operation permit. [Rules 62-4.070(1) and (3), F.A.C.; and NESHAP Subpart UUUUU]

4. SO_2 Compliance and Monitoring Requirements: The existing FGD and SO_2 CEMS shall be operated at all times. Compliance with the SO_2 emissions limit shall be met at all times except during periods of startup and shutdown. During startup and shutdown, work practice standards in accordance with NESHAP Subpart UUUUU of 40 CFR 63 shall apply. [Rules 62-4.070(1) and (3), F.A.C.; and NESHAP Subpart UUUUU]

Appendix K
SO_2 Data Requirements Rule Modeling Report
Mulberry, Polk County, Florida

Division of Air Resource Management
Florida Department of Environmental Protection
January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

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1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Mosaic Fertilizer owns and operates a phosphate fertilizer manufacturing plant (Mosaic New Wales) in Mulberry, Florida under Title V Permit No. 1050059-096-AV issued by the Florida Department of Environmental Protection (Department). Mosaic New Wales emitted 7,126 tons of SO_2 in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around Mosaic New Wales in Polk County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts in the Mulberry area.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around Mosaic New Wales for the DRR.

3.2. Modeled Facilities

Mosaic New Wales is one of three DRR-applicable facilities in Polk County. The other two facilities, Mosaic Fertilizer's Bartow (Mosaic Bartow) facility and Lakeland Electric's C. D. McIntosh, Jr. Power Plant (McIntosh), are 16 km northeast and 30 km north-northeast of Mosaic New Wales respectively. Initial modeling indicated that the distances between these three facilities were too large to include all three in a single combined DRR modeling demonstration for all of Polk County. Instead, three individual modeling demonstrations were performed and each facility was evaluated separately for inclusion as a background source with respect to the other two facilities. Only Mosaic Bartow was chosen to be included in the Mulberry DRR modeling demonstration.

There are also a variety of smaller nearby SO_2 sources in both Polk County and adjacent Hardee, Manatee, and Hillsborough Counties. Appendix W states, and the Modeling TAD reiterates, that the

[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.
[4] *See* Appendix W to 40 CFR 51, Section 3.2.

number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern. Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgement to determine whether they should be included.

The Department determined that, in addition to Mosaic Bartow, Mosaic Fertilizer's South Pierce facility (Mosaic South Pierce) and Tampa Electric Company's Polk Power Station (TECO Polk) are the only other sources that have the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources in the area (**Table 1**) are represented in the added monitored background concentrations discussed in **Section 3.9**. While the McIntosh, Tampa Electric Company Big Bend Station (TECO Big Bend) and Mosaic Riverview facilities, all more than 30 km away, are technically above the 20d threshold, they were not explicitly included in the modeling demonstration. The reasoning for this decision is based mainly on the fact that these facilities were included in the DRR modeling demonstration for other areas with McIntosh being the primary facility for the Lakeland DRR modeling demonstration and TECO Big Bend being the primary facility in the Hillsborough County demonstration. These demonstrations are included as **Appendix J** and **Appendix F** to this submittal. In addition, the monitor used to develop the modeled background concentrations is well placed to fully represent their emissions in the model. This is also discussed further in **Section 3.9.**

Figure 1: 2014 SO_2 emission sources greater than 1 ton in and around Mulberry.

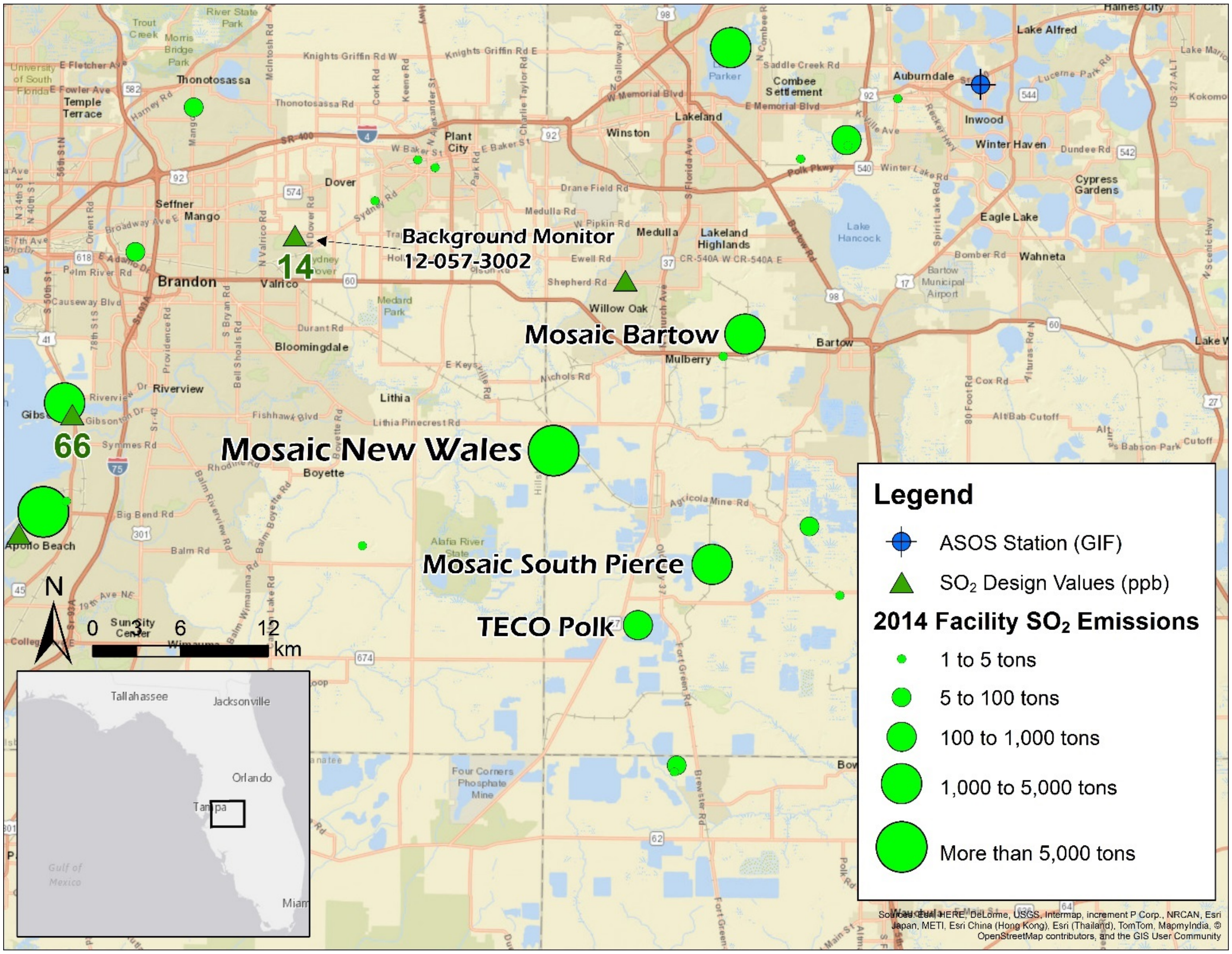


Table 1: All sources of SO_2 emissions greater than 5 tons in 2014 within 35 km of Mosaic New Wales.

Facility ID	Facility Name	Distance from Mosaic New Wales (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
105-0059	Mosaic Fertilizer New Wales [a,b]	0	0	7,126.50	Yes
105-0055	Mosaic Fertilizer South Pierce [a]	13	260	1,731.77	Yes
105-0233	TECO Polk Power Station [a]	13	260	1,245.17	Yes
105-0046	Mosaic Fertilizer Bartow [a,b]	16	320	4,045.72	Yes
105-0234	Duke Hines Energy Complex	18	360	23.72	No
049-0340	Seminole Electric Midulla Station	23	460	5.84	No
105-0216	Wheelabrator Ridge Energy	30	600	213.77	No
105-0004	Lakeland Electric McIntosh [b]	30	600	2,156.63	Yes
057-0261	Hillsborough Resource Recovery	32	640	13.89	No
057-0008	Mosaic Fertilizer Riverview	34	680	2,209.13	Yes
057-0039	TECO Big Bend Station [b]	35	700	11,156.71	Yes

a. Explicitly modeled facility.
b. DRR-applicable facility.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Winter Haven Municipal Airport (GIF) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the nearest NWS atmospheric sounding location in Ruskin, Florida (TBW) downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 10 – Sets ASOS anemometer height to 10 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 GIF dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The default seasonal categories for each month were changed to reflect the subtropical climate of Polk County. All inputs to AERSURFACE are summarized in **Table 2**.

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

Table 2: AERSURFACE inputs for 2012-2014 GIF AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	28.062
Meteorological Station Longitude (Degrees)	-81.754
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	0
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	1,2,10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Average
Average Surface Moisture 2013	Dry
Average Surface Moisture 2014	Average

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around Mosaic New Wales so that a comparison could be done to determine if the meteorological data recorded at GIF are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. In addition, the airport is just 39 km northeast of Mosaic New Wales, the land in between is generally flat, and both areas have similar topography. Based on this analysis, the GIF meteorological dataset was considered to be representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Mulberry.

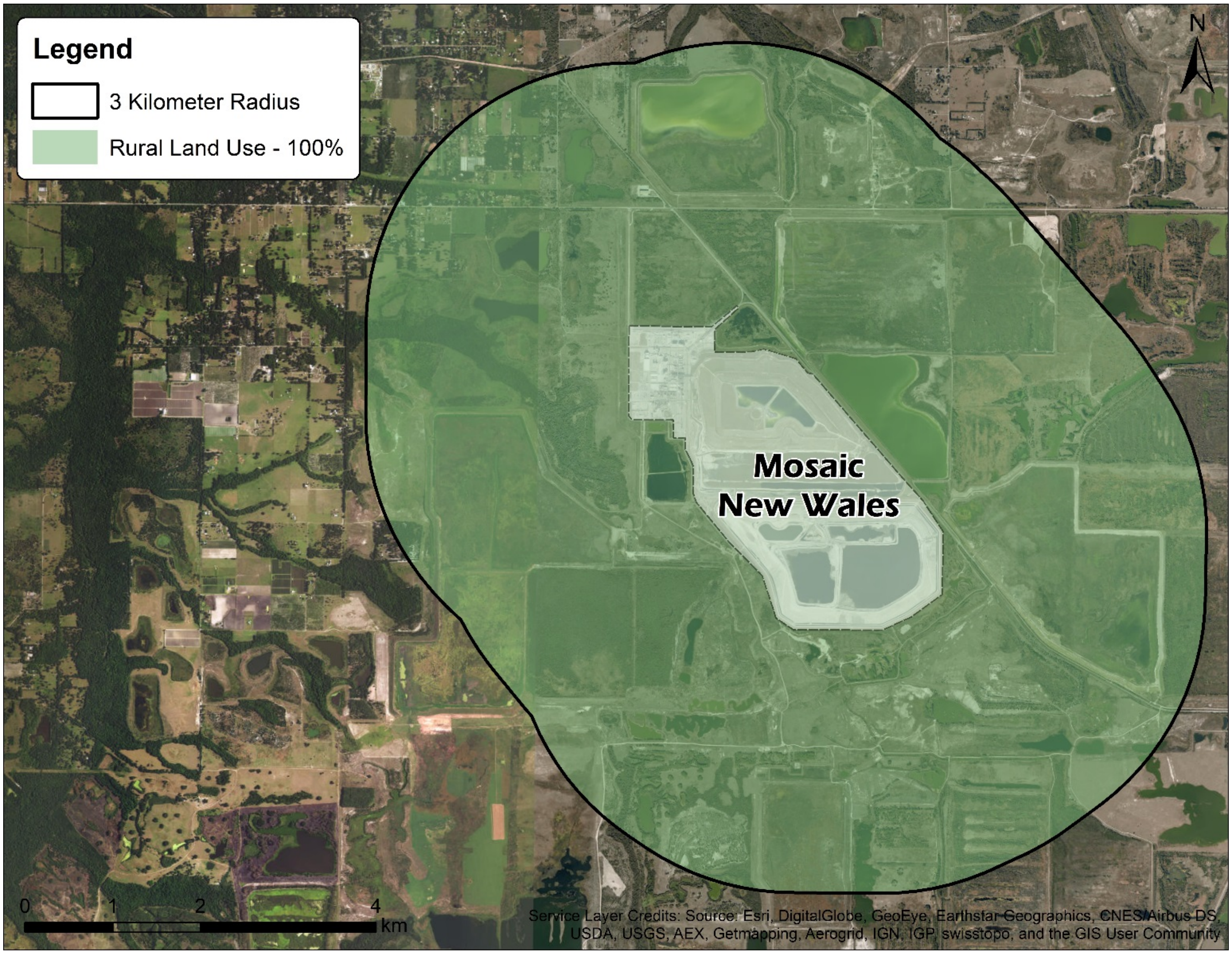
Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Winter Haven Municipal Airport	0.15	0.40	0.042
Mosaic Fertilizer New Wales	0.17	0.49	0.181

3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an analysis of the land use within a 3-km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes essentially all of the 3-km radius around Mosaic New Wales.

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

Figure 2: Land use classification around Mosaic New Wales in Mulberry.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance, the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack

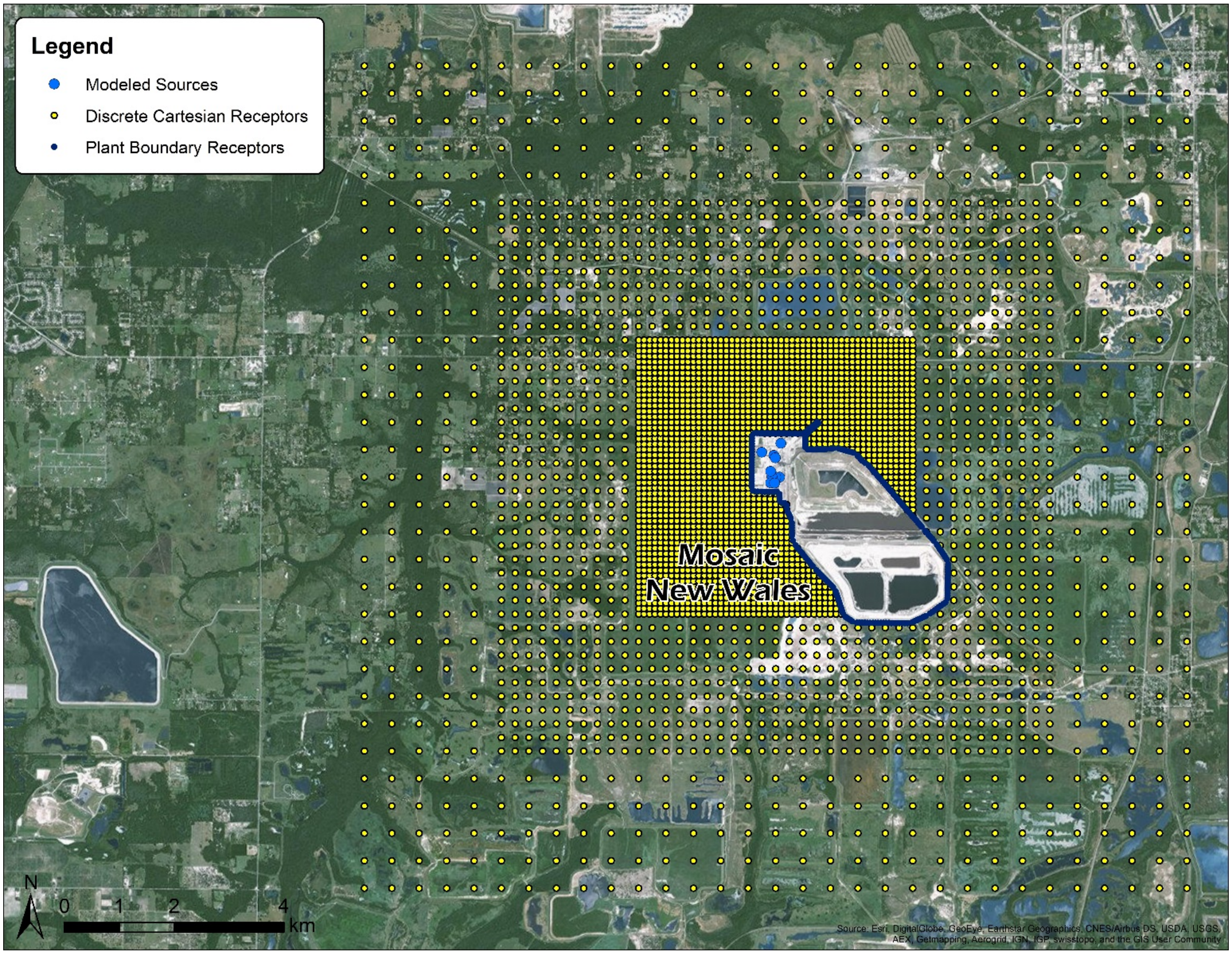
[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

(if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within Mosaic New Wales's fenceline were removed and receptors were placed with 50 m spacing along the fenceline. The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 7.5 km of Mosaic New Wales. The receptor grid used in the Mulberry DRR modeling demonstration is described below in **Table 4** and **Figure 3**.

Table 4: Mulberry DRR modeling demonstration main receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	SAP 2
Unit UTM Zone	17N
Unit UTM Easting (m)	396,550.77
Unit UTM Northing (m)	3,078,958.33
Actual Stack Height (m)	60.96
Expected Distance to Max Concentration (m)	610
20 Times Stack Height (m)	1,219
100 m Receptor Spacing - Extent from the Origin (m)	2,500
250 m Receptor Spacing - Extent from the Origin (m)	5,000
500 m Receptor Spacing - Extent from the Origin (m)	7,500
Plant Boundary Receptor Spacing (m)	50
Total Receptors	3,986

Figure 3: Receptor grid placement for the Mulberry DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. 60 significant structures onsite at Mosaic New Wales were included in the downwash analysis. Direction-specific downwash parameters for all stacks at Mosaic New Wales were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use actual hourly emissions data to characterize most modeled sources and maximum permitted short-term emission rates for a few smaller sources. The hourly data for all units were requested from the facilities for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness. The hourly data were then included in the modeling demonstration using the AERMOD keyword HOUREMIS for the units that were characterized with actual emissions data. A variety of small, intermittent emissions sources including fire pumps and emergency generators at all facilities were not included because their

emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

3.8.1. Mosaic New Wales Modeled Units

Mosaic New Wales is a phosphate fertilizer manufacturing plant that has five sulfuric acid plants (SAPs) on site that account for the vast majority of the facility's SO_2 emissions. The SAPs burn elemental sulfur to create SO_2 which is then oxidized to SO_3 over a catalyst bed and absorbed into sulfuric acid. A portion of the SO_2 is not oxidized and is emitted to the atmosphere. The Department chose to characterize the five SAPs using actual hourly emissions data. The data used were obtained from in-stack continuous emissions monitoring systems (CEMS). Short periods of missing hourly data were filled with the last valid CEMS measurement. As is the case with other phosphate fertilizer manufacturing plants in the area, Mulberry is slated to make changes to the facility in the near future to comply with an anticipated EPA Region 4 consent decree to reduce SO_2 emissions from the SAPs. This work is expected to significantly decrease the facility's emissions over the next few years.

There are also three ammonium phosphate fertilizer plants (DAP and GMAP), an animal feed ingredient (AFI) plant, and a sulfur handling system on-site that contribute a small amount of additional SO_2 emissions. These five units were characterized using their maximum permitted short-term emission rates.

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[9] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[10] The stack heights for all units at Mosaic New Wales are less than or equal to the GEP height for each. A summary of the modeled stack parameters for Mosaic New Wales is presented below in **Table 5**.

Table 5: Mosaic New Wales units' Mulberry DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 1 SAP	60.96	2.59	15.24	349.82	CEMS [a]
No. 2 SAP	60.96	2.59	15.24	349.82	CEMS [a]
No. 3 SAP	60.96	2.59	15.24	349.82	CEMS [a]
No. 4 SAP	60.66	2.59	15.24	349.82	CEMS [a]
No. 5 SAP	60.66	2.59	15.24	349.82	CEMS [a]
No. 1 DAP	40.54	2.13	14.93	333.60	0.016
No. 2 DAP	52.13	1.83	17.97	336.30	0.04
GMAP Plant	40.55	1.83	33.42	355.80	0.02
Sulfur Handling	12.20	1.00	1.00	330.00	2.80
AFI Plant	52.44	2.44	20.22	347.40	0.079
a. Short periods of missing data were filled with the last valid measurement.					

[8] *See* Modeling TAD, Section 5.5.
[9] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[10] *See* Modeling TAD, Section 6.1.

3.8.2. Mosaic South Pierce Modeled Units

Mosaic South Pierce is a smaller phosphate fertilizer manufacturing plant with just two SAPs on site. Again, both units were characterized using actual hourly emissions data from CEMS and actual stack heights are less than or equal to the calculated GEP stack height for each. A summary of the modeled stack parameters for Mosaic South Pierce is presented below in **Table 6**.

Table 6: Mosaic South Pierce units' Mulberry DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 4 SAP	43.89	2.74	12.10	355.37	CEMS [a]
No. 5 SAP	43.89	2.74	12.10	355.37	CEMS [a]
a. Short periods of missing data were filled with the last valid measurement.					

3.8.3. Mosaic Bartow Modeled Units

Mosaic Bartow is another phosphate fertilizer manufacturing plant in Polk County. The three SAPs at the facility were all characterized using actual hourly emissions data recorded by CEMS. Actual stack heights are less than or equal to the calculated GEP stack height for all units. A summary of the modeled stack parameters for Mosaic Bartow is presented below in **Table 7**.

Table 7: Mosaic Bartow units' Mulberry DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
No. 4 SAP	60.96	2.07	18.60	355.37	CEMS [a]
No. 6 SAP	60.96	2.07	18.60	355.37	CEMS [a]
No. 5 SAP	60.96	2.07	18.60	355.37	CEMS [a]
a. Short periods of missing data were filled with the last valid measurement.					

3.8.4. TECO Polk Modeled Units

TECO Polk is an electrical generating facility with a variety of SO_2 emission sources. The largest source is a combined-cycle combustion turbine (CCCT) that primarily fires gasified coal (syngas). There are also four simple-cycle combustion turbines (SCCT) that mostly run on natural gas and a small SAP. The SCCT units are currently under construction for conversion to CCCTs but this work will not be completed in time for inclusion in the DRR modeling demonstration. Only the SAP and an emergency flare that burns syngas during startup, shutdown, and malfunction of the solid fuel gasification system (SFGS) and/or CCCT were characterized with their maximum permitted short-term emission rates. All other units were characterized with actual hourly emissions data. Missing hourly data were substituted following the procedures outlined in 40 CFR 75.33(b). All stack heights are less than or equal to the calculated GEP stack height. A summary of the modeled stack parameters for TECO Polk is presented below in **Table 8**.

The SFGS flare typically operates less than 150 hours per year but is also the second largest source of SO_2 emissions behind the CCCT at TECO Polk. Emergency and intermittent sources are not typically modeled because, as previously mentioned, they do not operate often enough to significantly contribute to the distribution of 1-hour average concentrations. However, due to the large amount of SO_2 that this flare emits when it does operate, the Department felt it was necessary to include it in the modeling demonstration. The flare was modeled according to EPA guidance and using its maximum annual emission rate from the period 2012-2014.[11]

Table 8: TECO Polk units' Mulberry DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
CCCT No. 1	45.72	5.79	23.10	444.30	CEMS
SFGS Flare	81.50 [a]	7.86	20.00	1,272.04	2,378.0
SAP	60.65	1.98	8.84	355.40	55.37
SCCT 2A	34.75	5.50	51.80	831.90	CEMS
SCCT 2B	34.75	5.50	51.80	831.90	CEMS
SCCT 2C	34.75	5.50	51.80	831.90	CEMS
SCCT 2D	34.75	5.50	51.80	831.90	CEMS
a. Calculated effective release height: 45.72 m stack plus flare height.					

3.8.4.1. TECO Polk Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[12] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger short-term limit needs to be input to the model in order to account for this variability. The SO_2 emission limits for the TECO Polk SAP is based on a longer-term averaging period so this adjustment process was used (**Table 9**).

Table 9: Emissions variability analysis and equivalent emission rate calculations.

Unit Description	99th Percentile Rate (lb/hr)		Ratio	Permitted Limit (lb/hr)	Equivalent Limit (lb/hr)
	1-hour	Long-term			
TECO Polk SAP	-	-	0.900 [a]	49.83 24-hour	55.37
a. No hourly data available for the SAP. Ratio is a conservative estimate based on similar units in the state.					

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[13] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-057-3002 for the period January 2012 to December 2014. As shown in **Figure 1**, the monitor is 23 km northwest of Mosaic New Wales in a rural area away from any large sources of SO_2. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from Mosaic New Wales or

[11] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-92-024, *Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants) (Revised)*, (December 1992).
[12] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html
[13] *See* Modeling TAD, Section 8.1

any modeled background source. In this case, any measurement recorded when the wind direction was from 58° to 182° was removed from the background calculation as shown in **Figure 4**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 10**. As previously mentioned, it is expected that due to the location of the monitor in Hillsborough County both TECO Big Bend and Mosaic Riverview are likely well represented in the monitored data. This can be seen in **Figure 4** where there is an increase in monitored concentrations in the direction of these facilities. In addition, it can be seen that there is very little, if any, impact on the monitor by McIntosh. Given that the monitor is approximately the same distance from McIntosh as McIntosh is from Mosaic New Wales, it can be reasonably assumed that McIntosh would not have a significant impact in the modeled area.

Figure 4: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-057-3002.

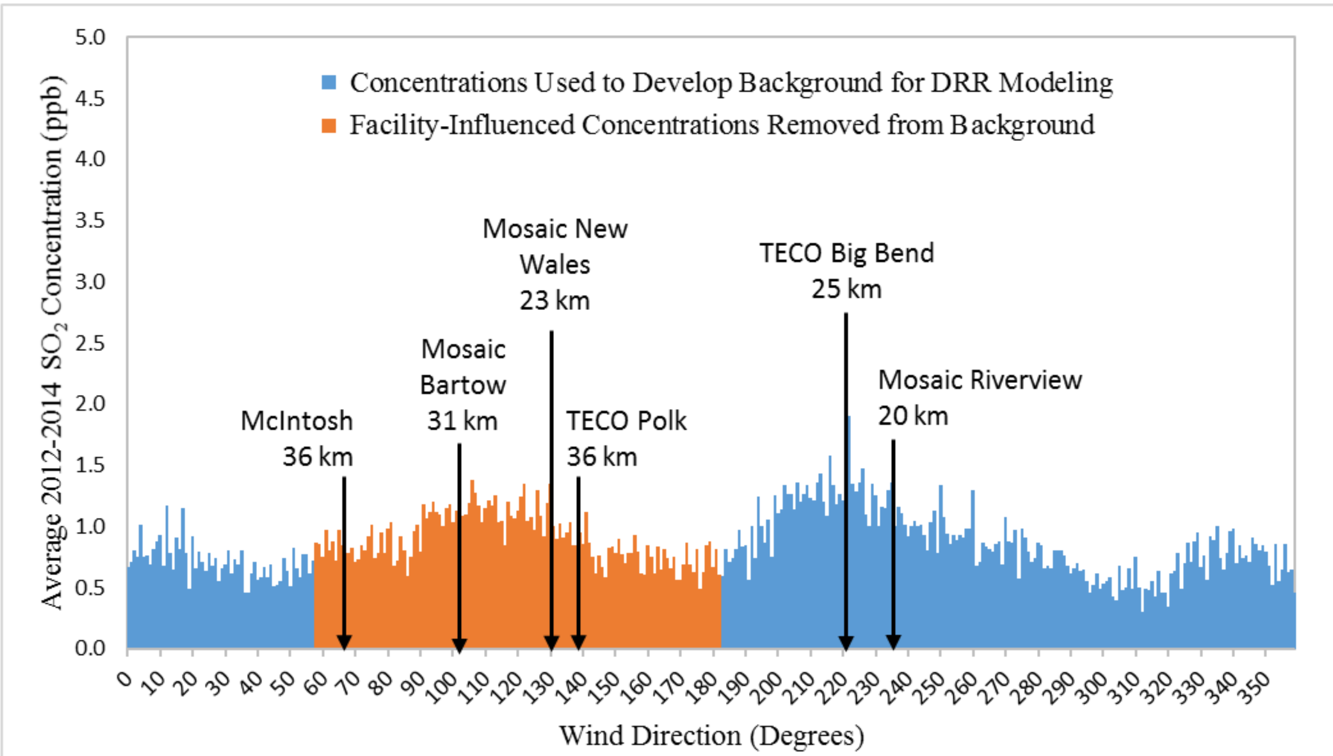


Table 10: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Mulberry DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	1.67	1.33	1.33	2.67	12:00	3.67	4.00	3.33	3.00
1:00	3.33	1.67	1.67	2.33	13:00	5.00	2.67	2.67	3.67
2:00	2.00	2.00	1.67	3.33	14:00	4.33	2.33	3.00	2.33
3:00	1.33	1.67	1.67	2.67	15:00	3.67	3.33	2.33	2.67
4:00	1.67	1.33	2.00	3.67	16:00	3.33	2.33	3.00	2.33
5:00	1.67	2.00	1.33	3.33	17:00	5.00	3.67	2.00	2.33
6:00	2.00	2.00	1.33	1.67	18:00	4.33	5.33	2.67	2.67
7:00	2.33	3.00	3.67	4.00	19:00	3.67	6.00	1.67	2.33
8:00	2.33	3.33	3.33	7.33	20:00	4.00	4.33	1.67	2.33
9:00	3.67	3.67	4.67	5.00	21:00	2.00	2.67	1.67	2.33
10:00	4.33	3.33	3.00	3.67	22:00	2.67	1.33	1.67	2.00
11:00	3.00	4.67	3.67	3.33	23:00	2.33	1.33	2.00	2.33

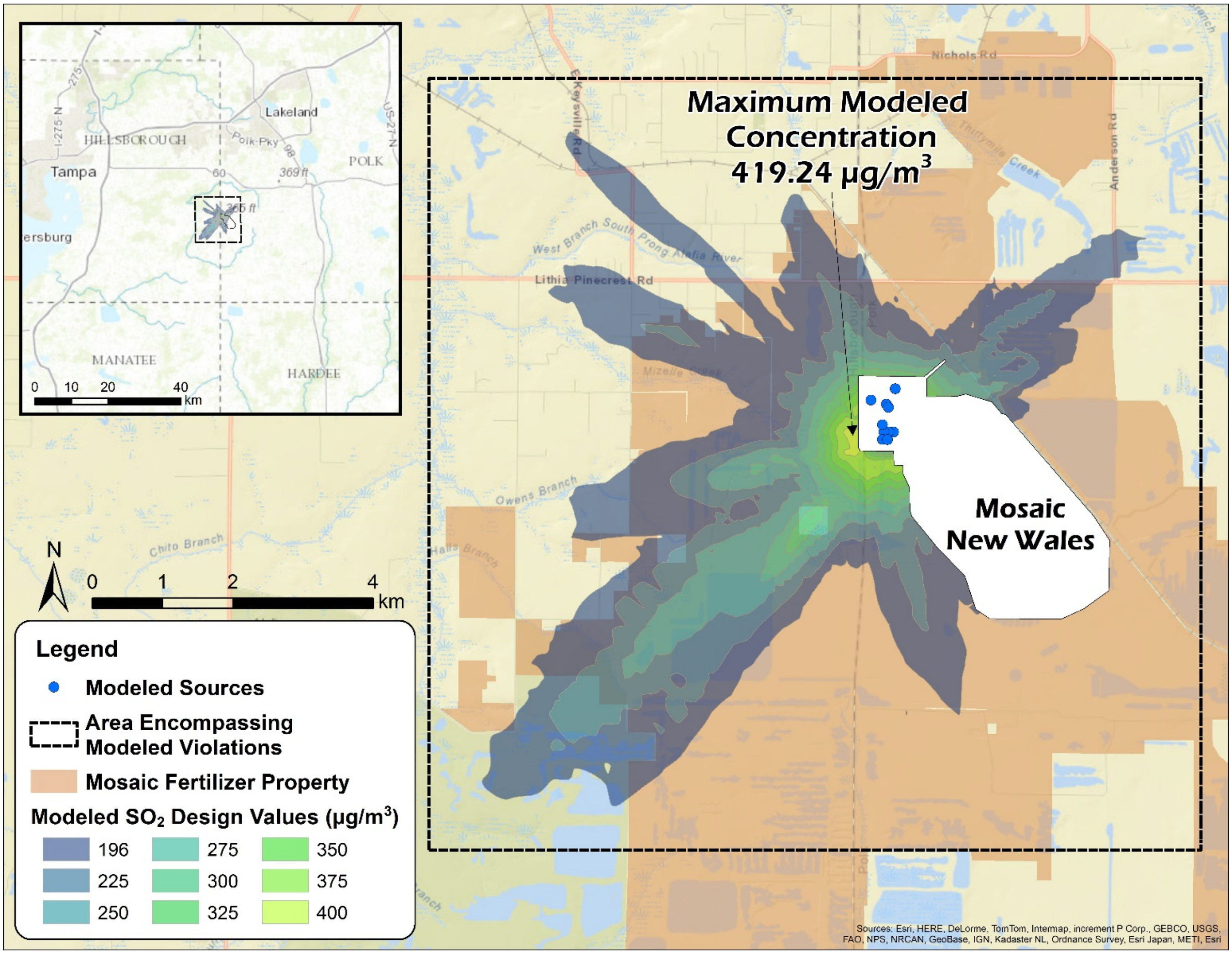
4. Modeling Summary and Results

The EPA-recommended dispersion model AERMOD was used to evaluate the area around Mosaic's New Wales Facility in Mulberry, Florida to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 1-hour SO_2 NAAQS. The results summarized in **Table 11** and **Figure 5** indicate that a limited area around Mosaic New Wales (almost entirely confined to Mosaic-owned reclaimed mining lands) in both Hillsborough and Polk Counties is likely in violation of the 2010 1-hour SO_2 NAAQS. The extent of the modeled violations can be fully encompassed by an 11-km square centered at UTM Zone 17N coordinates 395,000m E, 3,078,500m N (NAD83 datum).

Table 11: Maximum modeled SO_2 design value in the Mulberry DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (µg/m^3)				1-Hour SO_2 NAAQS	Percent of NAAQS
		Mosaic New Wales	Others	Background	Total		
396,050.78	3,078,958.25	410.40	0.78	9.01	420.19	196.4	214%

Figure 5: Modeled SO_2 design values in the Mulberry DRR modeling demonstration.



4.1. Current SO_2 Reduction Work

Mosaic Fertilizer is currently implementing SO_2 reduction projects at its New Wales, Bartow, and South Pierce facilities in connection with settlement discussions between Mosaic Fertilizer and EPA Region 4, which are expected to be memorialized in a consent decree. Mosaic recently received a permit[14] from the Department authorizing upgrades to the catalysts in the five SAPs at the New Wales Facility. These catalyst upgrades will enable the New Wales Facility to meet the new, significantly more stringent SO_2 emission limits that will be imposed by the anticipated consent decree. Included in the permit is an expedited schedule for the implementation of these upgrades beginning in January 2017 (**Table 12**). In the first quarter of 2017, the Department expects to finalize emission limits for the New Wales Facility based on this work that will result in modeled attainment for the Mulberry area. The Department will provide a supplemental submittal to EPA detailing these efforts.

[14] *See* Air Construction Permit No. 1050059-101-AC, issued by the Florida Department of Environmental Protection on January 4, 2017, attached to this Modeling Report as Appendix K-1.

Table 12: Mosaic New Wales facility catalyst upgrade schedule.

Unit	Catalyst Upgrade Date
SAP 1	January 2018 (completed by 03/31/18)
SAP 2	January 2017 (completed by 03/31/17)
SAP 3	June 2018 (completed by 08/31/18)
SAP 4	January 2019 (completed by 03/31/19)
SAP 5	June 2019 (completed by 08/31/19)

Appendix K-1

Mosaic Fertilizer, LLC – New Wales Facility

Air Construction Permit No. 1050059-101-AC

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

PERMITTEE

New Wales Facility
Mosaic Fertilizer, LLC
13830 Circa Crossing Drive
Lithia, Florida 33547

Authorized Representative:
Mr. Joseph Kline, General Manager- New Wales

Permit No. 1050059-101-AC
Permit Expires: March 1, 2020
New Wales Facility
Catalyst Change/Augmentation
Sulfuric Acid Plant Nos. 1 to 5
Polk County

PROJECT

This is the final air construction permit to change and augment the convert catalyst in Sulfuric Acid Plant Nos. 1 to 5 (SAP Nos. 1 to 5) at the New Wales Facility. In addition, the permit forbids the use of No. 6 fuel oil in DAP Plant No. 2 - East Train, DAP Plant No. 2 - West Train, the GMAP Plant, DAP Plant No. 1 (EU 009) and the AFI Granulation Plant. The only authorized fuel going forward for these units will be natural gas.

The New Wales Facility is an existing phosphate fertilizer manufacturer categorized under Standard Industrial Classification Number (No.) 2874. The existing facility is in Polk County at 3095 Hwy 640 W in Mulberry, Florida. The UTM coordinates are Zone 17, 396.67 kilometers (km) East and 3079.3 km North. Latitude is: 27º 50` 3.7065" North; and, Longitude is: 82º 2` 57.3205" West.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix CF of Section 4 of this permit

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction requirements for major new source review in Chapter 62-212, F.A.C.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

For:
Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

SA/dlr

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this final air permit package (including the Final Determination and Final Permit with Appendices) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Mr. Joseph Kline, Mosaic Fertilizer, LLC: joseph.kline@mosaicco.com
Mr. Rama Iyer, P.E., Mosaic Fertilizer, LLC: rama.iyer@mosaicco.com
DEP SWD: SWD_Air_Permitting@dep.state.fl.us
Mr. Steve Morgan, DEP SWD: Steve.Morgan@dep.state.fl.us
EPA Region 4 NSR/PSD: NSRsubmittals@epa.gov
Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

FACILITY DESCRIPTION

This existing Mosaic New Wales facility consists of five double absorption sulfuric acid plants; three phosphoric acid plants; a phosphoric acid clarification and storage area; three diammonium phosphate (DAP) plants; a monoammonium phosphate (MAP) plant; a granular monoammonium phosphate (GMAP) plant; an animal feed ingredients (AFI) plant; a molten sulfur storage & handling system; a limestone storage silo/rock grinding operation; and a phosphogypsum stack. This plant started operations in 1975. The emission units affected by this permitting action is highlighted in yellow.

LIST OF EMISSION UNITS.

EU No.	a. Brief Description
Regulated Emissions Units	
002	No. 1 Sulfuric Acid Plant
003	No. 2 Sulfuric Acid Plant
004	No. 3 Sulfuric Acid Plant
042	No. 4 Sulfuric Acid Plant
044	No. 5 Sulfuric Acid Plant
008	Phosphoric Acid Plant (East)
017	Phosphoric Acid Plant (West)
039	Phosphoric Acid Plant No. 3
053	Phosphoric Acid Clarification and Storage Area
048	30% Clarification Area (Area 10)
009	DAP Plant No. 1
045	DAP Plant No. 2 - East Train
046	DAP Plant No. 2 - West Train
047	DAP Plant No. 2 - West Product Cooler
056	DAP Plant No. 2 - East Product Cooler
011	MAP Prill Plant
055	MAP Plant Cooler
015	Animal Feed Ingredients (AFI) Shipping/Truck Loadout
023	AFI Storage Silos (3) - North Side
024	AFI Storage/Shipping/Rail Car Loading
025	AFI Limestone Storage Silos (2)
026	AFI Silica Storage Bin
027	AFI Granulation Plant
086	AFI Defluorination Batch Tanks
028	AFI Storage Silos (3) - South Side
052	AFI Limestone Feed Bin
030	Soda Ash Unloading System
060	7,500 Ton Rail Storage Molten Sulfur Storage Tank
062	15,000 Ton Molten Sulfur Storage Tank
063	1,500 Ton Truck Unloading Pit, Sulfur Pit (North)

067	1,500 Ton Truck Unloading Pit, Sulfur Pit Front Vent
068	1,500 Ton Truck Unloading Pit, Sulfur Pit Rear Vent
064	350 Ton Truck Unloading Pit, Sulfur Pit (South)
069	350 Ton Truck Unloading Pit, Sulfur Pit Vent
065	800 Ton Railcar Unloading Pit
066	200 Ton Molten Sulfur Transfer Pit
080	1 Molten Sulfur Loading Station
070	Limestone Storage Silo/Rock Grinding
071	Phosphogypsum Stack
078	GMAP Plant
087	Existing Emergency CI RICE $\leq$ 500 HP
093	New Emergency CI ICE
Unregulated Emissions Units and Activities	
072	Facility-Wide Fugitive Emissions - SO_2, SO_3, SAM and NOx emissions from the 1, 2, 3, 4 and 5 Sulfuric Acid Plants (SAPs) - Fluoride emissions from the Phosphoric Acid Plants (PAPs) East and West and No. 3 PAP - Fluoride, NH_3, PM emissions from Diammonium Phosphate (DAP), Monoammonium Phosphate (MAP) and Granular Monoammonium Phosphate (GMAP) Plants. - Hydrogen Fluoride (HF) emissions from the Phosphogypsum Stack and Cooling Pond *Note: For this emission unit, Annual Operation Report (AOR) emissions estimates are required only for Hydrogen Fluoride emissions from the Phosphogypsum Stack and Cooling Pond.*
012	GMAP Plant Storage Building

PROPOSED PROJECT

The purpose of the proposed project is to authorize the changing and augmentation the converter catalyst in SAP Nos. 1 to 5 while eliminating the use of No. 6 fuel oil Diammonium Phosphate (DAP) Plant No. 1, DAP Plant No. 2 - East Train, DAP Plant No. 2 - West Train, the Granular Monoammonium Phosphate (GMAP) Plant, and the Animal Feed Ingredients (AFI) Granulation Plant.

FACILITY REGULATORY CLASSIFICATION

- The existing facility is a major source of HAP.
- The existing facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The existing facility is a major stationary source in accordance with Rule 62-212.400 (PSD), F.A.C.
- This facility does not operate units subject to the acid rain provisions of the Clean Air Act (CAA)
- The facility operates units that are subject to the New Source Performance Standards (NSPS) at 40 Code of Federal Regulations, Part 60 (40 CFR 60), and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR 63.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The mailing address for the Office of Permitting and Compliance is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Compliance Authority, the Department's Southwest District (SWD). The Compliance Authority's mailing address is:

   Florida Department of Environmental Protection
   Southwest District Office
   Air and Solid Waste Permitting Program
   13051 North Telecom Parkway
   Temple Terrace, Florida 33637-0926
   Telephone: 813-470-5700
   E-mail: SWD_Air_Permitting@dep.state.fl.us

3. Appendices: The following Appendices are attached as a part of this permit and the permittee must comply with the requirements of the appendices:

   a. Appendix A. Citation Formats and Glossary of Common Terms;

   b. Appendix B. General Conditions;

   c. Appendix C. Common Conditions and

   d. Appendix D. Common Testing Requirements

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Title V Permit: This permit authorizes specific modifications and/or new construction on the affected emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted emissions units. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

8. Objectionable Odors Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C.]

   {Note: An objectionable odor is defined in Rule 62-210.200(Definitions), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.}

9. Unconfined Emissions of Particulate Matter: No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions. Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter. General reasonable precautions include the following: a. Paving and maintenance of roads, parking areas and yards; b. Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing; c. Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities; d. Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulates from becoming airborne; e. Landscaping or planting of vegetation; f. Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter; g. Confining abrasive blasting where possible; and h. Enclosure or covering of conveyor systems. [Rule 62-296.320(4)(c), F.A.C.]

PREVIOUS APPLICABLE REQUIREMENTS

10. Effect on Other Permits: The conditions of this permit supplement and or replace all previously issued air construction and operation permits for this emissions unit. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions, rules and regulations. [Rule 62-4.070(1) & (3), Reasonable Assurance, F.A.C.]

A. SAP Nos. 1 to 5 (EU No. 002, 003, 004, 042 and 044)

This subsection of the permit addresses the following emission units:

EU No.	Brief Description
002	No. 1 Sulfuric Acid Plant
003	No. 2 Sulfuric Acid Plant
004	No. 3 Sulfuric Acid Plant
042	No. 4 Sulfuric Acid Plant
044	No. 5 Sulfuric Acid Plant

Sulfur dioxide emissions from SAPs are controlled by a double absorption system technology with vanadium and/or cesium catalyst in the converters and the use of good combustion practices and best operational practices to minimize excess emissions during startup and shutdown. SAP Nos. 2, 3 and 4 each utilizes a heat recovery system (HRS) absorption tower instead of a traditional interpass absorption tower. For all SAPs, Sulfuric Acid Mist (SAM) emissions are controlled by Brownian diffusion type candles in the mist eliminator section in the final absorption tower (FAT). SAP Nos. 1, 2 and 3 produce a maximum of 3,400 tons per day of sulfuric acid (100% H_2SO_4 basis) while SAP Nos. 4 and 5 produce a maximum of 2,900 tons per day of sulfuric acid (100% H_2SO_4 basis). This project will not change the production capacity of any SAP nor will any permitted emission limits be changed.

{Permitting note: This emission unit is regulated under NSPS - 40 CFR 60, Subpart H, Standards of Performance for Sulfuric Acid, adopted and incorporated by reference in Rule 62-204.800(7)(b)10., F.A.C.; Rule 62-212.300, F.A.C., General Preconstruction Review Requirements; Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD); Rule 62-296.320, F.A.C., General Pollutant Emission Limiting Standards; and Rule 296.402, F.A.C., Sulfuric Acid Plant.}

Authorized Physical Changes

1. Converter Catalyst Replacement and Augmentation: In accordance with the work schedule specified in **Condition 2** of this subsection, the permittee shall change/augment the convert catalyst in SAP Nos. 1 to 5. The permitted capacity of each SAP after the change/augmentation of the converter catalyst shall remain unchanged and no emission limits shall be increased. Within 45 days of commencing operation following the turnaround (including catalyst installation and arrangement for each SAP), the permittee shall provide the following information to the Division and the Compliance Authority: the type of catalyst; the amount of catalyst and the catalyst arrangement within the convertor.

   [Rules 62-4.070(1) and (3) and 62-4.080, F.A.C.]; and Application No. 1050059-101-AC

2. Work Schedule: The permittee shall conduct the required work in accordance with the following schedule, which is based on the facility's planned turnaround.

Turnaround Date	SAP Number, EU No.	Modification
January 2017 (completed by 03/31/17)	SAP No. 2, EU 003	Catalyst Change/Augmentation
January 2018 (completed by 03/31/18)	SAP No. 1, EU 002	Catalyst Change/Augmentation
June 2018 (completed by 08/31/18)	SAP No. 3, EU 004	Catalyst Change/Augmentation
January 2019 (completed by 03/31/19)	SAP No. 4, EU 042	Catalyst Change/Augmentation
June 2019 (completed by 08/31/19)	SAP No. 5, EU 044	Catalyst Change/Augmentation

   [Application No. 1050059-101-AC]

Notifications

3. Work Status: The permittee shall notify the Compliance Authority within 5 business days prior to starting the catalyst replacement/augmentation work on each SAP. The permittee shall notify the Compliance Authority within 5 business days after the turnaround (including catalyst installation and arrangement for each SAP) is completed. [Rules 62-4.070(1) and (3) and 62-4.080, F.A.C.; and Application No. 1050059-101-AC]

B. DAP Plant No. 2 - East Train, DAP Plant No. 2 - West Train, the GMAP Plant, DAP Plant No. 1 and the AFI Granulation Plant (EU No. EU 045, 046, 078, 009 and 027)

This subsection of the permit addresses the following emission units:

EU No.	Brief Description
045	DAP Plant No. 2 - East Train
046	DAP Plant No. 2 - West Train
078	GMAP Plant
009	DAP Plant No. 1
027	AFI Granulation Plant

The DAP Plant No. 2 consist of two trains, each of them identical process flow diagram-wise, an East Train and a West Train. Each train produces the granular ammoniated phosphate products monoammonium phosphate (GMAP), diammonium phosphate (DAP) and MicroEssentials™ (MESZ, MES15, MES10, etc.) at a design maximum capacity of 170 tons per hour (TPH) of these products which approximately equates to a nominal 80 tons diphosphorus pentoxide (P_2O_5) per hour feed input. The Granular Monoammonium Phosphate (GMAP) Plant has a maximum production rate of 150 TPH of GMAP (75 TPH P_2O_5 feed). GMAP is made by reacting anhydrous ammonia and phosphoric acid in a covered reaction tank with the further addition of ammonia and acid in a granulator. The granulated product is then dried in a rotary drier. The dried product is further processed by screening, milling (oversized), and reprocessing (undersized). The properly sized product is conveyed to the storage building for eventual load out. The Animal Feed Ingredient (AFI) Granulation Plant produces 120 TPH of animal feed.. The Diammonium Phosphate (DAP) Plant No. 1 produces monoammonium phosphate (MAP) or diammonium phosphate (DAP) at a maximum rate of 150 TPH.

Allowable Fuels

1. Natural Gas: TDAP Plant No. 2 - East Train, DAP Plant No. 2 - West Train, the GMAP Plant, DAP Plant No. 1 and the AFI Granulation Plant shall henceforth be fired on natural gas. The use of No. 6 fuel oil in these emission units is forbidden. This condition with regards to the allowable fuel for these emission unit supersedes all previous conditions with respect to allowable fuels in previous air construct permits for these emissions units. [Application No. 1050059-101-AC]

Appendix L
SO_2 Data Requirements Rule Modeling Report
Putnam County, Florida

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

Table of Contents

1. Background

On August 21, 2015, the U.S. Environmental Protection Agency (EPA) promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which requires states to evaluate compliance with the 2010 one-hour sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) in areas surrounding certain large SO_2 sources. Pursuant to the DRR, states can choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

2. Overview

Seminole Electric Cooperative (SEC) owns and operates Seminole Generating Station (SGS), an electrical generating facility, in Palatka, Florida under Title V Permit No. 1070025-023-AV issued by the Florida Department of Environmental Protection (Department). SGS emitted 13,017 tons of SO_2 from its two electric generating boilers in 2014, exceeding the DRR applicability threshold of 2,000 tons.[1] The Department has chosen to characterize the area around SGS in Putnam County, Florida using air dispersion modeling following the approach outlined in the Department's modeling protocol submitted to EPA Region 4 on July 1, 2016, and in compliance with all applicable EPA rules and guidance including *Appendix W to 40 CFR Part 51: The Guideline on Air Quality Models*[2] (Appendix W) and the *SO_2 NAAQS Designations Modeling Technical Assistance Document*[3] (Modeling TAD). This report summarizes the Department's completed modeling efforts that indicate Putnam County is in attainment of the 2010 SO_2 NAAQS.

3. Dispersion Modeling

3.1. Model Selection

EPA recommends the use of the American Meteorological Society/Environmental Protection Agency Regulatory Modeling System (AERMOD), including the pre-processing programs AERMET, AERMINUTE, AERMAP, and AERSURFACE, for all regulatory modeling of inert pollutants in the near field.[4] Accordingly, the Department utilized the latest version of AERMOD (v.15181) using the regulatory default options for characterizing the area around SGS for the DRR.

3.2. Modeled Facilities

SGS is the only DRR-applicable facility in Putnam County. There are, however, a variety of small nearby SO_2 sources in Putnam County. Appendix W states, and the Modeling TAD reiterates, that the number of sources to explicitly model should be small except in unusual cases. An analysis of emissions data and spatial proximity was performed for all nearby sources to determine which sources to explicitly include in the modeling demonstration. All sources within 20 km of the primary facility that had 2014 SO_2 emissions of at least 100 tons were automatically included. All other sources within 35 km were then subjected to a widely used screening procedure known as 20d. This method suggests that if a source's annual emissions in tons (Q) is less than its distance from the primary source in kilometers (d) multiplied by 20, then it is unlikely to have a significant concentration gradient in the area of concern.

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[1] *See* 40 CFR 51.1202.
[2] *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.
[3] SO_2 National Ambient Air Quality Standards Designations Modeling Technical Assistance Document, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.
[4] *See* Appendix W to 40 CFR 51, Section 3.2.

Finally, for all sources not already identified for inclusion, the Department considered emissions data, stack parameters, and spatial proximity (both to other sources and the background monitor), and used professional judgment to determine whether they should be included.

The Department determined that the Georgia-Pacific Palatka Pulp & Paper Mill (GP) located approximately 7 km to the southwest is the only other source of SO_2 emissions that has the potential to cause a significant concentration gradient in the area of interest (**Figure 1**). All other sources within 35 km of SGS emitted less than 1 ton of SO_2 in 2014 (**Table 1**) and are represented in the added monitored background concentrations discussed in **Section 3.9**.

Figure 1: 2014 SO_2 emission sources in Putnam County, Florida.

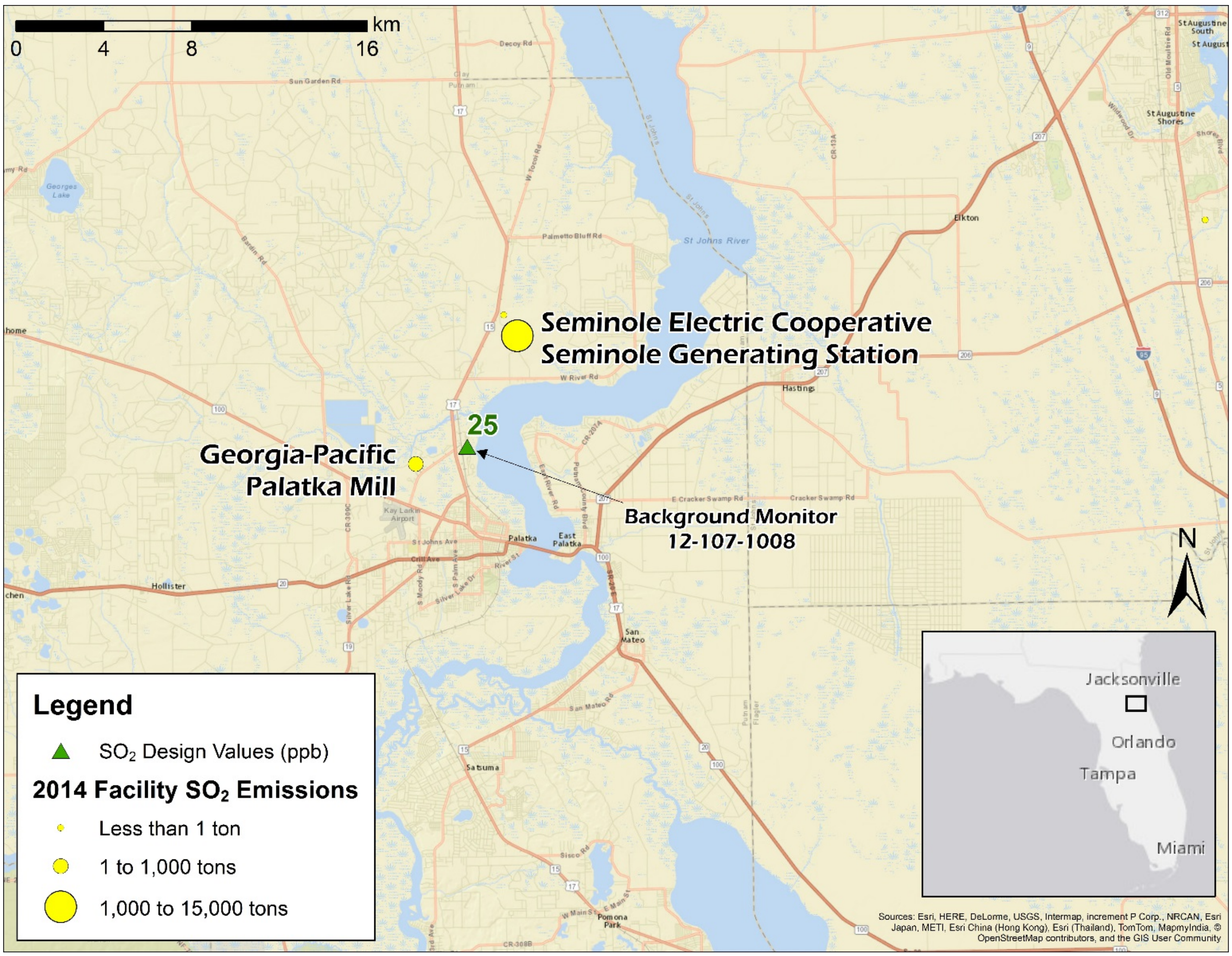


Table 1: All 2014 sources of SO_2 emissions within 35 km of Seminole Electric's SGS Plant.

Facility ID	Facility Name	Distance from SGS (km) (d)	20d	2014 SO_2 Emissions (tons) (Q)	Q > 20d
107-0025	Seminole Electric SGS Plant [a]	0	0	13,016.59	Yes
107-0039	Continental Palatka	1	20	0.56	No
107-0005	Georgia Pacific Palatka Mill [a]	7	140	630.85	Yes
109-0447	SAPA Extrusions St. Augustine	32	640	0.10	No

a. Explicitly modeled facility.

3.3. Meteorological Input Data

Florida has a relatively dense network of high-quality National Weather Service (NWS) Automated Surface Observing System (ASOS) stations for use in air dispersion modeling demonstrations. Hourly meteorological surface observations for 2012-2014 from the nearest representative NWS ASOS station at Jacksonville International Airport (JAX) were processed with AERMET v.15181. The raw data were retrieved from the National Climatic Data Center's (NCDC) file transfer protocol site in the standard integrated surface hourly data format (ISHD) along with the TD-6405 ASOS 1-minute wind data. Upper air parameters were derived from twice daily radiosonde observations (RAOB) from the JAX NWS atmospheric sounding location downloaded from the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL) website. Missing 12Z soundings were filled with archived modeled soundings from NOAA's Air Resources Laboratory (ARL) website prior to processing in AERMET.

Default options and settings were used when processing AERMET with the exception of the following:

- ASOS1MIN – Include ASOS 1-minute wind data processed by AERMINUTE v.14337
- THRESH_1MIN 0.5 – Minimum wind speed threshold: 0.5 m/s
- METHOD WIND_DIR RANDOM – Wind directions are randomized to correct rounding
- NWS_HGT WIND 10 – Sets ASOS anemometer height to 10 m

EPA has established criteria for the use of meteorological data for modeling purposes that states that meteorological data should be 90% complete on a quarterly basis.[5] The 2012-2014 JAX dataset satisfies this completeness requirement.

3.3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station. The Department used the recommended AERMET preprocessing program AERSURFACE v.13016 to extract estimates of the Bowen ratio, surface roughness, and albedo from the 1992 National Land Cover Dataset (NLCD) for Florida. Per EPA guidance, because the Bowen ratio is dependent upon surface moisture and precipitation patterns, each year was classified as wet, dry, or average by comparing the annual precipitation to the 1981-2010 climatological record at the site. The default seasonal categories for each month were changed to reflect the subtropical climate of Putnam County. All inputs to AERSURFACE are summarized in **Table 2**.

[5] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/R-99-005, *Meteorological Monitoring Guidance for Regulatory Modeling Applications*, (February 2000).

Table 2: AERSURFACE inputs for 2012-2014 JAX AERMET dataset.

Parameter	Value
Coordinate System	LATLON
Meteorological Station Latitude (Degrees)	30.4953
Meteorological Station Longitude (Degrees)	-81.6937
Horizontal Datum	NAD83
Radius of Study Area for Surface Roughness (km)	1
Number of Sectors	12
Temporal Resolution	Monthly
Continuous Snow Cover for at Least One Month	No
Late Autumn or Winter Without Snow	1,2
Transitional Spring	3,4
Midsummer	5,6,7,8,9
Autumn	10,11,12
Located at an Airport	Yes
Arid Region	No
Average Surface Moisture 2012	Average
Average Surface Moisture 2013	Dry
Average Surface Moisture 2014	Wet

3.3.2. Site Representativeness

The surface characteristics were also extracted for the area around SGS so that a comparison could be done to determine if the meteorological data recorded at JAX are representative of the meteorological conditions in the modeling domain. The resulting average surface characteristics at both sites are similar and are summarized in **Table 3**. Due to Florida's uniform flat topography, the most important geographical influence on mesoscale meteorological conditions is proximity to the coastline. JAX and SGS are approximately 30 km and 35 km from Florida's Atlantic Coast respectively. Based on this analysis, while the JAX meteorological dataset is not from the closest ASOS station (Daytona Beach, Gainesville, and Craig Municipal are slightly closer), it was determined to be the most representative of the domain for this modeling demonstration.

Table 3: Average surface characteristics from AERSURFACE for Putnam County.

Location	Albedo	Bowen Ratio	Surface Roughness (z_o)
Jacksonville International Airport	0.14	0.44	0.058
Seminole Electric SGS Plant	0.14	0.37	0.144

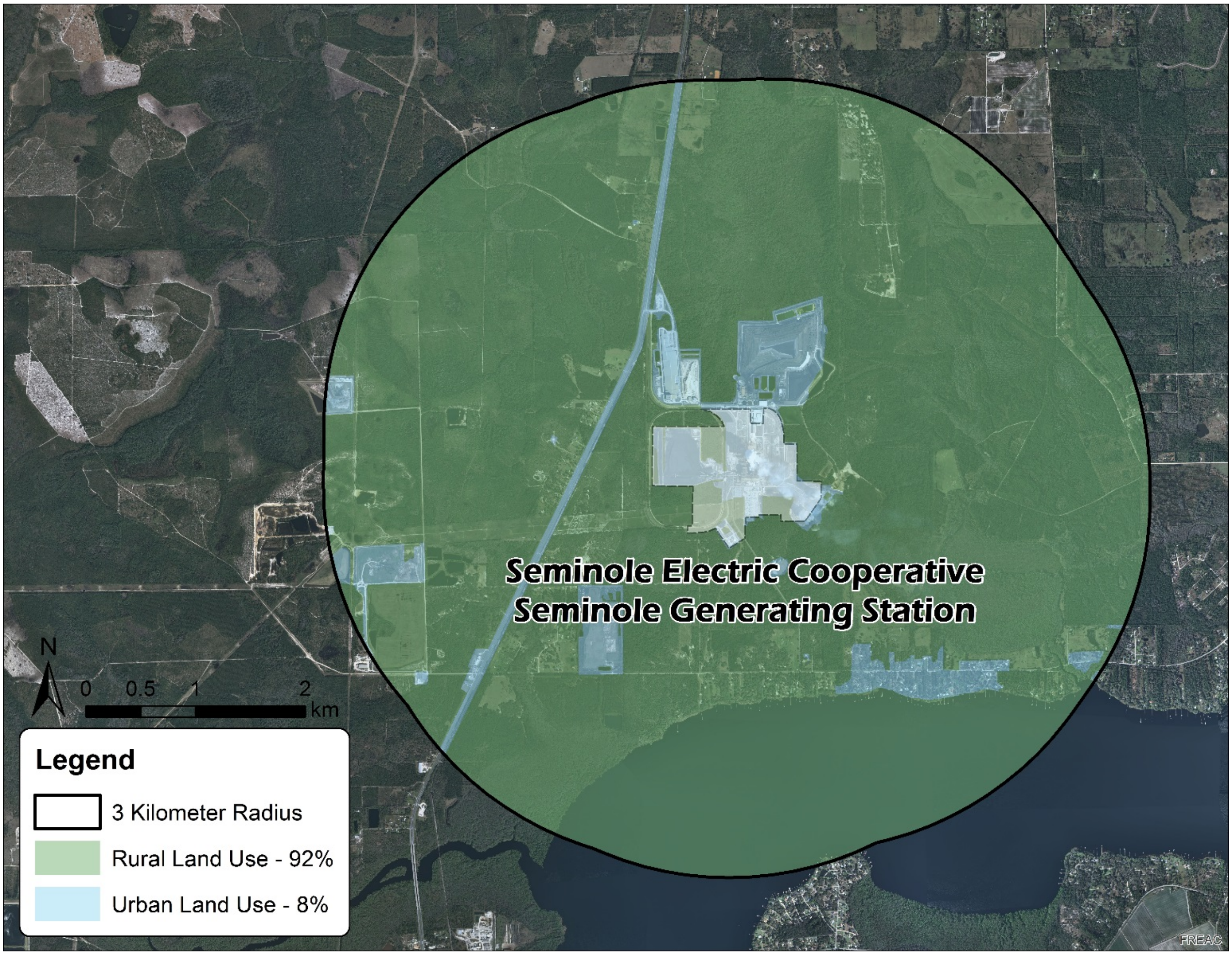
3.4. Rural/Urban Determination

AERMOD contains different dispersion coefficients for rural and urban settings. Appendix W outlines two methods for determining whether the area should be considered rural or urban. The Department chose the land-use classification approach employing Auer's method.[6] The Auer method requires an analysis of the land use within a 3 km radius around a facility to determine whether the majority of the land is classified as rural or urban. If more than fifty percent of the area consists of Auer land-use industrial, commercial, or residential land types, then urban dispersion coefficients are used in the

[6] Auer, Jr., A.H. "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, 17:636-643 (1978).

model; otherwise, rural dispersion coefficients are used. As shown in **Figure 2** below, rural land use constitutes a majority (92%) of the 3 km radius around SGS.

Figure 2: Land use classification around Seminole Electric's SGS Plant in Putnam County.



3.5. Terrain Elevations

Terrain elevations were determined using the AERMOD terrain preprocessor AERMAP v.11103. AERMAP extracted elevations and hill heights for all sources, buildings, and receptors from the United States Geological Survey (USGS) National Elevation Dataset (NED) with a 10 m horizontal resolution.

3.6. Receptor Placement

According to EPA's March 2011 Memo *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* and reiterated in the Modeling TAD, it is expected that the distance from the source to the area of the maximum ground-level 1-hour impact of SO_2 will be approximately 10 times the source release height.[7] Based on this guidance,

[7] Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/scram/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

the Department developed a uniform method for receptor grid placement for all DRR sources in Florida. As a conservative approach, a dense grid of receptors was placed from the primary facility's tallest stack (if multiple stacks are the tallest, the most centrally located was chosen) to the greater of 20 times the tallest stack height at the primary facility or 2500 m. Receptor density then decreased in 2500 m intervals. Receptors located within SGS's fenceline were removed and receptors were placed with 50 m spacing along the fenceline.

Initial modeling indicated that high concentrations were found in an area of insufficiently dense receptor placement near GP. Accordingly, an additional nested grid of receptors with 100 m spacing was placed in this area to fully resolve the highest concentrations. The Modeling TAD describes a process for removing receptors placed in areas that it would not be feasible to place an actual monitor, such as bodies of water, that is unique to the DRR. The Department chose not to employ this process and instead included receptors in all areas of ambient air within 9.5 km of SGS. The receptor grid used in the Putnam County DRR modeling demonstration is described below in **Table 4, Table 5,** and **Figure 3.**

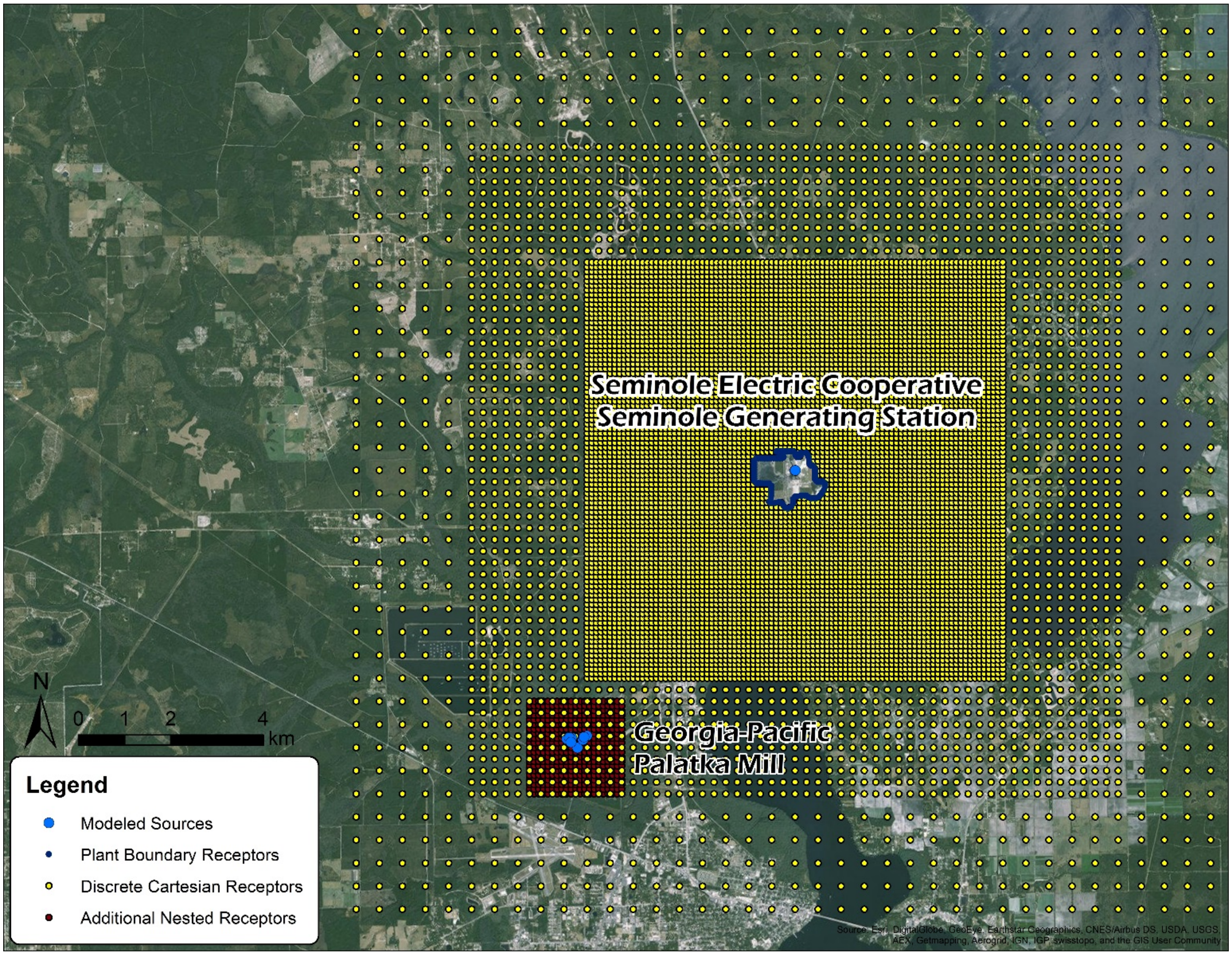
Table 4: Putnam County DRR modeling demonstration receptor grid description.

Receptor Grid Parameter	Value/Description
Description of Unit at Grid Center	Boiler 1
Unit UTM Zone	17N
Unit UTM Easting (m)	438,836.85
Unit UTM Northing (m)	3,289,451.52
Actual Stack Height (m)	211.8
Expected Distance to Max Concentration (m)	2,118
20 Times Stack Height (m)	4,236
100 m Receptor Spacing - Extent from the Origin (m)	4,500
250 m Receptor Spacing - Extent from the Origin (m)	7,000
500 m Receptor Spacing - Extent from the Origin (m)	9,500
Plant Boundary Receptor Spacing (m)	50
Total Receptors	10,866

Table 5: Putnam County DRR modeling demonstration nested receptor grid description

Receptor Grid Parameter	Value/Description
UTM Zone	17N
SW Corner UTM Easting (m)	433,086.80
SW Corner UTM Northing (m)	3,282,452.00
Total East-West Extent (m)	2,000
Total North-South Extent (m)	2,000
Receptor Spacing (m)	100
Total Receptors	441

Figure 3: Receptor grid placement for the Putnam County DRR modeling demonstration.



3.7. Building Downwash

Building downwash effects on emitted plumes were simulated using the Plume Rise Model Enhancements (PRIME) algorithm v.04274 in AERMOD. PRIME predicts concentrations in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume, and reemitted to the far wake as a volume source. Fourteen significant structures onsite at SGS and 25 structures at GP were included in the downwash analysis. Direction-specific downwash parameters for all stacks at SGS were calculated and input to AERMOD by EPA's Building Profile Input Program for PRIME (BPIPPRM).

3.8. Source Parameters and Emissions Data

The Department chose to use maximum permitted short-term emission rates to characterize every explicitly modeled source in Putnam County except for two units at GP. The hourly data for all units were requested from the facilities for the years 2012-2014 by the Department in July 2015. All data received were thoroughly checked for accuracy and representativeness. The hourly data were then included in the modeling demonstration using the AERMOD keyword HOUREMIS for the two GP units that were characterized with actual emissions data. A variety of small, intermittent emissions sources including fire pumps and emergency generators at both facilities were not included because their

emissions are not "continuous or frequent enough to contribute significantly to the annual distribution of maximum daily 1-hour concentrations."[8]

3.8.1. SGS Modeled Units

SO_2 emissions from SGS are from two predominantly coal-fired electric generating boilers. These units emit through a common chimney with closely proximate flues in which the plumes are scrubbed of SO_2 emissions via a flue-gas desulfurization (FGD) system. These separate flues were modeled as a single merged stack with an equivalent exit diameter due to the nearly instantaneous merging of the plumes upon exit from the individual flues. The equivalent exit diameter was calculated by determining the diameter of a circle with a cross-sectional area equal to that of the two flues summed. This procedure is necessary in order to replicate the actual dispersion of the combined plume. When two plumes merge in the atmosphere, the combined heat content increases the plume's buoyancy, which increases dispersion. AERMOD cannot simulate the interaction of individual plumes because it calculates dispersion for each modeled stack separately and then sums the resulting concentrations from each at the end. This can result in unrealistically high modeled concentrations. SO_2 emissions from these units are monitored by in-stack continuous emissions monitoring systems (CEMS).

Traditional modeling demonstrations require the use of the calculated good engineering practice (GEP)[9] stack height for all sources in the model. The DRR is different in that the purpose is to replicate actual ambient concentrations of SO_2. As such, the use of actual stack heights for those stacks that exceed their calculated GEP height is permitted if the source is characterized using actual hourly emissions data.[10] The stack height is higher than the calculated GEP height so the lower GEP height was used. A summary of the modeled stack parameters for SGS is presented below in **Table 6**.

Table 6: SGS units' Putnam County DRR modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate (lb/hr)
Boiler 1	205.8	8.1	18.3	326.5	2,792.83
Boiler 2	205.8	8.1	18.3	326.5	2,543.26
Boilers 1 & 2 Merged Stack	205.8 [a]	11.4	18.3	326.5	5,336.09
a. The actual stack height is 211.8 m.					

3.8.1.1. Modeled Emission Rate Averaging Times

If a compliance averaging time for an emission limit is longer than the averaging time for the applicable NAAQS (here, one hour), EPA guidance provides a method of calculating an "equivalent" longer-term emission limit where appropriate.[11] The adjustment method suggested by EPA is to scale the longer-term average emission limit by the ratio of each source's historic 99th percentile one-hour average emission rate to its 99th percentile longer-term average emission rate. The premise of this method is that a longer-term emission limit allows a higher level of emissions variability than the short-term limit. Thus, a larger

[8] *See* Modeling TAD, Section 5.5.
[9] Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-450/4-80-023R, *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, (June 1985).
[10] *See* Modeling TAD, Section 6.1.
[11] Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, available at: http://www.epa.gov/ttn/oarpg/t1pgm.html

short-term limit needs to be input to the model in order to account for this variability. The SO_2 emission limits for both SGS units are based on 30-day averaging periods so this adjustment process was used. The analysis was performed using CEMS data from 2012-2014 and is summarized in **Table 7**.

Table 7: Emissions variability analysis and equivalent emission rate calculations for SGS units.

Unit Description	99th Percentile Rate (lb/hr) 1-hr Average	30-day Average	Ratio 30-day/1-hr	Permitted 30-day Average Limit (lb/hr)	Equivalent 1-hr Average Limit (lb/hr)
Boiler 1	408.34	262.15	0.642	1,793.00	2,792.83
Boiler 2	416.03	293.36	0.705	1,793.00	2,543.26

3.8.2. GP Modeled Units

GP is a Kraft pulp and paper mill that has ten SO_2-emitting units on site. For eight of the ten units, the maximum permitted short-term emission rate was input to the model (**Table 8)**. For the remaining two units, the No. 4 Combination Boiler and the No. 4 Recovery Boiler, a combination of recorded CEMS data and calculated actual hourly emissions from 2012-2014 were input (Table 9**)**. Actual stack heights are less than or equal to the calculated GEP stack height for all units.

Table 8: GP units included in the Putnam County DRR modeling demonstration using permitted emission rates.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	Permitted SO_2 Emission Rate (lb/hr)
No. 4 Lime Kiln	40.17	1.34	21.30	344.80	9.1
No. 4 Smelt Dissolving Tanks	62.80	1.50	10.05	344.26	0.35
No. 4 Smelt Dissolving Tanks	62.80	1.50	10.05	344.26	0.35
Thermal Oxidizer	76.20	0.65	18.50	344.30	31.3
No. 3 TPM Yankee Dryer	20.70	1.12	24.05	409.45	0.042
No. 4 TPM Yankee Dryer	17.68	1.18	21.57	409.45	0.042
No. 5 TPM Yankee Dryer	22.84	1.30	21.90	505.37	0.042
No. 7 Package Boiler	18.30	1.83	11.56	672.00	0.14

Table 9: GP units included in the Putnam County DRR modeling demonstration using actual emission rates.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO_2 Emission Rate Sources and Factors
No. 4 Combination Boiler	73.41	2.44	23.18	489.82	5.04 lb/min Non-Condensable Gases [a] 5.4 lb/min Stripper Off-Gases [a] 0.0006 lb/MMBtu Natural Gas [b] 0.0302 lb/ton Wood/Biomass [c] (0.164 × % Sulfur) lb/gal Fuel Oil [d]
					Burning Dilute Non-Condensable Gases: 0.7 lb/ton Air-Dried Unbleached Pulp [a]
No. 4 Recovery Boiler	71.09	3.66	23.16	344.26	Normal Operation: CEMS [e]
					Startup/Shutdown: 0.0006 lb/MMBtu Natural Gas [b] (0.164 × % Sulfur) lb/gal Fuel Oil [d]

a. Title V Permit 1070005-088-AV, Condition C-15
b. EPA AP-42 Table 1.4-2
c. Table 10.4 of NCASI TB 1020
d. Air Construction Permit 1070005-017-AC, Condition 4.c.
e. Short instances of missing data were filled using the average of the bounding hours.

3.9. Background Concentrations

A set of background concentrations to account for all SO_2 sources not explicitly modeled was developed for each hour of the day by season from local monitoring data.[12] The data used were obtained from the Florida Air Monitoring and Assessment System (FAMAS) for monitoring station No. 12-107-1008 for the period January 2012 to December 2014. As shown in **Figure 1**, the monitor is just 5.5 km southwest of SGS. In order to avoid double-counting the emissions from the explicitly modeled sources, Appendix W recommends filtering the data to remove measurements when the wind direction could transport pollutants from SGS. In this case, any measurement recorded when the wind direction was from 341° to 70° was removed from the background calculation as shown in **Figure 4**. The 99th percentile (2nd high) concentration for each hour by season was then averaged across the three years and the resulting array was input to AERMOD with the BACKGRND SEASHR keyword. The final set of background concentrations is summarized in **Table 10**.

[12] *See* Modeling TAD, Section 8.1

Figure 4: 2012-2014 average SO_2 concentrations by wind direction for monitor 12-107-1008.

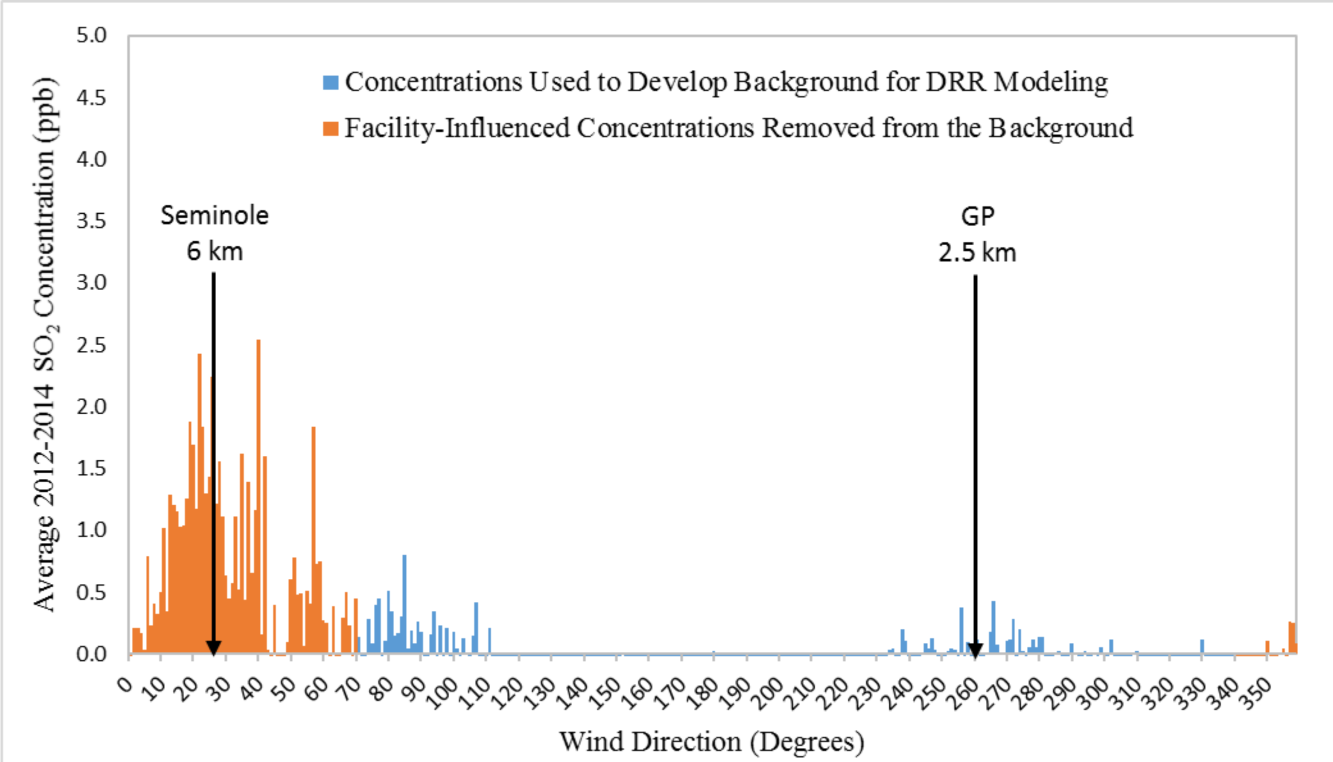


Table 10: 2012-2014 SO_2 background concentrations (ppb) by hour-of-day by season for the Putnam County DRR modeling demonstration.

Hour	Winter	Spring	Summer	Autumn	Hour	Winter	Spring	Summer	Autumn
0:00	2.00	1.00	1.00	0.67	12:00	4.67	9.00	3.33	4.33
1:00	2.00	1.00	1.33	0.33	13:00	7.00	5.67	4.00	5.33
2:00	1.67	1.00	1.00	0.33	14:00	7.67	4.33	3.33	4.33
3:00	2.33	0.67	1.33	0.33	15:00	7.33	3.00	4.67	2.67
4:00	2.67	1.33	1.00	0.33	16:00	4.33	3.33	4.00	1.00
5:00	1.67	1.33	1.67	0.33	17:00	2.33	0.67	2.00	0.67
6:00	2.00	1.33	1.67	0.67	18:00	2.33	1.33	1.33	1.00
7:00	1.67	1.67	1.67	0.67	19:00	1.33	1.33	1.67	1.00
8:00	2.00	1.67	1.67	0.33	20:00	1.33	1.00	1.00	0.67
9:00	1.67	1.67	2.33	1.00	21:00	1.33	1.00	1.33	0.33
10:00	2.33	5.33	5.00	2.33	22:00	1.33	0.33	2.00	0.67
11:00	3.33	10.33	6.00	4.67	23:00	1.00	0.33	2.33	0.33

4. Modeling Summary and Results

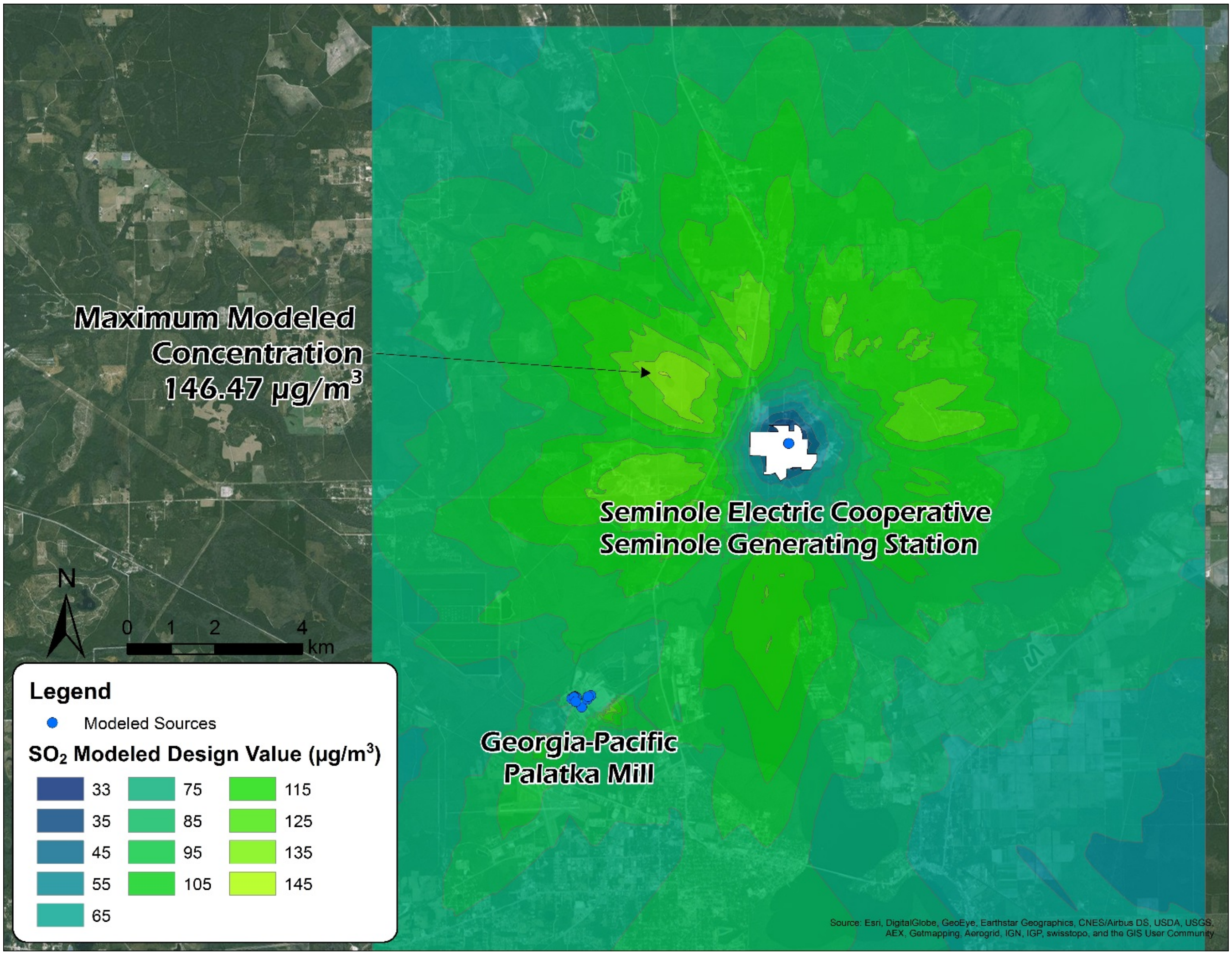
The EPA-recommended dispersion model AERMOD was used to evaluate the area around Seminole Electric Cooperative's Seminole Generating Station in Putnam County, Florida in order to satisfy the requirements of the DRR. The model was run from 2012-2014 using actual emissions data and monitored background concentrations. The 99th percentile (4th high) daily maximum one-hour average concentration for each year at each receptor was averaged across all three years. The highest modeled design value at any receptor was then compared to the 2010 one-hour SO_2 NAAQS. Post-processing was performed to subtract the ambient impact from GP's units to receptors located within GP's fenceline.

The results summarized in **Table 11** and **Figure 5** indicate that Putnam County is in attainment of the SO_2 NAAQS.

Table 11: Maximum modeled SO_2 design value in the Putnam County DRR modeling demonstration.

UTM 17N Easting (m)	UTM 17N Northing (m)	Max Modeled Design Value (µg/m^3)				1-Hour SO_2 NAAQS	Percent of NAAQS
		SGS	GP	Background	Total		
435,936.84	3,291,051.50	131.15	0.50	14.82	146.47	196.4	74.6%

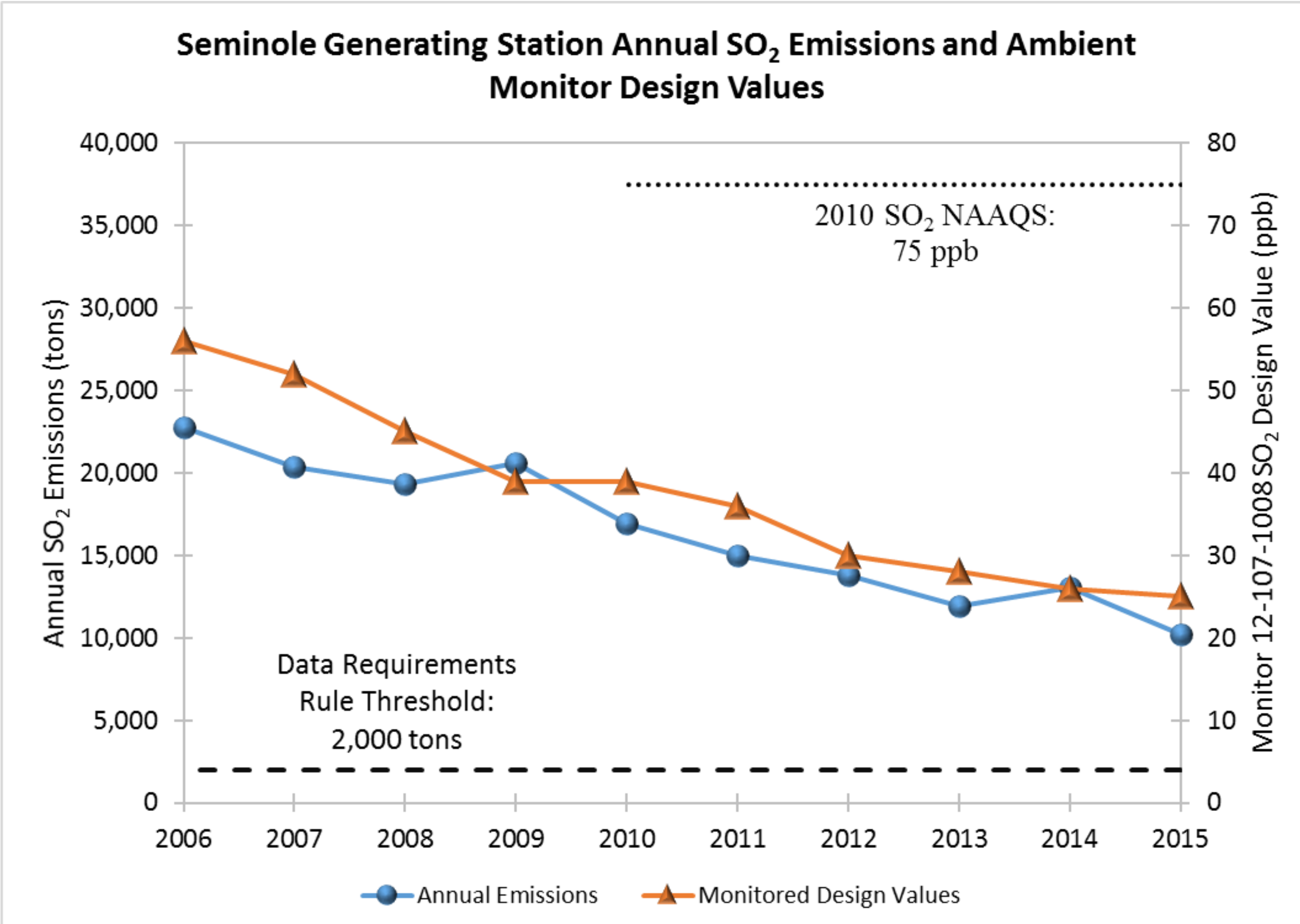
Figure 5: Modeled SO_2 design values in the Putnam County DRR modeling demonstration.



4.1. Continuing Review Obligations

The DRR modeling demonstration for Putnam County shows that the area is well within attainment of the 2010 SO_2 NAAQS, supporting the local ambient monitoring data. Under the DRR, the Department has a continuing obligation to review SO_2 emissions in the area annually for continued compliance with the NAAQS. It is expected that the ambient concentrations and emissions of SO_2 in Putnam County will continue to fall as they have for at least the past decade (**Figure 6**). 2015 emissions of SO_2 at SGS were 22% less than in 2014. It is anticipated that the implementation of a variety of national rules and regulations (particularly the Mercury and Air Toxics Standard) and economic forcing will likely result in the maintenance or even further reduction of these lower levels of SO_2 emissions ensuring continued compliance with the NAAQS.

Figure 6: 2006-2015 SGS SO_2 emissions and monitor 12-107-1008 SO_2 design values.



Appendix M

Office of Air Monitoring Memo December 2, 2016:

SO_2 Monitoring Data QA/QC Report

Division of Air Resource Management

Florida Department of Environmental Protection

January 13, 2017

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

From: Sandra F. Veazey, Program Administrator, Office of Air Monitoring

Through: Jeffrey Koerner, Interim Director, Division of Air Resource Management

To: Preston McLane, Program Administrator, Office of Business Planning

Date: December 2, 2016

Subject: Sulfur Dioxide Ambient Air Monitoring Data used to Support the Data Requirements Rule for Florida

The sulfur dioxide (SO_2) ambient air monitoring data and quality assurance data for the monitors and timeframes listed in Table 1 were timely submitted to EPA's Air Quality System (AQS) and were certified in accordance with 40 CFR Part 58.15. AQS Data Completeness Reports (AMP 430) are enclosed to provide verification that the Data Quality Objectives (DQOs) were met or exceeded for the monitors/timeframes listed.

Table 1. Sulfur Dioxide Monitors and Timeframes

Monitor	Time
017-0006	2013-2015
031-0032	2012-2014
033-0004	2012-2014
047-0015	2014-2015
057-0081	2012-2014
057-3002	2012-2014
089-0005	2012-2014
095-2002	2012-2014

If you have any questions, please contact Ms. Saphique Thomas of my office at 850/717-9015, or oriene.thomas@dep.state.fl.us.

Enclosure (48 pages)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: XOSTHOMAS

DATA COMPLETENESS REPORT

Report Request ID: 1493909 Report Code: AMP430 Nov. 2, 2016

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	12	031	0032								
	12	033	0004								
	12	057	0081								
	12	057	3002								
	12	089	0005								
	12	095	2002								

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA	42401		

SELECTED OPTIONS

Option Type	Option Value
OZONE EVALUATION	SEASONAL-HOURLY
MERGE PDF FILES	YES
AGENCY ROLE	REPORTING

SORT ORDER

Order	Column
1	EPA_REGION
2	STATE_CODE
3	MONITOR_TYPE
4	COUNTY_CODE
5	SITE_ID
6	PARAMETER_CODE
7	POC

DATE CRITERIA

Start Date	End Date
2012 01	2012 12

APPLICABLE STANDARDS

Standard Description
SO2 1-hour 2010

Nov. 2, 2016

MONITORS NOT REPORTING

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012

REGION: (04) ATLANTA

STATE: Florida

REP ORG: City of Jacksonville Environmental Quality Division

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
12-031-0032	42401 Sulfur dioxide	1	1	10	678	719	703	436	544	615	727	706	721	660	727	7246
Jacksonville			060	1%	97%	97%	98%	59%	76%	83%	98%	98%	97%	92%	98%	82%
2900 BENNETT ST.																
12-031-0032	42401 Sulfur dioxide	5	H	129	8134	8628	8436	5232	6514	7380	8724	8472	8652	7920	8724	86945
Jacksonville			060	1%	97%	97%	98%	59%	75%	83%	98%	98%	97%	92%	98%	82%
2900 BENNETT ST.																

OBSERVATIONS — NUMBER / PERCENT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012
REGION: (04) ATLANTA
STATE: Florida

REP ORG: Florida Dept of Environmental Protection, Northeast District
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-089-0005	42401 Sulfur dioxide	1	1	735	692	738	687	739	712	742	735	703	708	718	742	8651
Fernandina Bea			060	99%	99%	99%	95%	99%	99%	100%	99%	98%	95%	100%	100%	98%
5TH ST.N.OF LIME AVE.																
12-089-0005	42401 Sulfur dioxide	5	H	8585	8055	8588	7998	8549	8298	8636	8572	8190	8206	8361	8644	100682
Fernandina Bea			060	96%	96%	96%	93%	96%	96%	97%	96%	95%	92%	97%	97%	96%
5TH ST.N.OF LIME AVE.																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Florida Dept of Environmental Protection, Northwest District

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-033-0004	42401 Sulfur dioxide	1	1	744	685	569	720	741	718	743	743	715	744	718	571	8411
Ferry Pass			000	100%	98%	76%	100%	100%	100%	100%	100%	99%	100%	100%	77%	96%
ELLYSON INDUSTRIAL PARK-COPTER ROAD																
12-033-0004	42401 Sulfur dioxide	5	H	8657	8073	8506	8377	8618	8362	8653	8654	8333	8656	8363	5164	98416
Ferry Pass			060	97%	97%	95%	97%	97%	97%	97%	97%	96%	97%	97%	58%	93%
ELLYSON INDUSTRIAL PARK-COPTER ROAD																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012
REGION: (04) ATLANTA
STATE: Florida

REP ORG: Hillsborough County Environmental Protection Commission
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER		POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
					OBSERVATIONS NUMBER / PERCENT												
12-057-0081	42401	Sulfur dioxide	1	1	741	690	739	718	737	712	740	653	606	707	715	740	8498
Ruskin				060	100%	99%	99%	100%	99%	99%	99%	88%	84%	95%	99%	99%	97%
2401 19th Avenue Northwest																	
12-057-0081	42401	Sulfur dioxide	5	H	8691	8106	8679	8432	8655	7771	8524	7661	7116	8267	8330	8629	98861
Ruskin				060	97%	97%	97%	98%	97%	90%	95%	86%	82%	93%	96%	97%	94%
2401 19th Avenue Northwest																	
12-057-3002	42401	Sulfur dioxide	1	1	720	694	739	716	741	625	739	735	714	738	708	696	8565
Valrico				560	97%	100%	99%	99%	100%	87%	99%	99%	99%	99%	98%	94%	98%
1167 NORTH DOVER ROAD																	
12-057-3002	42401	Sulfur dioxide	5	H	8635	8320	8864	8588	8881	7440	8854	8805	8562	8847	8560	8350	102706
Valrico				560	97%	100%	99%	99%	99%	86%	99%	99%	99%	99%	99%	94%	97%
1167 NORTH DOVER ROAD																	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Orange County Environmental Protection Division

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-095-2002	42401 Sulfur dioxide	1	1	729	689	736	694	737	715	733	735	712	729	710	736	8655
Winter Park			060	98%	99%	99%	96%	99%	99%	99%	99%	99%	98%	99%	99%	99%
MORRIS BLVD.																
12-095-2002	42401 Sulfur dioxide	5	H	8781	8287	8658	7690	8844	8580	8796	8760	8544	8747	8520	8832	103039
Winter Park			060	98%	99%	97%	89%	99%	99%	99%	98%	99%	98%	99%	99%	98%
MORRIS BLVD.																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012
REGION: (04) ATLANTA
STATE: Florida
REP ORG: City of Jacksonville Environmental Quality Division
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	2	0	2	82.0%
MT SUMMARY:	SLAMS	2	0	2	82.0%
RO SUMMARY:	City of Jacksonville Environmental Quality Di\	2	0	2	82.0%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Dept of Environmental Protection, Northeast District
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	2	0	2	97.0%
MT SUMMARY:	SLAMS	2	0	2	97.0%
RO SUMMARY:	Florida Dept of Environmental Protection, Nort	2	0	2	97.0%

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Dept of Environmental Protection, Northwest District
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	2	0	2	94.5%
MT SUMMARY:	SLAMS	2	0	2	94.5%
RO SUMMARY:	Florida Dept of Environmental Protection, Nort	2	0	2	94.5%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Hillsborough County Environmental Protection Commission

MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	4	0	4	96.5%
MT SUMMARY:	SLAMS	4	0	4	96.5%
RO SUMMARY:	Hillsborough County Environmental Protection (	4	0	4	96.5%

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2012 THRU DEC. 31, 2012
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Orange County Environmental Protection Division
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	98.5%
MT SUMMARY: SLAMS	2	0	2	98.5%
RO SUMMARY: Orange County Environmental Protection Divisic	2	0	2	98.5%
STATE SUMMARY: Florida	12	0	12	94.2%
REGION SUMMARY: (04) ATLANTA	12	0	12	94.2%
REPORT SUMMARY:	12	0	12	94.2%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: XOSTHOMAS

DATA COMPLETENESS REPORT

Report Request ID: 1493911 | Report Code: AMP430 | Nov. 2, 2016

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	12	031	0032								
	12	033	0004								
	12	057	0081								
	12	057	3002								
	12	089	0005								
	12	095	2002								
	12	017	0006								
	12	047	0015								

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA	42401		

SELECTED OPTIONS

Option Type	Option Value
OZONE EVALUATION	SEASONAL-HOURLY
MERGE PDF FILES	YES
AGENCY ROLE	REPORTING

SORT ORDER

Order	Column
1	EPA_REGION
2	STATE_CODE
3	MONITOR_TYPE
4	COUNTY_CODE
5	SITE_ID
6	PARAMETER_CODE
7	POC

DATE CRITERIA

Start Date	End Date
2013 01	2013 12

APPLICABLE STANDARDS

Standard Description
SO2 1-hour 2010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS NOT REPORTING

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida

REP ORG: City of Jacksonville Environmental Quality Division
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-031-0032	42401 Sulfur dioxide	1	1	710	655	728	703	613	704	715	552	707	727	698	732	8244
Jacksonville			060	95%	97%	98%	98%	82%	98%	96%	74%	98%	98%	97%	98%	94%
2900 BENNETT ST.																
12-031-0032	42401 Sulfur dioxide	5	H	8520	7862	8724	8436	7327	8448	8736	8472	8484	8724	8376	8784	100893
Jacksonville			060	95%	97%	98%	98%	82%	98%	98%	95%	98%	98%	97%	98%	96%
2900 BENNETT ST.																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida

REP ORG: FDEP Ambient Monitoring Section
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER		POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
12-017-0006	42401	Sulfur dioxide	1	1												450	450
				060												99%	99%
W. Powerline Road																	
12-017-0006	42401	Sulfur dioxide	5	H												5251	5251
				060												96%	96%
W. Powerline Road																	

(OBSERVATIONS — NUMBER / PERCENT)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Florida Dept of Environmental Protection, Northeast District

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-047-0015	42401 Sulfur dioxide	1	1	738	670	719	709	733	707	737	742	663	739	708	741	8606
White Springs			060	99%	100%	97%	98%	99%	98%	99%	100%	92%	99%	98%	100%	98%
COUNTY ROAD 137 AT ENTRANCE TO OXY SRCC																
12-047-0015	42401 Sulfur dioxide	5	H	8605	7805	8368	8279	8544	8262	8598	8646	7953	8612	8259	8635	100566
White Springs			060	96%	97%	94%	96%	96%	96%	96%	97%	92%	96%	96%	97%	96%
COUNTY ROAD 137 AT ENTRANCE TO OXY SRCC																
12-089-0005	42401 Sulfur dioxide	1	1	708	667	741	714	718	713	735	734	717	736	715	740	8638
Fernandina Bea			060	95%	99%	100%	99%	97%	99%	99%	99%	100%	99%	99%	99%	99%
5TH ST.N.OF LIME AVE.																
12-089-0005	42401 Sulfur dioxide	5	H	8268	7754	8625	8317	8387	8314	8576	8565	8354	8593	8346	8628	100727
Fernandina Bea			060	93%	96%	97%	96%	94%	96%	96%	96%	97%	96%	97%	97%	96%
5TH ST.N.OF LIME AVE.																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida

REP ORG: Florida Dept of Environmental Protection, Northwest District
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-033-0004	42401 Sulfur dioxide	1	1	414	662	628	714	719	716	740	741	717	742	711	738	8242
Ferry Pass			000	56%	99%	84%	99%	97%	99%	99%	100%	100%	100%	99%	99%	94%
ELLYSON INDUSTRIAL PARK-COPTER ROAD																
12-033-0004	42401 Sulfur dioxide	5	H	4730	6942	7447	8310	8388	8348	8626	8646	8355	8645	8286	8615	95338
Ferry Pass			000	53%	86%	83%	96%	94%	97%	97%	97%	97%	97%	96%	96%	91%
ELLYSON INDUSTRIAL PARK-COPTER ROAD																

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida

REP ORG: Hillsborough County Environmental Protection Commission
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER		POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
12-057-0081	42401	Sulfur dioxide	1	1	741	666	742	719	735	717	733	741	718	737	718	739	8706
Ruskin				060	100%	99%	100%	100%	99%	100%	99%	100%	100%	99%	100%	99%	99%
2401 19th Avenue Northwest																	
12-057-0081	42401	Sulfur dioxide	5	H	8628	7762	8650	8377	8567	8347	8524	8635	8372	8584	8372	8610	101428
Ruskin				060	97%	96%	97%	97%	96%	97%	95%	97%	97%	96%	97%	96%	96%
2401 19th Avenue Northwest																	
12-057-3002	42401	Sulfur dioxide	1	1	722	670	739	716	739	716	655	632	717	737	710	740	8493
Valrico				560	97%	100%	99%	99%	99%	99%	88%	85%	100%	99%	99%	99%	97%
1167 NORTH DOVER ROAD																	
12-057-3002	42401	Sulfur dioxide	5	H	8653	8031	8853	8578	8856	8566	7842	7577	8609	8838	8516	8879	101798
Valrico				560	97%	100%	99%	99%	99%	99%	88%	85%	100%	99%	99%	99%	97%
1167 NORTH DOVER ROAD																	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Orange County Environmental Protection Division

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER		POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
					OBSERVATIONS NUMBER / PERCENT												
12-095-2002	42401	Sulfur dioxide	1	1	732	660	731	701	726	710	733	732	713	723	709	733	8603
Winter Park				060	98%	98%	98%	97%	98%	99%	99%	98%	99%	97%	98%	99%	98%
MORRIS BLVD.																	
12-095-2002	42401	Sulfur dioxide	5	H	8784	7917	8605	8405	8712	8520	8796	8784	8556	8676	8508	8796	103059
Winter Park				060	98%	98%	96%	97%	98%	99%	99%	98%	99%	97%	98%	99%	98%
MORRIS BLVD.																	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida
REP ORG: City of Jacksonville Environmental Quality Division
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	2	0	2	95.0%
MT SUMMARY:	SLAMS	2	0	2	95.0%
RO SUMMARY:	City of Jacksonville Environmental Quality Di\	2	0	2	95.0%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013

REGION: (04) ATLANTA

STATE: Florida

REP ORG: FDEP Ambient Monitoring Section

MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	97.5%
MT SUMMARY: SLAMS	2	0	2	97.5%
RO SUMMARY: FDEP Ambient Monitoring Section	2	0	2	97.5%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Dept of Environmental Protection, Northeast District
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	4	0	4	97.3%
MT SUMMARY:	SLAMS	4	0	4	97.3%
RO SUMMARY:	Florida Dept of Environmental Protection, Nort	4	0	4	97.3%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Dept of Environmental Protection, Northwest District
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	92.5%
MT SUMMARY: SLAMS	2	0	2	92.5%
RO SUMMARY: Florida Dept of Environmental Protection, Nort	2	0	2	92.5%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Hillsborough County Environmental Protection Commission
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	4	0	4	97.3%
MT SUMMARY:	SLAMS	4	0	4	97.3%
RO SUMMARY:	Hillsborough County Environmental Protection (	4	0	4	97.3%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2013 THRU DEC. 31, 2013
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Orange County Environmental Protection Division
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	98.0%
MT SUMMARY: SLAMS	2	0	2	98.0%
RO SUMMARY: Orange County Environmental Protection Divisic	2	0	2	98.0%
STATE SUMMARY: Florida	16	0	16	96.5%
REGION SUMMARY: (04) ATLANTA	16	0	16	96.5%
REPORT SUMMARY:	16	0	16	96.5%

User ID: XOSTHOMAS

DATA COMPLETENESS REPORT

Report Request ID: 1493917

Report Code: AMP430

Nov. 2, 2016

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	12	031	0032								
	12	033	0004								
	12	057	0081								
	12	057	3002								
	12	089	0005								
	12	095	2002								
	12	017	0006								
	12	047	0015								

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA	42401		

SELECTED OPTIONS

Option Type	Option Value
OZONE EVALUATION	SEASONAL-HOURLY
MERGE PDF FILES	YES
AGENCY ROLE	REPORTING

SORT ORDER

Order	Column
1	EPA_REGION
2	STATE_CODE
3	MONITOR_TYPE
4	COUNTY_CODE
5	SITE_ID
6	PARAMETER_CODE
7	POC

DATE CRITERIA

Start Date	End Date
2014 01	2014 12

APPLICABLE STANDARDS

Standard Description
SO2 1-hour 2010

Nov. 2, 2016

MONITORS NOT REPORTING

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida

REP ORG: City of Jacksonville Environmental Quality Division
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-031-0032	42401 Sulfur dioxide	1	1	718	660	732	702	730	710	725	730	708	729	705	734	8583
Jacksonville			060	97%	98%	98%	98%	98%	99%	97%	98%	98%	98%	98%	99%	98%
2900 BENNETT ST.																
12-031-0032	42401 Sulfur dioxide	5	H	8616	7920	8784	8424	8760	8520	8700	8760	8496	8748	8460	8807	102995
Jacksonville			060	97%	98%	98%	98%	98%	99%	97%	98%	98%	98%	98%	99%	98%
2900 BENNETT ST.																

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014

REGION: (04) ATLANTA

STATE: Florida

REP ORG: FDEP Ambient Monitoring Section

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-017-0006	42401 Sulfur dioxide	1	1	677		578	712	737	716	734	736	641	741	713	735	7720
			060	91%		78%	99%	99%	99%	99%	99%	89%	100%	99%	99%	88%
W. Powerline Road																
12-017-0006	42401 Sulfur dioxide	5	H	8480		6877	8303	8606	8336	8573	8592	8266	8639	8282	8527	91481
			060	95%		77%	96%	96%	96%	96%	96%	96%	97%	96%	96%	87%
W. Powerline Road																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Florida Dept of Environmental Protection, Northeast District

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-047-0015	42401 Sulfur dioxide	1	1	739	667	738	708	740	718	736	733	712	265	716	738	8210
White Springs			060	99%	99%	99%	98%	99%	100%	99%	99%	99%	36%	99%	99%	94%
COUNTY ROAD 137 AT ENTRANCE TO OXY SRCC																
12-047-0015	42401 Sulfur dioxide	5	H	8609	7784	8607	8285	8629	8368	8591	8544	8325	3091	8313	8575	95721
White Springs			060	96%	97%	96%	96%	97%	97%	96%	96%	96%	35%	96%	96%	91%
COUNTY ROAD 137 AT ENTRANCE TO OXY SRCC																
12-089-0005	42401 Sulfur dioxide	1	1	711	607	743	712	742	712	729	740	714	733	705	739	8587
Fernandina Bea			060	96%	90%	100%	99%	100%	99%	98%	99%	99%	99%	98%	99%	98%
5TH ST.N.OF LIME AVE.																
12-089-0005	42401 Sulfur dioxide	5	H	8264	7086	8650	8306	8652	8297	8606	8630	8315	8544	8206	8587	100143
Fernandina Bea			060	93%	88%	97%	96%	97%	96%	96%	97%	96%	96%	95%	96%	95%
5TH ST.N.OF LIME AVE.																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Florida Dept of Environmental Protection, Northwest District

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-033-0004	42401 Sulfur dioxide	1	1	712	666	740	712	742	718	742	742	716	736	710	742	8678
Ferry Pass			060	96%	99%	99%	99%	100%	100%	100%	100%	99%	99%	99%	100%	99%
ELLYSON INDUSTRIAL PARK-COPTER ROAD																
12-033-0004	42401 Sulfur dioxide	5	H	8317	7772	8623	8323	8641	8368	8651	8639	8336	8597	8339	8614	101220
Ferry Pass			060	93%	96%	97%	96%	97%	97%	97%	97%	96%	96%	97%	96%	96%
ELLYSON INDUSTRIAL PARK-COPTER ROAD																

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida

REP ORG: Hillsborough County Environmental Protection Commission
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
12-057-0081	42401 Sulfur dioxide	1	1	737	668	742	716	736	717	706	653	685	711	633	692	8396
Ruskin			060	99%	99%	100%	99%	99%	100%	95%	88%	95%	96%	88%	93%	96%
2401 19th Avenue Northwest																
12-057-0081	42401 Sulfur dioxide	5	H	8584	7780	8647	8342	8572	8365	8497	7853	8237	8559	7614	8323	99373
Ruskin			060	96%	96%	97%	97%	96%	97%	95%	88%	95%	96%	88%	93%	95%
2401 19th Avenue Northwest																
12-057-3002	42401 Sulfur dioxide	1	1	676	662	742	708	742	717	425	740	712	740	717	740	8321
Valrico			560	91%	99%	100%	98%	100%	100%	57%	99%	99%	99%	100%	99%	95%
1167 NORTH DOVER ROAD																
12-057-3002	42401 Sulfur dioxide	5	H	7985	7938	8893	8493	8900	8597	5092	8868	8533	8873	8596	8872	99640
Valrico			560	89%	98%	100%	98%	100%	100%	57%	99%	99%	99%	99%	99%	95%
1167 NORTH DOVER ROAD																

OBSERVATIONS: NUMBER / PERCENT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida

REP ORG: Orange County Environmental Protection Division
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
12-095-2002	42401 Sulfur dioxide	1	1	730	645	736	707	710	571	708	736	687	733	709	720	8392
Winter Park			060	98%	96%	99%	98%	95%	79%	95%	99%	95%	99%	98%	97%	96%
MORRIS BLVD.																
12-095-2002	42401 Sulfur dioxide	5	H	8760	7740	8822	8484	8518	6852	8496	8841	8244	8796	8508	8556	100617
Winter Park			060	98%	96%	99%	98%	95%	79%	95%	99%	95%	99%	98%	96%	96%
MORRIS BLVD.																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014

REGION: (04) ATLANTA

STATE: Florida

REP ORG: City of Jacksonville Environmental Quality Division

MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	98.0%
MT SUMMARY: SLAMS	2	0	2	98.0%
RO SUMMARY: City of Jacksonville Environmental Quality Div	2	0	2	98.0%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida
REP ORG: FDEP Ambient Monitoring Section
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	87.5%
MT SUMMARY: SLAMS	2	0	2	87.5%
RO SUMMARY: FDEP Ambient Monitoring Section	2	0	2	87.5%

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Dept of Environmental Protection, Northeast District
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	4	0	4	94.5%
MT SUMMARY:	SLAMS	4	0	4	94.5%
RO SUMMARY:	Florida Dept of Environmental Protection, Nort	4	0	4	94.5%

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Dept of Environmental Protection, Northwest District
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	97.5%
MT SUMMARY: SLAMS	2	0	2	97.5%
RO SUMMARY: Florida Dept of Environmental Protection, Nort	2	0	2	97.5%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Hillsborough County Environmental Protection Commission
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	4	0	4	95.3%
MT SUMMARY: SLAMS	4	0	4	95.3%
RO SUMMARY: Hillsborough County Environmental Protection (	4	0	4	95.3%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2014 THRU DEC. 31, 2014
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Orange County Environmental Protection Division
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	96.0%
MT SUMMARY: SLAMS	2	0	2	96.0%
RO SUMMARY: Orange County Environmental Protection Divisio	2	0	2	96.0%
STATE SUMMARY: Florida	16	0	16	94.8%
REGION SUMMARY: (04) ATLANTA	16	0	16	94.8%
REPORT SUMMARY:	16	0	16	94.8%

User ID: XOSTHOMAS

DATA COMPLETENESS REPORT

Report Request ID: 1493918 | Report Code: AMP430 | Nov. 2, 2016

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region
	12	017	0006								
	12	047	0015								

PROTOCOL SELECTIONS

Parameter Classification	Parameter	Method	Duration
CRITERIA	42401		

SELECTED OPTIONS

Option Type	Option Value
OZONE EVALUATION	SEASONAL-HOURLY
MERGE PDF FILES	YES
AGENCY ROLE	REPORTING

SORT ORDER

Order	Column
1	EPA_REGION
2	STATE_CODE
3	MONITOR_TYPE
4	COUNTY_CODE
5	SITE_ID
6	PARAMETER_CODE
7	POC

DATE CRITERIA

Start Date	End Date
2015 01	2015 12

APPLICABLE STANDARDS

Standard Description
SO2 1-hour 2010

Nov. 2, 2016

MONITORS NOT REPORTING

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2015 THRU DEC. 31, 2015
REGION: (04) ATLANTA
STATE: Florida

REP ORG: FDEP Ambient Monitoring Section
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-017-0006	42401 Sulfur dioxide	5	H	8610	7722	8608	8306	8261	8247	8595	8573	8332	8599	8284	8491	100628
			060	96%	96%	96%	96%	93%	95%	96%	96%	96%	96%	96%	95%	96%
W. Powerline Road																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2015 THRU DEC. 31, 2015
REGION: (04) ATLANTA
STATE: Florida

REP ORG: Florida Department of Environmental Protection (FDEP)
MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-017-0006	42401 Sulfur dioxide	1	1	742	665	742	714	733	708	740	738	718	740	712	730	8682
			060	100%	99%	100%	99%	99%	98%	99%	99%	100%	99%	99%	98%	99%
W. Powerline Road																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR QUALITY SYSTEM

DATA COMPLETENESS REPORT

Nov. 2, 2016

MONITORS REPORTING

DATE RANGE: JAN. 01, 2015 THRU DEC. 31, 2015

REGION: (04) ATLANTA

STATE: Florida

REP ORG: Florida Dept of Environmental Protection, Northeast District

MONITOR TYPE: SLAMS

SITE ID / CITY / ADDRESS	PARAMETER	POC	DURATION / METHOD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
				OBSERVATIONS NUMBER / PERCENT												
12-047-0015	42401 Sulfur dioxide	1	1	734	665	741	450	741	708	383	738	714	741	710	742	8067
White Springs			060	99%	99%	100%	63%	100%	98%	51%	99%	99%	100%	99%	100%	92%
COUNTY ROAD 137 AT ENTRANCE TO OXY SRCC																
12-047-0015	42401 Sulfur dioxide	5	H	8533	7740	8605	5225	8323	8216	8350	8563	8303	8606	8240	8609	97313
White Springs			060	96%	96%	96%	60%	93%	95%	94%	96%	96%	96%	95%	96%	93%
COUNTY ROAD 137 AT ENTRANCE TO OXY SRCC																

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2015 THRU DEC. 31, 2015
REGION: (04) ATLANTA
STATE: Florida
REP ORG: FDEP Ambient Monitoring Section
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	1	0	1	96.0%
MT SUMMARY: SLAMS	1	0	1	96.0%
RO SUMMARY: FDEP Ambient Monitoring Section	1	0	1	96.0%

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
DATA COMPLETENESS REPORT

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2015 THRU DEC. 31, 2015
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Department of Environmental Protection (FDEP)
MONITOR TYPE: SLAMS

PARAMETER		ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401	Sulfur dioxide	1	0	1	99.0%
MT SUMMARY:	SLAMS	1	0	1	99.0%
RO SUMMARY:	Florida Department of Environmental Protectior	1	0	1	99.0%

Nov. 2, 2016

REPORT SUMMARY

DATE RANGE: JAN. 01, 2015 THRU DEC. 31, 2015
REGION: (04) ATLANTA
STATE: Florida
REP ORG: Florida Dept of Environmental Protection, Northeast District
MONITOR TYPE: SLAMS

PARAMETER	ACTIVE MONITORS	# NOT REPORTING	# MONITORS > 75%	MONITORS AVG COMPLETENESS
42401 Sulfur dioxide	2	0	2	92.5%
MT SUMMARY: SLAMS	2	0	2	92.5%
RO SUMMARY: Florida Dept of Environmental Protection, Nort	2	0	2	92.5%
STATE SUMMARY: Florida	4	0	4	95.0%
REGION SUMMARY: (04) ATLANTA	4	0	4	95.0%
REPORT SUMMARY:	4	0	4	95.0%