



Florida Department of Environmental Protection

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3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

June 13, 2011

Ms. Gwendolyn Keyes Fleming
Regional Administrator
U. S. Environmental Protection Agency - Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303-8909

Dear Ms. Fleming:

In response to your March 28, 2011, letter to Governor Rick Scott, I am pleased to submit recommendations for the designation of "nonattainment" area boundaries in Florida with respect to the 2010 revised national ambient air quality standard (NAAQS) for sulfur dioxide (SO₂). In support of these recommendations, I have enclosed three technical appendices as described below. As additional information becomes available, I may find it necessary to update these recommendations.

The Florida Department of Environmental Protection (DEP) and its local air program partners currently operate 19 SO₂ monitoring sites throughout the state. The monitoring site locations and SO₂ design values¹ for the three-year period 2008-2010 are presented in Appendix 1. These data show compliance with the new 1-hour SO₂ NAAQS at all but three sites. The three non-complying monitors are located in Hillsborough, Escambia, and Nassau counties. Based on the 2008-2010 data, DEP's initial recommendation is that a portion of Hillsborough County be designated nonattainment for SO₂ and the rest of the state, as a whole, be designated "unclassifiable" or "unclassifiable/attainment" in accordance with the U.S. Environmental Protection Agency's (EPA) proposed implementation strategy.

The nonattainment area boundary recommendation for the non-complying monitoring site in Hillsborough County is described in Appendix 2. The violation at this site can be overwhelmingly attributed to a single source. Consequently, DEP and the county air program have entered into discussions with the company to explore possible solutions to the SO₂ problem. If DEP is able to timely put into place an enforceable mechanism

¹ The design value for a monitoring site is the three-year average of each year's 99th percentile 1-hour daily maximum concentration at the site. A design value greater than 75 parts per billion represents a violation of the 1-hour SO₂ NAAQS.

that provides for attainment and maintenance of the SO₂ standard in the affected area, we may withdraw our recommendation that this area be designated nonattainment. However, if nonattainment cannot be avoided, we recommend a nonattainment area boundary encompassing the area that, based upon air dispersion modeling, may be experiencing violations of the standard caused by the identified source. We believe it is important for the public, particularly potentially affected asthmatics, to understand that violations of the 1-hour SO₂ standard are localized events not reflective of county-wide air quality, and that the only area for which we currently have reasonable evidence of high levels of SO₂ is the designated nonattainment area.

Despite current data showing noncompliance with the 1-hour SO₂ standard at the Escambia County monitoring site, we are not recommending that Escambia County or any portion thereof be designated nonattainment. We understand that EPA will consider data for the three-year period 2009-2011 before making its final designations next year, and we are reasonably confident, for the reasons given in Appendix 3, that the Escambia County monitoring site will show compliance with the SO₂ standard based on 2009-2011 data. If the 2009-2011 data end up showing noncompliance at the Escambia County monitor, or at any of the currently complying monitoring sites elsewhere in the state, we will promptly update the recommendations contained herein.

We are making no recommendation of nonattainment area boundaries at this time with respect to the SO₂ monitoring site in Nassau County. A single source of SO₂ emissions appears to be responsible for the violation at the monitor; however, a monitor operated by the company and located within a few meters of DEP's monitoring site shows significantly lower concentrations of SO₂. DEP and the company are working together to resolve the monitoring discrepancies in a timely fashion, while also exploring possible SO₂ mitigation measures at the source should they prove necessary. We will inform you of our findings and our recommendation for this area as soon as more definitive information becomes available, and, if unresolved, provide you with an update on our findings/recommendations prior to the end of the calendar year.

Finally, in recommending a small nonattainment area, we do not dismiss the possibility that SO₂ violations may exist elsewhere in the state or county, nor do we ignore the possibility that emissions from other nearby sources may combine with emissions from the known source of the measured violation to cause or contribute to violations of the SO₂ standard at other locations. However, we do not believe that enlarging the nonattainment area beyond the boundaries we are recommending is necessary to address either of these concerns – the reason being that both of these possibilities will be fully examined through EPA's proposed "hybrid" monitoring and modeling implementation strategy. In addition, any new major source of SO₂ emissions or major modification that might be proposed in the vicinity of a nonattainment area will be

Ms. Gwendolyn Keyes Fleming

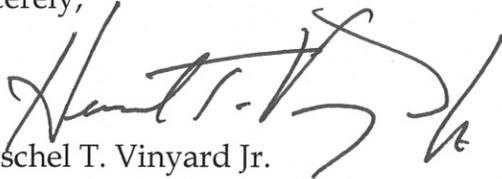
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required to demonstrate that it would not cause or contribute to any violation of the SO₂ standard within the nonattainment area or anywhere else.²

Thank you for your continued support of our efforts to fully implement the Clean Air Act in Florida. If you have any questions about this recommendation, please contact Mr. Mike Halpin, Director of DEP's Division of Air Resource Management, at (850) 717-9000 or by e-mail at Mike.Halpin@dep.state.fl.us.

Sincerely,

A handwritten signature in black ink, appearing to read "Herschel T. Vinyard Jr.", with a stylized flourish at the end.

Herschel T. Vinyard Jr.

Secretary

Enclosures: Appendices 1-3

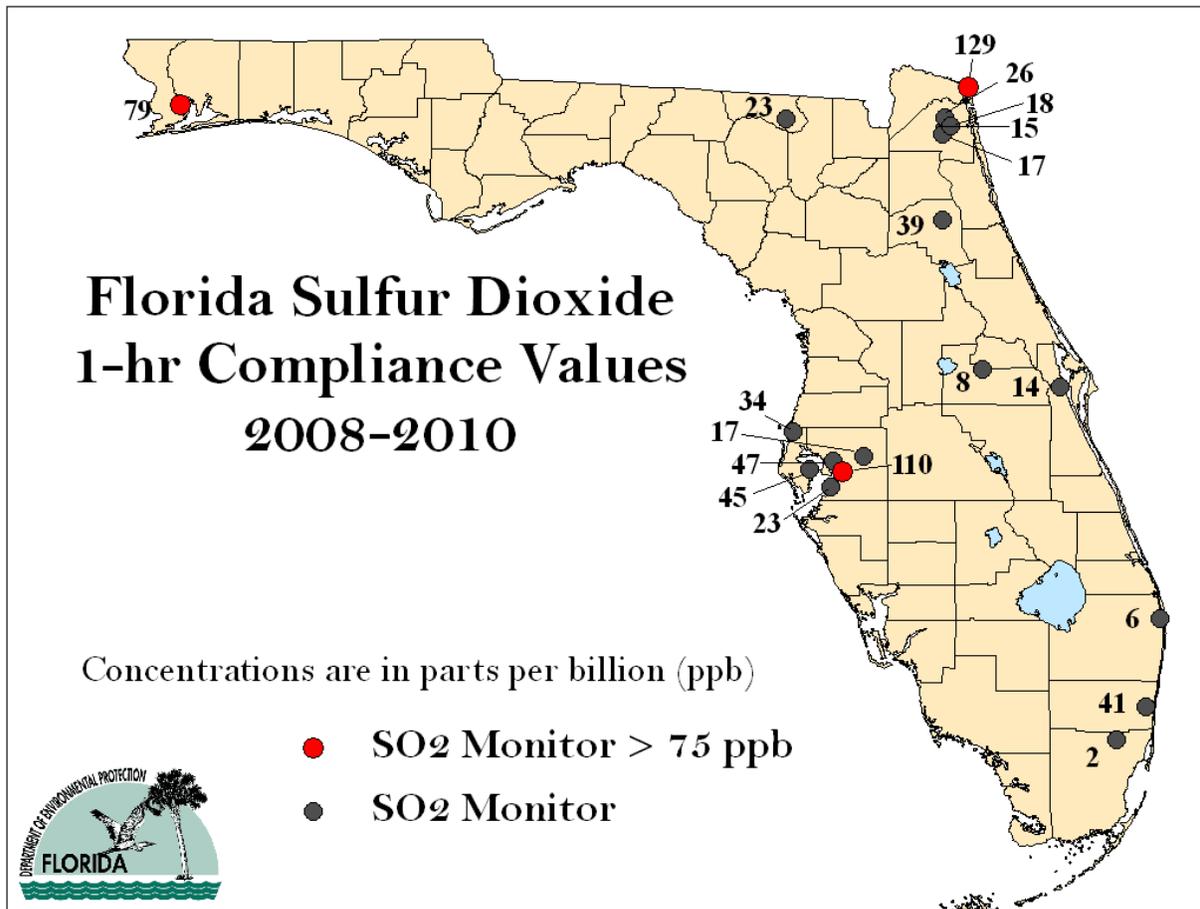
cc: Mike Halpin, Director, Division of Air Resource Management, DEP
Dick Schutt, Chief, Air Planning Branch, EPA Region 4

² 40 CFR 52.21(k) and subsection 62-212.400(5), Florida Administrative Code.

Appendix 1

Florida Sulfur Dioxide (SO₂) Monitoring Data

There are currently 19 SO₂ monitoring sites in the Florida network. Of these, three are currently (based on 2008-2010 data) in violation of the 1-hour ambient air quality standard of 75 parts per billion (ppb). Compliance with this standard is based on the three-year average of the 99th percentile maximum daily 1-hour average SO₂ concentration. This metric is referred to as the design value. The following map shows the current design value for all the SO₂ monitoring sites in the state.



The three monitors with design values greater than 75 ppb are located in Hillsborough, Nassau, and Escambia counties. Each of these monitors is located in close proximity to a large SO₂ source. The Hillsborough County violating monitor (Gibson) is next to the Mosaic Riverview phosphate processing plant, the Nassau County monitor (Fernandina Beach) is next to the Rayonier Performance Fibers mill, and the Escambia County monitor (Ellyson) is located near the Gulf Power Crist power plant. The table below also provides the statewide data with the site name and county location.

Site Name	County	2008-2010 1-hr SO ₂ Design Value (ppb)
Fay Park	Brevard	14
Lincoln Park Elem.	Broward	41
Kooker Park	Duval	15
Minerva Street	Duval	17
Cedar Bay STP	Duval	26
Fort Caroline Road	Duval	18
Ellyson	Escambia	79
White Springs	Hamilton	23
Simmons Park	Hillsborough	23
Gibsonton	Hillsborough	110
Davis Island	Hillsborough	47
Sydney	Hillsborough	17
DOT Miami	Miami-Dade	2
Fernandina Beach	Nassau	129
Winter Park	Orange	8
Riviera Beach	Palm Beach	6
Derby Lane	Pinellas	45
Oakwood	Pinellas	34
Palatka Barge Port	Putnam	39

More detailed information on each monitor can be obtained from the department.

Appendix 2

Sulfur Dioxide (SO₂) Nonattainment Boundary Five-Factor Analysis for the Gibsonton Monitoring Site (Hillsborough County)

Recommendation

The recommended area of SO₂ nonattainment near the Gibsonton monitoring site in Hillsborough County is described by a polygon encompassing the predicted area having a design value greater than the 1-hour ambient SO₂ standard of 75 parts per billion (ppb). This area includes the location of the violating monitor (AQS monitor ID 0570109). The vertices of the polygon are as follows, using Universal Transverse Mercator (UTM) coordinates in UTM zone 17 with datum NAD83:

Vertices	UTM Easting (m)	UTM Northing (m)
1	358581	3076066
2	355673	3079275
3	360300	3086380
4	366850	3086692
5	368364	3083760
6	365708	3079121

The determination of this area was based on the five factors outlined in the EPA guidance memorandum, "Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards (March 24, 2010)," and on air dispersion modeling that was completed following the general guidance in the same document. Analysis of the five factors to be considered, as outlined in the guidance, and the modeling follows.

Five-Factor Analysis

1. Air Quality Data

There are six SO₂ monitors in the Tampa Bay area. The monitor located near Gibsonton, Florida, is currently in violation of the new 1-hour SO₂ standard. A violation occurs when the three-year average of the 99th percentile maximum daily 1-hour average concentration is greater than 75 ppb. All other monitors in the area are well below the standard. A summary of the monitoring data is below.

Site:L0570081 - E.G. Simmons Park - #113 County:Hillsborough AQS Monitor ID:12-057-0081-42401-1										
Year	Ranked 1-Hour Averages		Ranked 3-Hour Averages		Ranked 24-Hour Averages		99th Percentile Values			Design Value
	1 st	2 nd	1 st	2 nd	1 st	2 nd	Annual Average	Complete Days	Valid	
2008	35 (03/01)	29 (09/15)	26 (09/15:09)	17 (02/09:09)	7 (02/09)	6 (09/15)	1.7	25	25	
2009	24 (12/29)	23 (09/15)	16 (12/29:00)	15 (09/15:09)	6 (12/27)	6 (01/21)	1.5	18	18	
2010	32 (01/11)	32 (01/07)	26 (01/11:18)	23 (01/11:15)	9 (01/11)	6 (01/10)	1.6	25	25	23

Site:L0570109 - South of Tampa, Replaced 0108 County:Hillsborough AQS Monitor ID:12-057-0109-42401-1										
Year	Ranked 1-Hour Averages		Ranked 3-Hour Averages		Ranked 24-Hour Averages		99th Percentile Values			Design Value
	1 st	2 nd	1 st	2 nd	1 st	2 nd	Annual Average	Complete Days	Valid	
2008	189 (01/01)	169 (09/05)	137 (01/01:18)	135 (01/01:15)	48 (01/01)	30 (03/24)	3.2	123	123	
2009	136 (03/02)	134 (02/20)	117 (03/02:00)	109 (03/02:03)	40 (03/02)	27 (04/07)	3.2	104	104	
2010	119 (12/27)	117 (12/26)	102 (12/27:00)	96 (12/27:03)	34 (12/27)	28 (12/01)	3.0	104	104	110†

Site:L0571035 - Coast Guard Station - Davis Island County:Hillsborough AQS Monitor ID:12-057-1035-42401-1										
Year	Ranked 1-Hour Averages		Ranked 3-Hour Averages		Ranked 24-Hour Averages		99th Percentile Values			Design Value
	1 st	2 nd	1 st	2 nd	1 st	2 nd	Annual Average	Complete Days	Valid	
2008	71 (08/27)	70 (07/12)	38 (07/12:00)	38 (10/30:06)	11 (08/24)	10 (10/30)	2.7	49	49	
2009	39 (03/22)	38 (02/25)	27 (07/29:03)	24 (02/25:21)	8 (07/29)	7 (12/22)	2.0	35	35	
2010	67 (09/19)	66 (11/20)	40 (11/20:00)	39 (09/19:06)	10 (11/19)	8 (09/19)	1.9	57	57	47

Site:L0573002 - Sydney County:Hillsborough AQS Monitor ID:12-057-3002-42401-1										
Year	Ranked 1-Hour Averages		Ranked 3-Hour Averages		Ranked 24-Hour Averages		99th Percentile Values			Design Value
	1 st	2 nd	1 st	2 nd	1 st	2 nd	Annual Average	Complete Days	Valid	
2008	55 (02/21)	28 (01/31)	20 (02/21:03)	15 (01/31:09)	4 (02/21)	3 (11/22)	1.4	19	19	
2009	18 (09/25)	17 (04/19)	10 (01/24:09)	10 (04/09:18)	4 (01/23)	2 (01/24)	1.2	16	16	
2010	27 (03/01)	17 (10/31)	19 (03/01:18)	12 (06/15:18)	3 (03/01)	3 (01/05)	1.2	15	15	17

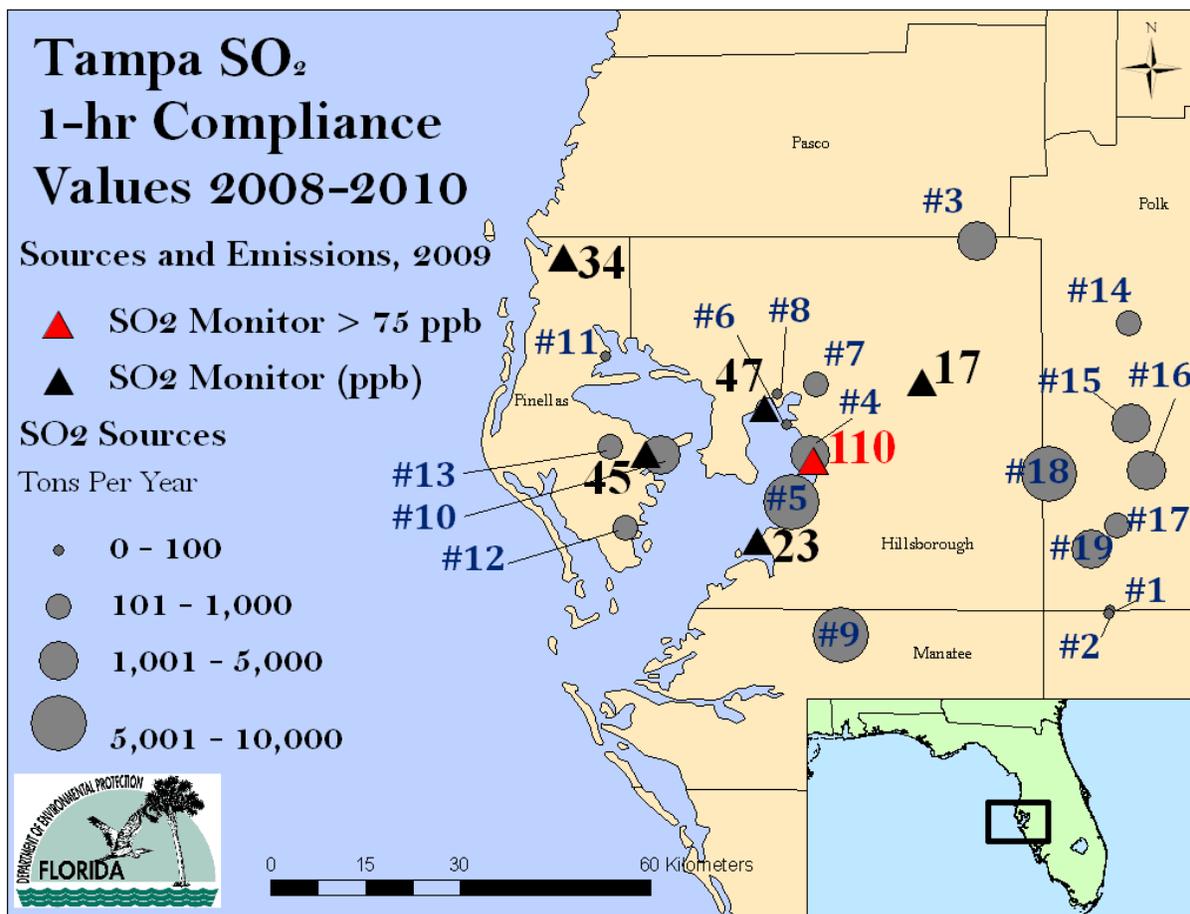
Site:L1030023 - Derby Lane County:Pinellas AQS Monitor ID:12-103-0023-42401-1										
Year	Ranked 1-Hour Averages		Ranked 3-Hour Averages		Ranked 24-Hour Averages		Annual Average	99th Percentile Values		Design Value
	1 st	2 nd	1 st	2 nd	1 st	2 nd		Complete Days	Valid	
2008	119 (06/07)	94 (07/04)	63 (07/04:09)	57 (06/07:09)	22 (10/23)	18 (06/07)	2.4	62	62	
2009	101 (02/13)	100 (02/06)	46 (03/13:12)	46 (02/06:12)	10 (03/24)	9 (02/06)	1.5	58	58	
2010	40 (01/11)	19 (01/09)	32 (01/11:12)	27 (01/11:15)	9 (01/11)	6 (01/09)	1.2	15	15	45

Site:L1035003 - Oakwood County:Pinellas AQS Monitor ID:12-103-5003-42401-1										
Year	Ranked 1-Hour Averages		Ranked 3-Hour Averages		Ranked 24-Hour Averages		Annual Average	99th Percentile Values		Design Value
	1 st	2 nd	1 st	2 nd	1 st	2 nd		Complete Days	Valid	
2008	85 (08/06)	50 (02/25)	36 (08/06:12)	19 (08/06:15)	7 (08/06)	6 (03/05)	1.2	37	37	
2009	55 (05/10)	38 (08/24)	38 (05/10:15)	21 (01/23:15)	5 (05/10)	5 (12/29)	1.2	32	32	
2010	72 (01/06)	55 (07/14)	39 (01/06:15)	29 (02/26:15)	6 (07/14)	5 (01/06)	1.1	34	34	34

The violating monitor (L0570109) near Gibsonton is located approximately 1 kilometer (km) to the southeast of the Mosaic Riverview phosphate fertilizer plant, a major source of SO₂ emissions. The primary emissions units at this facility are three sulfuric acid plants.

2. Emissions-Related Data

The following map provides the location of large (100 TPY or greater) SO₂ emitting sources in the greater Tampa Bay area in relation to the monitors. A few other smaller sources are also included.



The emissions represented are actual values in 2009. The facility with the greatest SO₂ emissions is the Tampa Electric Company (TECO) Big Bend power plant. Emissions in 2009 were 8,988 tons. The Mosaic Riverview phosphate processing plant, located next to the violating monitor, emitted 2,992 tons.

Map ID	Site Name	SO ₂ 2009 (tpy)
1	HARDEE POWER STATION	6
2	MIDULLA GENERATING STATION	38
3	CF INDUSTRIES-PLANT CITY PHOSP COMPLEX	3,086
4	MOSAIC FERTILIZER-RIVERVIEW FACILITY	2,992
5	BIG BEND STATION	8,988
6	H. L. CULBREATH BAYSIDE POWER STATION	18
7	ENVIROFOCUS TECHNOLOGIES, LLC	782
8	MCKAY BAY REFUSE-TO-ENERGY FACILITY	11
9	MANATEE POWER PLANT	5,997
10	BARTOW PLANT	1,831
11	HIGGINS PLANT	5
12	BAYBORO POWER PLANT	140
13	PINELLAS CO. RESOURCE RECOVERY FACILITY	145
14	CHARLES LARSEN MEMORIAL POWER PLANT	294
15	MOSAIC FERTILIZER - BARTOW FACILITY	3,711
16	MOSAIC FERTILIZER - GREEN BAY FACILITY	1,021
17	MOSAIC FERTILIZER - SOUTH PIERCE FACILIT	315
18	MOSAIC FERTILIZER - NEW WALES FACILITY	7,726
19	POLK POWER STATION	1,208

3. Meteorology

A review of the monitoring data in relation to the wind direction at the time of maximum concentrations revealed that all occurrences of SO₂ above the level of the standard (75 ppb) were associated with winds coming from the Mosaic Riverview facility. The following aerial photo shows the direction of the Mosaic Riverview facility from the SO₂ monitor. The distance from the primary SO₂ sources (three sulfuric acid plants) to the monitor is 1 kilometer, with the direction of the entire facility ranging from 295° to 350°. The following tables list each of the hours in which a concentration was greater than the ambient SO₂ standard (75 ppb) along with its associated wind direction. The wind direction data come from the wind instrument located at the monitoring site (wind data from the nearby Simmons Park monitoring site are substituted when data at the Gibsonton site are missing). The tables show that for some hours of high SO₂ concentration the wind appears to be coming from a direction of about 56°. There are no SO₂ sources from that direction, so the department reviewed the wind direction data for regional consistency. A review of these data shows that winds measured at other wind instruments in the area during these hours are consistent with a wind flow from the Mosaic Riverview facility. The wind direction data from the nearby Simmons Park site, located to the south of the Gibsonton monitor, are shown as a truer representation of the winds during these hours. We have not identified the reason why the Gibsonton wind instrument displays this behavior; however, it appears to be confined to the

period from November 19, 2009, through February 17, 2010. Both before and after this period, SO₂ concentrations remain near zero when the winds are out of this direction.

SO₂ Concentration and Associated Wind Direction (2008)
 (for hours greater than 75 ppb)

Date	Time	SO ₂ (ppb)	WD	Simmons WD*
20080101	14:00	96	-	347
20080101	15:00	189	-	345
20080101	16:00	122	-	344
20080101	17:00	94	-	342
20080101	18:00	100	-	342
20080101	19:00	142	-	340
20080101	20:00	170	-	344
20080101	21:00	115	-	351
20080102	12:00	76	-	350
20080102	14:00	80	-	345
20080120	0:00	76	310	
20080227	15:00	86	297	
20080308	22:00	103	303	
20080324	15:00	75	302	
20080324	16:00	85	304	
20080324	17:00	90	306	
20080324	19:00	123	307	
20080324	20:00	129	300	
20080413	5:00	123	297	
20080414	18:00	104	294	
20080414	19:00	84	295	
20080414	20:00	102	295	
20080429	19:00	77	293	
20080812	18:00	99	317	
20080905	7:00	169	306	
20080905	8:00	128	306	
20080905	10:00	113	294	
20080914	16:00	76	308	
20081027	21:00	82	308	

*Substitute wind direction data from the Simmons Park (0570081) site.

SO₂ Concentration and Associated Wind Direction (2009)
(for hours greater than 75 ppb)

Date	Time	SO ₂ (ppb)	WD	Simmons WD*
20090220	2:00	134	306	
20090301	23:00	92	295	
20090302	0:00	99	299	
20090302	1:00	127	302	
20090302	2:00	126	303	
20090302	3:00	136	299	
20090302	4:00	112	302	
20090302	5:00	80	311	
20090302	20:00	89	298	
20090407	2:00	107	301	
20090407	7:00	87	298	
20090408	0:00	83	294	
20090408	1:00	104	297	
20090408	2:00	85	298	
20090511	20:00	80	291	
20091017	13:00	81	305	
20091017	16:00	76	308	
20091017	17:00	83	307	
20091024	21:00	97	305	
20091126	15:00	87	56	339
20091126	16:00	83	55	337
20091126	19:00	96	55	335
20091205	14:00	86	57	345
20091219	3:00	84	56	328
20091219	5:00	79	56	329
20091219	6:00	98	57	336
20091219	7:00	85	56	331
20091219	8:00	87	57	329
20091220	1:00	85	56	333
20091220	2:00	98	56	334
20091220	3:00	94	59	343
20091228	21:00	75	59	346

*Substitute wind direction data from the Simmons Park (0570081) site.

SO₂ Concentration and Associated Wind Direction (2010)
 (for hours greater than 75 ppb)

Date	Time	SO ₂ (ppb)	WD	Simmons WD
20100105	11:00	85	57	350
20100106	11:00	76	57	347
20100131	1:00	87	55	343
20100212	20:00	78	54	342
20100212	21:00	104	53	343
20100216	4:00	104	54	346
20101015	14:00	76	313	
20101105	15:00	79	307	
20101201	4:00	89	309	
20101201	9:00	111	309	
20101201	10:00	76	315	
20101201	11:00	93	308	
20101201	12:00	86	306	
20101226	20:00	117	302	
20101226	21:00	107	307	
20101227	0:00	95	312	
20101227	1:00	113	305	
20101227	2:00	100	308	
20101227	3:00	119	306	
20101227	4:00	95	303	
20101227	5:00	75	308	

*Substitute wind direction data from the Simmons Park (0570081) site.



4. Geography/Topography

There are no significant topographical features in the Gibsonton area. Elevation changes are minimal. The primary geographic feature is Tampa Bay, aside which the Mosaic Riverview facility is located. Wind variations can occur along the bay due to land/water temperature differences resulting in a juxtaposition of bay and gulf breezes in the afternoon. The wind data from both the monitoring site and the Tampa airport reflect this mesoscale wind flow.

5. Jurisdictional Boundaries

The violating monitor is located within Hillsborough County, roughly in the center of the county. The violating area associated with the primary source of SO₂ at this monitor is well within the county boundary. The recommended nonattainment boundary encompasses this violating area as informed by air dispersion modeling.

Air Dispersion Modeling

The department used air dispersion modeling to help delineate the boundary of the recommended nonattainment area. In completing this modeling, the department generally followed the guidance

provided in the March 24, 2011, EPA memorandum, "Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards."

- a) Model Selection – The department used the AERMOD modeling system.
 - a. AERMOD ver11103
 - b. AERMAP ver11103
 - c. AERMET ver06341
 - d. AERSURFACE ver08009
- b) Modeling Domain – The focus of the nonattainment designation is on the monitor having the violation. As noted above, wind data at the monitoring site indicate that all of the high concentrations (greater than the standard of 75 ppb) occur within a small wind direction sector that implicates the nearby Mosaic Riverview phosphate processing facility. Modeling of this source alone indicates that the predicated concentrations at the location of the monitor are almost completely explained by this single source. As a result, the modeling domain is centered on the Mosaic Riverview facility, which is located only 1000 meters from the monitoring location, and the domain extends to a 15 by 15 kilometer area around this facility.
- c) Determining the Sources to Model – Because the Mosaic Riverside facility is the overwhelming source of the violation, it is the only source that is modeled for the purpose of informing the extent of the nonattainment area. The department recognizes that other SO₂ sources in the multi-county area could interact with the Mosaic facility for certain wind directions. However, for the purpose of simply determining the area of nonattainment encompassing the violating monitor, we believe it is sufficient to focus on the Mosaic Riverside facility. Other sources in the area will be evaluated individually and collectively through the infrastructure SIP modeling that will be completed in the next two years.
- d) Receptor Grid – The receptor grid follows the EPA guidance: a nested grid with 50 meter spacing within one kilometer of the source, 100 meter spacing from one to two kilometers, 250 meters from two to ten kilometers, and 500 kilometers outside of ten kilometers.
- e) Source Inputs – Maximum allowable short-term limits on SO₂ emissions or potential-to-emit levels were used for all sources. Stack and emission information were obtained from the department's Air Resource Management System, Title V operating permits, and previous air construction permit applications. These data were reviewed by Mosaic, resulting in changes in refinement of the inputs related to geographic location of buildings and stacks. Where stack heights are less than GEP, building downwash effects are included. No stacks at this facility exceed GEP limits. The ground surface characteristic of the area is rural as determined through land-use data consistent with the guidance.
- f) Meteorological Data – Five years (2005-2009) of meteorological data from the National Weather Service site at Tampa International Airport were used in this analysis. These data were processed through AERMET version 06341. The Tampa airport is located approximately 20 km from the Mosaic facility, also along Tampa Bay. These data are deemed representative of the area in which Mosaic Riverview is located.
- g) Background Concentration – The background concentration at the Gibsonton monitor was determined based on the 99th percentile maximum daily 1-hour value on hours that were not

impacted by the Mosaic Riverview facility. A 90-degree sector of wind directions centered on the Mosaic facility was excluded from the calculation to avoid double counting. The 99th percentile of the remaining concentrations associated with winds not from the direction of the Mosaic facility was calculated for each year and averaged. Based on this calculation, the background concentration is 25.8 ppb.

Modeling Results

The AERMOD model results were used to determine the areal extent with which this facility would be potentially violating the standard. The recommended nonattainment area encompasses the receptors having modeled violations of the ambient standard associated with the Mosaic Riverview facility. A review of the modeled impact at the location of the monitor provides an indication of the general performance of the model in describing the SO₂ concentrations. The table below compares the model results with those at the monitor.

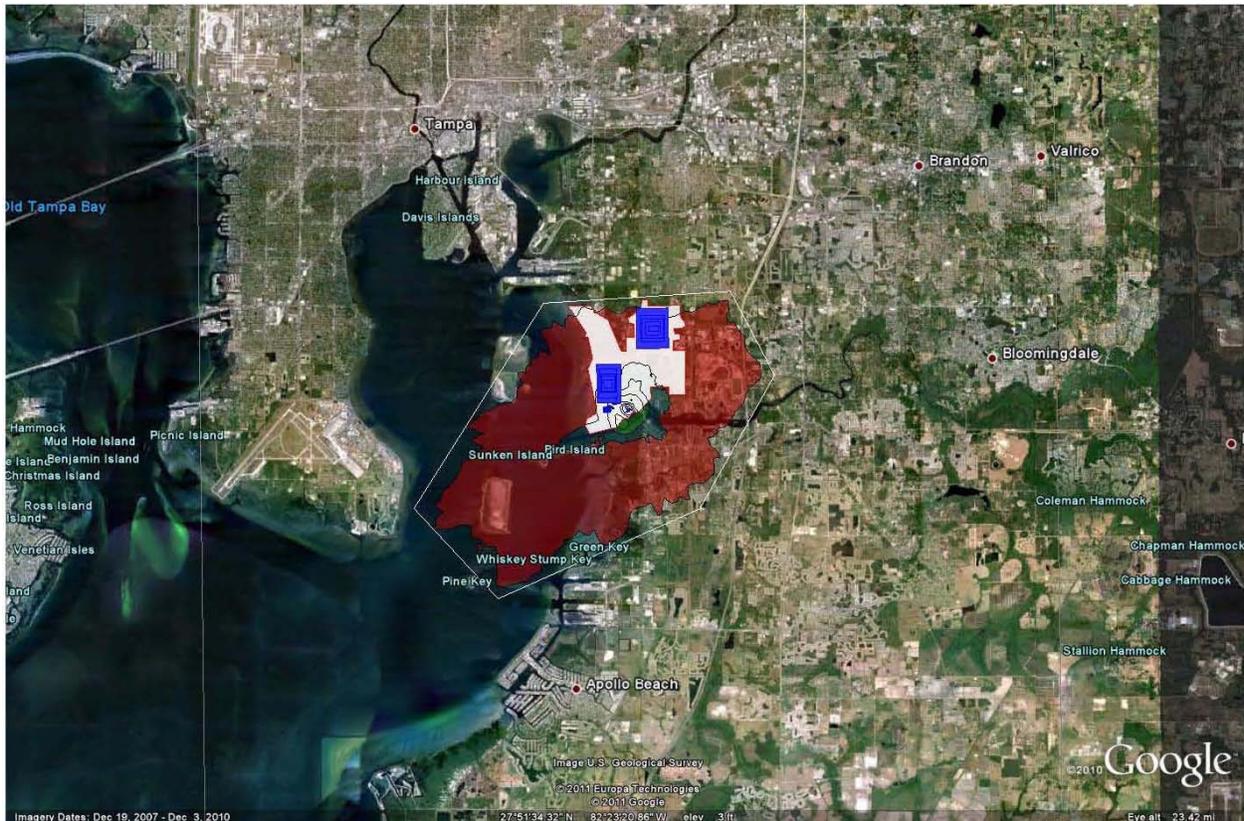
Year	Modeled Maximum at Monitor Location (ppb)	Actual 1 st High Maximum 1 hour value at Monitor (ppb)	Modeled 4 th High at Monitor Location (ppb)	Actual 4 th High (99 th Percentile) at Monitor (ppb)
2005	163.0	151	133.5	135
2006	166.7	130	130.5	96
2007	163.3	143	137.6	126
2008	187.3	189	140.1	123
2009	153.7	136	130.1	104

These results indicate that the model is performing very well in replicating the SO₂ concentration at the monitoring location, and that the Mosaic Riverview facility explains virtually all of the elevated concentrations that occur at this monitor. The design value concentrations in the area due to the Mosaic Riverview facility show that there are potentially higher concentrations in other locations. The maximum modeled design values associated with the Mosaic facility for 2005-2009 are as follows.

Year	Date (MMDDHH)	4 th High Concentration (ppb)
2005	010411	506.7
2006	031211	494.8
2007	120811	486.7
2008	090110	462.6
2009	022617	442.1
5-Year Average		478.5

It should be noted that the location of the design value concentration is on the Mosaic plant property.

Because the model performance is very good, the department has used the model results in an exacting manner to describe the recommended nonattainment boundaries. The nonattainment area is defined as the area where the model predicts that the SO₂ concentration (using the five-year average of the 4th high value as the metric) is greater than the ambient SO₂ standard. A polygon with six vertices is used to define the areal extent of the nonattainment area. The following aerial photo below shows the bounds of the area having modeled concentrations greater than the ambient air quality standard. The annotated polygon (white line) outlines the area recommended for nonattainment classification. The red shaded area outlines the modeled area greater than the ambient standard. The whited-out area describes the property boundary of the Mosaic Riverview facility, with buildings and structures in blue.



Modeling input and output files will be provided on CD/DVD.

Hillsborough County Environmental Protection Commission Letter

Below is a letter received from the Hillsborough County Environmental Protection Commission (HCEPC) concurring with the department's recommendation to limit the size of the SO₂ nonattainment area to the immediate area of the Gibsonton monitoring site.

COMMISSION

Kevin Beckner – Chairman
Lesley “Les” Miller – Vice Chairman
Victor Crist
Ken Hagan
Al Higginbotham
Sandy Murman
Mark Sharpe



Roger P. Stewart Center
3629 Queen Palm Dr. Tampa, FL 33619
Ph: (813) 627-2600

Fax Numbers (813):			
Admin	627-2620	Waste	627-2640
Legal	627-2602	Wetlands	627-2630
Water	627-2670	Air	627-2660
Lab	635-8061		

Executive Director
Richard D. Garrity, Ph.D.

May 17, 2011

Mr. Mike Halpin, Director
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, MS#5510
Tallahassee, Florida 32399-2400

Re: Recommendation for the SO₂ Designation and Nonattainment Area in Hillsborough County

Dear Mr. Halpin,

It is our understanding that the implementation of the recently revised primary national ambient air quality standard (NAAQS) for sulfur dioxide (SO₂) requires states to submit designation recommendations to the US EPA Administrator by June 3, 2011. Since one SO₂ monitor in Hillsborough County is currently exceeding the revised air quality standard for SO₂, I offer the following comments and enclosed information in support of Secretary Vinyard's recommendation to the EPA.

The Environmental Protection Commission of Hillsborough County (EPC) maintains and operates four (4) continuous air monitors to measure SO₂ and determine compliance with the SO₂ NAAQS. These four monitors were individually located to measure areas of maximum population exposure, large sources of SO₂ emissions, or background concentrations on an urban scale. The violating monitor is East Bay (12-057-0109) located about 0.6 miles southeast of Mosaic's Riverview facility and its three (3) sulfuric acid manufacturing plants. The facility is a Title V source and is major for SO₂. For your convenience, I have enclosed an aerial photograph of the East Bay monitor and surrounding communities. The monitor was placed there in 1997 as a source-oriented special purpose monitor (SPM). Under previous ownership, the facility had been the subject of citizen complaints and EPC responded by setting up a monitor.

For the past six years, East Bay has been the only SO₂ monitor with a design value above the new 1-hr standard. Currently the design value for all other SO₂ monitors in the County are less than 65% of the standard, thus we believe that the population exposed to the unacceptable levels of SO₂ is limited to the area surrounding the East Bay site. Enclosed is a table showing all the southern Hillsborough County site design values for the new 1-hour SO₂ standard applied retroactively.

An agency with values of environmental stewardship, integrity, honesty, and a culture of fairness and cooperation.

In addition, the historical record of the meteorological measurements and observed SO₂ concentrations clearly indicate that fertilizer manufacturing facility is the single source contributing to the SO₂ violations at the monitoring site. SO₂ pollution roses were generated for the days in 2010 when the maximum 1-hr average concentration was above 75 ppb. They indicate the predominant wind direction was from the northwest ordinal quadrant at 5 to 10 mph. During these periods, the acid plants were operating in compliance, but were directly upwind of East Bay. As the wind speed and direction gradually shifted from these values, the levels returned to typical background. A pollution rose and meteorological data chart representative of a typical high value day are attached.

As stated in the US EPA Memorandum, "Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards", dated March 24, 2011, direct emissions of sulfur dioxide will result in the highest concentrations close to the source. When combined with a short 1-hour averaging time for comparison to the standard, it is expected that concentrations will diminish significantly with time and distance. In light of the fact that none of our other SO₂ monitors are recording ambient levels near the NAAQS, and the current East Bay monitor is only impacted during certain localized metrological conditions, we recommend a limited non-attainment boundary of 1.5 km.

Be advised as time and resources warrant, EPC will look into doing some additional SO₂ monitoring in the Riverview area with our mobile monitoring equipment. Any data collected prior to the EPA having to make a final determination in June of 2012, will be shared with the State. We feel this will be helpful in setting any non-attainment boundary whether it be 1.5 km or otherwise.

Limiting the non-attainment area will allow the State to minimize any unnecessary or unintended economic impact to other facilities and at the same time to work expediently to assist the surrounding community. We will continue to work closely with Mosaic and the State to address this issue. The facility has been cooperative and appears committed to remedying the situation.

Thank you for your consideration. If you need any additional information, please let me know.

Sincerely,



Jerry Campbell, P.E.

Air Management Division Director

cc: Stephen R. David, Mosaic Fertilizer, LLC
Larry George, Administrator, FDEP OPAPM

Encs.

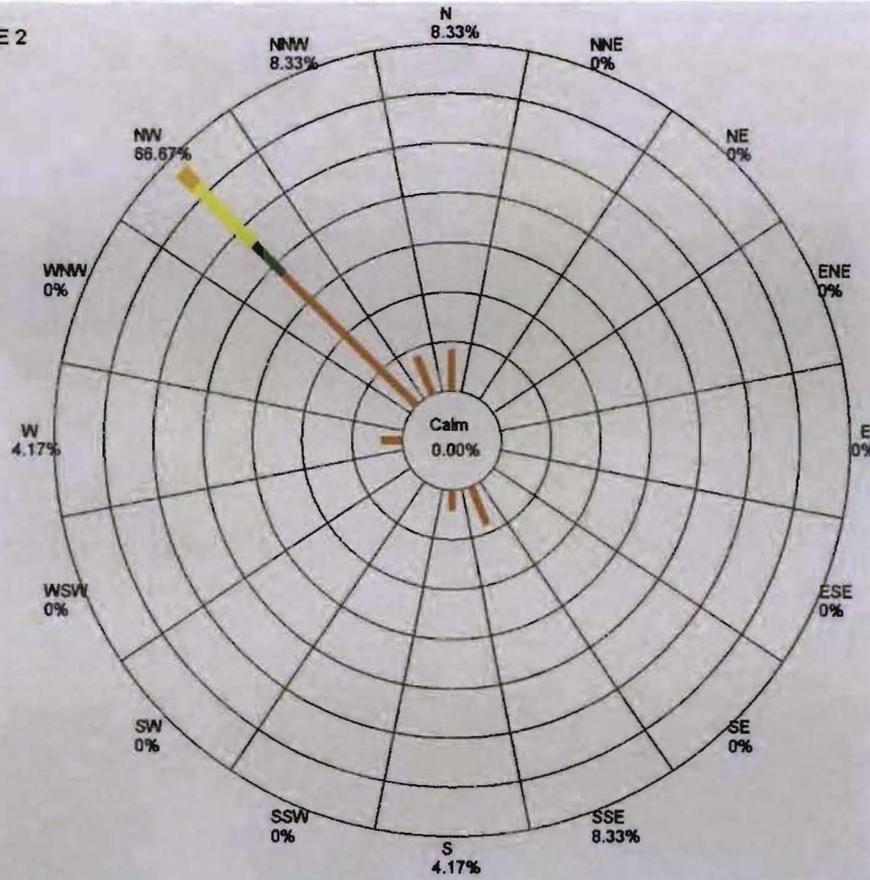
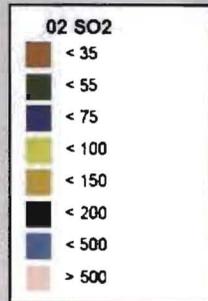
East Bay Air Monitor



HILLSBOROUGH COUNTY SULFUR DIOXIDE (PPB)

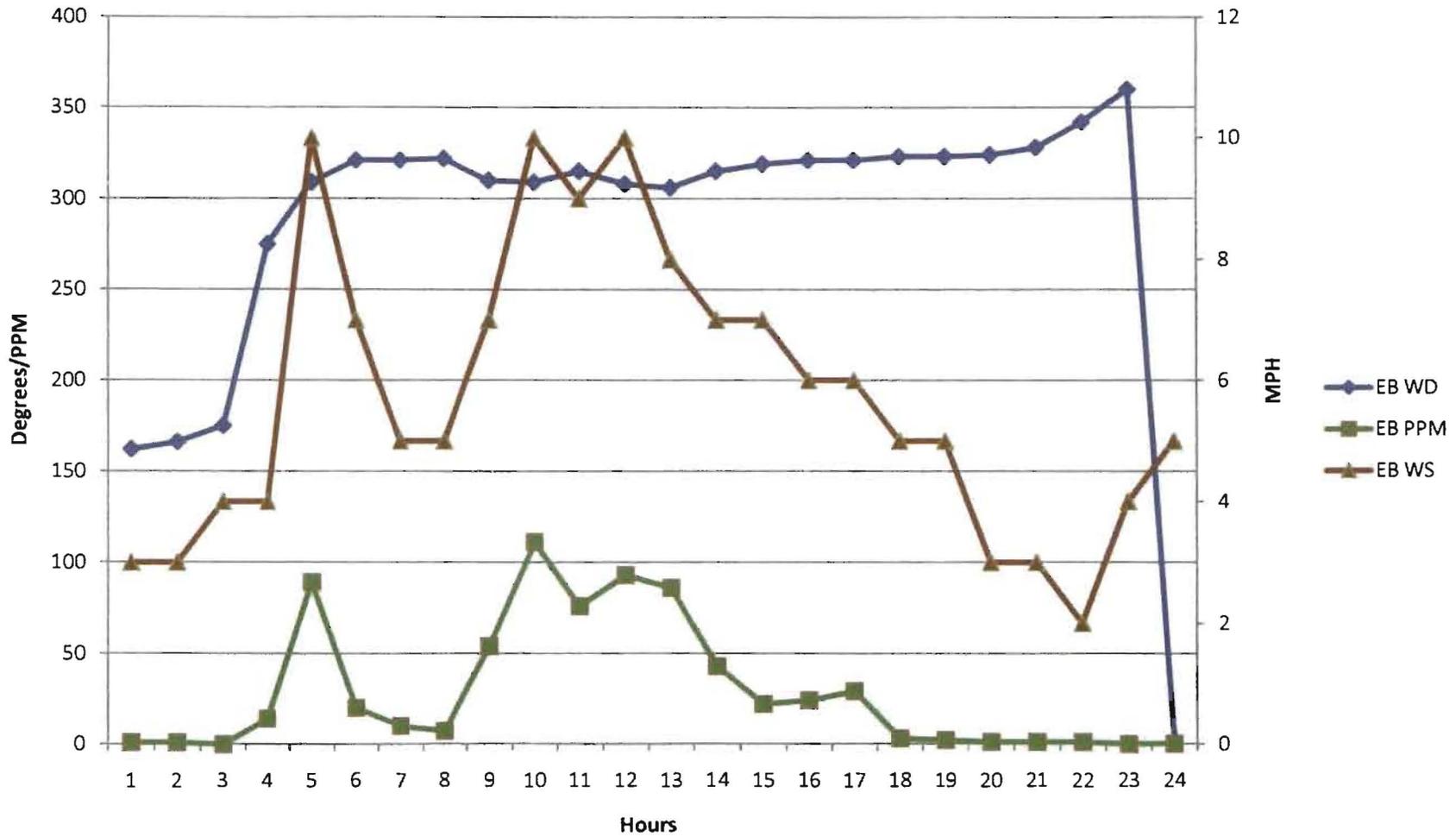
YEAR	DAVIS ISLAND		SIMMONS PARK		EAST BAY		CAUSEWAY		BIG BEND		GIANTS FISH CAMP	
	1 Hr High	Design	1 Hr High	Design	1 Hr High	Design	1 Hr High	Design	1 Hr High	Design	1 Hr High	Design
1984	238	-					291	-	370	-		
1985	171	-					240	-	650	-		
1986	190	130					300	206	320	264		
1987	181	123					254	192	290	254		
1988	287	164					245	193	258	226		
1989	224	174					252	182	325	239		
1990	212	172					375	195	235	210		
1991	395	156					282	195	76	157		
1992	224	159	345	-			327	218	109	101	211	-
1993	189	155	199	-			266	220	132	75	226	-
1994	320	156	255	204			212	213	203	113	236	182
1995	310	152	210	170			327	189	286	123	227	178
1996	171	143	176	156			294	187	323	153		
1997	209	132	157	124	167	-	203	178	219	165		
1998	205	123	120	110	186	-	284	181	278	175		
1999	153	130	195	113	277	145	210	160	176	172		
2000	136	118	218	116	144	134	305	166				
2001	130	107	383	120	203	133	250	165				
2002	192	109	172	107	164	137	169	159				
2003	108	100	135	99	167	146	131	140				
2004	79	93	76	81	187	138	31	89				
2005	91	74	92	68	151	133	98	70				
2006	161	72	143	49	130	117	40	44				
2007	124	71	83	47	143	119	39	44				
2008	71	62	35	37	189	115						
2009	39	50	24	29	136	118						
2010	67	47	32	23	119	110						

Site: C7_EAST BAY SITE 2
Parameter: O2 SO2
Units: PPB



Period: 12/1/2010-12/1/2010

East Bay Monitor December 1, 2010



Appendix 3

Sulfur Dioxide (SO₂) Unclassifiable Area Justification for the Ellyson Monitoring Site (Escambia County)

Recommendation

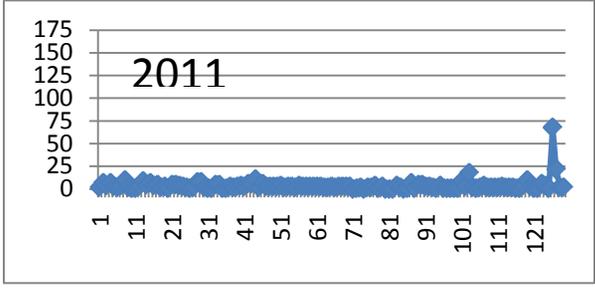
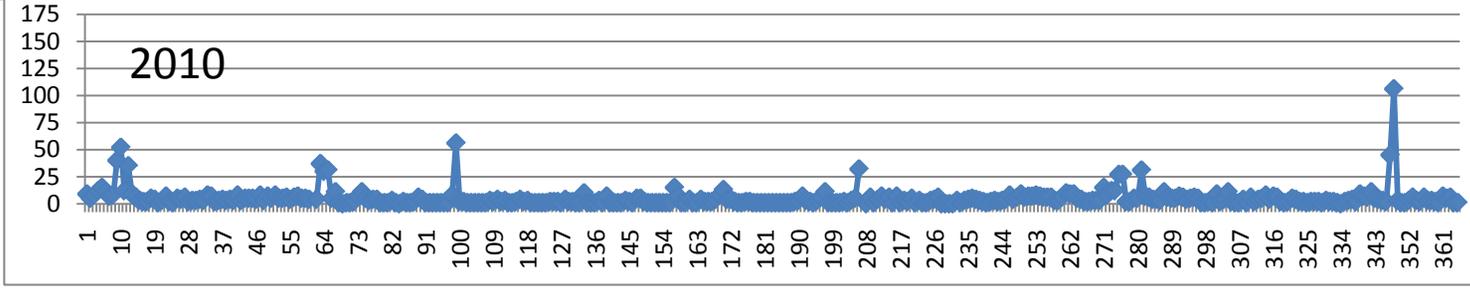
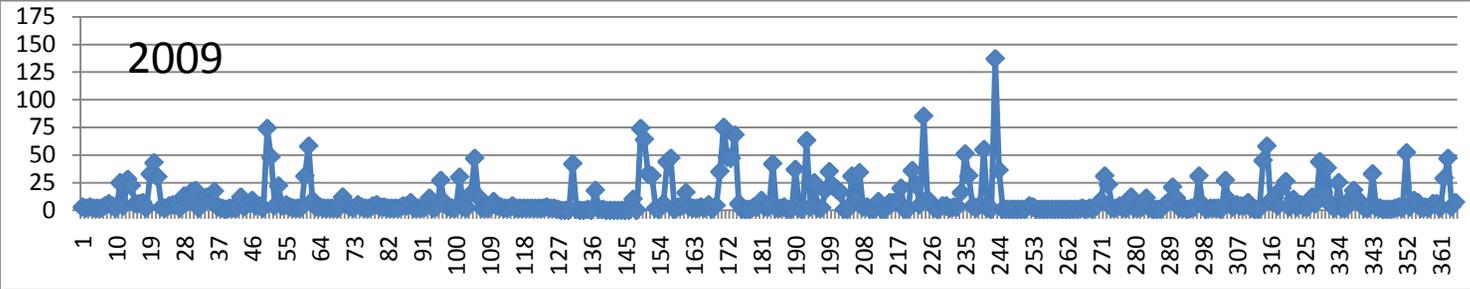
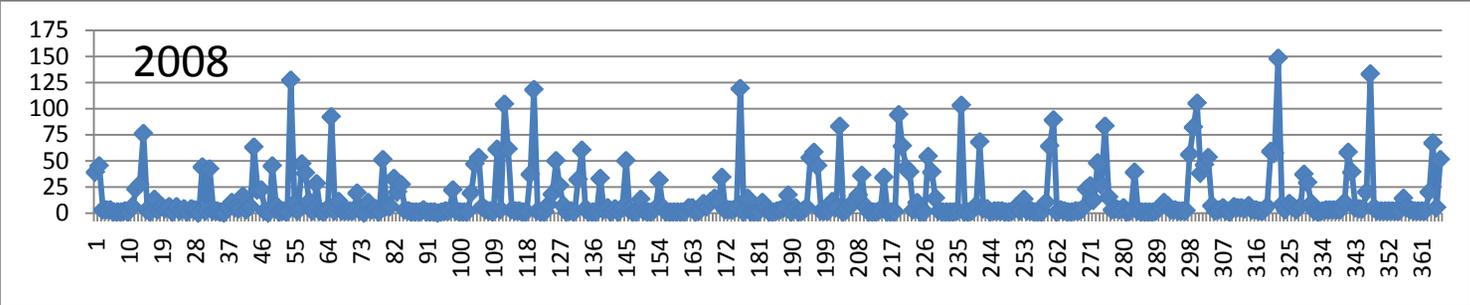
For the reasons outlined in this appendix, the department’s recommendation that most of the state, as a whole, be designated “unclassifiable” or “unclassifiable/attainment” for the 75 parts per billion (ppb) 1-hour SO₂ standard is intended to include the area surrounding the Ellyson monitoring site in Escambia County. While the most recent data for 2008-2010 show a violation, the SO₂ emissions source (Gulf Power Crist power plant) having the overwhelming influence at the monitor added a flue gas desulfurization (FGD) system in December 2009. The result, as seen in the charts below, indicate that this monitor will show compliance with the standard at the end of the 2009-2011 three-year period. The design value should continue to decrease the following year when the higher concentration data (pre-scrubber) in 2009 are dropped from the average.

Air Quality Data

The table below shows the recent history of SO₂ concentrations at the Ellyson monitor. The strip charts, also below, pictorially show the change in SO₂ measurements before and after the scrubber at Crist.

Site:A0330004 - Ellyson Industrial Park County:Escambia AQS Monitor ID:12-033-0004-42401-1										
Year	Ranked 1-Hour Averages		Ranked 3-Hour Averages		Ranked 24-Hour Averages		99th Percentile Values			Design Value
	1 st	2 nd	1 st	2 nd	1 st	2 nd	Annual Average	Complete Days	Valid	
2000	159 (11/11)	147 (08/04)	93 (12/31:12)	76 (06/23:09)	23 (01/24)	21 (06/23)	3.6	140	140	
2001	172 (05/12)	152 (09/20)	76 (01/08:06)	76 (05/12:06)	24 (01/08)	21 (03/07)	3.1	100	100	
2002	200 (06/02)	91 (02/08)	82 (06/02:06)	80 (02/08:12)	20 (02/08)	19 (11/12)	3.0	84	84	108†
2003	113 (01/07)	102 (12/11)	106 (01/07:12)	76 (01/23:00)	20 (01/23)	18 (01/07)	2.6	76	76	87†
2004	128 (08/15)	95 (05/06)	65 (12/26:12)	62 (09/06:15)	27 (12/26)	17 (08/15)	2.3	85	85	82†
2005	92 (10/08)	83 (08/09)	71 (01/01:09)	68 (10/08:09)	40 (01/01)	18 (10/08)	2.5	69	69	77†
2006	103 (03/24)	85 (11/22)	76 (03/24:00)	68 (11/22:09)	26 (03/24)	24 (11/22)	2.4	79	79	78†
2007	129 (05/12)	85 (11/03)	78 (05/12:09)	63 (06/20:12)	25 (06/20)	16 (11/03)	2.7	81	81	76†
2008	148 (11/17)	133 (12/12)	92 (12/12:09)	77 (11/17:09)	24 (12/12)	22 (10/01)	2.8	119	119	93†
2009	137 (08/31)	85 (08/12)	72 (08/31:12)	68 (08/12:09)	18 (03/02)	14 (04/15)	2.5	74	74	91†
2010	106 (12/14)	56 (04/09)	62 (12/14:12)	45 (01/10:12)	13 (01/10)	12 (12/13)	1.9	45	45	79†
2011	68 (05/06)	22 (05/07)	30 (05/06:06)	25 (05/06:09)	9 (05/06)	3 (01/15)	1.5*	22*	22*	47*

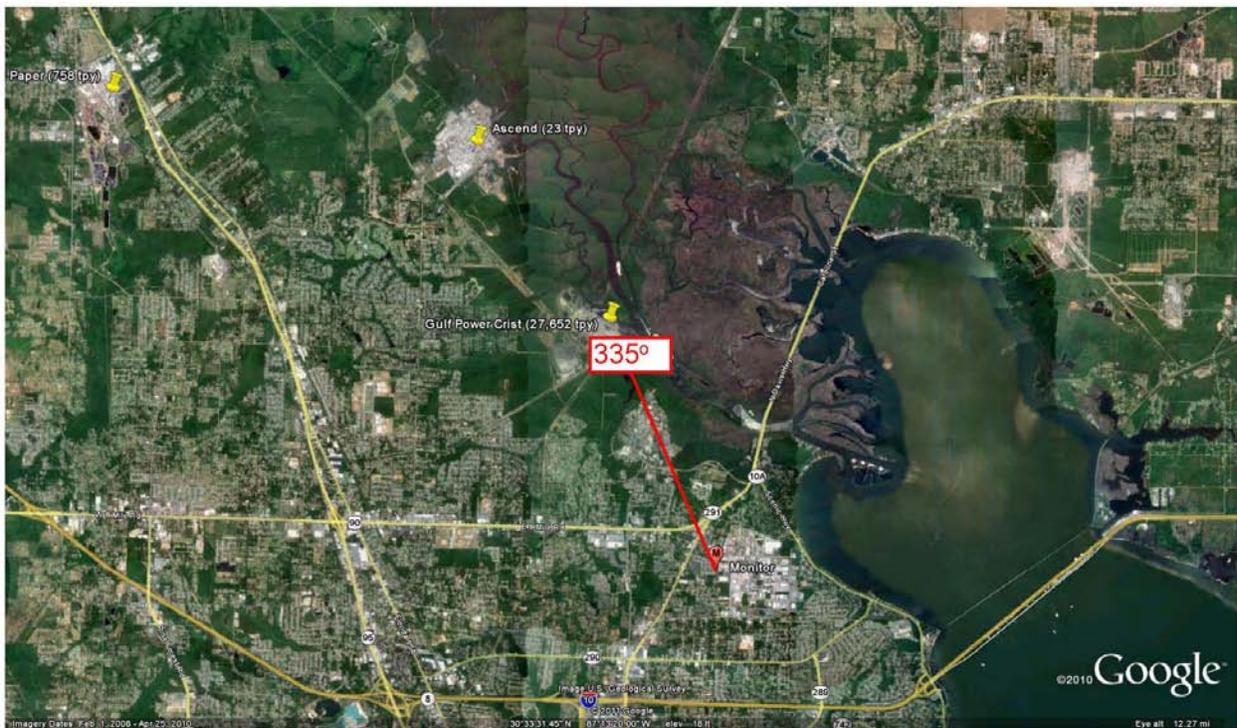
Maximum Daily 1-hour Average SO2 Concentrations in ppb (2008-2011)



As seen in the table, the 99th percentile maximum daily value for 2010, the first full year of scrubber operation, is 45 ppb. There is every expectation that this metric will be well below the level of the standard for future years. Indeed, the partial year 2011 shows a greatly reduced value.

Gulf Power Crist is the Overwhelming Contributor to the Ellyson Monitor

Wind data collected at the Ellyson monitoring site indicate that all hours with high SO₂ concentration (i.e., greater than 75 ppb) occur with the winds coming from the Gulf Power Crist power plant. The following picture shows the location of the Ellyson monitor in relation to the Crist power plant.



The following tables show the wind direction during times of high SO₂ for the years 2008 to 2010.

Date	Time	SO ₂ (ppb)	WD
20080114	12:00	76	344
20080223	11:00	85	342
20080223	12:00	127	350
20080305	10:00	92	320
20080429	8:00	113	347
20080429	9:00	118	335
20080624	10:00	119	334
20080806	7:00	94	328
20080823	8:00	102	335
20080823	9:00	85	336
20080823	10:00	103	324
20080917	9:00	89	329
20081001	6:00	83	330
20081026	10:00	105	330
20081117	9:00	148	346
20081212	10:00	122	332
20081212	11:00	133	344

Date	Time	SO ₂ (ppb)	WD	Substitute Data
20090812	9:00	85	350	ASOS
20090812	11:00	84	286	ASOS
20090831	12:00	137	322	ASOS

Date	Time	SO ₂ (ppb)	WD
20101214	12:00	106	345

The implication of these data is that the Gulf Power Crist power plant is clearly the overwhelming contributor to the historic high SO₂ concentrations at the Ellyson monitor. It is also clear from the data that the initiation of scrubber operation in December 2009 at the Crist facility has had a marked effect on the SO₂ concentration data at the Ellyson monitor. It is expected that this monitor will begin having compliant data with the three-year period ending in 2011.