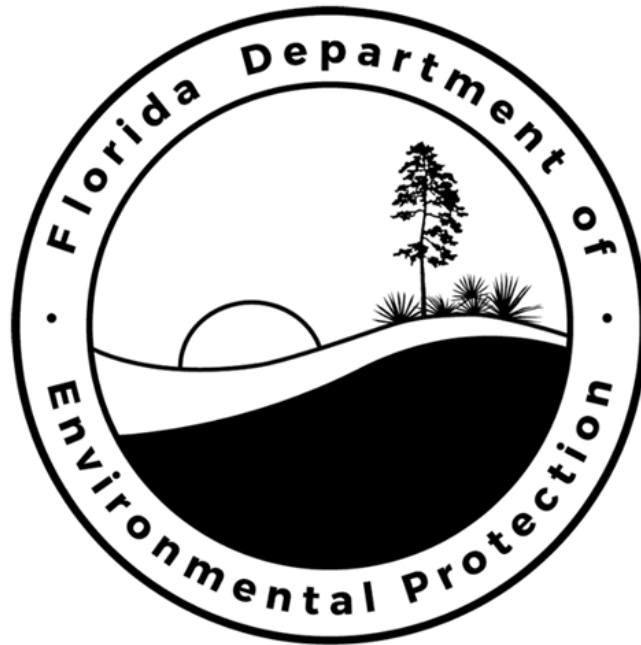


**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
PROPOSED REVISION TO STATE IMPLEMENTATION PLAN**



SUBMITTAL NUMBER 2017-04

**INCORPORATION OF SO₂ EMISSIONS LIMITS
FOR TWO FACILITIES IN POLK COUNTY**

October 20, 2017

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Executive Summary

1. Introduction

The Department of Environmental Protection (Department) is proposing a revision to Florida's State Implementation Plan (SIP) under the federal Clean Air Act (CAA). This SIP revision consists of a plan that will ensure attainment and maintenance of the 2010 revised Sulfur Dioxide (SO₂) 1-hour National Ambient Air Quality Standard (NAAQS) in the area around Mosaic Fertilizer, LLC's (Mosaic) New Wales facility located in Polk County, Florida. Florida's proposed SIP revision incorporates specific conditions from two air construction permits for two facilities in Polk County, Florida – Mosaic's New Wales and Bartow facilities – as they pertain to emissions of SO₂. The SIP revision also includes a modeling demonstration showing that the limits in the two air construction permits are protective of the 2010 SO₂ NAAQS.

2. Background

On June 22, 2010 (effective August 23, 2010), the U.S. Environmental Protection Agency (EPA) promulgated a revised NAAQS for SO₂. The level of the revised standard is 75 parts per billion (ppb), three-year average of the annual 99th percentile of one-hour daily maximum concentrations. The revised SO₂ standard is the first one-hour primary standard promulgated by EPA for this air pollutant.

On August 21, 2015, EPA promulgated the "Data Requirements Rule" (DRR) (80 Fed. Reg. 51,052; codified at 40 CFR Part 51, Subpart BB), which required states to evaluate compliance with the 2010 SO₂ NAAQS in areas surrounding certain large SO₂ sources. Pursuant to the DRR, states could choose to perform area characterizations around the specified sources using either air quality monitoring or air dispersion modeling.

Mosaic New Wales emitted 7,126 tons of SO₂ in 2014, exceeding the DRR applicability threshold of 2,000 tons.¹ The Department chose to characterize the area around Mosaic New Wales 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 *SO₂ NAAQS Designations Modeling Technical Assistance Document*³ (Modeling TAD). On January 13, 2017, the Department submitted a report to EPA characterizing the area around Mosaic New Wales with respect to the 2010 SO₂ NAAQS. This submittal indicated that the area immediately surrounding Mosaic New Wales was likely in violation of the 2010 SO₂ NAAQS for the period of 2012 through 2014.

The Department submitted a supplemental DRR modeling report to EPA on June 23, 2017 detailing a set of lower emission limits for both Mosaic New Wales and Mosaic Bartow and a new fence line for Mosaic New Wales that would allow for modeled attainment of the 2010 SO₂ NAAQS. This modeling demonstration was performed in compliance with the *Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions*⁴ (SO₂ SIP Guidance). The Mosaic facilities at New Wales and Bartow began implementing the required physical changes to the affected units in January 2017. The permitted schedule sets completion of this work and construction of the new fence line in August 2019. This proposed revision

¹ See 40 CFR 51.1202.

² *Guideline on Air Quality Models*. 40 CFR Part 51 Appendix W.

³ SO₂ 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 *Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions*, 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/20140423guidance_nonattainment_sip.pdf

to Florida's SIP includes a final air construction permit that places a 1,100 pounds of SO₂ per hour (lb/hr) cap over the three sulfuric acid plants (SAPs) at the Bartow facility and a draft air construction permit that places a 1,090 lb/hr cap over the five SAPs at the New Wales facility. The draft permit for the New Wales facility will be finalized and submitted as part of the final SIP submission to EPA. This proposed SIP revision also includes the dispersion modeling demonstration showing attainment of the 2010 SO₂ NAAQS in the area using the SO₂ emission limits in the construction permits. The modeling demonstration was developed jointly by the Department and Mosaic's outside consultant, Environmental Resources Management (ERM).

3. Mosaic New Wales Permit

Mosaic New Wales (Facility ID: 1050059) is located at 3095 County Road 640, Mulberry, Florida. This facility is a phosphate fertilizer manufacturing complex. The fertilizer complex processes phosphate rock into several different fertilizer products and animal feed ingredients. This is accomplished by reacting the phosphate rock with sulfuric acid to produce phosphoric acid and then converting the phosphoric acid to fertilizer and animal feed ingredient products. This facility consists of five double absorption SAPs; 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 and handling system; a limestone storage silo/rock grinding operation; and a phosphogypsum stack.

On October 11, 2017, the Department issued a draft air construction permit to Mosaic New Wales (New Wales Permit) that, when finalized, will require the facility to comply with a 1,090 lb/hr emissions cap for the five SAPs based on a 24-hour average as determined by continuous emissions monitoring system (CEMS) data.⁵ Compliance with the cap will be determined through reported CEMS data. The five-unit emissions cap of 1,090 lb/hr will be incorporated into the facility's Title V permit.

4. Mosaic Bartow Permit

Mosaic Bartow (Facility ID: 1050046) is located at 3200 Highway 60 West, Bartow, Florida. This facility is a phosphate fertilizer manufacturing complex. The fertilizer complex processes phosphate rock into fertilizer. This is accomplished by reacting the phosphate rock with sulfuric acid to produce phosphoric acid and then converting the phosphoric acid to fertilizer. This facility consists of three SAPs, one phosphoric acid plant (two trains), one monoammonium phosphate/ diammonium phosphate (MAP/DAP) plant, one DAP fertilizer plant, two fertilizer shipping plants, an auxiliary boiler, and a molten sulfur storage and handling system.

On July 3, 2017, the Department issued an air construction permit to Mosaic Bartow (Bartow Permit) that requires the facility to comply with a 1,100 lb/hr emissions cap for the three SAPs based on a 24-hour average as determined by CEMS data.⁶ Compliance with the cap will be determined through reported CEMS data. The three-unit emissions cap of 1,100 lb/hr has been incorporated into the facility's Title V permit.⁷

⁵ See Draft Air Construction Permit No. 1050059-106-AC, issued by the Florida Department of Environmental Protection on October 11, 2017.

⁶ See Air Construction Permit No. 1050046-050-AC, issued by the Florida Department of Environmental Protection on July 3, 2017.

⁷ See Title V Operating Permit No. 1050046-051-AV, issued by the Florida Department of Environmental Protection on September 15, 2017.

5. SIP Development Process

Section 403.061(35), Florida Statutes, authorizes the Department to “exercise the duties, powers, and responsibilities required of the state under the federal Clean Air Act.” These duties and responsibilities include the development and periodic updating of Florida’s SIP. Pursuant to this statutory authority, the Department has developed this proposed SIP revision.

Pursuant to state administrative procedures and 40 CFR 51.102, on October 20, 2017, the Department published a notice in the Florida Administrative Register (FAR) announcing the opportunity for the public to provide comments, request a public hearing, and participate in a public hearing to be held on November 22, 2017, if requested, regarding the proposed revision to Florida’s SIP.

In accordance with the 30-day notice requirement of 40 CFR 51.102, a pre-hearing submittal regarding the proposed SIP revision was transmitted to EPA on October 20, 2017, and posted on the website for the Department’s Division of Air Resource Management. At the same time, notice of the opportunity to submit comments, request a public hearing, and participate in the public hearing, if requested, was transmitted to Florida’s local air pollution control programs.

6. Attainment of the SO₂ NAAQS

Pursuant to the New Wales and Bartow air construction permits, the facilities will reduce SO₂ emissions and ambient impacts from the facilities by implementing the following measures:

- Upgrading the catalysts in SAP Nos. 1, 2, 3, 4, and 5 at Mosaic New Wales and SAP Nos. 4, 5, and 6 at Mosaic Bartow.
- Complying with specific SO₂ emissions caps based on a 24-hour average as determined by CEMS data effective August 31, 2019.

Construction at these facilities is permitted through August 2019 and final compliance with the SO₂ emissions cap at each facility is required on August 31, 2019. Construction will occur in multiple phases as detailed below which will result in incremental air quality improvement over the permitted construction period. Once completed, the changes to the facilities and the associated emissions reductions will result in the area around Mosaic New Wales attaining and maintaining compliance with the 2010 SO₂ NAAQS.

7. Historic and Projected SO₂ Emissions in Hillsborough and Polk Counties

Over the past five years, SO₂ emissions in the areas surrounding Mosaic New Wales have dropped substantially. During the period modeled under the Department’s DRR analysis (2012-2014), emissions of SO₂ were, on average, 25% higher than in 2016. **Table 1** below summarizes the largest sources of SO₂ in Hillsborough and Polk counties from 2012 through 2016:

Table 1: Annual SO₂ emissions from the largest sources in Hillsborough and Polk counties.

Facility ID	Facility Name	Distance from Mosaic New Wales (km)	Annual SO ₂ Emissions (tons)				
			2012	2013	2014	2015	2016
105-0059	Mosaic Fertilizer New Wales	0	7,104	7,194	7,126	6,844	7,424
105-0055	Mosaic Fertilizer South Pierce	13	1,210	1,454	1,732	1,886	1,553
105-0233	TECO Polk Power Station	13	1,064	1,174	1,245	830	1,096
105-0046	Mosaic Fertilizer Bartow	16	3,931	4,174	4,046	3,917	3,780
105-0234	Duke Hines Energy Complex	18	28	26	24	27	26
049-0340	Seminole Midulla Station	23	8	7	6	6	8
105-0216	Wheelabrator Ridge Energy	30	233	224	214	205	194
105-0004	Lakeland Electric McIntosh	30	5,155	5,792	2,157	2,205	1,275
057-0261	Hillsborough Resource Recovery	32	9	22	14	21	16
057-0008	Mosaic Fertilizer Riverview	34	2,569	2,225	2,209	1,733	1,804
057-0039	TECO Big Bend Station	35	9,158	10,907	11,157	7,315	6,213
Total Annual SO₂ Emissions (tons):			30,469	33,198	29,929	24,989	23,389

This downward trend in SO₂ emissions is projected to continue into the foreseeable future. Emissions are expected to decrease at the TECO Polk Power Station due to an increase in the utilization of natural gas. Upgrades to the flue gas desulfurization equipment at the Lakeland Electric McIntosh facility have already yielded very large reductions. At Mosaic New Wales and Mosaic Bartow, the catalyst upgrades will result in substantial reductions of actual and allowable SO₂ emissions. Once the emissions limits for these two facilities are effective, the potential to emit (PTE) will be just 4,774 tons per year (tpy) at Mosaic New Wales and 4,818 tpy at Mosaic Bartow. This marks a significant 55% reduction at Mosaic New Wales compared to the 2014 PTE of 10,750 tpy.

It is also important to observe that the reductions detailed in **Table 1** above do not account for the fact that Mosaic New Wales and Mosaic Bartow operate well below their maximum PTE. Historically, Mosaic New Wales has operated at approximately 75% of capacity and Mosaic Bartow has operated at approximately 81% of capacity (in tons of sulfuric acid produced per year). In short, actual emissions are significantly lower than the PTE, as show in **Table 2**.

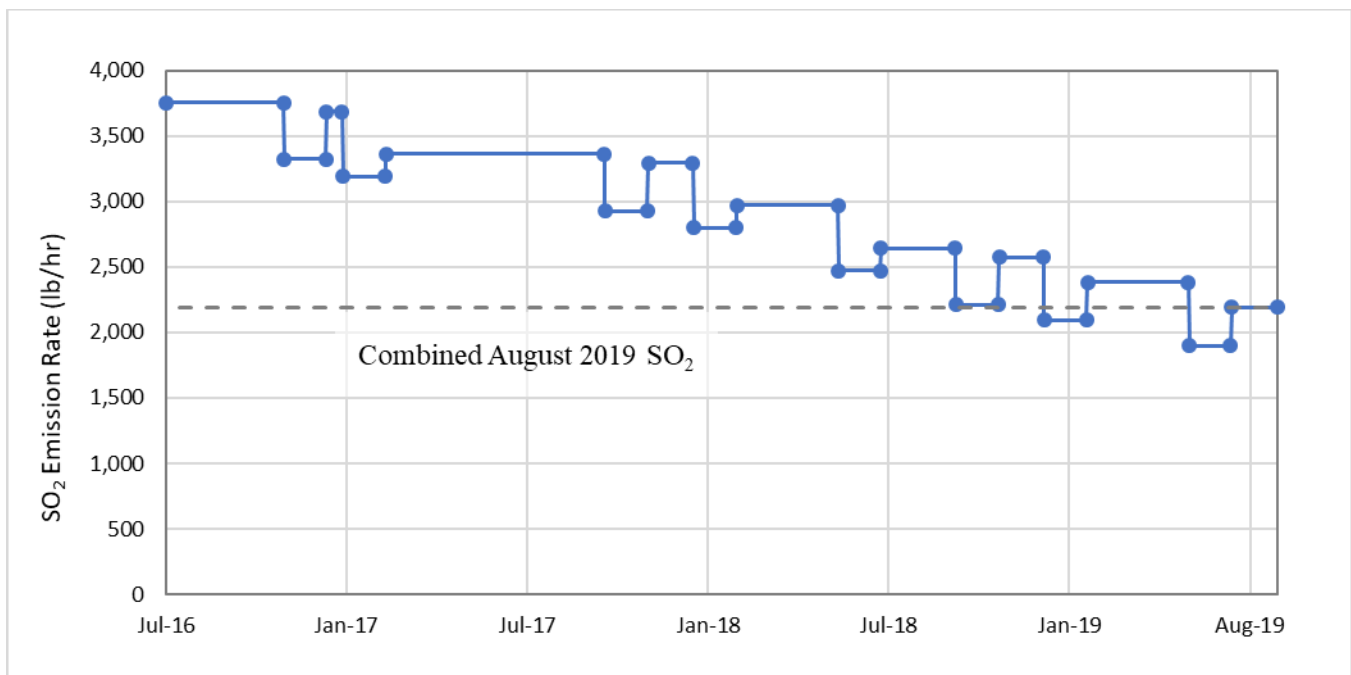
Table 2: Historic utilization, production, and emissions data for Mosaic SAPs 2012-2016.

Mosaic New Wales Unit	Percent of Total Hours Operated	Average Annual Acid Produced (tons)	Potential Annual Acid Production	Percentage of Maximum Production	Average Annual SO ₂ Emissions (tons)	SO ₂ Emission Limit (lb/hr)	Annual SO ₂ PTE (tons)	Average Percentage of PTE Emitted
SAP 1	88.65%	787,726	1,241,000	63.48%	1,292	496	2,172	59.45%
SAP 2	91.25%	921,457	1,241,000	74.25%	1,517	496	2,172	69.81%
SAP 3	92.91%	856,875	1,241,000	69.05%	1,397	496	2,172	64.32%
SAP 4	92.18%	833,342	949,000	87.81%	1,532	483	2,117	72.36%
SAP 5	87.50%	755,179	949,000	79.58%	1,394	483	2,117	65.86%
Average	90.50%			74.83%				66.36%

Mosaic Bartow Unit	Percent of Total Hours Operated	Average Annual Acid Produced (tons)	Potential Annual Acid Production	Percentage of Maximum Production	Average Annual SO ₂ Emissions (tons)	SO ₂ Emission Limit (lb/hr)	Annual SO ₂ PTE (tons)	Average Percentage of PTE Emitted
SAP 4	90.58%	775,569	949,000	81.72%	1,315	433	1,897	69.33%
SAP 5	90.20%	767,364	949,000	80.86%	1,308	433	1,897	68.94%
SAP 6	90.12%	775,569	949,000	81.72%	1,336	433	1,897	70.43%
Average	90.30%			81.44%				69.57%

As the upgrades to pollution control equipment are completed at each SAP, there will be further reductions in the PTE, culminating in the August 31, 2019 effective date for the emissions caps at Mosaic New Wales and Mosaic Bartow. Historic utilization rates are expected to remain constant, with each facility producing somewhere between 75% and 80% of its maximum sulfuric acid production capacity. Between January 2017 and August 2019, Mosaic has estimated the maximum potential emissions rates of SO₂ from these units will decline as shown in **Figure 1**:

Figure 1: Estimated combined maximum potential SO₂ emissions rates for the Mosaic New Wales and Mosaic Bartow SAPs as pollution control equipment upgrades are completed.



The PTE is reduced in a step-wise function as the catalyst in each SAP is upgraded. **Figure 1** reflects an estimated six-week shutdown for each SAP as the work is completed. These phased reductions in the maximum potential emissions rate conclude in August 2019 when the combined total potential emissions rate for the two facilities reaches 2,190 lb/hr (1,090 lb/hr at New Wales and 1,100 lb/hr at Bartow).

A calculation of the declining PTE of these two facilities is shown in **Table 3**. In 2016, the SAPs at Mosaic New Wales and Mosaic Bartow emitted a combined 11,192 tons of SO₂ (7,422 tons at Mosaic New Wales and 3,770 at Mosaic Bartow) with a PTE of 16,490. As the upgrades are completed, the PTE declines as shown below in **Table 3**:

Table 3: Projected combined PTE and projected actual emissions for Mosaic New Wales and Mosaic Bartow SAPs 2017-2020.

	2016	2017	2018	2019	2020
PTE (tons)	16,490	14,354	11,710	9,632	9,618
Projected Actuals (tons)	11,192 ^a	10,765 ^b	8,783 ^b	7,224 ^b	7,214 ^b
a. 2016 data retrieved from the facilities' annual operating reports.					
b. 2017-2020 data projected based on historic operating practices (i.e., 75% of PTE).					

The projected actual emissions are based on the data in **Table 2**, which demonstrate that Mosaic New Wales and Mosaic Bartow emit between 60% and 75% of each facility's total PTE. The Department used a conservative utilization factor of 75% to estimate the projected actual emissions for 2017 through 2020.⁸

When these reductions in potential emissions are combined with historic utilization rates and historic actual emissions as a fraction of potential emissions (i.e. through the combined effect of the actions already taken, emissions reductions already achieved, and actual operating conditions), it becomes evident that emission reductions at Mosaic New Wales and Mosaic Bartow are already progressively reducing the likelihood of a violation of the 2010 SO₂ NAAQS. In addition, the physical extent of property owned by Mosaic has increased, and areas where elevated SO₂ levels may occur are expected to be confined to Mosaic-owned property beginning in 2018.

⁸ This 75% actual emissions factor is further supported by data from the Mosaic Riverview facility, which has completed upgrades at all three of the facility's SAPs and is meeting the 575 lb/hr three-unit cap that was part of Florida's SO₂ nonattainment area SIP for Hillsborough County. In 2016, the Mosaic Riverview facility emitted 1,803 tons of SO₂, which is approximately 71% of the facility's PTE (2,518 tons per year).

SO₂ Emissions Limits – Construction Permits

The following air construction permits issued to Mosaic New Wales and Mosaic Bartow impose new SO₂ emissions caps that are sufficient to attain and maintain the 2010 SO₂ NAAQS in the area around Mosaic New Wales in Hillsborough and Polk counties.

1. New Wales Permit

The new SO₂ emissions cap imposed by the New Wales Permit will require physical and operational changes to the five SAPs, which are the largest SO₂ emitting units at the site. These SAPs are sulfur burning, double conversion, and double absorption plants of Leonard-Monsanto design. Sulfur is burned with dried atmospheric oxygen to produce SO₂. The SO₂ is then catalytically oxidized to sulfur trioxide (SO₃) over a catalyst bed. The SO₃ is then absorbed in sulfuric acid (H₂SO₄). The remaining SO₂, not previously oxidized, is passed over a final converter bed of catalyst and the SO₃ produced is then absorbed in H₂SO₄. Control of SO₂ emissions is achieved primarily through the chemical process itself.

Currently, a double conversion, double absorption plant efficiently converts SO₂ to SO₃, then SO₃ reacts in a mixture of water and H₂SO₄ to produce more H₂SO₄. In a double absorption system, the conversion efficiency from SO₂ to SO₃ is at least 99.7%. All five SAPs currently use vanadium and/or cesium catalyst in the converters. Sulfuric acid mist (SAM) emissions are controlled using high efficiency acid mist eliminators (demister pads) or impaction-type glass fiber collection devices.

To reduce SO₂ emissions at the five SAPs, Mosaic will replace the vanadium catalyst in each unit with a more efficient catalyst. The new catalysts will allow for more SO₂ to be captured for process purposes rather than emitted to the atmosphere. These changes will allow Mosaic to meet the much more stringent SO₂ emissions cap for these units. On average, at maximum production (i.e., all five SAPs in operation), SO₂ emissions will be reduced by over 55%. Under these conditions the production-based emissions limits at the five sulfuric acid plants of 3.5 and 4 lbs SO₂/ton of 100% H₂SO₄ are effectively lowered to 1.6 & 1.8 lbs SO₂/ton of 100% H₂SO₄, respectively. This is approximately equivalent to an overall SO₂ reduction of 5,930 tons per year (tpy) at maximum capacity. All five SAPs currently have SO₂ CEMS installed for compliance purposes, and Mosaic is required to submit compliance reports to the Department.

Mosaic's catalyst upgrades will be conducted in five phases, as outlined in **Table 4** below.

Table 4: Mosaic New Wales SO₂ reduction project schedule.

Scheduled Project	Affected Unit	Anticipated Completion Date	Permitted Completion Date ⁹
Catalyst Upgrade	SAP 2	Completed in January 2017	Completed January 2017
Catalyst Upgrade	SAP 1	January 2018	March 31, 2018
Catalyst Upgrade	SAP 3	June 2018	August 31, 2018
Catalyst Upgrade	SAP 4	January 2019	March 31, 2019
Catalyst Upgrade	SAP 5	June 2019	August 31, 2019

2. Bartow Permit

The new SO₂ emissions cap imposed by the Bartow Permit will require physical and operational changes to the three SAPs, the largest SO₂ emitting units on the site. These SAPs are sulfur burning, double conversion, and double absorption plants of Leonard-Monsanto design. Sulfur is burned with

⁹ See Air Construction Permit No. 1050059-101-AC, issued by the Florida Department of Environmental Protection on January 4, 2017.

dried atmospheric oxygen to produce SO₂. The SO₂ is then catalytically oxidized to SO₃ over a catalyst bed. The SO₃ is then absorbed in H₂SO₄. The remaining SO₂, not previously oxidized, is passed over a final converter bed of catalyst and the SO₃ produced is then absorbed in H₂SO₄. Control of SO₂ emissions is achieved primarily through the chemical process itself.

Currently, a double conversion, double absorption plant efficiently converts SO₂ to SO₃, then SO₃ reacts in a mixture of water and H₂SO₄ to produce more H₂SO₄. In a double absorption system, the conversion efficiency from SO₂ to SO₃ is at least 99.7%. All three plants currently use a vanadium catalyst in the converters. SAM emissions are controlled using high efficiency acid mist eliminators (demister pads) or impaction-type glass fiber collection devices.

To reduce SO₂ emissions at the three SAPs, Mosaic will replace the vanadium catalyst in each unit with a more efficient catalyst. The new catalysts will allow for more SO₂ to be captured for process purposes rather than emitted to the atmosphere. These changes will allow Mosaic to meet the much more stringent SO₂ emissions cap for these units. On average, at maximum production (i.e., all three SAPs in operation), SO₂ emissions will be reduced by over 15%. Under these conditions the production-based emissions limits at the 3 sulfuric acid plants of 4 lbs SO₂/ton of 100% H₂SO₄ are effectively lowered to 3.4 lbs SO₂/ton of 100% H₂SO₄. This is equivalent to approximately an overall 876 tpy SO₂ reduction at maximum capacity. All three SAPs currently have SO₂ CEMS installed for compliance purposes, and Mosaic is required to submit compliance reports to the Department.

Mosaic's catalyst upgrades will be conducted in three phases, as outlined in **Table 5** below.

Table 5: Mosaic Bartow SO₂ reduction project schedule.

Scheduled Project	Affected Unit	Anticipated Completion Date	Permitted Completion Date
Catalyst Upgrade	SAP 4	Completed in October 2016	December 31, 2017 ¹⁰
Catalyst Upgrade	SAP 6	October 2017	June 30, 2018 ¹¹
Catalyst Upgrade	SAP 5	October 2018	Not yet permitted.

¹⁰ See Air Construction Permit No. 1050046-048-AC, issued by the Florida Department of Environmental Protection on September 30, 2016.

¹¹ See Air Construction Permit No. 1050046-049-AC, issued by the Florida Department of Environmental Protection on July 14, 2017.

SO₂ Emissions Limits – Dispersion Modeling

The Department utilized air dispersion modeling to demonstrate that the SO₂ emissions caps imposed by the New Wales permit and the Bartow permit, once effective, will allow for attainment and maintenance of the 2010 SO₂ NAAQS in the area around Mosaic New Wales in Hillsborough and Polk counties. As previously mentioned, this modeling demonstration was performed in compliance with all applicable EPA rules and guidance including Appendix W and the SO₂ SIP Guidance.

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.¹² Accordingly, the Department utilized the latest version of AERMOD (v.16216r) using the regulatory default options to analyze the impact of the modified facilities on the ambient SO₂ concentrations in the area around Mosaic New Wales.

2. Modeled Facilities

Mosaic New Wales is by far the largest source of SO₂ in Polk County but there are a variety of smaller nearby SO₂ sources in Polk County and adjacent Hardee, Manatee, and Hillsborough counties. Appendix W states, and the SO₂ SIP Guidance reiterates, that the number of sources to explicitly model should be small except in unusual cases.¹³ 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 km of the primary facility that had 2014 SO₂ emissions of at least 100 tons were 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 Mosaic Bartow, Mosaic's South Pierce facility 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 2**). All other sources in the area (**Table 6**) are represented in the added monitored background concentrations discussed in **Section 10**. While the Lakeland Electric C.D. McIntosh Jr. Power Plant (Lakeland 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 monitor used to develop the modeled background concentrations is well placed to fully represent their emissions in the model. This is discussed further in **Section 10** below.

¹² See SO₂ SIP Guidance, Appendix A, Section 3.

¹³ See SO₂ SIP Guidance, Appendix A, Section 5.1.

Figure 2: 2014 SO₂ emissions sources greater than one ton, in and around Mosaic New Wales.

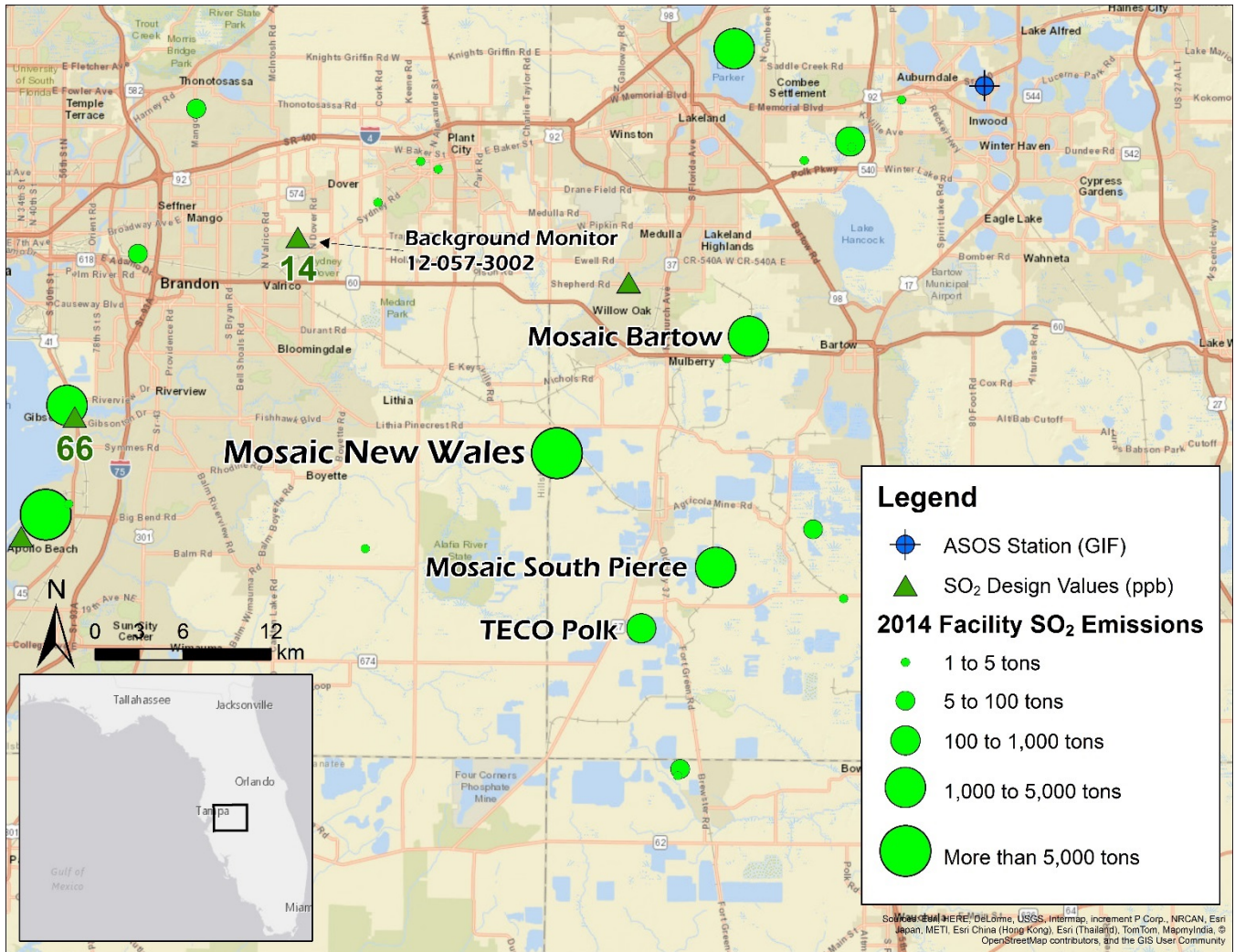


Table 6: All sources of SO₂ emissions greater than 5 tons in 2014 within 35 km of Mosaic New Wales.

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. 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 2012-2016 from the nearest representative NWS ASOS station at Winter Haven Municipal Airport (GIF) were processed with AERMET v.16216. 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 including 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
- METHOD STABLEBL ADJ_U* – Adjusts the surface friction velocity under low wind, stable conditions to avoid overprediction errors.

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.¹⁴ The 2012-2016 GIF dataset satisfies this completeness requirement.

3.1. Surface Characteristics

AERMET requires information about the surface characteristics of the land surrounding the meteorological station as inputs to calculate realistic planetary boundary layer profiles among other things. Estimates of the albedo (r), Bowen ratio (B_o), and surface roughness length (z_o) are typically developed using the recommended AERMET preprocessing program AERSURFACE v.13016.

3.1.1. 1992 NLCD Correction

AERSURFACE calculates r , B_o , and z_o based on the 1992 National Land Cover Dataset (NLCD) using a set of assumptions for each of the 21 land cover types in the dataset. However, there are several known issues with this approach.¹⁵ In the 25 years since the imagery used in the 1992 NLCD was developed, significant changes in land use have and continue to occur, decreasing the accuracy of the dataset as time passes. In addition, the technology used to develop the dataset is outdated compared to modern equipment and methods. These issues often necessitate a more thorough, hands-on process to estimate surface characteristics more accurately for input to AERMET.

Recognizing these issues, ERM reviewed the 1992 NLCD around the GIF ASOS station and determined that indeed there were many misinterpreted pixels within one km of the station as seen in **Figure 3** and

¹⁴ 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).

¹⁵ Brode, Roger, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, *AERSURFACE Update*, 10th Conference on Air Quality Modeling, March 13, 2012, RTP, North Carolina. https://www3.epa.gov/scram001/10thmodconf/presentations/1-8-Brode_10thMC_AERSURFACE_Update_03-13-2012.pdf

Figure 4. The recommended approach for calculating r and B_0 is to use the geometric mean over a 10 km by 10 km domain centered on the meteorological site. For z_0 , an inverse-distance weighted geometric mean of one km upwind of the site should be used. Since EPA has determined that the relationship between the surface roughness upwind of the measurement site and the measured wind speeds is generally the most important consideration for surface characteristics input to AERMET, ERM limited their review to the one km radius required to calculate z_0 rather than the full 10 km domain for r and B_0 .¹⁶ ERM then corrected the 1992 NLCD on a pixel-by-pixel basis with the resulting dataset depicted in **Figure 5**.

Figure 3: One-km radius around the ASOS Station at the Winter Haven Municipal Airport with imagery from February 11, 2017.



¹⁶ Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, *AERMOD Implementation Guide*, August 3, 2015, available at: https://www3.epa.gov/ttn/scram/7thconf/aermod/aermod_implmntn_guide_3August2015.pdf

Figure 4: 1992 NLCD land cover classification within one km of the GIF ASOS station.

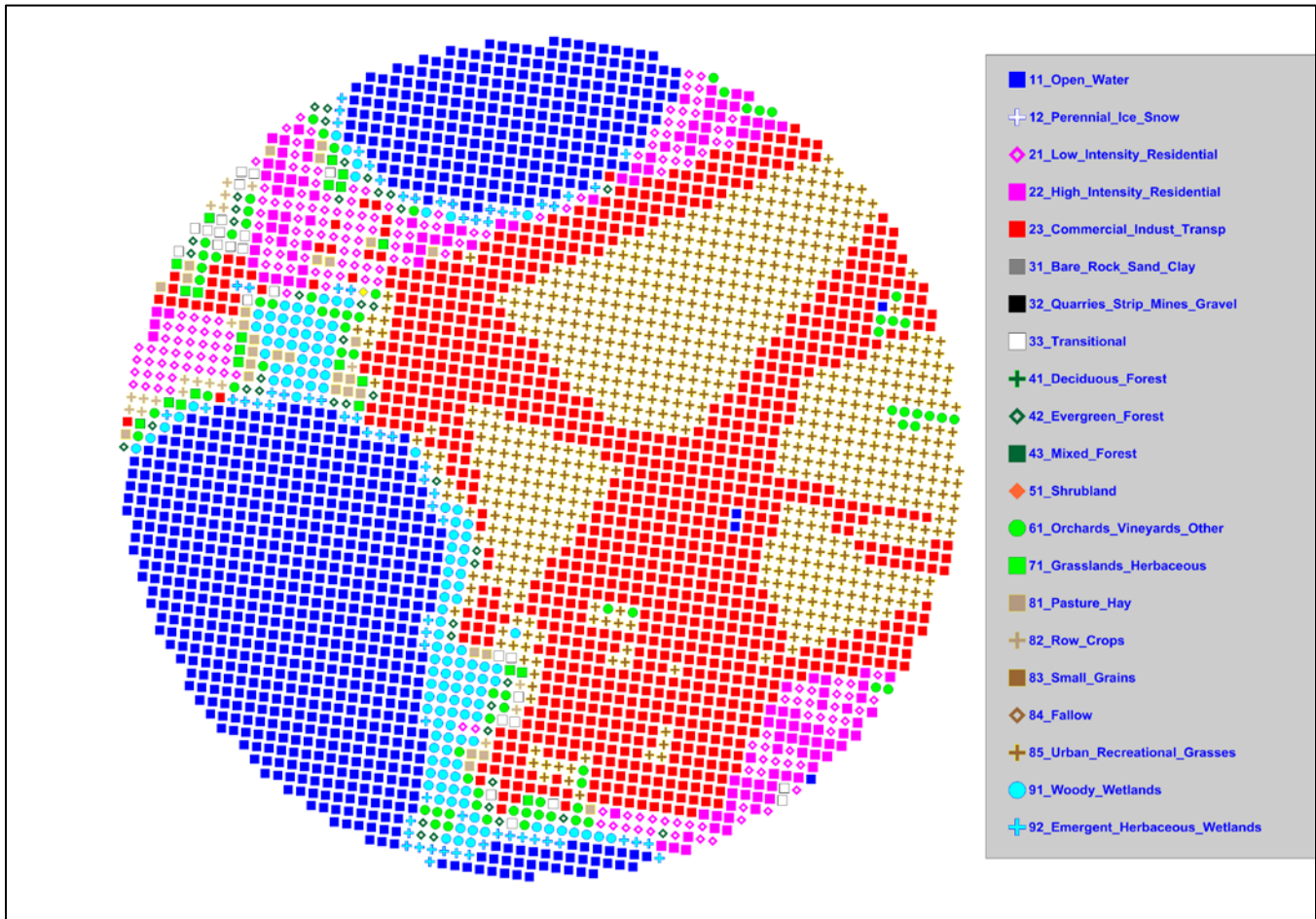
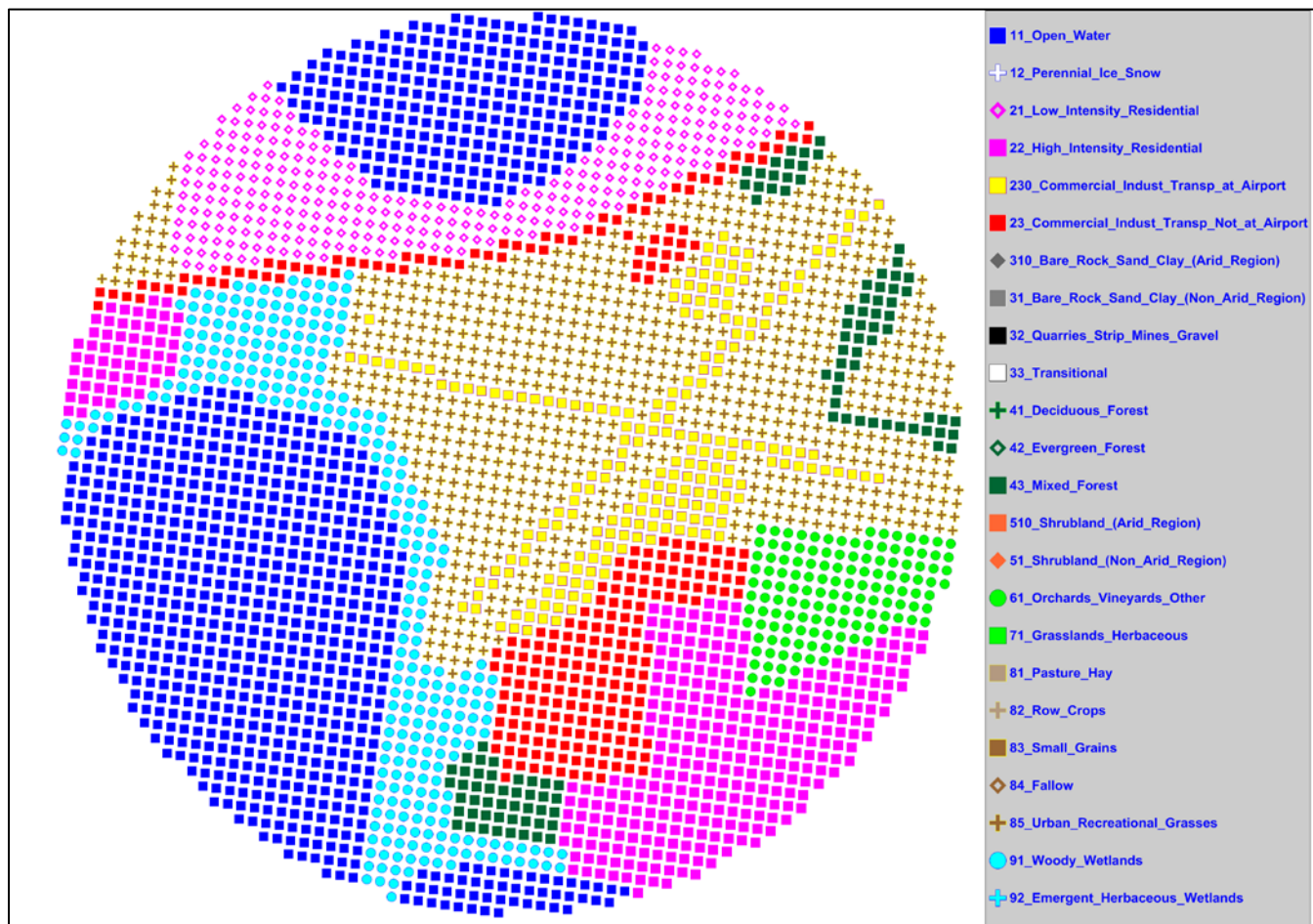


Figure 5: Corrected land cover classification within one km of the GIF ASOS station.



3.1.2. Precipitation Data Refinement

Another input to AERSURFACE is an annual moisture level classification based on precipitation. EPA guidance suggests classifying each year as wet, dry, or average by comparing the annual precipitation to the most recent 30-year climatological record at the site because the Bowen ratio is dependent upon surface moisture and precipitation patterns. ERM went a step further and classified each *month* as wet, dry, or average using the same method. The resulting array of classifications is shown below in **Table 7**.

Table 7: Monthly precipitation classification based on the most recent 30-year climatological average for the Winter Haven Municipal Airport.

Month	Year				
	2012	2013	2014	2015	2016
January	Dry	Dry	Average	Dry	Wet
February	Wet	Dry	Wet	Wet	Average
March	Dry	Average	Wet	Average	Average
April	Average	Wet	Wet	Wet	Dry
May	Average	Wet	Wet	Dry	Average
June	Wet	Wet	Dry	Dry	Average
July	Dry	Wet	Wet	Average	Dry
August	Average	Dry	Average	Wet	Average
September	Wet	Wet	Wet	Dry	Wet
October	Average	Dry	Dry	Dry	Average
November	Dry	Average	Wet	Wet	Dry
December	Average	Dry	Average	Average	Wet

3.1.3. Monthly Seasonal Calculations

The seasonal changes in foliage influence surface characteristics. As such, AERSURFACE requires input on the temporal occurrence of seasons for the study area. The subtropical climate of Polk County differs from the default assumptions in AERSURFACE, so the Department has developed a more accurate set of monthly seasonal classifications as detailed in **Table 8**.

Table 8: AERSURFACE seasonal classification refinement for Polk County, Florida.

Month	Seasonal Classification	
	AERRSURFACE Default	Polk County Actual
January	Late Autumn/Snowless Winter	Autumn
February	Late Autumn/Snowless Winter	Autumn
March	Transitional Spring	Transitional Spring
April	Transitional Spring	Transitional Spring
May	Transitional Spring	Midsummer
June	Midsummer	Midsummer
July	Midsummer	Midsummer
August	Midsummer	Midsummer
September	Autumn	Midsummer
October	Autumn	Autumn
November	Autumn	Autumn
December	Late Autumn/Snowless Winter	Autumn

3.1.4. Surface Characteristic Calculations

Finally, ERM used the updated land cover dataset, the refined precipitation data, and the monthly seasonal classifications to calculate estimates of r , B_o , and z_o using the same formulas contained within AERSURFACE. The calculations of z_o were performed in 12 30-degree sectors around the meteorological site. The values were then input to AERMET using the SITE_CHAR keyword on the stage 3 input files.

3.2. Site Representativeness

The surface characteristics were estimated for the area around Mosaic New Wales and the GIF ASOS station using the basic AERSURFACE approach without the updated land cover data 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 9**. 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 is considered to be representative of the domain for this modeling demonstration.

Table 9: Average surface characteristics from AERSURFACE for Polk County.

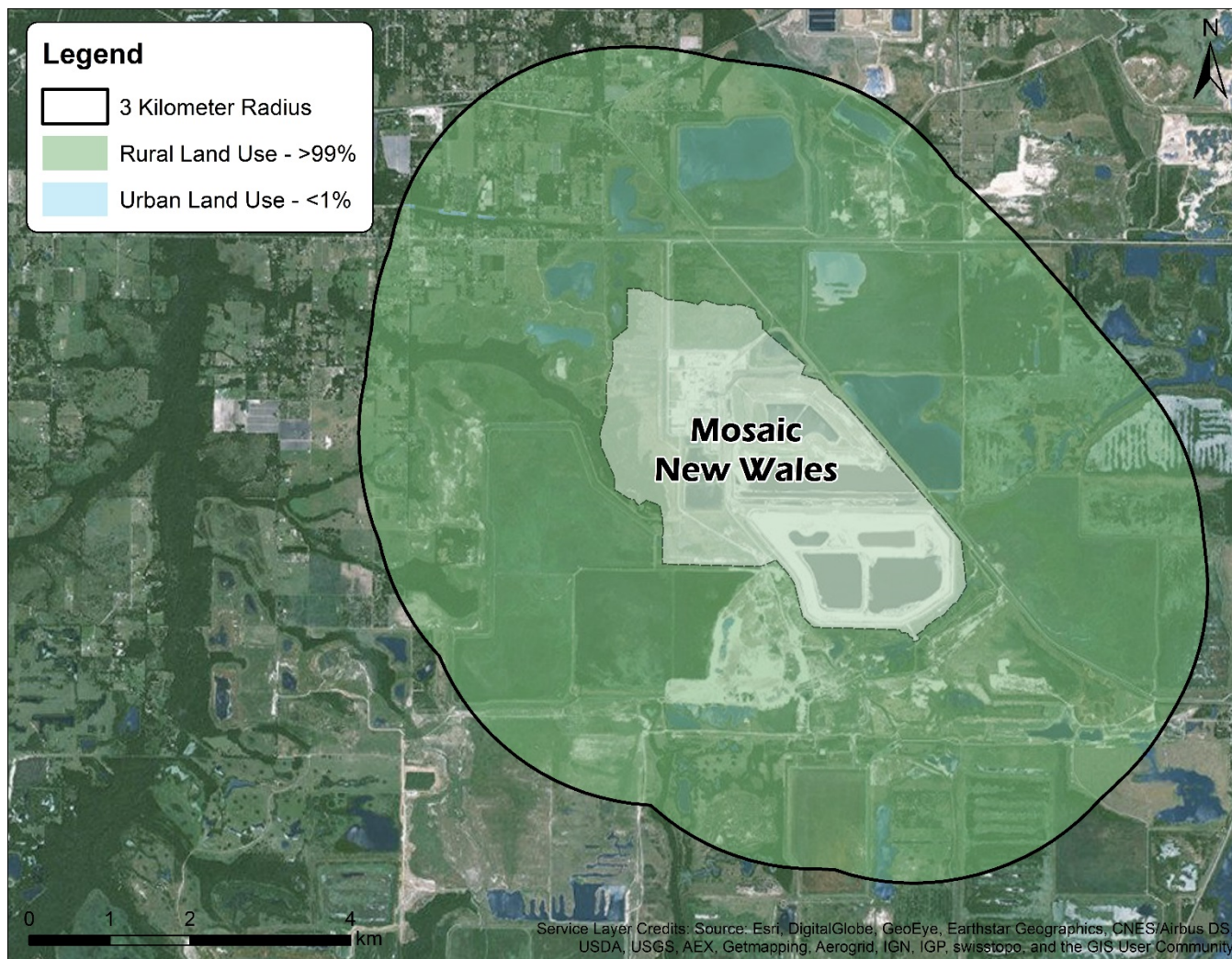
Location	Albedo	Bowen Ratio	Surface Roughness (z_0)
Winter Haven Municipal Airport	0.15	0.40	0.042
Mosaic New Wales	0.17	0.49	0.181

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.¹⁷ The Auer method requires an analysis of the land use within a 3-km radius around a facility to determine whether most 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 6** below, rural land use constitutes essentially the entire 3-km radius around Mosaic New Wales.

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

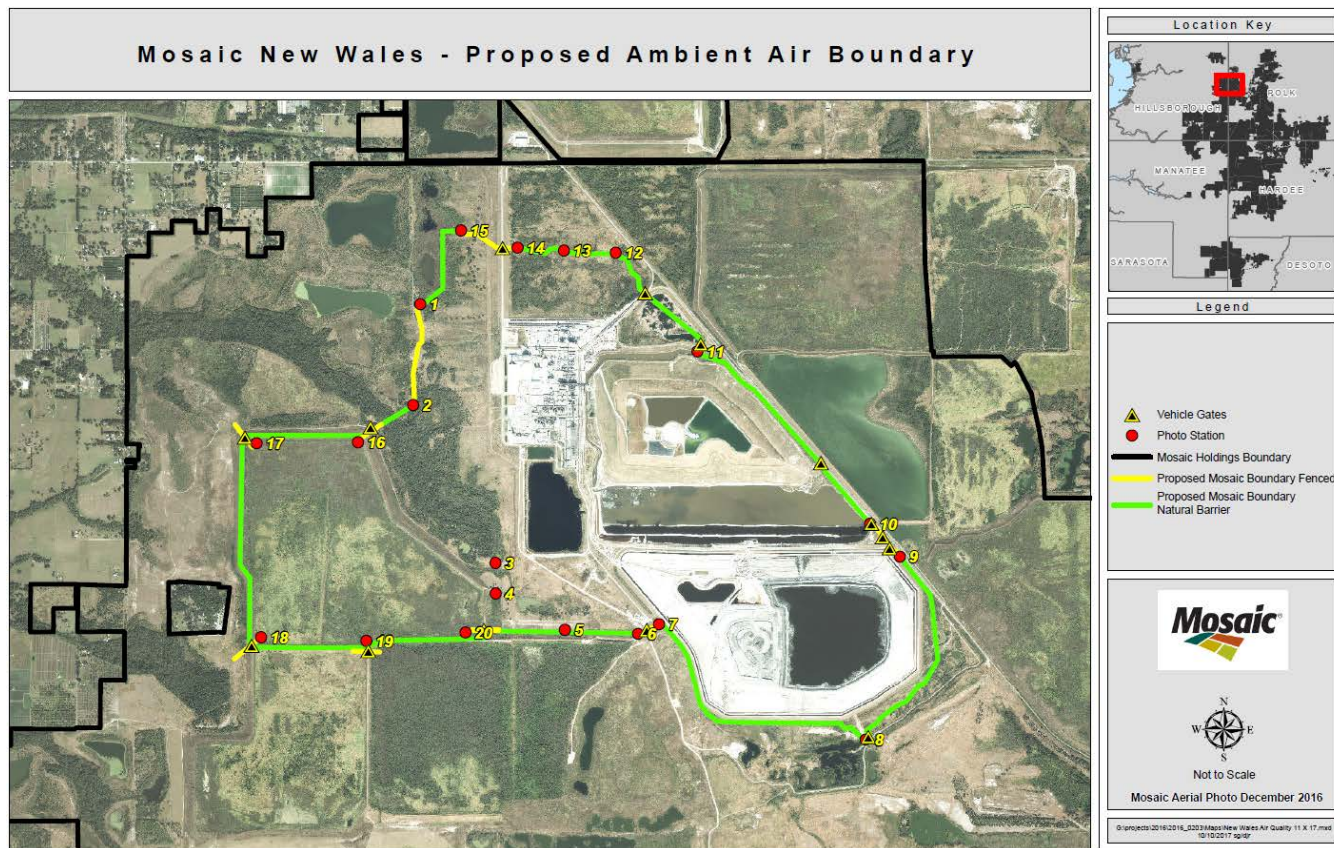
Figure 6: Land use classification around Mosaic New Wales.



5. Ambient Air Boundary

Ambient air is defined in 40 CFR Part 50.1(e) as “that portion of the atmosphere, external to buildings, to which the general public has access.” The NAAQS are only applicable in ambient air. Therefore, modeling receptors are not placed within the ambient air boundary (fence line) of the primary facility. The fence line used in the initial DRR submittal for Mosaic New Wales constitutes the existing boundary. As a part of the upgrades at the facility, Mosaic is improving its fence line on property already owned by the company to deter unauthorized trespassing. A ground survey was completed to establish the location of physical barriers sufficient to preclude access to the general public and to determine where additional fencing will need to be constructed. Mosaic provided to the Department the map in **Figure 7** and photographs corresponding to the numbers to document these barriers and construction sites. This information is included as **Appendix A**. The existing physical barriers include densely vegetated ditches and canals with steep banks, forested and herbaceous wetlands with dense vegetation and standing water, deep water industrial ponds, and densely vegetated uplands. The Department concurs with Mosaic’s evaluation and proposed work. All work on the fencing will be completed by August 2019. It should be noted that this fence line differs from the fence line submitted to EPA on June 23, 2017, due to a recent land acquisition by Mosaic.

Figure 7: Mosaic New Wales Proposed Ambient Air Boundaries.



6. 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.

7. 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, 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.¹⁸ 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 Mosaic New Wales’s fence line were removed and receptors were placed with 50 m spacing along the fence line. Receptors were included in all areas of ambient air within 7.5 km of Mosaic New Wales. The receptor grid used is described below in **Table 10** and **Figure 8**.

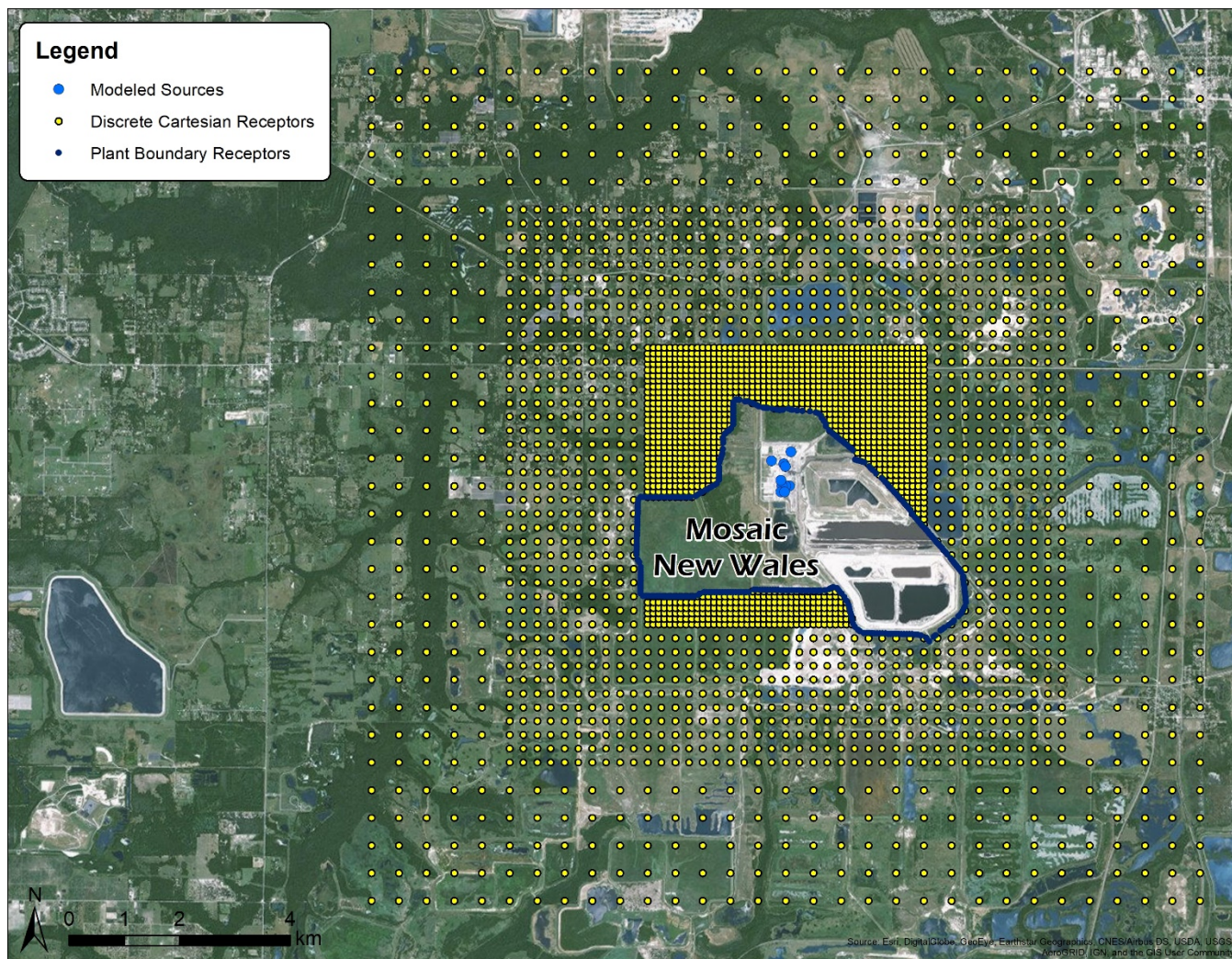
¹⁸ Applicability of Appendix W Modeling Guidance for the 1-hr NO_2 National Ambient Air Quality Standard. Tyler Fox Memorandum dated June 28, 2010, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711, available at: https://www3.epa.gov/scram001/guidance/clarification/ClarificationMemo_AppendixW_Hourly-NO2-NAAQS_FINAL_06-28-2010.pdf.

It should be noted that ERM used a subset of this grid focused on the area of highest concentration to decrease model runtimes. This did not have an impact on the results because the area of highest concentration near the Mosaic New Wales fence line was in an area of dense receptor placement in all model runs.

Table 10: Modeling demonstration 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	3,426

Figure 8: Receptor grid placement for the dispersion modeling demonstration.



8. 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 (BPIPFRM).

9. Modeled Source Parameters

The Department modeled all sources using their maximum permitted, short-term emissions rates. The stack heights for all units are less than or equal to the good engineering practice (GEP) height for each.¹⁹

¹⁹ 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).

A variety of small and/or intermittent emissions sources at the modeled facilities, including fire pumps and emergency generators, were not included.²⁰

9.1. Mosaic New Wales Modeled Units

All significant sources of SO₂ at Mosaic New Wales were included in the modeling demonstration. The new SO₂ emissions cap for the five SAPs will limit the total emissions from these units in aggregate to no more than 1,090 lb/hr on a 24-hour average. However, each individual unit retains its current permitted emissions limit. A summary of the modeled stack parameters and individual unit limits for Mosaic New Wales is presented below in **Table 11**.

Table 11: Mosaic New Wales units' modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO ₂ Emissions Rate (lb/hr)
No. 1 SAP	60.96	2.59	15.24	349.82	496
No. 2 SAP	60.96	2.59	15.24	349.82	496
No. 3 SAP	60.96	2.59	15.24	349.82	496
No. 4 SAP	60.66	2.59	15.24	349.82	483.33
No. 5 SAP	60.66	2.59	15.24	349.82	483.33
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

9.2. Mosaic South Pierce Modeled Units

Mosaic South Pierce is a smaller phosphate fertilizer manufacturing plant with just two SAPs on site. This facility is also in the process of reducing SO₂ emissions by upgrading the catalyst in the two SAPs. Although these units do not have new permitted limits, the upgrades occurring in 2018 will drastically reduce actual SO₂ emissions from the facility. Therefore, including these units in the modeling at their current permitted emissions limits is a conservative approach. A summary of the modeled stack parameters for Mosaic South Pierce is presented below in **Table 12**.

Table 12: Mosaic South Pierce units' modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO ₂ Emissions Rate (lb/hr)
No. 4 SAP	43.89	2.74	12.10	355.37	500
No. 5 SAP	43.89	2.74	12.10	355.37	500

9.3. Mosaic Bartow Modeled Units

The three SAPs at Mosaic Bartow were included in the modeling demonstration. The new SO₂ emissions cap for the three SAPs will limit the total emissions from these units in aggregate to no more than 1,100 lb/hr on a 24-hour average. However, each individual unit retains its current permitted

²⁰ See SO₂ SIP Guidance, Appendix A, Section 6.1.

emissions limit. A summary of the modeled stack parameters and individual unit limits for Mosaic Bartow is presented below in **Table 13**.

Table 13: Mosaic Bartow units’ modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO ₂ Emissions Rate (lb/hr)
No. 4 SAP	60.96	2.07	18.60	355.37	433.33
No. 6 SAP	60.96	2.07	18.60	355.37	433.33
No. 5 SAP	60.96	2.07	18.60	355.37	433.33

9.4. TECO Polk Modeled Units

TECO Polk is an electrical generating facility with a variety of SO₂ emissions sources. The largest source is a combined-cycle combustion turbine (CCCT) that primarily fires gasified coal (syngas). There are also four combustion turbines that were recently converted from simple-cycle units to combined-cycle units that mostly run on natural gas and a small SAP.²¹ There is an emergency flare onsite that is only used to burn excess gas from the solid fuel gasification system during startup, shutdown, and malfunction scenarios. Following EPA guidance, this unit was not included in the modeling demonstration because it does not operate “continuous enough or frequent enough to contribute significantly to the annual distribution of daily maximum 1-hour concentrations.”²² A summary of the modeled stack parameters for TECO Polk is presented below in **Table 14**.

Table 14: TECO Polk units’ modeling parameters.

Unit Description	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	SO ₂ Emissions Rate (lb/hr)
CCCT No. 1	45.72	5.79	23.10	444.30	454.78
SAP	60.65	1.98	8.84	355.40	55.37
CCCT 2A	45.11	5.80	18.30	363.40	12.41
CCCT 2B	45.11	5.80	18.30	363.40	12.41
CCCT 2C	45.11	5.80	18.30	363.40	12.41
CCCT 2D	45.11	5.80	18.30	363.40	12.41

9.5. Modeled Emissions Rate Averaging Times

If a compliance averaging time for an emissions 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 emissions limit where appropriate.²³ The adjustment method suggested by EPA is to scale the longer-term average emissions limit by the ratio of each source’s historic 99th percentile one-hour average emissions rate to its 99th percentile longer-term average emissions rate. The premise of this method is that a longer-term emissions 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 to account for this variability. The SO₂ emissions limits for several of the modeled sources are based on longer-term averaging periods

²¹ See Air Construction Permit No. 1050233-034-AC, issued by the Florida Department of Environmental Protection on May 15, 2013.

²² Additional Clarification Regarding the Application of Appendix W Modeling Guidance for the 1-hr NO₂ National Ambient Air Quality Standard. Tyler Fox Memorandum dated March 1, 2011, 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/2015-07/documents/appwno2_2.pdf

²³ See SO₂ SIP Guidance, Section V.D.2.

so this adjustment process was performed using actual emissions data from 2012-2014 retrieved from each unit's CEMS (**Table 15**). These ratios were applied to all modeled scenarios.

Table 15: Emissions variability analysis and equivalent emissions rate calculations.

Unit Description	99 th Percentile Rate (lb/hr)		Ratio	Permitted Limit (lb/hr)	Equivalent Limit (lb/hr)
	1-hour	Long-term			
New Wales SAP 1	419.22	412.13	0.983	496.00 24-hr	504.58
New Wales SAP 2	444.41	436.63	0.982	496.00 24-hr	505.09
New Wales SAP 3	408.25	400.62	0.981	496.00 24-hr	505.61
New Wales SAP 4	452.58	452.14	1.00	483.30 3-hr	483.30
New Wales SAP 5	458.06	457.90	1.00	483.30 3-hr	483.30
South Pierce SAP 10	412.39	400.37	0.971	500.00 24-hr	514.93
South Pierce SAP 11	376.93	367.16	0.974	500.00 24-hr	513.35
Bartow SAP 4	408.55	393.96	0.964	433.33 24-hr	449.51
Bartow SAP 6	441.98	431.89	0.977	433.33 24-hr	443.53
Bartow SAP 5	436.55	434.88	0.996	433.33 24-hr	435.07
TECO CCCT 1	420.08	329.78	0.785	357.00 30-day	454.78
TECO Polk SAP	-	-	0.900 ^a	49.83 24-hr	55.37

a. No hourly data available for the TECO SAP. Ratio is a conservative estimate based on similar units in the state.

10. Background Concentrations

A set of background concentrations to account for all SO₂ sources not explicitly modeled was developed from local monitoring data recorded at the Sydney monitor (12-057-3002) in nearby Hillsborough County. As shown in **Figure 2**, the monitor is 23 km northwest of Mosaic New Wales in a rural area away from any large sources of SO₂ making it an ideal background monitor. Using data obtained from the Florida Air Monitoring and Assessment System (FAMAS) for the period January 2014 to December 2016, a set of concentrations that vary by hour-of-day by season were calculated as recommended by the SO₂ SIP Guidance.²⁴

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 any modeled background source. In this case, any measurement recorded when the wind direction was from 57° to 175° was removed from the background calculation as shown in **Figure 9**. 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 16**. 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 9** 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 Lakeland McIntosh. Given that the monitor is approximately the same distance from Lakeland McIntosh as Lakeland McIntosh is from Mosaic New Wales, it can be reasonably assumed that Lakeland McIntosh would not

²⁴ See SO₂ SIP Guidance, Appendix A, Section 8.

have a significant impact in the modeled area, supporting the decision to not explicitly model this facility.

Figure 9: 2014-2016 average SO₂ concentrations by wind direction for monitor 12-057-3002.

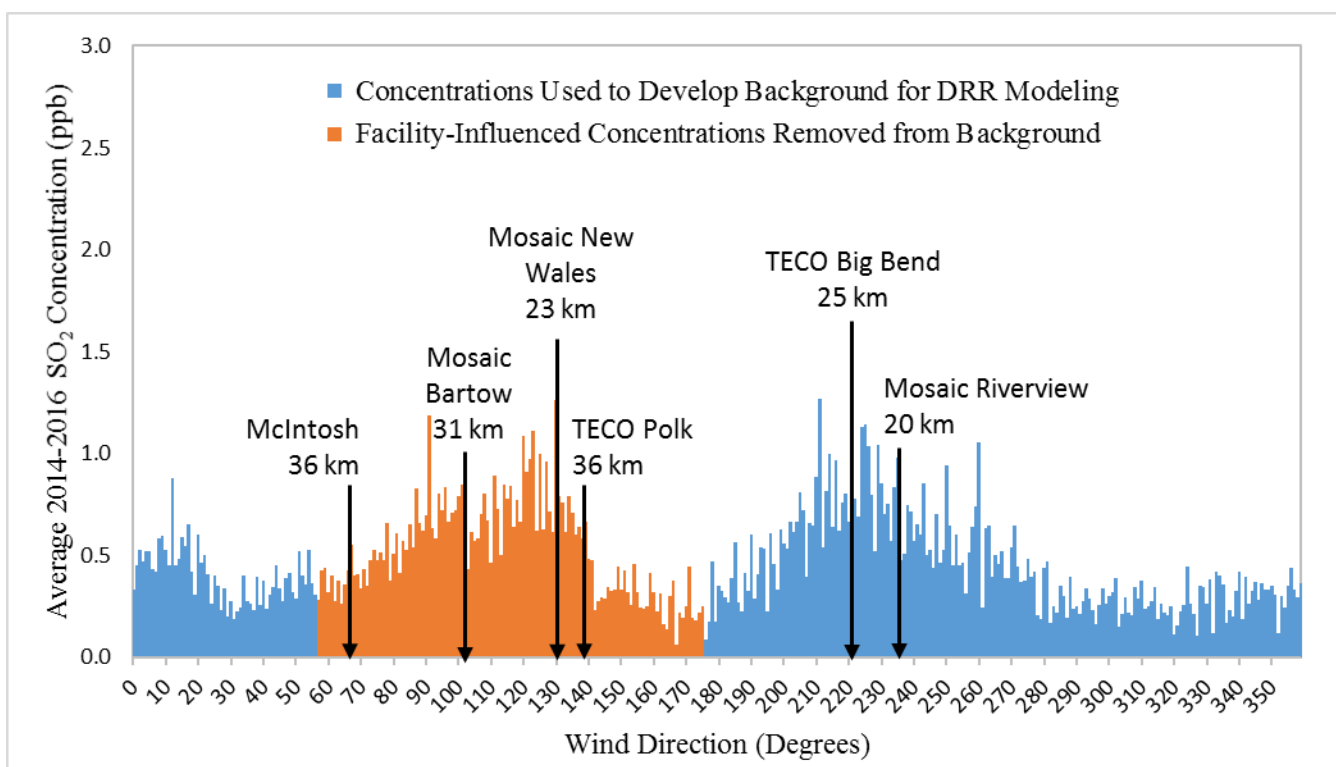


Table 16: 2014-2016 SO₂ background concentrations (ppb) by hour-of-day by season used in the modeling demonstration.

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

11. Modeling Approach

Initial modeling was performed to establish emissions caps for the New Wales SAPs and the Bartow SAPs. To demonstrate compliance with the NAAQS under the two new SO₂ emissions caps, a series of emissions scenarios had to be modeled to account for the entire range of possible emissions distributions

among the eight affected units. Once the caps were established, 336 modeling runs were performed to verify that these caps are protective of the NAAQS under any operational scenario. 84 possible combinations of two, three, four, and five SAPs operating at Mosaic New Wales were modeled against four different scenarios at Mosaic Bartow. The four Mosaic Bartow operational scenarios included the three combinations of two SAPs at their individual maximum allowable emission rate (MAER) with the third SAP using the remainder of the cap and a fourth scenario with the cap evenly distributed amongst the three SAPs. These runs are summarized below:

1. The first round of modeling included the ten possible combinations of two Mosaic New Wales SAPs operating at MAER with the other three offline. The results from these 40 modeling runs were all well below the NAAQS.
2. The second round included 33 possible combinations of three Mosaic New Wales SAPs operating with two at MAER and the third at a reduced emissions rate. These 132 runs included the worst case operational scenario that was the basis for the two emissions caps.
3. The third round consisted of 30 combinations of four online Mosaic New Wales SAPs to verify that the derived caps would be sufficient. The 120 scenarios in this round consisted of two SAPs at MAER and the remainder of the cap split evenly among the two other SAPs. These runs all showed compliance with the NAAQS.
4. The final round of modeling involved 11 scenarios with all five Mosaic New Wales SAPs operating. Two SAPs were modeled at MAER with the remainder of the cap distributed evenly amongst the other three SAPs for ten of the runs. For the eleventh run, the cap was distributed evenly amongst all five SAPs. These 44 runs again all showed compliance with the NAAQS.

The results from all 336 modeling runs described here can be found in a memo from ERM to the Department provided as **Appendix B**. These runs were all performed using the previously permitted 1,100 lb/hr cap for Mosaic New Wales and thus the results are all slightly conservative given the new cap of 1,090 lb/hr.

12. Results

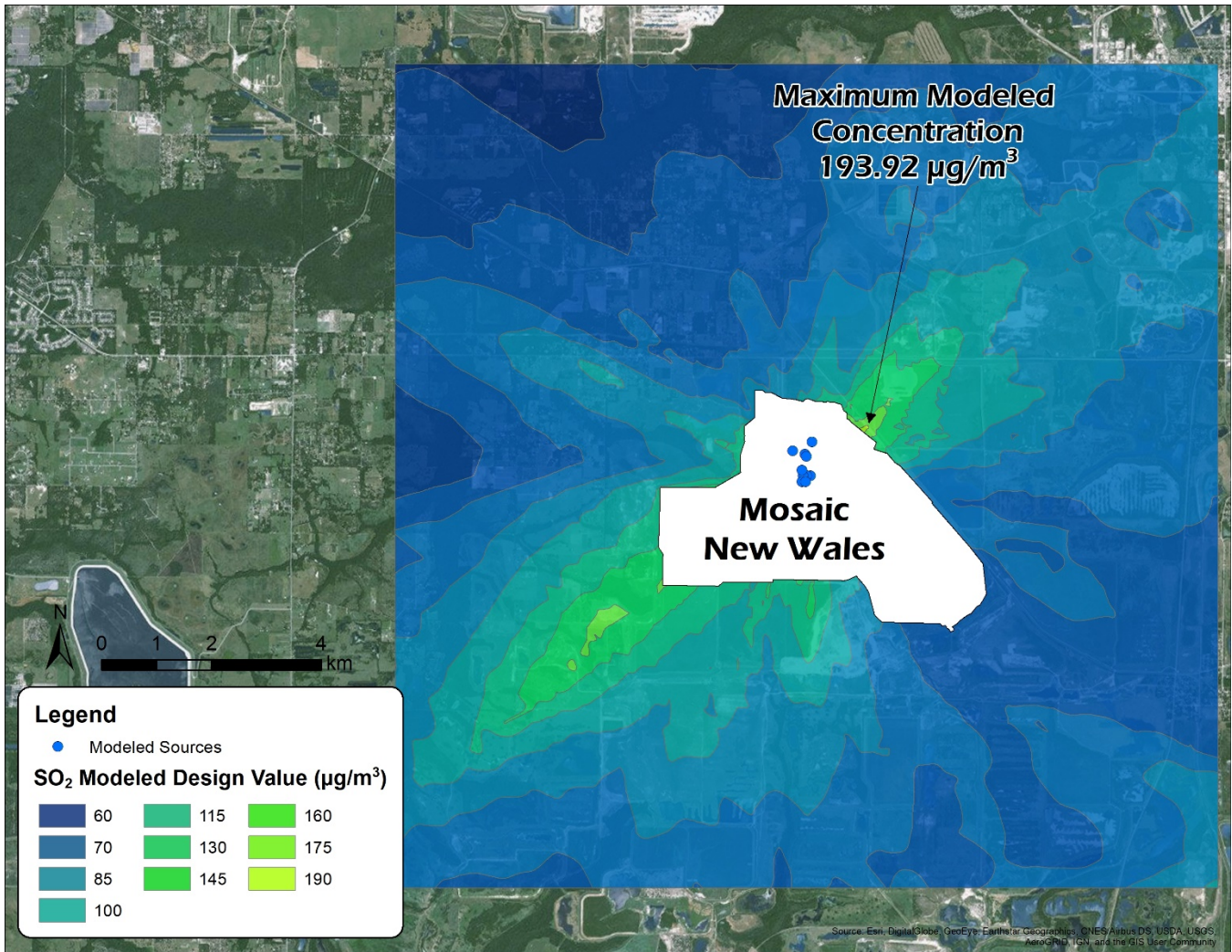
The EPA-recommended dispersion model AERMOD was used to evaluate the area around Mosaic New Wales to ensure compliance with the 2010 SO₂ NAAQS. The model was run from 2012-2016 using maximum allowable emissions rates and monitored background concentrations for 336 different operating scenarios under the two SO₂ emissions caps that were recently established at Mosaic New Wales and Mosaic Bartow. The 99th percentile (4th high) daily maximum 1-hour average concentration for each year at each receptor was averaged across all five years. The highest modeled design value at any receptor was then compared to the NAAQS for each of the 336 runs. The results from the worst-case emissions scenario summarized in **Table 17** and visualized in **Figure 10** indicate that once the currently ongoing work is completed at the facilities by August 2019, all areas around Mosaic New Wales will be in full compliance with the 2010 SO₂ NAAQS.

It should be noted that these results are from the Department's modeling using the recently permitted 1,090 lb/hr emissions cap for Mosaic New Wales rather than from the ERM modeling using the 1,100 lb/hr. Included with this SIP submittal are AERMOD input and output files for all 336 runs provided by ERM using the 1,100 lb/hr cap and the files for the single worst-case scenario from the Department's runs using the new 1,090 lb/hr cap.

Table 17: Maximum modeled SO₂ design value in the 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		
397,553.84	3,079,786.04	185.55	1.39	6.98	193.92	196.4	98.7%

Figure 10: Modeled SO₂ design values in the modeling demonstration.



Response to 40 CFR Part 51, Appendix V, Criteria

Pursuant to 40 CFR Part 51, Appendix V, the following materials shall be included in State Implementation Plan (SIP) submissions for review and approval by the U.S. Environmental Protection Agency (EPA).

1. Administrative Materials

(a) A formal letter of submittal from the Governor or his designee, requesting EPA approval of the plan or revision thereof (hereafter “the plan”).

A Pre-Hearing Submittal Letter signed by the Director of the Division of Air Resource Management, Florida Department of Environmental Protection (Department), on behalf of the Governor of the State of Florida, was sent to EPA Region 4 attached to this Pre-Hearing SIP Submittal.

(b) Evidence that the State has adopted the plan in the State code or body of regulations; or issued the permit, order, consent agreement (hereafter “document”) in final form. That evidence shall include the date of adoption or final issuance as well as the effective date of the plan, if different from the adoption/issuance date.

This proposed revision to Florida’s SIP consists of specific provisions of two air construction permits, Permit No. 1050059-106-AC, issued in draft form to the Mosaic New Wales facility on October 11, 2017, and Permit No. 1050046-050-AC, issued in final form to Mosaic (Bartow Facility) on July 3, 2017. A copy of each of these permits may be found in the “Materials Proposed to be Incorporated in the SIP” section of this submittal. A final air construction permit for the Mosaic New Wales facility will be included in the final SIP submittal.

(c) Evidence that the State has the necessary legal authority under State law to adopt and implement the plan.

The Department has the necessary legal authority to adopt and implement this proposed revision to Florida’s SIP. References to the pertinent Florida Statutes and Florida Administrative Code (F.A.C.) rules may be found in the “Legal Authority” section of this submittal.

(d) A copy of the actual regulation, or document submitted for approval and incorporation by reference into the plan, including indication of the changes made (*such as, redline/strikethrough*) to the existing approved plan, where applicable. The submittal shall include a copy of the official State regulation/document signed, stamped and dated by the appropriate State official indicating that it is fully enforceable by the State. The effective date of any regulation/document contained in the submission shall, whenever possible, be indicated in the regulation/document itself. *If the State submits an electronic copy, it must be an exact duplicate of the hard copy with changes indicated, signed documents need to be in portable document format, rules need to be in text format and files need to be submitted in manageable amounts (e.g., a file for each section or chapter, depending on size, and separate files for each distinct document) unless otherwise agreed to by the State and Regional Office.*

This proposed revision to Florida’s SIP consists of specific provisions of two air construction permits, Permit No. 1050059-106-AC, issued in draft form to Mosaic (New Wales facility) on October 11, 2017, and Permit No. 1050046-050-AC, issued in final form to Mosaic (Bartow Facility) on July 3, 2017. A copy of each of these permits may be found in the “Materials Proposed to be Incorporated in the SIP” section of this submittal.

(e) Evidence that the State followed all of the procedural requirements of the State’s laws and constitution in conducting and completing the adoption/issuance of the plan.

State law (Section 120.525, F.S.) requires DEP to give notice of public meetings, hearings, and workshops by publication in the Florida Administrative Register (FAR) not less than seven days before the event. Through publication in the FAR of the notice of opportunity to participate in a public hearing, if requested, at least 30 days before the event, DEP has complied with all state procedural requirements relevant to the development of this proposed SIP revision. A copy of the notice of proposed SIP revision may be found in the “Public Participation” section of this submittal.

(f) Evidence that public notice was given of the proposed change consistent with procedures approved by EPA, including the date of publication of such notice.

The Department has complied with all public hearing requirements of 40 CFR 51.102. Copies of all relevant notices and notification emails may be found in the “Public Participation” section of this submittal.

(g) Certification that public hearing(s) were held in accordance with the information provided in the public notice and the State’s laws and constitution, if applicable and consistent with the public hearing requirements in 40 CFR 51.102.

Certification of compliance with all state and federal public notice and hearing requirements is provided in the “Letter of Submittal.”

(h) Compilation of public comments and the State’s response thereto.

Written comments received during the public notice period on this proposed SIP revision, and the Department’s response thereto, will be included in the “Public Participation” section of this submittal.

2. Technical Support

(a) Identification of all regulated pollutants affected by the plan.

This SIP revision addresses only the air pollutant sulfur dioxide (SO₂).

(b) Identification of the locations of affected sources including the EPA attainment/nonattainment designation of the locations and the status of the attainment plan for the affected areas(s).

This SIP revision applies to the area in the vicinity of the Mosaic New Wales and Mosaic Bartow facilities, located in Polk County, Florida. The location these facilities are as follows:

Mosaic New Wales:

3095 Highway 640, Mulberry, Florida. UTM coordinates: Zone 17N, 396.7 km E and 3079.3 km N.

Mosaic Bartow:

3200 Highway 60 West, Bartow, Florida. UTM coordinates: Zone 17N, 409.8 km E and 3087.3 km N.

(c) Quantification of the changes in plan allowable emissions from the affected sources; estimates of changes in current actual emissions from affected sources or, where appropriate, quantification of changes in actual emissions from affected sources through calculations of the differences between certain baseline levels and allowable emissions anticipated as a result of the revision.

See the SO₂ Emissions Limits – Construction Permits section of this submittal.

(d) The State’s demonstration that the national ambient air quality standards, prevention of significant deterioration increments, reasonable further progress demonstration, and visibility, as applicable, are protected if the plan is approved and implemented. For all requests to redesignate an area to attainment for a national primary ambient air quality standard, under section 107 of

the Act, a revision must be submitted to provide for the maintenance of the national primary ambient air quality standards for at least 10 years as required by section 175A of the Act.

See the SO₂ Emissions Limits – Dispersion Modeling section of this submittal.

(e) Modeling information required to support the proposed revision, including input data, output data, models used, justification of model selections, ambient monitoring data used, meteorological data used, justification for use of offsite data (where used), modes of models used, assumptions, and other information relevant to the determination of adequacy of the modeling analysis.

See the SO₂ Attainment Demonstration – Dispersion Modeling section of this submittal. See also CD containing an electronic copy of this document together with all SO₂ air quality modeling files.

(f) Evidence, where necessary, that emission limitations are based on continuous emission reduction technology.

See Mosaic New Wales and Mosaic Bartow facilities Air Construction Permits (1050059-106-AC and 1050046-050-AC, respectively) in the “Materials Proposed to be Incorporated into the SIP” section of this submittal.

(g) Evidence that the plan contains emission limitations, work practice standards and recordkeeping/reporting requirements, where necessary, to ensure emission levels.

See SO₂ emissions limits for each affected unit, specified operating parameters, and specified compliance measures from the Mosaic New Wales and Mosaic Bartow facilities Air Construction Permits (1050059-106-AC and 1050046-050-AC, respectively) detailed under the “Materials Proposed to be Incorporated into the SIP” section of this submittal.

(h) Compliance/enforcement strategies, including how compliance will be determined in practice.

See SO₂ emissions limits for each affected unit, specified operating parameters, and specified compliance measures from Mosaic New Wales and Mosaic Bartow Air Construction Permits (1050059-106-AC and 1050046-050-AC, respectively) detailed under the “Materials Proposed to be Incorporated into the SIP” section of this submittal.

(i) Special economic and technological justifications required by any applicable EPA policies, or an explanation of why such justifications are not necessary.

Not Applicable.

3. Exceptions

Not applicable.

Materials to be Incorporated into the SIP

1. Permitted Limits and Conditions

The Department is proposing that specific conditions from the New Wales draft air construction permit (Permit No.: 1050059-106-AC) and the Bartow final air construction permit (Permit No. 1050046-050-AC) be incorporated into Florida's SIP. EPA's approval of these limits into Florida's SIP will ensure that Florida's SIP attains and maintains the 2010 SO₂ NAAQS in the area around Mosaic New Wales in Hillsborough and Polk counties.

1.1. Specific Limits and Conditions from the New Wales Permit

The Department is proposing that the following specific conditions from the New Wales draft air construction permit (Permit No.: 1050059-106-AC) be incorporated into Florida's SIP:

Affected Units:

- EU 002 – No. 1 Sulfuric Acid Plant
- EU 003 – No. 2 Sulfuric Acid Plant
- EU 004 – No. 3 Sulfuric Acid Plant
- EU 042 – No. 4 Sulfuric Acid Plant
- EU 043 – No. 5 Sulfuric Acid Plant

SO₂ Emissions Cap for All Five SAPs: Effective August 31, 2019, when any combination of SAPs operates within a 24-hour block averaging period the following SO₂ emissions cap applies:

- 1,090 lb SO₂/hour, 24-hour block average (6:00 a.m. to 6:00 a.m.).

Continuous Compliance Demonstration: The permittee shall demonstrate continuous compliance with the SO₂ emissions standards and caps based on data collected by the existing SO₂ CEMS. The emissions standards and caps apply during all periods of operation including startup and shutdown.

SO₂ CEMS Requirements: The existing SO₂ CEMS shall comply with the quality assurance and quality control requirements specified in the most recent Title V air operation permit.

For ease of reference, the entirety of the New Wales Permit (Permit No. 1050059-106-AC) is provided on the following pages.



Florida Department of Environmental Protection

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

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

PERMITTEE

Mosaic Fertilizer, LLC
New Wales Facility

Authorized Representative:
Mr. Joseph Kline, General Manager

Permit No. 1050059-106-AC
Permit Expires: October 31, 2019

Project: Minor Source Air Construction Permit (Revised)
1-hour SO₂ NAAQS Compliance
Polk County, Florida

PROJECT

This permit revises the previously issued Permit No. 1050059-103-AC, replacing it in its entirety with this permit.

This is the final air construction (AC) permit, which authorizes sulfuric acid plant numbers 1, 2, 3, 4 & 5 to comply with the U.S. EPA's 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) final rule (Project). This facility is an existing phosphate fertilizer manufacturing facility categorized under Standard Industrial Classification No. 2874. The existing New Wales Facility is located in Polk County at 3095 Highway 640 in Mulberry, Florida. UTM coordinates are: Zone 17, 396.7 km East and 3079.3 km North; Latitude: 27° 50'03" North and Longitude: 82°02'57" 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.

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

(DRAFT)

For:

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

PERMIT

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. Joseph Kline, Mosaic Fertilizer, LLC: joseph.kline@mosaicco.com
Mr. Rama K. Iyer, P.E., Mosaic Fertilizer, LLC: rama.iyer@mosaicco.com
Mr. Ghani Baig, Mosaic Fertilizer, LLC: ghani.baig@mosaicco.com
DEP SWD Office: SWD_Air@dep.state.fl.us & SWD_Air_Permitting@dep.state.fl.us
Mr. Hastings Read, DEP OBP: hastings.read@dep.state.fl.us
Ms. Lynn Searce, DEP OPC: lynn.searce@dep.state.fl.us
Ms. Ana Oquendo-Vazquez, U.S. EPA Region 4: oquendo.ana@epa.gov
Ms. Natasha Hazziez, U.S. EPA Region 4: hazziez.natasha@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.

(DRAFT)

Mosaic Fertilizer, LLC
New Wales Facility

Permit No. 1050059-106-AC
Air Construction Permit (Revised)

SECTION I. GENERAL INFORMATION

FACILITY DESCRIPTION

This existing 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) Defluorination Batch Tank Area; an animal feed ingredients (AFI) granulation plant; a sulfur storage & handling system; a limestone storage silo/rock grinding operation; and a phosphogypsum stack.

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
002	Sulfuric Acid Plant No. 1
003	Sulfuric Acid Plant No. 2
004	Sulfuric Acid Plant No. 3
042	Sulfuric Acid Plant No. 4
044	Sulfuric Acid Plant No. 5

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- This facility does not operate 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

Major changes made in the draft version of the permit documents are specifically shown as follows: deletions are noted in strike through and additions are noted in double underline. The changes will not be shown in the final permit documents.

This minor source air construction (AC) permit is for the sulfuric acid plant numbers 1, 2, 3, 4 & 5 to comply with the U.S. EPA's 2010 1-hour sulfur dioxide (SO2) National Ambient Air Quality Standard (NAAQS) final rule.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Minor Source Air Construction Permit Application received on October 11, 2017 (complete).

SECTION II. 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 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. 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.]

SECTION III. EMISSION(S) UNIT(S) SPECIFIC CONDITIONS

Subsection A. Sulfuric Acid Plant Nos. 1, 2, 3, 4 & 5 (Emission Units 002, 003, 004, 042 & 044)

This subsection of the permit addresses the following emission units:

E.U. ID No.	Brief Description
002	Sulfuric Acid Plant No. 1
003	Sulfuric Acid Plant No. 2
004	Sulfuric Acid Plant No. 3
042	Sulfuric Acid Plant No. 4
044	Sulfuric Acid Plant No. 5

This permit is for the addition of an SO₂ emission limit applicable to Sulfuric Acid Plant Nos. 1, 2, 3, 4 & 5. This emission limit is based on an allowable SO₂ emissions rate that demonstrates compliance with the U.S. Environmental Protection Agency's (U.S. EPA's) 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) final rule. Compliance with the new SO₂ emission limit shall occur on or before August 31, 2019.

No new or modified equipment (physical changes) or changes in methods of operation associated with this project (SO₂ emission limit addition) are authorized under this permit. No changes are authorized to any of the sulfuric acid plant stacks, e.g., stack height, diameter.

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.]

PERMITTED CAPACITIES

2. Permitted Capacities: The permitted capacities of the SAPs shall remain the same. [Application Nos. 1050059-103-AC & 1050059-106-AC, and, Rule 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.]

SO₂ EMISSION LIMIT

3. SO₂ Emission Limit: The following SO₂ emission limit applies to the Sulfuric Acid Plant (SAP) Nos. 1, 2, 3, 4 & 5:
 - a. When all five SAPs are in operation within the same 24-hour block averaging period, a cap of 1,100,090 lb SO₂/hour, 24-hour block average (6:00 a.m. to 6:00 a.m.) is applicable; and,
 - b. The cap of 1,100,090 lb SO₂/hour, 24-hour block average (6:00 a.m. to 6:00 a.m.) applies in scenarios when any combination of any number of the SAPs are not in operation and when any number of the SAPs are in operation.

Any requested revisions to this emission limit requires air dispersion modelling review and written approval from the Department's Meteorology and Air Modeling Section in the Office of Business Planning to confirm SO₂ NAAQS compliance. [Rule 62-4.030, *General Prohibition*, F.A.C.; and, Rule 62-4.210, *Construction Permits*, F.A.C.; and, Application Nos. 1050059-103-AC & 1050059-106-AC.]

COMPLIANCE REQUIREMENTS

4. Initial Compliance: These emission units shall use certified SO₂ CEMS data to demonstrate initial compliance with the new SO₂ emission limit. [Rules 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.; and, Application Nos. 1050059-103-AC & 1050059-106-AC.]
5. Recordkeeping: The permittee shall keep records of the initial compliance demonstration. The records shall include the SO₂ CEMS data along with the sulfuric acid production rate (TPH, tons per hour) during the demonstration. Any 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 Nos. 1050059-103-AC & 1050059-106-AC.]

1.2. Specific Limits and Conditions from the Bartow Permit

The Department is proposing that the following specific conditions from the Bartow air construction permit (Permit No. 1050046-050-AC) be incorporated into Florida's SIP:

Affected Units:

- EU 012 – No. 4 Sulfuric Acid Plant
- EU 032 – No. 6 Sulfuric Acid Plant
- EU 033 – No. 5 Sulfuric Acid Plant

SO₂ Emissions Caps for All Three SAPs: Effective August 31, 2019, when any combination of SAPs operates within a 24-hour block averaging period the following SO₂ emissions cap applies:

- 1,100 lb SO₂/hour, 24-hour block average (6:00 a.m. to 6:00 a.m.).

Continuous Compliance Demonstration: The permittee shall demonstrate continuous compliance with the SO₂ emissions standards and caps based on data collected by the existing SO₂ CEMS. The emissions standards and caps apply during all periods of operation including startup and shutdown.

SO₂ CEMS Requirements: The existing SO₂ CEMS shall comply with the quality assurance and quality control requirements specified in the most recent Title V air operation permit.

For ease of reference, the entirety of the Bartow Permit (Permit No. 1050046-050-AC) is provided on the following pages.



Florida Department of Environmental Protection

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

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

PERMITTEE

Mosaic Fertilizer, LLC
Bartow Facility

Authorized Representative:
Mr. Jeraud Dominic, General Manager

Permit No. 1050046-050-AC
Permit Expires: October 31, 2019

Project: Minor Source Air Construction Permit
1-hour SO₂ NAAQS Compliance

Polk County, Florida

PROJECT

This is the final air construction (AC) permit, which authorizes sulfuric acid plant numbers 4, 5 & 6 to comply with the U.S. EPA's 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) final rule (Project). This facility is an existing phosphate fertilizer manufacturing facility categorized under Standard Industrial Classification No. 2874. The existing Bartow Facility is in Polk County at 3200 Highway 60 West in Bartow, Florida. UTM coordinates are: Zone 17, 409.77 East and 3087.26 North. Latitude is: 27° 54' 25.938" North; and, Longitude is: 81° 55' 0.9691" 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.

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

David Lyle Read, P.E.
2017.07.03 09:34:15 -04'00'

For:

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

SA/dlr/sms



Florida Department of Environmental Protection

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

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

PERMITTEE

Mosaic Fertilizer, LLC
Bartow Facility

Authorized Representative:
Mr. Jeraud Dominic, General Manager

Permit No. 1050046-050-AC
Permit Expires: October 31, 2019

Project: Minor Source Air Construction Permit
1-hour SO₂ NAAQS Compliance

Polk County, Florida

PROJECT

This is the final air construction (AC) permit, which authorizes sulfuric acid plant numbers 4, 5 & 6 to comply with the U.S. EPA's 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) final rule (Project). This facility is an existing phosphate fertilizer manufacturing facility categorized under Standard Industrial Classification No. 2874. The existing Bartow Facility is in Polk County at 3200 Highway 60 West in Bartow, Florida. UTM coordinates are: Zone 17, 409.77 East and 3087.26 North. Latitude is: 27° 54' 25.938" North; and, Longitude is: 81° 55' 0.9691" 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.

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

David Lyle Read, P.E.
2017.07.03 09:34:15 -04'00'

For:

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

SA/dlr/sms

PERMIT

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. Jeraud Dominic, Mosaic Fertilizer, LLC: jerry.dominic@mosaicco.com
Mr. Rama K. Iyer, P.E., Mosaic Fertilizer, LLC: rama.iyer@mosaicco.com
Mr. Keith Nadaskay, Mosaic Fertilizer, LLC: keith.nadaskay@mosaicco.com
DEP SWD Office: SWD_Air@dep.state.fl.us & SWD_Air_Permitting@dep.state.fl.us
Mr. Hastings Read, DEP OBP: hastings.read@dep.state.fl.us
Ms. Lynn Searce, DEP OPC: lynn.searce@dep.state.fl.us
U.S. EPA Region 4: R4TitleVFL@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.



2017.07.03 09:38:35
-04'00'

Mosaic Fertilizer, LLC
Bartow Facility

Permit No. 1050046-050-AC
Air Construction Permit

Page 2 of 5

SECTION I. GENERAL INFORMATION

FACILITY DESCRIPTION

This existing facility consists of one phosphoric acid plant (two trains), one monoammonium phosphate/diammonium phosphate (MAP/DAP) plant, one DAP fertilizer plant, three sulfuric acid plants, two fertilizer shipping plants, an auxiliary boiler and a molten sulfur storage and handling system.

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
012	No. 4 Sulfuric Acid Plant
032	No. 6 Sulfuric Acid Plant
033	No. 5 Sulfuric Acid Plant

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- This facility does not operate 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 minor source air construction (AC) permit is for the sulfuric acid plant numbers 4, 5 & 6 to comply with the U.S. EPA's 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) final rule.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Minor Source Air Construction Permit Application received on June 9, 2017 (complete).

SECTION II. 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 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. 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.]

SECTION III. EMISSION(S) UNIT(S) SPECIFIC CONDITIONS
Subsection A. Sulfuric Acid Plant Nos. 4, 5 & 6 (Emission Units 012, 033 & 032)

This subsection of the permit addresses the following emission units:

E.U. ID No.	Brief Description
012	No. 4 Sulfuric Acid Plant
032	No. 6 Sulfuric Acid Plant
033	No. 5 Sulfuric Acid Plant

This permit is for the addition of an SO₂ emission limit applicable to Sulfuric Acid Plant Nos. 4, 5 & 6. This emission limit is based on an allowable SO₂ emissions rate that demonstrates compliance with the U.S. Environmental Protection Agency's (U.S. EPA's) 2010 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) final rule. Compliance with the new SO₂ emission limit shall occur on or before **August 31, 2019**.

No new or modified equipment (physical changes) or changes in methods of operation associated with this project (SO₂ emission limit addition) are authorized under this permit. No changes are authorized to any of the sulfuric acid plant stacks, e.g., stack height, diameter.

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.]

PERMITTED CAPACITIES

2. **Permitted Capacities:** The permitted capacities of the SAPs shall remain the same. [Application No. 1050046-050-AC; and, Rule 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.]

SO₂ EMISSION LIMIT

3. **SO₂ Emission Limit:** The following SO₂ emission limit applies to the Sulfuric Acid Plant (SAP) Nos. 4, 5 & 6:
 - a. When all three SAPs are in operation within the same 24-hour block averaging period, a cap of 1,100 lb SO₂/hour, 24-hour block average (6:00 a.m. to 6:00 a.m.) is applicable; and,
 - b. The cap of 1,100 lb SO₂/hour, 24-hour block average (6:00 a.m. to 6:00 a.m.) applies in scenarios when any combination of any number of the SAPs are not in operation and when any number of the SAPs are in operation.

Any requested revisions to this emission limit requires air dispersion modelling review and written approval from the Department's Meteorology and Air Modeling Section in the Office of Business Planning to confirm SO₂ NAAQS compliance. [Rule 62-4.030, *General Prohibition*, F.A.C.; and, Rule 62-4.210, *Construction Permits*, F.A.C.; and, Application No. 1050046-050-AC.]

COMPLIANCE REQUIREMENTS

4. **Initial Compliance:** These emission units shall use certified SO₂ CEMS data to demonstrate initial compliance with the new SO₂ emission limit. [Rules 62-4.070(1)&(3), *Reasonable Assurance*, F.A.C.; and, Application No. 1050046-050-AC.]
5. **Recordkeeping:** The permittee shall keep records of the initial compliance demonstration. The records shall include the SO₂ CEMS data along with the sulfuric acid production rate (TPH, tons per hour) during the demonstration. Any 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. 1050046-050-AC.]

Legal Authority

Chapter 403 of the Florida Statutes (F.S.), entitled “Environmental Control,” provides the legal framework for most of the activities of the air resource management program within the Florida Department of Environmental Protection (Department). Except as provided at sections 403.8055 and 403.201, F.S., for fast-track rulemaking and the granting of variances under Chapter 403, F.S., respectively, Chapter 120, F.S., Florida’s “Administrative Procedure Act,” sets forth the procedures the Department must follow for rulemaking, variances, and public meetings. The most recent version of the Florida Statutes can be found online at <http://www.leg.state.fl.us/Statutes>.

The principal sections of Chapter 403, F.S., that grant the Department authority to operate its air program are listed below. Authority to develop and update Florida’s State Implementation Plan (SIP) and 111(d) Designated Facilities Plan is expressly provided by subsection 403.061(35), F.S., which provides that the Department shall have the power and the duty to control and prohibit pollution of air and water in accordance with the law and rules adopted and promulgated by it and, for this purpose, to “exercise the duties, powers, and responsibilities required of the state under the federal Clean Air Act, 42 U.S.C. ss. 7401 et seq.”

- [403.031](#) Definitions, including the definition of “regulated air pollutant” (403.031(19)).
- [403.061](#) Authority to: promulgate plans to provide for air quality control and pollution abatement (403.061(1)); adopt rules for the control of air pollution in the state (403.061(7)); take enforcement action against violators of air pollution laws, rules and permits (403.061(8)); establish and administer an air pollution control program (403.061(9)); set ambient air quality standards (403.061(11)); monitor air quality (403.061(12)); require reports from air pollutant emission sources (403.061(13)); require permits for construction, operation, and modification of air pollutant emission sources (403.061(14)); and exercise the duties, powers, and responsibilities required of the state under the federal Clean Air Act (403.061(35)).
- [403.087](#) Authority to issue, deny, modify, and revoke permits.
- [403.0872](#) Authority to establish an air operating permit program as required by Title V of the Clean Air Amendments of 1990.
- [403.0877](#) Authority to require engineering certification of permit applications.
- [403.121](#) Authority to seek judicial and administrative remedies for violations.
- [403.131](#) Authority to seek injunctive relief for violations.
- [403.141](#) Authority to find civil liability for violations.
- [403.161](#) Authority to assess civil and criminal penalties for violations.
- [403.182](#) Authority for local pollution control programs.
- [403.201](#) Authority to grant variances.
- [403.8052](#) Authority to establish a Small Business Assistance Program for small-business sources of air pollutant emissions.
- [403.8055](#) Authority to adopt U.S. Environmental Protection Agency (EPA) standards by reference through a fast-track process.
- [403.814](#) Authority to allow use of general permits (permits-by-rule) for minor sources.

Other statutory authorities, outside of Chapter 403, F.S., for Florida's air program are as follows:

- [112.3143](#) Requirement that public officials disclose potential conflicts of interest.
- [112.3144](#) Requirement for disclosure of financial interests by public officials.
- [120.569](#) Authority of agency head to issue an emergency order in response to an immediate threat to public health, safety, or welfare.
- [316.2935](#) Authority to prohibit the sale and operation of motor vehicles whose emission control systems have been tampered with, and to prohibit the operation of motor vehicles that emit excessive smoke.
- [320.03](#) Authority to establish Air Pollution Control Trust Fund and use \$1 fee on every motor vehicle license registration sold in the state for air pollution control purposes, including support of approved local air pollution control programs.
- [376.60](#) Authority to establish a fee for asbestos removal projects.

Current and historical versions of Florida Administrative Code (F.A.C.) rule sections and chapters back to January 1, 2006, may be accessed from the Florida Department of State (DOS) website <https://www.flrules.org>. The DOS website also provides access to materials adopted by reference since January 1, 2011. Department rule chapters containing State Implementation Plan (SIP) or 111(d) State Plan provisions are as follows:

- [62-204](#) Air Pollution Control – General Provisions
- [62-210](#) Stationary Sources – General Requirements
- [62-212](#) Stationary Sources – Preconstruction Review
- [62-243](#) Tampering with Motor Vehicle Air Pollution Control Equipment
- [62-252](#) Gasoline Vapor Control
- [62-256](#) Open Burning
- [62-296](#) Stationary Sources – Emission Standards
- [62-297](#) Stationary Sources – Emissions Monitoring

Other air-related Department rule chapters—not part of the SIP or 111(d) State Plan—include:

- [62-213](#) Operation Permits for Major Sources of Air Pollution (Title V)
- [62-214](#) Requirements for Sources Subject to the Federal Acid Rain Program
- [62-257](#) Asbestos Program

Notice of Opportunity to Submit Comments and Participate in Public Hearing

Florida Administrative Register

Volume 43, Number 204, October 20, 2017

PLACE: Residence Inn Amelia Island, 2301 Sadler Road, Fernandina Beach, Florida 32034

GENERAL SUBJECT MATTER TO BE CONSIDERED: General business.

A copy of the agenda may be obtained by contacting: Board of Veterinary Medicine, 2601 Blair Stone Rd., Tallahassee, FL 32399, (850)717-1981.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting: Board of Veterinary Medicine, 2601 Blair Stone Rd., Tallahassee, FL 32399; (850)717-1981. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

For more information, you may contact: Board of Veterinary Medicine, 2601 Blair Stone Rd., Tallahassee, FL 32399; (850)717-1981.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

The Department of Environmental Protection, Division of Air Resource Management announces a hearing to which all persons are invited.

DATE AND TIME: November 22, 2017, 10:00 a.m.

PLACE: Department of Environmental Protection, Bob Martinez Center, 2600 Blair Stone Road, Room 195, Tallahassee, Florida

GENERAL SUBJECT MATTER TO BE CONSIDERED:

Pursuant to 40 CFR 51.102, the Department of Environmental Protection (DEP) announces a public hearing and opportunity to offer comments on a proposed revision to Florida's State Implementation Plan (SIP) under the Clean Air Act. This SIP revision consists of a plan that will ensure the attainment and maintenance of the 2010 revised Sulfur Dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) in Polk County. Florida's SIP amendment consists of specific conditions from two air construction permits for two facilities, Mosaic New Wales and Mosaic Bartow, as they pertain to emissions of SO₂. The materials comprising DEP's proposed SIP revision may be obtained through the Department's website at <http://www.dep.state.fl.us/air/rules/regulatory.htm> or by contacting Hastings Read at Hastings.Read@dep.state.fl.us. The materials may also be inspected during normal business hours at DEP, Division of Air Resource Management offices, Bob Martinez Center, 2600 Blair Stone Road, Tallahassee,

Florida. A public hearing will be held, if requested, at the date, time and place given above. It is not necessary that the hearing be held or attended for persons to comment on DEP's proposed submittal to EPA. Any request for a public hearing must be submitted by letter or e-mail to Hastings Read, Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, MS 5500, Tallahassee, Florida 32399-2400 (Hastings.Read@dep.state.fl.us), and received no later than November 20, 2017. If no request for a public hearing is received, the hearing will be cancelled, and notice of the cancellation will be posted at the following website: <https://www.fldepnet.org/public-notices>. Persons may also contact Terri Long at (850)717-9023 to find out if the hearing has been cancelled. It is not necessary that the hearing be held or attended for persons to comment on DEP's proposed submittal to EPA. Any comments must be submitted to Hastings Read by letter or email, with a copy to Terri Long (Terri.Long@dep.state.fl.us), and received no later than November 20, 2017.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting Terri Long at (850)717-9023 or Terri.Long@dep.state.fl.us. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, (800) 955-8771 (TDD) or (800) 955-8770 (Voice).

For more information, you may contact Hastings Read by letter or email or by calling (850)717-9017.

DEPARTMENT OF HEALTH

Board of Medicine

The Board of Medicine - Probable Cause Panel South announces a public meeting to which all persons are invited.

DATE AND TIME: Friday, November 3, 2017, 2:30 p.m.

PLACE: Meet-Me: phone number 1(888)670-3525, participant code 125-528-7056

GENERAL SUBJECT MATTER TO BE CONSIDERED: To conduct a public meeting to reconsider disciplinary cases with prior findings of probable cause.

A copy of the agenda may be obtained by contacting: Sheila Autrey, (850)558-9813, sheila.autrey@flhealth.gov.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 10 days before the workshop/meeting by contacting: Sheila Autrey, (850)558-9813, sheila.autrey@flhealth.gov. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

Public Participation

Documentation will be added upon completion of the 30-day comment period for the pre-hearing submittal and public notice.

Appendix A: Mosaic New Wales Fence Line Memorandum

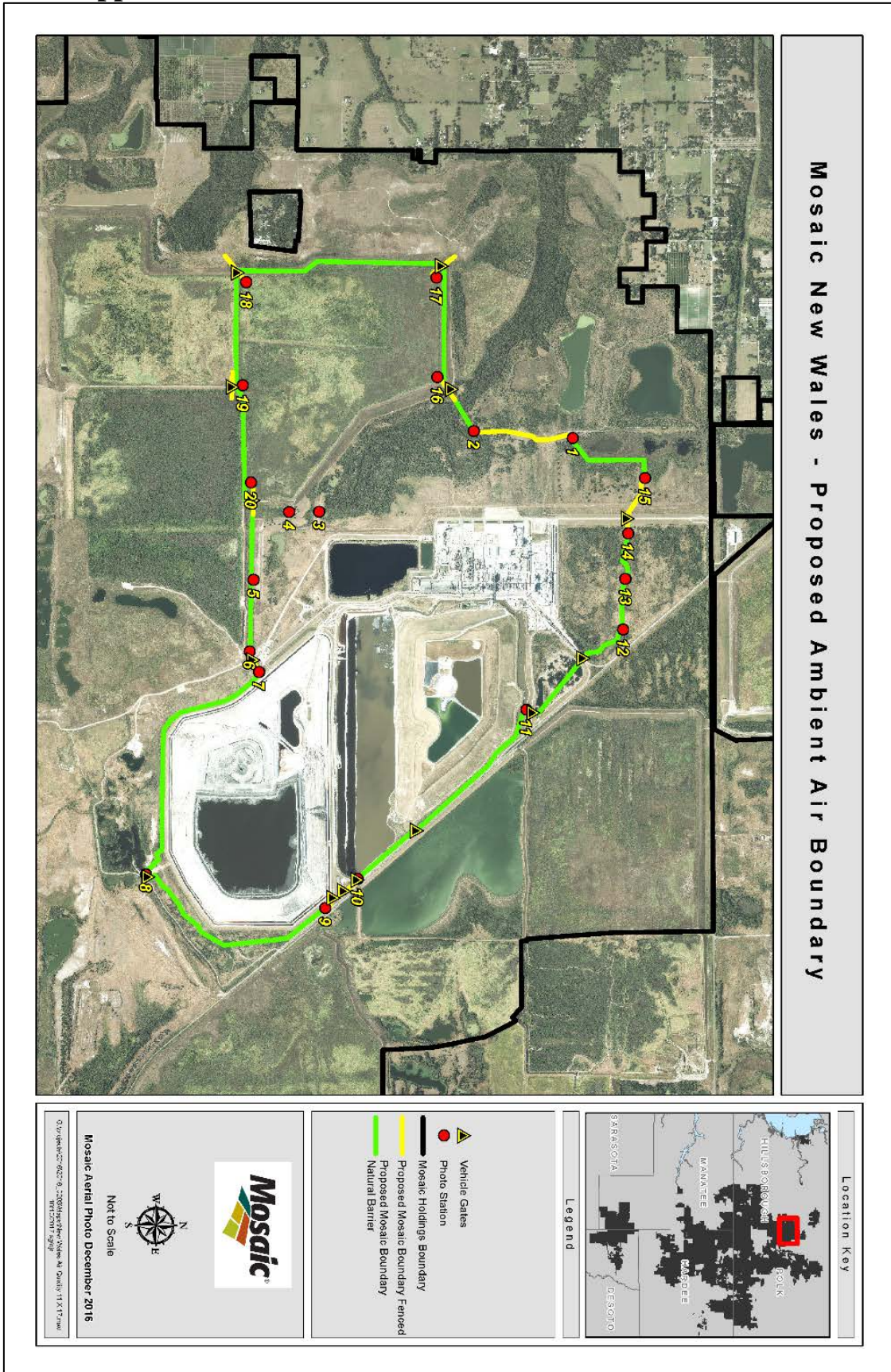




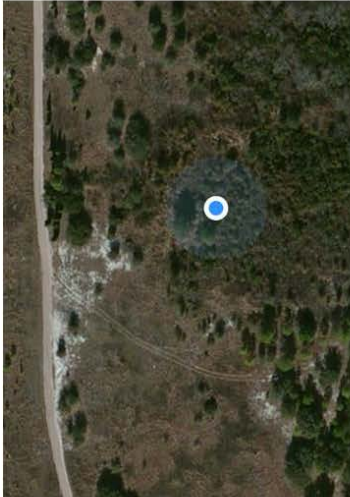
Exhibit 3

Mosaic New Wales – Proposed Ambient Air Boundary Existing Physical Barriers and Proposed Fence Location

The map on Exhibit 2 shows the existing physical barriers and proposed fence/gates needed to form a continuous ambient air boundary. It also provides the proposed DEP ambient air boundary and Mosaic's modeled boundary at 1.3 lbs./ton. Physical barriers include thick woods, as discussed in the August 26, 1999 letter from EPA Region 5 to the Minnesota Pollution Control Agency, fence and a combination of these to form a continuous perimeter to deter unauthorized trespass. Vehicle access, as needed for plant ingress/ egress and compliance monitoring will be via secured gates. The New Wales Entrance Guard Gate will be moved at or north of the intersection of the ambient air boundary and the entrance road.

For purposes of this evaluation, existing physical barriers include densely vegetated ditches and canals with steep banks, forested and herbaceous wetlands with dense vegetation and standing water, deep water industrial ponds, densely vegetated uplands, etc. These existing physical barriers provide as much or more of a deterrent to unauthorized access as fencing. Photos were taken along the end points of the proposed fence sections as well as along the outer boundary to illustrate existing physical barriers. The approximate locations of these photos are represented by the red dots labeled 1 thru 15.

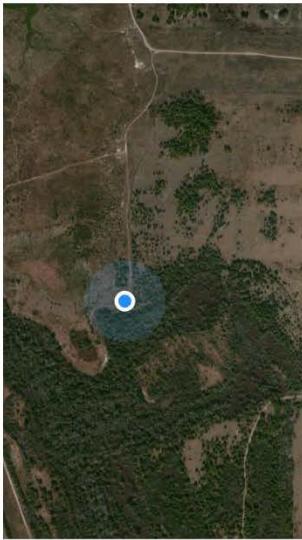
Fence/gate installation will be completed on or before the catalyst installation completion date of June 2019. No trespassing signs will be posted on each segment of fence and/or gate. The boundary will be inspected at least annually to ensure: (1) continued integrity of the fencing, (2) no trespassing signs remain in place and (3) no change in the natural barrier conditions requiring fence reconfiguration.



No.1



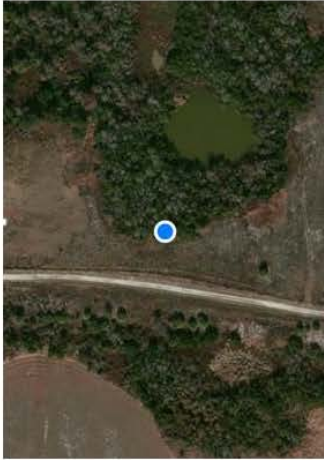
No. 1 Looking East into thick forested wetland. North end fence here. (PS-1)



No. 2



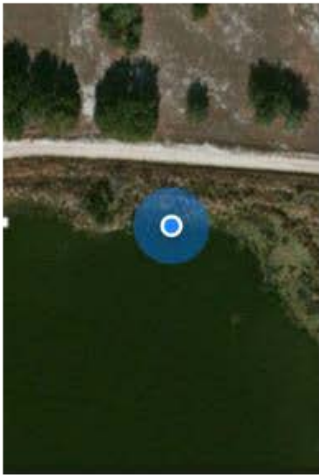
No. 2 Looking South into thick forested wetland of Mizelle Creek. To install South end fence here (PS-2)



No. 3



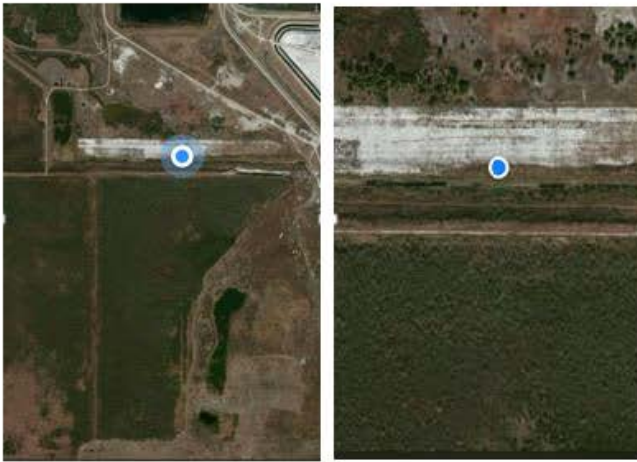
No. 3 Looking North into thick forested wetland with heavy vines. North end of fence to go here.
(PS-7)



No. 4



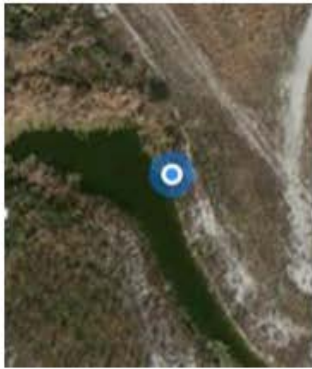
No. 4 Looking South into thick woods. South end of fence here. (PS-10)



No. 5



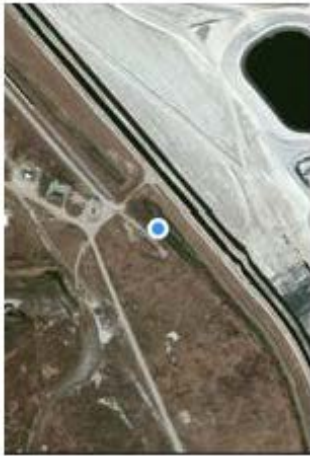
No. 5 Looking into deep ditch/wetland barrier. (PS-11)



No. 6



No. 6 Looking Southwest across thickly vegetated water-filled ditch. West end of proposed fence here. (PS-12)

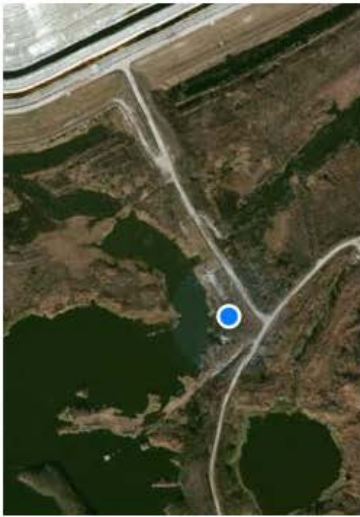


No. 7



No. 7 Looking North. (PS-13)

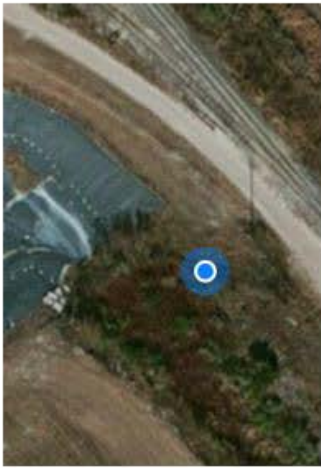
(The gypsum stack is serving as the primary barrier)



No. 8



No. 8 Looking Southwest into ditch/thick woods. West end of proposed fence here. (PS-14)
(Fence/gate proposed to block unauthorized road access)

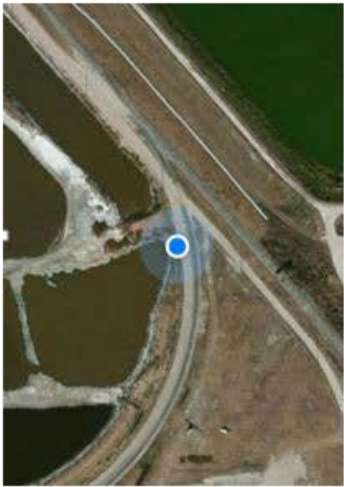


No. 9



No. 9 Looking Southwest into existing wetland ditch barrier. Southeast end of proposed fence here. (PS-16)

(Fence/gate proposed to block unauthorized road access)

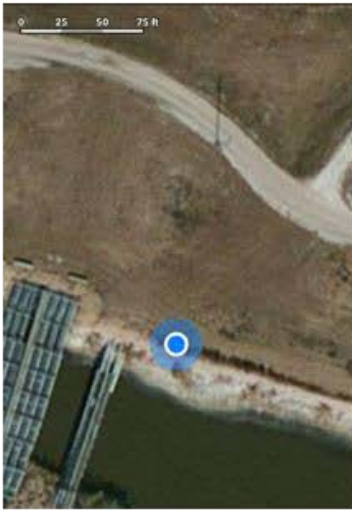


No. 10



No. 10 Looking West over water-filled ditch- existing barrier. West end proposed fence here.
(PS-19)

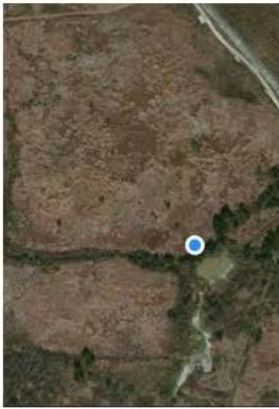
(Fence/gate proposed to block unauthorized road access)



No. 11



No. 11 Looking East. (ps-21)
(Fence/gate proposed to block unauthorized road access)



No. 12



No. 12 Looking South into thick forested wetland with open water in background. Existing physical barrier here. (PS-27)



No. 12 Looking South (PS-27)



No. 13



No. 13 Looking South into dense marsh. Existing natural barrier. (PS-29)



No. 13 Looking down in marsh – standing water, difficult to wade through – more of a deterrent than a fence (PS-29)



No. 14



No. 14 Looking east into thick forested wetland existing natural barrier. East end of proposed fence here. (p.30)



No. 15



No. 15 Looking West into thick forested wetland. West end of proposed fence here. (PS-31)

Date: 12/19/2016

W:\MineSyms\Shared\N_Syde\New Wales air quality buffer\DEES PROJECTS REVISED - New Wales air quality buffer Photos - COLA VERSION 5 - 12 19 16.docx

New Wales Proposed Ambient Air Boundary (October 2017)

Photo Station # 16 - From perimeter elevated road looking southwest



Photo Station # 16 - From elevation below perimeter road looking southwest - Impassable on foot



New Wales Proposed Ambient Air Boundary (October 2017)

Photo Station 17 - From Perimeter Elevated Road looking southeast



Photo Station # 17 - From elevation below perimeter road looking southeast



New Wales Proposed Ambient Air Boundary (October 2017)

Photo Station 18 - From Perimeter Elevated Road looking northeast



Photo Station 18 – Tangled web of grass and willows with unstable clay soil



New Wales Proposed Ambient Air Boundary (October 2017)

Photo Station 19 - From Elevated Perimeter Road looking northeast



Photo Station # 19 - From elevation below perimeter road looking north - Tangled web of vegetation and unstable clay soil



New Wales Proposed Ambient Air Boundary (October 2017)

Photo Station # 20 – From Elevated Perimeter Road looking northeast



Photo Station # 20 – On the ground looking northwest – Impassable on foot



Appendix B: Mosaic New Wales Modeling Memorandum

Memorandum

**Environmental
Resources
Management**

To: Brian Himes, Florida Department of Environmental Protection (FDEP)

One Beacon Street
5th Floor
Boston, MA 02108
(617) 646- 7800

From: Richard Hamel, Environmental Resources Management (ERM)

www.erm.com

Date: 14 October, 2017

Subject: New Wales Modeling – Supplemental Modeling with Revised Ambient Air Boundary and Aggregate Emission Limit



CC: Diana Jagiella, The Mosaic Company
Neil Beckingham, The Mosaic Company
Subrata Bandyopadhyay, The Mosaic Company
Rama Iyer, The Mosaic Company
Scott Lehr, The Mosaic Company
Preston McLane, FDEP

The following is a summary of ERM's supplemental modeling work on behalf of The Mosaic Company (Mosaic) in support of the Mosaic New Wales plant compliance demonstration in accordance with the Data Requirements Rule for the 2010 1-hour Sulfur Dioxide (SO₂) Primary National Ambient Air Quality Standard (NAAQS).

ERM has performed additional modeling since the June 2017 submittal. This modeling was primarily done to address EPA's question about the use of a sectorized ambient background concentration methodology. ERM and Mosaic believe that the approach was appropriate and allowable under EPA modeling guidance. However, in order to expedite the process and in an effort to find common ground, we provide this additional information. Additionally, Mosaic now owns all of the land surrounding the previously proposed ambient air barrier, so the proposed ambient air barrier has been expanded. Two sets of modeling runs were performed to evaluate these changes:

- Modeling was performed to determine the aggregate emission rate that would demonstrate compliance with the NAAQS using the proposed ambient air barrier presented along with the modeling submitted in June. The results of that modeling showed that an aggregate SO₂ emission rate of 1092 lb/hr for New Wales would be achieve NAAQS compliance using the June proposed boundary.
- Additionally, Mosaic has recently purchased the tract of land, known as the "Jamison Parcel", which had previously limited the extent to which the ambient air barrier could be extended to the southwest where the highest model-predicted impacts were located. With that transaction

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completed Mosaic is proposing to extend the ambient air barrier around the perimeter of the clay-settling area K8 to the southwest of the New Wales plant area. Using that new proposed barrier, an additional round of modeling was performed at the currently permitted aggregate emission rate of 1100 lb/hr for the New Wales facility.

Both sets of modeling, performed against the 336 scenarios that represent all possible operational combinations of the 5 SAPs at New Wales and the 3 SAPs at Bartow, show compliance with the 1-hour SO₂ NAAQS for all cases. Thus, either of the two approaches: (1) reduction of the aggregate emission rate for New Wales to 1092 lb/hr and keeping the originally proposed ambient air barrier (proposed in June 2017), or (2) keeping the aggregate emission rate of 1100 lb/hr and adjusting the proposed ambient air barrier outward around K8, are sufficient to demonstrate that New Wales will be in compliance with the 1-hour SO₂ NAAQS after the scheduled modifications have been completed. However, to provide an additional level of assurance that the facility will be in compliance with the NAAQS, Mosaic is proposing to incorporate both changes:

- Reduce the permitted aggregate emission rate for New Wales to 1090 lb/hr SO₂ (rounded down from 1092 lb/hr to provide additional buffer); and
- Expand the ambient air barrier to the southwest to bring the entire clay-settling area K8 within the barrier.

Modeling Methodology:

This supplemental modeling builds on the modeling submitted with the *New Wales Modeling Methodology and Results Memorandum* submitted to FDEP on May 3rd, 2017, and the *New Wales SO₂ Modeling Supplement 060717* submitted to FDEP on June 7th, 2017. The methodology used in this modeling was identical with the following 3 exceptions:

- The aggregate emissions for the 5 New Wales SAPs was set to their current SO₂ emission limit of 1100 lb/hr.
- The aggregate emissions for the 3 Bartow SAPs was set to their current SO₂ emission limit of 1100 lb/hr.
- The ambient air barrier for New Wales was expanded to encompass the clay-settling area southwest of the main plant as shown in Figure 1.

Modeling To Demonstrate Compliance with the 1-hour SO₂ NAAQS:

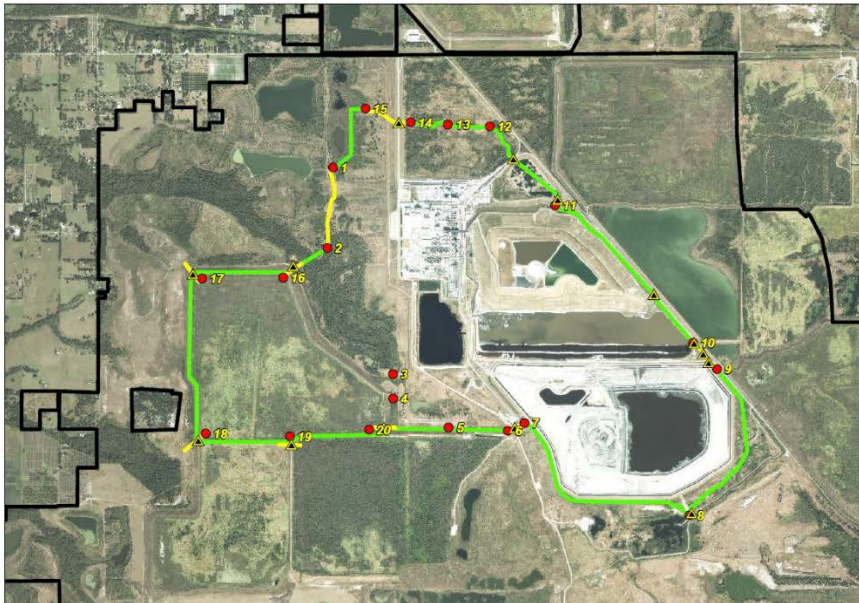
Modeling was then performed against the 84 New Wales operational cases (various combinations of 2, 3, 4, and 5 SAPs operational, limited to their

individual PTE as well as the aggregate emission rate of 1100 lb/hr total) in 4 ways representing the potential operational patterns of the 3 SAP's at Bartow to confirm that this emission rate, couple with the modified ambient air barrier would continue to result in a compliant demonstration at New Wales. The 4 Bartow operations scenarios, modeled at the aggregate limit of 1100 lb/hr SO₂, were:

- SAP 4 and SAP 6 at PTE, SAP 5 modeled at 239.33 lb/hr.
- SAP 4 and SAP 5 at PTE, SAP 6 modeled at 239.33 lb/hr.
- SAP 5 and SAP 6 at PTE, SAP 4 modeled at 239.33 lb/hr.
- The 1106 lb/hr distributed evenly between the 3 SAPs at 368.67 lb/hr each.

Note that the equivalency rates for all SAPs from the original FDEP runs were maintained for all modeling and are included in the emission rate calculations for both Bartow and New Wales.

Figure 1: Proposed Ambient Air Barrier for New Wales



Summary and Conclusions

A total of 336 combinations of two, three, four, or five active SAPs at New Wales, in conjunction with the four scenarios at Bartow described above, were modeled to demonstrate that, along with the aggregate emission rate of 1100 lb/hr SO₂

between the 5 SAPs at New Wales, an aggregate emission rate of 1100 lb/hr SO₂ between the 3 SAPs at Bartow, and the updated proposed ambient air barrier would result in cumulative model-predicted concentrations below the 1-hour SO₂ NAAQS at New Wales for all cases. As shown in the tables below, the maximum design value for all 4 Bartow load cases was 195.24 µg/m³, against the 1-hour SO₂ NAAQS of 196.50 µg/m³, when New Wales SAPs 1 and 2 are operating at PTE, SAP's 3 and 4 are offline, and SAP 5 is toggled to use the remainder of the 1100 lb/hr aggregate limit that SAPs 1 and 2 are not consuming.

All files related to the modeling described above will be provided in the electronic modeling archive delivered with this memorandum.

Modeling Results for all Mosaic New Wales Modeling Cases with varied Bartow SAP emissions:

New Wales Two SAP Cases:

In the tables below, case indicates which New Wales SAPs were modeled as active, i.e. 1-2 means SAPs 1 and 2 were operating and 3, 4, and 5 were offline. Each column represents one of the four Bartow emission rates with total emissions between the 3 SAPs of 1100 lb/hr SO₂.

Case	AERMOD Concentrations (µg/m ³)			
	SAP 4 and 6 PTE	SAP 4 and 5 PTE	SAP 5 and 6 PTE	Even Distribution
1-2	176.99	176.99	176.98	176.99
1-3	175.39	175.38	175.38	175.38
1-4	173.32	173.32	173.32	173.32
1-5	172.43	172.43	172.43	172.43
2-3	176.64	176.64	176.64	176.64
2-4	171.38	171.38	171.38	171.38
2-5	172.25	172.25	172.25	172.25
3-4	171.89	171.89	171.89	171.89
3-5	169.58	169.58	169.58	169.58
4-5	167.40	167.40	167.40	167.40

New Wales Three SAP Cases:

In each case the SAP listed in the Scaled SAP column is scaled while the other two SAPs are at PTE so that the total emissions are 1100 lb/hr SO₂.

Case	Scaled SAP	AERMOD Concentrations ($\mu\text{g}/\text{m}^3$)			
		SAP 4 and 6 PTE	SAP 4 and 5 PTE	SAP 5 and 6 PTE	Even Distribution
1-2-3	1	194.85	194.85	194.85	194.85
	2	193.54	193.54	193.53	193.54
	3	194.25	194.25	194.25	194.25
	Avg.*	194.26	194.25	194.25	194.25
1-2-4	1	191.87	191.87	191.87	191.87
	2	193.65	193.65	193.65	193.65
	4	194.77	194.77	194.77	194.77
	Avg.*	193.42	193.42	193.42	193.42
1-2-5	1	192.95	192.95	192.94	192.95
	2	192.58	192.57	192.57	192.57
	5	195.24	195.24	195.24	195.24
	Avg.*	194.48	194.48	194.48	194.48
1-3-4	1	191.90	191.90	191.90	191.90
	3	192.68	192.67	192.67	192.67
	4	192.68	192.68	192.8	192.68
1-3-5	1	189.07	189.07	189.06	189.07
	3	192.68	192.68	192.68	192.68
	5	192.037	192.03	192.03	192.05
1-4-5	1	189.67	189.67	189.67	189.67
	4	191.94	191.93	191.93	191.93
	5	193.19	193.19	193.19	193.19
2-3-4	2	192.39	192.39	192.39	192.39
	3	191.25	191.24	191.24	191.24
	4	194.46	194.46	194.46	194.46
2-3-5	2	189.37	189.37	189.36	189.37
	3	191.36	191.36	191.36	191.36
	5	194.06	194.05	194.05	194.05
2-4-5	2	190.23	190.22	190.22	190.22
	4	192.07	192.03	192.03	192.03
	5	191.43	191.43	191.43	191.43
3-4-5	3	189.85	189.85	189.85	189.85
	4	189.06	189.05	189.05	189.05
	5	190.93	190.93	190.93	190.93

The Avg. cases are those where the 1100 lb/hr at 3 New Wales SAPs were evenly distributed, to test cases where no SAP was at PTE but instead the emissions were spread out. In those cases the impacts were always lower than the worst case where the emissions were more concentrated at some combination of SAPs

New Wales Four SAP Cases:

For the New Wales four SAP cases, the first two numbers are the New Wales SAPs modeled at PTE, the second two are the two that were scaled, and the final one was offline. Ex: 45-23-1 indicated SAP's 4 and 5 modeled at PTE, 2 and 3 equally split emissions to add the total to 1100 lb/hr, and SAP 1 was assumed offline.

Case	AERMOD Concentrations ($\mu\text{g}/\text{m}^3$)			
	SAP 4 and 6 PTE	SAP 4 and 5 PTE	SAP 5 and 6 PTE	Even Distribution
12-34-5	194.49	194.49	194.49	194.49
12-35-4	194.72	194.72	194.72	194.72
12-45-3	195.01	195.01	195.00	195.01
13-24-5	193.16	193.16	193.16	193.16
13-25-4	192.84	192.84	192.83	192.84
13-45-2	192.36	192.36	192.35	192.36
14-23-5	193.16	193.16	193.16	193.16
14-25-3	193.49	193.49	193.49	193.49
14-35-2	193.01	193.00	193.00	193.00
15-23-4	192.63	192.63	192.62	192.63
15-24-3	192.19	192.19	192.19	192.19
15-34-2	191.94	191.94	191.94	191.94
23-14-5	194.66	194.65	194.65	194.65
23-15-4	194.45	194.45	194.45	194.45
23-45-1	194.26	194.26	194.25	194.26
24-13-5	191.26	191.25	191.25	191.61
24-15-3	191.61	191.61	191.61	191.61
24-35-1	190.89	190.89	190.89	190.89
25-13-4	192.078	192.08	192.07	192.08
25-14-3	192.41	192.41	192.41	192.41
25-34-1	191.70	191.70	191.70	191.70
34-12-5	192.22	192.21	192.21	192.21
34-15-2	191.42	191.41	191.41	191.41
34-25-1	191.79	191.79	191.79	191.79
35-12-4	189.01	189.00	189.00	189.01
35-14-2	189.03	189.03	189.03	189.03
35-24-1	189.15	189.15	189.14	189.15
45-12-3	189.95	189.95	189.94	189.95
45-13-2	190.04	190.04	190.03	190.04
45-23-1	190.04	190.04	190.034	190.04

New Wales Five SAP Cases:

For the five SAP cases, the SAP's listed were modeled at PTE while the remaining emissions were divided equally amongst the other three to total 1100 lb/hr. For the Average case, all the 1100 lb/hr emissions were divided equally amongst the five SAPs (220 lb/hr each).

Case	AERMOD Concentrations ($\mu\text{g}/\text{m}^3$)			
	SAP 4 and 6 PTE	SAP 4 and 5 PTE	SAP 5 and 6 PTE	Even Distribution
1-2	194.74	194.74	194.74	194.74
1-3	192.79	192.78	191.41	192.78
1-4	193.22	193.22	193.22	193.22
1-5	192.15	192.15	192.15	192.15
2-3	194.46	194.45	194.45	194.45
2-4	191.14	191.14	191.13	191.14
2-5	192.06	192.06	192.06	192.06
3-4	192.65	191.85	191.85	191.85
3-5	189.05	189.05	189.04	189.05
4-5	190.10	190.10	190.10	190.10
Average	190.67	190.67	190.67	190.67