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November 17, 1999

BUREAU OF AIR REGULATION

9937515A/7

Florida Department of Environmental Protection
New Source Review Section
2600 Blair Stone Road
Tallahassee, FL

Attention : Jeffery Koerner, P.E.

RE: United States Sugar Corporation (U.S. Sugar) – PSD Permit Application for
Boiler No. 4 and the Sugar Refinery at the Clewiston Mill
Updated ISC-PRIME Modeling Information

Dear Mr. Koerner:

The purpose of this letter is to address the issues raised by the U.S. EPA in their November 12, 1999, letter regarding the draft Boiler No. 4 PSD permit. The EPA comments are addressed below, in the same order as they appear in the comment letter.

Operational and Emission Limits

1. The current Boiler No. 4 permit restricts the annual fuel oil usage to 500,000 gal/yr, and this same cap was proposed in the permit application for the Boiler No. 4 modification. However, the draft permit did not contain such a condition. To resolve this issue, please add this limitation to the permit (i.e., in Condition 6 under the Boiler No. 4 emission unit section). Also, for modeling purposes for SO₂, it was assumed that Boiler No. 4 was operating at 633MMBtu/hr for the 3-hour averaging time, and at 600 MMBtu/hr for the 24-hour and annual averaging times, which are higher maximum heat inputs than would actually occur under combination bagasse/oil firing. This was done to be conservative, but also because for the 24-hour and annual averaging times, the worst case mill scenario is Boiler No. 4 burning 100 percent bagasse (see discussion below). Boiler No. 4 was modeled for 8,760 hr/yr in all modeling scenarios, since it is proposed to not restrict Boiler No. 4 operation to the crop season (i.e., it can operate any time during the year).
2. No comment.
3. Based on the available SO₂ test data, U.S. Sugar is willing to lower the proposed SO₂ limit for bagasse firing to 0.06 lb/MMBtu in order to resolve this issue. This is about 4 times the highest test data result, but concerns remain over meeting any lower limit on a continuous basis based on the limited test data available, and the ability of measurement methodologies to accurately measure at this low level.

Air Quality Impact Assessment

1. It is agreed that the ISC-PRIME model should provide the basis for the final permit issuance.
2. Based upon the recent approval by EPA of the ISC-PRIME dispersion model for the Clewiston mill, Golder Associates has performed additional modeling analysis in order to bring the project impacts up to date. All model runs have been re-executed using the ISC-PRIME model. In addition, U.S. Sugar seeks the option to raise the existing stacks on Boiler Nos. 1, 2 and 3 from the current 165 feet to a minimum height of 182 feet. This is being done to allow the option of burning the currently permitted 2.5% sulfur (maximum) No. 6 fuel oil in these three boilers. As a result, two sets of model impact results are being provided:
 - 1) Existing stack heights (Boiler Nos. 1, 2, and 3 @ 165 feet, Boiler No. 4 @ 150 feet, and Boiler No. 7 @ 225 feet), and
 - 2) Future stack heights (Boiler Nos. 1, 2 and 3 @ 182 feet, Boiler No. 4 @ 150 feet, and Boiler No. 7 @ 225 feet).

PM and CO emissions are not affected by fuel oil burning since maximum emissions occur under 100 percent bagasse firing in all boilers. Therefore, the emissions for these pollutants are the same for both stack height scenarios, and have not changed from that presented in the application.

The maximum mill SO₂ emissions and fuel usage scenario are dictated by the stack height scenario. For the 165 foot stack scenario, Boiler Nos. 1, 2 and 3 will be restricted to burning fuel oil with no greater than 2.0% sulfur in order to comply with all standards and increments. For the 182 foot stack scenario, Boiler Nos. 1, 2 and 3 will be restricted to burning fuel oil with no greater than 2.5% sulfur. The SO₂ emissions for these two scenarios are presented in Tables A and B attached.

As shown in the attached tables, compliance with all standards and increments is predicted with the ISC-PRIME model. The 182 foot scenario tables have a "R1" reference in the table number, while the 165 foot scenario has "R2" in the table number.

The above discussion and modeling results assume that Boiler No. 4 has a separate fuel oil tank for 0.7% sulfur fuel oil, and Boiler Nos. 1, 2, and 3 have a common tank with either 2.0% sulfur or 2.5% sulfur fuel oil. However, until such time that U.S. Sugar constructs a separate fuel oil tank for Boiler No. 4, U.S. Sugar will purchase only 0.7% sulfur fuel for the common tank. Total SO₂ emissions based on 0.7% sulfur fuel oil for Boiler Nos. 1 through 4 will be much less than either of the modeling scenarios presented above with 2.0% or 2.5% fuel oil. As a result, the modeling analysis demonstrates compliance with standards and increments for the scenario of 0.7% sulfur fuel oil being burned in all boilers.

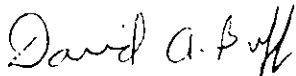
All model input and output files have been placed on Golder's FTP site for access by FDEP and EPA at <ftp://golder.com/gville/srm/cleve/USSCLEW>.

Please note that U.S. Sugar started purchasing solely 0.7% (maximum) sulfur fuel oil for the common fuel oil tank prior to the beginning of the crop season, and will continue to purchase this fuel for the common tank until such time as a separate fuel oil tank is constructed for Boiler No. 4.

Thank you for consideration of these comments. Please call or e-mail me if you have any additional questions.

Sincerely,

Golder Associates Inc.



David A. Buff, P.E.
Principal Engineer
Florida P.E. #19011

DB/arz

Attachments

cc: Don Griffin
Bill Wehrum
Stan Krivo, EPA Region IV
National Park Service

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CC: J. Koerner, BAR
SD
EPA
NPS

Table A. U.S. Sugar Clewiston Mill Maximum Fuel Oil Burning And SO₂ Emissions - Future Operation:
(09/20/99)

Boilers 1-3 @ 2.5% sulfur fuel oil; 182 ft stack height
Boiler 4 @ 0.7% sulfur fuel oil; 150 ft stack height

Boiler	Total Maximum Heat Input (MMBtu/hr)	Maximum Heat Input From Fuel Oil (MMBtu/hr)	Rates Used For Modeling Purposes				Modeled SO ₂ Emissions			
			Fuel Oil		Bagasse		Fuel Oil (lb/hr)	Bagasse ^b (lb/hr)	Total	
			gal/hr ^a	MMBtu/hr	MMBtu/hr	lb/hr(dry)			(lb/hr)	(g/s)
<u>MAXIMUM 3-HOUR CASE</u>										
1	495.6 ^c	225.1	1,500	225.0	270.6	37,583	615.0	18.8	633.8	79.86
2	495.6 ^c	225.1	1,500	225.0	270.6	37,583	615.0	18.8	633.8	79.86
3	342.0 ^c	135.1	900	135.0	207.0	28,750	369.0	14.4	383.4	48.31
4	633.0	225.1	1,500	213.0	420.0	58,333	153.3	42.0 ^d	195.3	24.61
7	812.0	249.0	0	0.0	812.0	112,778	0.0	138.0 ^d	138.0	17.39
Totals	2,778.2		5,400 (16,200 gallons per 3-hour period)	798.0	1,980.2	275,028	1,752.3	232.0	1,984.3	250.0
<u>MAXIMUM 24-HOUR CASE</u>										
1	495.6	225.1	1,400	210.0	285.6	39,667	574.0	19.8	593.8	74.82
2	495.6	225.1	1,400	210.0	285.6	39,667	574.0	19.8	593.8	74.82
3	342.0	135.1	900	135.0	207.0	28,750	369.0	14.4	383.4	48.31
4	600.0	225.1	0	0.0	600.0	83,333	0.0	60.0 ^d	60.0	7.56
7	738.0	249.0	0	0.0	738.0	102,500	0.0	125.5 ^d	125.5	15.81
Totals	2,671.2		3,700 (88,800 gallons per 24-hour period)	555.0	2,116.2	293,917	1,517.0	239.5	1,756.5	221.3

^aTotal fuel usage for all boilers based on current permit limits. Individual boiler rates selected to maximize SO₂ emissions, i.e., Boiler Nos. 1, 2 and 3 burning 2.5% sulfur oil, and Boiler No.4 burning 0.7% sulfur oil. Boiler Nos. 1, 2 and 3 have 182 ft stacks, and Boiler No. 4 has a 150 ft stack.

^b Assumes 75% removal of SO₂ due to bagasse firing, based on industry test data.

^c Permit limit for 24-hour average.

^d Based on proposed permit limit for Boiler No. 4 of 0.1 lb/MMBtu, and current permit limit of 0.17 lb/MMBtu for Boiler No. 7.

Note: Fuel Oil - 2.5% sulfur
18,300 Btu/lb; 150,000 Btu/gal
2.5% ε 8.2 lb/gal
Bagasse - 7,200 Btu/lb (dry); 3,600 Btu/lb (wet)
0.1% sulfur average, dry basis

0.7% sulfur
19,450 Btu/lb; 142,000 Btu/gal
7.3 lb/gal

Table B. U.S. Sugar Clewiston Mill Maximum Fuel Oil Burning And SO₂ Emissions - Future Operation:
(11/12/99)

Boilers 1-3 @ 2.0% sulfur fuel oil; 165 ft stack height
Boiler 4 @ 0.7% sulfur; 150 ft stack height

Boiler	Total Maximum Heat Input (MMBtu/hr)	Maximum Heat Input From Fuel Oil (MMBtu/hr)	Rates Used For Modeling Purposes				Modeled SO ₂ Emissions			
			Fuel Oil		Bagasse		Fuel Oil (lb/hr)	Bagasse ^b (lb/hr)	Total	
			gal/hr ^a	MMBtu/hr	MMBtu/hr	lb/hr(dry)			(lb/hr)	(g/s)
<u>MAXIMUM 3-HOUR CASE</u>										
1	495.6 ^c	225.1	1,500	225.0	270.6	37,583	492.0	18.8	510.8	64.36
2	495.6 ^c	225.1	1,500	225.0	270.6	37,583	492.0	18.8	510.8	64.36
3	342.0 ^c	135.1	900	135.0	207.0	28,750	295.2	14.4	309.6	39.01
4	633.0	225.1	1,500	213.0	420.0	58,333	153.3	42.0 ^d	195.3	24.61
7	812.0	249.0	0	0.0	812.0	112,778	0.0	138.0 ^d	138.0	17.39
Totals	2,778.2		5,400 (16,200 gallons per 3-hour period)	798.0	1,980.2	275,028	1,432.5	232.0	1,664.5	209.7
<u>MAXIMUM 24-HOUR CASE</u>										
1	495.6	225.1	1,400	210.0	285.6	39,667	459.2	19.8	479.0	60.36
2	495.6	225.1	1,400	210.0	285.6	39,667	459.2	19.8	479.0	60.36
3	342.0	135.1	900	135.0	207.0	28,750	295.2	14.4	309.6	39.01
4	600.0	225.1	0	0.0	600.0	83,333	0.0	60.0 ^d	60.0	7.56
7	738.0	249.0	0	0.0	738.0	102,500	0.0	125.5 ^d	125.5	15.81
Totals	2,671.2		3,700 (88,800 gallons per 24-hour period)	555.0	2,116.2	293,917	1,213.6	239.5	1,453.1	183.1

^a Total fuel usage for all boilers based on current permit limits. Individual boiler rates selected to maximize SO₂ emissions, i.e., Boiler Nos. 1, 2 and 3 burning 2.0% sulfur oil, and Boiler No.4 burning 0.7% sulfur oil. Boiler Nos. 1, 2 and 3 have 165 ft stacks, and Boiler No. 4 has a 150 ft stack.

^b Assumes 75% removal of SO₂ due to bagasse firing, based on industry test data.

^c Permit limit for 24-hour average.

^d Based on proposed permit limit for Boiler No. 4 of 0.1 lb/MMBtu, and current permit limit of 0.17 lb/MMBtu for Boiler No. 7.

Note: Fuel Oil - 2.0% sulfur
18,300 Btu/lb; 150,000 Btu/gal
2.5% ε 8.2 lb/gal
0.7% sulfur
19,450 Btu/lb; 142,000 Btu/gal
7.3 lb/gal
Bagasse - 7,200 Btu/lb (dry); 3,600 Btu/lb (wet)
0.1% sulfur average, dry basis

Table 6-16R. Maximum Predicted Pollutant Impacts From Proposed Project
 Screening Analysis - Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration ^a (ug/m ³)	Receptor Location ^b		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO₂				
Annual				
	1.75	300	1500	87123124
	1.59	270	1500	88123124
	1.88	310	1500	89123124
	2.08	300	1500	90123124
	1.99	300	1500	91123124
High 24-Hour				
	27.9	240	900	87110124
	25.7	260	1200	88013024
	18.4	310	1500	89040424
	25.3	240	900	90042024
	24.0	290	1200	91052124
High 3-Hour				
	77	10	463	87011915
	92	360	456	88112306
	65	350	900	89022118
	60	240	900	90100812
	69	10	463	91030309
PM10				
Annual				
	0.80	120	675	87123124
	0.86	110	906	88123124
	0.81	310	1200	89123124
	0.79	300	1200	90123124
	0.86	300	1200	91123124
High 24-Hour				
	8.4	230	1200	87102324
	7.9	60	912	88041224
	8.0	310	1500	89040424
	11.5	240	900	90042024
	10.2	290	1200	91052124
NO_x				
Annual				
	0.71	300	1500	87123124
	0.62	270	1500	88123124
	0.75	310	1500	89123124
	0.82	300	1500	90123124
	0.81	300	1500	91123124
CO				
High 8-Hour				
	1065	50	709	87062716
	891	350	600	88041816
	707	340	900	89060816
	795	240	900	90100816
	866	350	900	91042316
High 1-Hour				
	2097	350	1200	87071916
	2208	10	463	88090511
	2200	10	463	89062816
	1966	10	463	90071311
	1862	360	600	91080111

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

Table 6-17R. Maximum Predicted Pollutant Impacts From Proposed Project for Comparison to EPA Significant Impact Levels - Refined Analyses - Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration ^a ($\mu\text{mg}/\text{m}^3$)	Receptor Location ^b		Time Period (YYMMDDHH)	EPA Significant Impact Levels ($\mu\text{g}/\text{m}^3$)
		Direction (degree)	Distance (m)		
SO₂					
Annual	2.1	302	1500	90123124	1
	2.0	300	1500	91123124	
High 24-Hour	28.3	240	800	87110124	5
	25.9	260	1100	88013024	
	32.6	244	1000	90042024	
High 3-Hour	92	360	456	88112306	25
PM10					
Annual	1.54	100	800	88123124	1
	0.86	302	1200	91123124	
High 24-Hour	13.8	244	1000	90042024	5
	11.1	292	1100	91052124	
NO_x					
Annual	0.75	306	1500	89123124	1
	0.82	300	1500	90123124	
	0.81	300	1500	91123124	
CO					
High 8-Hour	1,065	50	709	87062716	500
High 1-Hour	2,134	350	1100	87071916	2000
	2,200	10	463	89062816	

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Note: The project's significant impact distances (km) are SO₂ - 12; PM10 - 4; CO - 3; NO_x = Not significant

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

EPA = Environmental Protection Agency

Table 6-18R. Maximum Predicted Pollutant Impacts From Proposed Project at the Everglades National Park PSD Class I Area
- Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration ^a (ug/m ³)	UTM Receptor Location ^b		Time Period (YYMMDDHH)	EPA Proposed Class I Significant Impact Levels (ug/m ³)
		(m)	(m)		
SO₂					
Annual	0.022	550300	2848600	87123124	0.1
	0.031	550300	2848600	88123124	
	0.031	545000	2848600	89123124	
	0.022	550300	2848600	90123124	
	0.027	545000	2848600	91123124	
High 24-Hour	0.49	540000	2848600	87021224	0.2
	0.50	535000	2848600	88071824	
	0.45	525000	2848600	89022824	
	0.67	545000	2844000	90082724	
	0.68	473500	2860000	91101924	
High 3-Hour	2.3	483000	2848500	87090706	1.0
	3.6	540000	2848600	88040603	
	3.6	525000	2848600	89022806	
	3.6	540000	2844000	90112603	
	2.9	545000	2848600	91012306	
PM₁₀					
Annual	0.006	550300	2848600	87123124	0.2
	0.008	550300	2848600	88123124	
	0.008	545000	2848600	89123124	
	0.006	550300	2848600	90123124	
	0.006	550300	2848600	91123124	
High 24-Hour	0.18	545000	2829000	87050724	0.3
	0.22	535000	2848600	88071824	
	0.19	545000	2848600	89041924	
	0.31	545000	2844000	90082724	
	0.30	473500	2857000	91101924	
NO_x					
Annual	0.009	550300	2848600	87123124	0.1
	0.012	550300	2848600	88123124	
	0.012	545000	2848600	89123124	
	0.009	550300	2848600	90123124	
	0.010	545000	2848600	91123124	

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Universal Mercator Transverse coordinate system

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

PSD = Prevention of Significant Deterioration

NPS = National Park Service

EPA = Environmental Protection Agency

Table 6-18AR. Maximum Predicted 24-Hour PM10 Pollutant Impacts From Proposed Project at the Everglades National Park
PSD Class I Area - Refinement - Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration ^a (mg/m ³)	Receptor Location ^b		Time Period (YYMMDDHH)	EPA Proposed Class I Significant Impact Level (mg/m ³)
		X (km)	Y (km)		
High 24-Hour	0.168	62.92	-80.54	87112924	0.3
	0.169	60.07	-82.68	88011224	
	0.171	-84.73	-57.15	89080224	
	0.154	44.80	-91.86	90121324	
	0.165	-82.68	60.07	91040824	

^a Concentrations are highest predicted with CALPUFF model and 5-year meteorological record from W. Palm Beach, 1987-91

^b Receptors are relative to the Clewiston Mill and are located on a circle of 102 km radius, and spaced at 2-degree intervals

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

PSD = Prevention of Significant Deterioration

NPS = National Park Service

EPA = Environmental Protection Agency

Table 6-19R1. Maximum Predicted Pollutant Impacts Due to All Future Sources, AAQS Screening Analyses
- Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ^a (ug/m ³)	Receptor Location ^b		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO₂				
Annual	29.9	310	1200	87123124
	31.1	270	1200	88123124
	33.9	310	1200	89123124
	35.8	310	1200	90123124
	33.2	300	1200	91123124
H2H 24-Hour	231	310	1200	87080724
	240	310	1200	88040324
	217	320	900	89061524
	208	320	900	90031624
	203	320	1200	91041624
H2H 3-Hour	552	310	900	87080715
	615	310	900	88090912
	574	310	900	89061212
	561	270	900	90092115
	728	310	900	91070615
PM₁₀				
Annual	5.5	310	1200	87123124
	5.7	270	1200	88123124
	6.4	310	1200	89123124
	6.8	310	1200	90123124
	6.3	300	1200	91123124
H2H 24-Hour	48.7	270	1200	87123124
	49.0	310	1500	88112024
	45.2	320	900	89060424
	43.9	320	1200	90020324
	44.3	290	1200	91050924
CO				
H2H 8-Hour	3781	310	900	87061416
	3824	280	1200	88032408
	3978	320	900	89060516
	3323	320	1200	90031508
	4211	310	900	91043016
H2H 1-Hour	7822	340	900	87072410
	7798	320	900	88040612
	7930	320	900	89051714
	8872	330	527	90080511
	9124	40	600	91081212

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-20R1. Maximum Predicted Pollutant Impacts Due to All Future Sources For Comparison to AAQS, Refined Analysis
- Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration (mg/m ³)			Receptor Location ^b		Time Period (YYMMDDHH)	Florida AAQS (mg/m ³)
	Total	Modeled	Background	Direction (degree)	Distance (m)		
<u>SO₂</u>							
Annual	39.7	34.7	5	316	1100	89123124	60
	40.9	35.9	5	310	1100	90123124	
	38.2	33.2	5	300	1200	91123124	
H2H 24-Hour	258	245	13	316	1100	87032424	260
	253	240	13	310	1200	88040324	
H2H 3-Hour	775	728	47	310	900	91070615	1300
<u>PM₁₀</u>							
Annual	29.6	6.6	23	316	1100	89123124	50
	29.8	6.8	23	310	1100	90123124	
H2H 24-Hour	90	51	39	272	1100	87123124	150
	88	49	39	310	1500	88112024	
<u>CO</u>							
H2H 8-Hour	7761	4331	3430	318	900	89060416	10000
	7681	4251	3430	310	800	91043016	
H2H 1-Hour	14839	9124	5715	40	600	91081212	40000

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-21R1. Maximum Predicted Pollutant PSD Class II Increment, Screening Analysis
- Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ^a (mg/m ³)	Receptor Location ^b		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO₂				
Annual				
	0.1	250	11000	87123124
	0.0	0	0	88123124
	0.0	0	0	89123124
	0.1	210	11000	90123124
	0.0	0	0	91123124
H2H 24-Hour				
	7	30	11000	87030524
	9	350	11000	88060224
	12	80	11000	89040224
	11	100	11000	90042124
	8	50	11000	91040824
H2H 3-Hour				
	29	60	11000	87041324
	46	60	11000	88040521
	48	70	11000	89041303
	33	120	11000	90042203
	36	80	11000	91041121
PM₁₀				
Annual				
	<0	0	0	87123124
	<0	0	0	88123124
	<0	0	0	89123124
	<0	0	0	90123124
	<0	0	0	91123124
H2H 24-Hour				
	4.9	320	900	87100624
	6.4	330	900	88062824
	5.9	350	900	89073024
	5.4	310	900	90082924
	6.0	310	900	91083124

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

PSD = Prevention of Significant Deterioration

Table 6-22R1. Maximum Predicted Pollutant PSD Increment Consumption For Comparison With PSD Class II Allowable Increments, Refined Analysis - Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ($\mu\text{g}/\text{m}^3$)	Receptor Location ^b		Time Period (YYMMDDHH)	Allowable PSD Class II Increment ($\mu\text{g}/\text{m}^3$)
		Direction (degree)	Distance (m)		
SO₂					
Annual	0.1	250	11000	87123124	20
H2H 24-Hour	12.2	78	11000	89042324	91
H2H 3-Hour	47.7	70	11000	89041303	512
PM₁₀					
Annual	<0	0	0	0	17
H2H 24-Hour	7.6	332	1200	88081424	30

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

EPA = Environmental Protection Agency

PSD = Prevention of Significant Deterioration

Table 6-23R1. Maximum Predicted SO₂ PSD Increment at the Everglades National Park PSD Class I Area
 - Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ^a (ug/m ³)	Receptor Location (UTM)		Time Period (YYMMDDHH)	Allowable PSD Class I Increment (ug/m ³)
		(m)	(m)		
Annual	0.16	550300	2848600	87123124	2
	0.14	535000	2848600	88123124	
	0.10	540000	2848600	89123124	
	0.20	545000	2848600	90123124	
	0.09	540000	2848600	91123124	
H2H 24-Hour	2.3	550300	2848600	87052924	5
	3.0	545000	2848600	88060224	
	2.8	545000	2848600	89040124	
	3.2	530000	2848600	90041224	
	2.5	550300	2848600	91100924	
H2H 3-Hour	17.7	540000	2848600	87041303	25
	24.2	540000	2848600	88042209	
	18.1	550300	2848600	89042924	
	19.1	540000	2848600	90020706	
	14.5	530000	2848600	91100915	

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

Legend:

PSD = Prevention of Significant Deterioration

YYMMDDHH = Year, Month, Day, Hour Ending

UTM = Universal Transverse Mercator

H2H = Highest, 2nd-Highest

Table 6-19R2. Maximum Predicted Pollutant Impacts Due to All Future Sources, AAQS Screening Analysis
- Boiler Nos. 1, 2, and 3 @ 165 ft and @ 2.0 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ^a (ug/m ³)	Receptor Location ^b		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO₂				
Annual	28.9	310	900	87123124
	30.6	270	900	88123124
	32.8	320	900	89123124
	35.0	270	900	90123124
	31.9	300	1200	91123124
H2H 24-Hour	224	310	1200	87080724
	231	310	1200	88040324
	214	320	900	89061524
	209	320	900	90031624
	198	320	900	91041624
H2H 3-Hour	528	310	900	87041418
	594	310	900	88090912
	530	310	900	89061212
	507	310	900	90122224
	655	310	900	91072412
PM₁₀				
Annual	6.3	310	900	87123124
	6.7	270	900	88123124
	7.2	320	900	89123124
	7.8	270	900	90123124
	7.1	300	1200	91123124
H2H 24-Hour	59	270	900	87123124
	56	310	1200	88112024
	53	320	900	89060424
	55	250	900	90042024
	57	260	1200	91102424
CO				
H2H 8-Hour	4,182	310	900	87061416
	4,501	280	1200	88032408
	4,388	310	900	89041416
	4,240	250	900	90022708
	4,741	310	900	91043016
H2H 1-Hour	8,531	320	600	87090213
	8,681	320	600	88090413
	8,908	320	600	89061511
	9,229	330	527	90080511
	9,723	40	595	91061812

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-20R2. Maximum Predicted Pollutant Impacts Due to All Future Sources For Comparison to AAQS,
Refined Analysis - Boiler Nos. 1, 2, and 3 @ 165 ft and @ 2.0 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ($\mu\text{g}/\text{m}^3$)			Receptor Location ^b		Time Period (YYMMDDHH)	Florida AAQS ($\mu\text{g}/\text{m}^3$)
	Total	Modeled	Background	Direction (degree)	Distance (m)		
SO₂							
Annual	38.7	33.7	5	316	1000	89123124	60
	40.3	35.3	5	272	1000	90123124	
	37.1	32.1	5	300	1100	91123124	
H2H 24-Hour	255	242	13	316	1000	87032424	260
	246	233	13	310	1000	88040324	
H2H 3-Hour	708	661	47	310	800	91070615	1300
PM₁₀							
Annual	30.8	7.8	23	272	1000	90123124	50
H2H 24-Hour	101	62	39	272	1000	87123124	150
	98	59	39	322	1000	88112624	
	96	57	39	260	1100	91102424	
CO							
H2H 8-Hour	7,962	4,532	3,430	280	1100	88032408	10000
	8,310	4,880	3,430	312	700	91043016	
H2H 1-Hour	15,438	9,723	5,715	40	595	91061812	40000

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-21R2. Maximum Predicted Pollutant PSD Class II Increment, Screening Analysis
 - Boiler Nos. 1, 2, and 3 @ 165 ft and @ 2.0 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ^a (ug/m ³)	Receptor Location ^b		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO₂				
Annual				
	0.17	250	11000	87123124
	0.03	220	11000	88123124
	0.00	0	0	89123124
	0.18	210	11000	90123124
	0.04	210	11000	91123124
H2H 24-Hour				
	6.8	30	11000	87030524
	9.0	350	11000	88060224
	11.7	80	11000	89040224
	10.7	100	11000	90042124
	8.4	50	11000	91040824
H2H 3-Hour				
	29	60	11000	87041324
	46	60	11000	88040521
	48	70	11000	89041303
	33	120	11000	90042203
	36	80	11000	91041121
PM₁₀				
Annual				
	<0	0	0	87123124
	0.04	340	1200	88123124
	<0	0	0	89123124
	0.06	330	1500	90123124
	0.04	340	1200	91123124
H2H 24-Hour				
	6.5	360	1200	87071924
	8.6	330	900	88062824
	7.3	320	900	89071224
	7.7	310	900	90082724
	10.4	310	900	91072424

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

PSD = Prevention of Significant Deterioration

Table 6-22R2. Maximum Predicted Pollutant PSD Increment Consumption For Comparison With PSD Class II Allowable Increments, Refined Analysis - Boiler Nos. 1, 2, and 3 @ 165 ft and @ 2.0 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration (ug/m ³)	Receptor Location ^b		Time Period (YYMMDDHH)	Allowable PSD Class II Increment (ug/m ³)
		Direction (degree)	Distance (m)		
<u>SO₂</u>					
Annual	0.2	210	11000	90123124	20
H2H 24-Hour	12.2	78	11000	89042324	91
H2H 3-Hour	46.9	64	11000	88042924	512
	47.7	70	11000	89041303	
<u>PM₁₀</u>					
Annual	0.07	322	1500	90123124	17
H2H 24-Hour	11.5	308	900	91072424	30

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

^b Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

EPA = Environmental Protection Agency

PSD = Prevention of Significant Deterioration

Table 6-23R2. Maximum Predicted SO₂ PSD Increment at the Everglades National Park PSD Class I Area
 - Boiler Nos. 1, 2, and 3 @ 165 ft and @ 2.0 % S; Boiler No. 4 @ 0.7 % S

Averaging Time	Concentration ^a (ug/m ³)	Receptor Location (UTM)		Time Period (YYMMDDHH)	Allowable PSD Class I Increment (ug/m ³)
		(m)	(m)		
Annual	0.18	550300	2848600	87123124	2
	0.16	535000	2848600	88123124	
	0.12	550300	2848600	89123124	
	0.22	545000	2848600	90123124	
	0.11	535000	2848600	91123124	
H2H 24-Hour	2.3	550300	2848600	87052924	5
	3.0	545000	2848600	88060224	
	2.8	545000	2848600	89040124	
	3.2	530000	2848600	90041224	
	2.5	550300	2848600	91100924	
H2H 3-Hour	17.7	540000	2848600	87041303	25
	24.2	540000	2848600	88042209	
	18.1	550300	2848600	89042924	
	19.1	540000	2848600	90020706	
	14.5	530000	2848600	91100915	

^a Based on 5-year meteorological record, West Palm Beach, 1987-91

Legend:

PSD = Prevention of Significant Deterioration

YYMMDDHH = Year, Month, Day, Hour Ending

UTM = Universal Transverse Mercator

H2H = Highest, 2nd-Highest