



Florida Department of Environmental Protection

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Secretary

November 28, 2011

Via Electronic Mail

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

Dear Ms. Keyes Fleming:

On June 13, 2011, the Florida Department of Environmental Protection submitted 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). Specifically, the Department recommended 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 proposed implementation strategy. Since the June submittal, the Department has further analyzed SO₂ monitoring data in Nassau County and now recommends that a portion of Nassau County also be designated "nonattainment."¹ Outside of the referenced portions of Hillsborough and Nassau counties, the Department continues to recommend that the rest of the state be designated "unclassifiable" or "unclassifiable/attainment."

The recommended nonattainment area boundary for the non-complying monitoring site in Nassau County is described in the enclosed appendix. Information available at this time suggests that emissions from a single facility are primarily responsible for the SO₂ violation at the Department's monitor; therefore, the boundary encompasses the area that, based upon air dispersion modeling, may be experiencing violations of the standard caused by the facility. The Department believes it is important for the public to understand that violations of the 1-hour SO₂ standard are localized events not

¹ The Department reviewed data from an independently-operated monitor, which is located within a few meters of the Department's monitor in Nassau County, and which indicates significantly lower concentrations of SO₂ than the Department's monitor. The Department has concluded that the Department's monitoring data should be used for air quality planning purposes.

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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 recommended nonattainment area.

Please note that the Department and the aforementioned Nassau County facility have discussed potential SO₂ mitigation measures and are mutually interested in a resolution. The Department expects that the facility will propose within the next 30 days a federally-enforceable solution that provides for attainment and maintenance of the SO₂ standard in the affected area, and that the Department will complete its review prior to EPA's deadline for publishing area designations. If so, the Department will withdraw its recommendation that the area be designated nonattainment.

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. Larry George, at (850) 717-9000 or by e-mail at Larry.George@dep.state.fl.us.

Sincerely,

A handwritten signature in blue ink, appearing to read "Michael P. Halpin".

Michael P. Halpin, P.E.

Director, Division of Air Resource Management

Enclosures: Appendix

cc: Jeff Littlejohn, P.E., Deputy Secretary for Regulatory Programs, FDEP
R. Scott Davis, Chief, Air Planning Branch, EPA Region 4

Appendix

SO₂ Nonattainment Boundary Five-Factor Analysis for Nassau County

Recommendation

The recommended area of nonattainment in the Fernandina Beach area of Nassau County is described by a circle of radius 2.4 kilometers, centered on the location of the violating monitor (AQS monitor ID 0890005). The center of the recommended nonattainment area is located at UTM Easting 455530. meters, UTM Northing 3391737. meters, UTM zone 17, using the NAD83 datum.

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 completed following the general guidance in the same document. Analysis of the five factors to be considered and the modeling results follow.

1. Air Quality Data

There are five SO₂ monitors in the Nassau/Duval counties area. The monitor located in Fernandina Beach in Nassau County, 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: B0890005 - FBHWWTP County: Nassau AQS Monitor ID: 12-089-0005-42401-1											
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	146 (12/12)	100 (01/13)	83 (12/12:18)	79 (01/13:21)	30 (01/14)	28 (01/01)	3.3*	98*	98*		
2009	145 (03/02)	121 (09/29)	52 (03/03:00)	49 (09/29:18)	22 (12/20)	21 (12/26)	2.2	73	73		
2010	345 (01/12)	344 (02/13)	317 (02/13:18)	159 (02/16:03)	68 (02/13)	58 (02/16)	4.3	216	216	129†	

Site: L0310032 - Kooker Park, Jacksonville County: Duval AQS Monitor ID: 12-031-0032-42401-1											
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	32 (02/16)	21 (02/02)	16 (02/16:12)	10 (01/14:00)	4 (02/11)	4 (01/26)	1.4	17	17		
2009	46 (02/06)	26 (05/13)	20 (05/13:15)	17 (02/06:09)	4 (02/06)	4 (05/13)	1.3	13	13		
2010	24 (01/13)	23 (04/11)	13 (04/15:15)	11 (04/19:15)	5 (10/16)	5 (04/19)	1.4	16	16	15	

Site:L0310080 - Minerva Street County:Duval AQS Monitor ID:12-031-0080-42401-1										
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	36 (01/28)	22 (11/01)	30 (01/28:09)	13 (11/01:12)	5 (01/26)	5 (01/28)	1.3	18	18	
2009	25 (02/06)	18 (11/29)	11 (02/06:12)	10 (01/09:12)	4 (12/27)	3 (11/04)	1.2	15	15	
2010	29 (01/13)	18 (02/24)	18 (01/13:09)	10 (02/24:09)	4 (01/07)	4 (01/13)	1.3	17	17	17

Site:L0310081 - Cedar Bay STP County:Duval AQS Monitor ID:12-031-0081-42401-1										
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	88 (06/07)	78 (06/06)	57 (06/06:12)	57 (06/07:15)	11 (06/06)	11 (06/07)	1.4	32	32	
2009	36 (07/21)	26 (02/06)	22 (02/06:12)	18 (07/22:12)	6 (07/22)	4 (02/06)	1.2	24	24	
2010	41 (05/06)	26 (09/25)	21 (05/05:12)	18 (05/06:15)	3 (05/20)	3 (05/05)	1.3	22	22	26

Site:L0310097 - Fort Caroline Road County:Duval AQS Monitor ID:12-031-0097-42401-1										
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	37 (01/28)	31 (01/04)	22 (11/11:15)	19 (01/28:09)	5 (01/04)	5 (01/21)	1.4	25	25	
2009	21 (02/06)	17 (12/16)	11 (05/19:06)	10 (05/19:03)	5 (05/19)	4 (12/27)	1.2	13	13	
2010	19 (01/13)	18 (09/03)	13 (12/03:21)	12 (01/13:09)	4 (12/04)	3 (12/03)	1.3	16	17	18

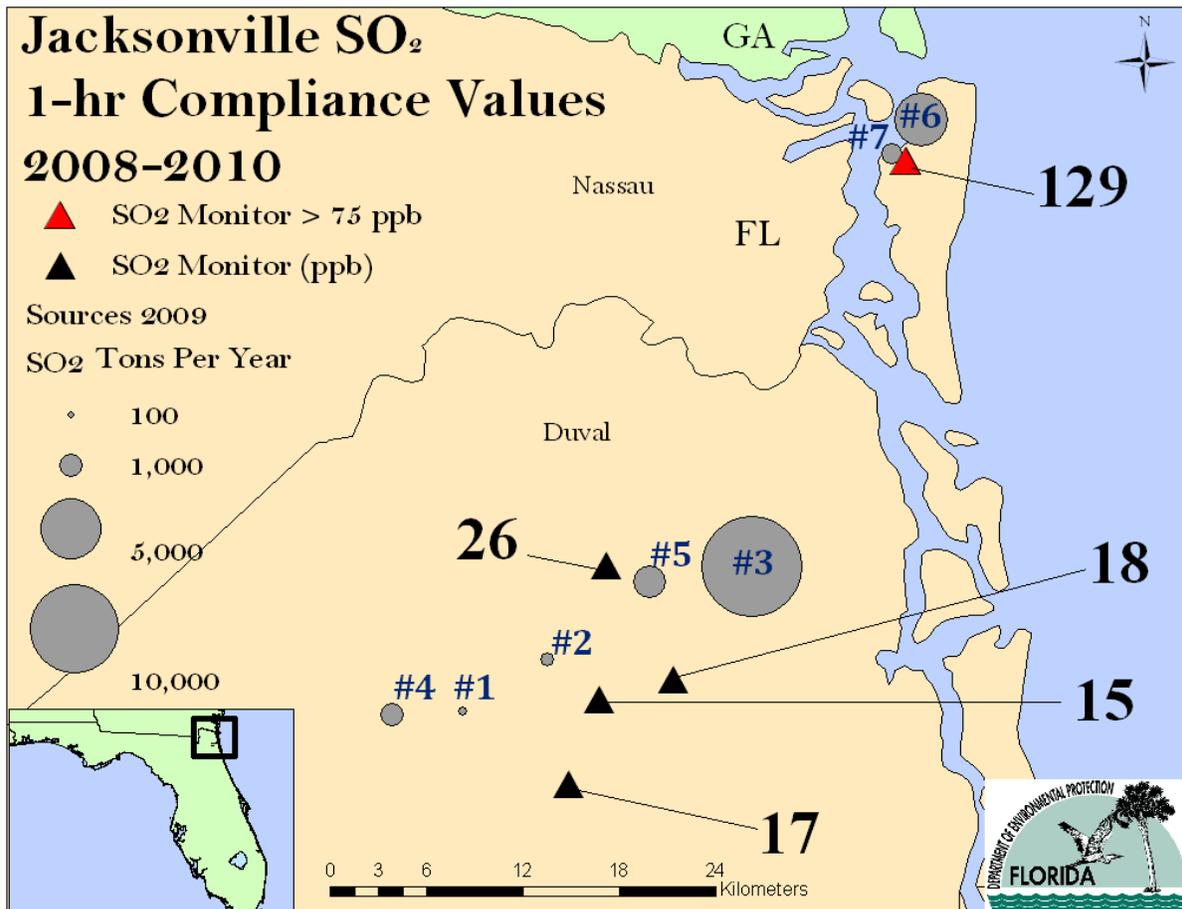
*There was insufficient data to produce a valid average

†Indicates the standard was exceeded

The violating monitor (L0890005) in Fernandina Beach is located less than 1 kilometer to the southeast of the Rayonier Performance Fibers plant, a major source of SO₂. Rayonier is an acid sulfite based pulp mill using ammonia as a base chemical for the manufacture of dissolving pulps. All other SO₂ monitors in the Northeast Florida area are in compliance with the ambient standard.

2. Emissions-Related Data

The following map provides the location of large (100 TPY or greater) SO₂ emitting sources in the Nassau/Duval Counties area in relation to the monitors.



The emissions represented are actual values in 2009. The two facilities closest to the violating monitor are Rayonier (1 kilometer) and Rock Tenn (2.9 kilometers). The nearest other SO₂ source is the JEA Northside/SJRPP power plant located 26.8 kilometers to the southwest. SO₂ emissions from Rayonier in 2009 were 830 tpy, and emissions from Rock Tenn were 4,090 tpy. Rock Tenn, formerly Smurfit Stone, is a fully integrated Kraft linerboard mill that consists of major activities areas such as: wood yard, pulp mill, recycle plant, chemical recovery, power house and paper mill..

Map ID	Facility Name	2009 SO ₂ (tpy)
1	ANCHOR GLASS CONTAINER CORPORATION	196
2	RENESENZ LLC	320
3	JEA NORTHSIDE/SJRPP	12,249
4	IFF CHEMICAL HOLDINGS, INC.	908
5	CEDAR BAY COGENERATION FACILITY	1,742
6	ROCK TENN	4,090
7	RAYONIER PERFORMANCE FIBERS LLC	830

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 Rayonier facility. The following aerial photo shows the direction of the Rayonier facility from the SO₂ monitor. The distance from the facility of the monitor is 1 kilometer, with the direction of the entire facility ranging from 290° to 320°. The following tables list all 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. When the winds come from the direction of the nearby Rock Tenn pulp mill, the monitor typically registers single digit SO₂ concentrations with highest value in the upper 30's ppb. It is clear that the violation of the standard is due to the Rayonier facility.



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

Date	Time	SO ₂ (ppb)	WD
20080113	21:00	100	321
20080114	1:00	79	321
20080114	7:00	78	324
20080127	21:00	93	325
20080210	1:00	98	316
20080413	22:00	82	292
20080512	22:00	86	332
20081212	17:00	85	321
20081212	19:00	146	325

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

Date	Time	SO ₂ (ppb)	WD
20090302	4:00	145	325
20090303	0:00	77	347
20090929	20:00	121	297

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

Date	Time	SO ₂ (ppb)	WD
20100106	20:00	106	291
20100106	23:00	76	301
20100109	23:00	253	287
20100110	0:00	134	323
20100110	20:00	105	330
20100111	0:00	79	334
20100111	5:00	152	315
20100111	6:00	80	297
20100111	7:00	216	284
20100111	8:00	105	316
20100112	17:00	143	295
20100112	18:00	345	295
20100112	19:00	121	322
20100127	2:00	81	325
20100203	4:00	76	321
20100213	18:00	289	294
20100213	19:00	320	290
20100213	20:00	344	288
20100214	1:00	102	314
20100214	3:00	145	276
20100214	9:00	86	289
20100215	23:00	93	297
20100216	0:00	176	294
20100216	3:00	201	291
20100216	4:00	190	294
20100216	5:00	88	300
20100216	6:00	121	295
20100216	7:00	135	295
20100216	22:00	124	293
20100217	3:00	132	301
20100314	0:00	186	321
20100315	1:00	84	296
20100315	23:00	80	294
20100316	1:00	81	289
20100316	4:00	78	330
20100318	7:00	85	330
20101007	5:00	111	323

4. Geography/Topography

There are no significant topographical features in the Fernandina Beach area. Elevation changes are minimal. The primary geographic feature is the intercoastal waterway, along which the Rayonier facility is located.

5. Jurisdictional Boundaries

The violating monitor is located in the northeastern part of Nassau 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 monitor 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 ver11059
 - d. AERMINUTE ver11059
 - e. 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 Rayonier facility. As a result, the modeling domain is centered on the Rayonier facility, which is located only 1 kilometer from the monitoring location, and the domain extends to a 10 by 10 kilometer area around this facility.
- c) Determining the Sources to Model – Because the Rayonier facility is the overwhelming source for the violation, this is the only source modeled for the purpose of determining the extent of the nonattainment area. The department recognizes that other SO₂ sources in the area could interact with the Rayonier facility for certain wind directions. These sources will be evaluated individually and collectively through the maintenance SIP modeling that will be completed over the next several years. In addition, the modeling demonstration associated with the nonattainment area corrective SIP will include all sources that significantly impact the area.

- d) Receptor Grid – The receptor grid used follows the guidance. A nested grid with 50 meter spacing within one kilometer of the source, 100 meter spacing from one to two kilometers, and 250 meters from two to 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 permit, and previous air construction permit applications. These data were reviewed by Rayonier to verify the correct 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 Rayonier facility is rural as determined through land-use data consistent with the guidance.
- f) Meteorological Data – Five years (2006-2010) of meteorological data from the National Weather Service site at Jacksonville International Airport were used in this analysis. These data were processed through AERMET version 11059, using 1-minute data from the same site processed through AERMINUTE version 11059. The Jacksonville airport is located approximately 28.5 kilometers to the south of the violating monitor.
- g) Background concentration – The background concentration at the Fernandina Beach monitor was determined based on the 99th percentile maximum daily 1-hour value on hours that were not impacted by the Rayonier facility. A 90-degree sector of wind directions centered on the Rayonier facility was excluded from the calculation to avoid contribution from the Rayonier facility. The 99th percentile of the remaining concentrations associated with winds not from the direction of the Rayonier facility were calculated for each year and averaged. Based on this calculation, the background concentration is 26.0 ppb.

Modeling Results

The AERMOD model results were used to determine the areal extent to which this facility would be potentially violating the standard. The recommended nonattainment area is centered on the violating monitor and encompasses the area having a modeled violation of the ambient standard associated with the Rayonier facility.

The maximum modeled design values associated with the Rayonier facility for 2006-2010 are as follows.

Year	Date (MMDDHH)	4 th High Concentration (ppb)*
2006	082909	230.7
2007	081709	267.0
2008	072214	274.7
2009	072812	276.6
2010	071812	284.5
5-Year Average		266.7

*includes background concentration of 26.0 ppb

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

The aerial photo below shows the bounds of the area having modeled concentrations greater than the ambient air quality standard. The red annotation circle outlines the area recommended for nonattainment classification, with the center being the location of the violating ambient monitor and the radius being 2.4 kilometers. Inside the shaded pink area outlines the modeled area greater than the ambient standard.

