Cleve 5

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

May 24, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. F. Ivan Nance, Environmental/Technical Manager
Piney Point Phosphates, Incorporated
13300 U. S. Highway 41 North
Palmetto, Florida 34221

Dear Mr. Nance:

Subject: Permit No. AC 41-173305 & PSD-FL-144

The Department has reviewed your application for a construction permit to replace the existing sulfuric acid plant with a new plant. We need more information in order to continue processing this application. Please complete the application by providing the information requested below:

1. Your response to the attached comments from the National Park Service.

2. The annual area of significant impact modeling should be based on the difference between the proposed emissions and the actual annual hourly emissions. Please redo the annual area of significant impact modeling using the correct inputs.

If you have any questions, please call John Reynolds, permit engineer, or Cleve Holladay, meteorologist, at 904-488-1344, or send your written comments to me at the above address.

Sincerely,

5/24

A. A. Linero, P.E.
Administrator
New Source Review Section

AL/ch/kt

Enclosure

cc: John B. Koogler, Koogler and Associates

National Park Service
Air Quality Division

P.O. Box 25287 Denver, CO 80225-0287

FACSIMILE COVER SHEET

Date: 5/23

Telephone: (303) 969-2070
Fax: (303) 969-2822

To: Cleve Holladay

From: Ellen Porter

Subject: PPP04

Number of pages:
(including this cover sheet) 3

Office location: Room 215, 12795 W. Alameda, Lakewood, CO 80228

Mr. C. H. Fancy
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

We have reviewed the material regarding the Prevention of Significant Deterioration (PSD) Application for the proposed modification of Piney Point Phosphate's (PPP) sulfuric acid (H_2SO_4) plant in Manatee County. The material contains updated information for PSD review ("Attachment 1"). We do not have the original application submitted several years ago. The PPP facility is located approximately 109 km south of Chassahowitzka Wilderness Area (WA), a Class I air quality area administered by the U.S. Fish and Wildlife Service (FWS). The modification would result in significant increases in emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and H_2SO_4 mist.

Best Available Control Technology (BACT)

We agree that the proposed technologies represent BACT for this facility. However, we do not agree that the proposed corresponding emission levels represent BACT. The proposed emission levels are equivalent to the New Source Performance Standards (NSPS) for H_2SO_4 plants, which have not been reviewed by the EPA for ten years. We believe that in cases where information is available to show that the Best Demonstrated Technology (as defined in the NSPS) can achieve levels beyond the NSPS limits, BACT should be set at the lower levels. This eliminates the trend of stagnating, inflated BACT determinations that are based solely on the NSPS and not on actual demonstrated emission levels. H_2SO_4 facilities have consistently demonstrated that emission rates lower than the NSPS are achievable, including the Farmland, IMC, and Agrico facilities in Florida. BACT for the General Chemical facility was recently set below the NSPS. We request FDEP set BACT for this facility at actual achievable emission rates, as demonstrated during compliance tests, or over a reasonable amount of operating time.

Air Quality Modeling Analysis

The applicant used the ISC model to predict SO_2 increment consumption at Chassahowitzka WA from all sources in the Class I area emission inventory. The results indicated that the maximum predicted impacts would exceed the 3-hr and 24-hr Class I SO_2 increments; however, PPP's predicted impacts would be less than the FWS significant impact levels. Therefore, while we agree that PPP would not contribute significantly to Class I increment

exceedances, we reiterate our concern regarding the status of Class I SO_2 increment consumption at Chassahowitzka WA. Recently, numerous PSD applicants have predicted exceedances of the short-term SO_2 Class I increments at Chassahowitzka WA and we urge FDEP to perform a refined cumulative modeling analysis to determine the cause(s) of these exceedances.

The applicant performed a VISCREEN analysis using a background visual range (BVR) of 25 km. The FWS Air Quality Branch repeated the analysis using the correct BVR of 65 km. This analysis indicated that there would be no coherent plume impact at the Class I area from the proposed project. The applicant performed a regional haze analysis using the correct BVR of 65 km. The regional haze analysis indicated that the proposed project would result in a 0.8 deciview (dv) change at the wilderness area. A dv change of less than 1.0 is generally imperceptible, and therefore the source will not contribute significantly to regional haze at Chassahowitzka WA.

Air Quality Related Values (AQRV) Analysis

Attachment 1 did not contain a Class I AQRV analysis. The applicant stated that the previously submitted Class I AQRV analysis is still valid and no update is necessary. Please send us a copy of that analysis so that we may evaluate its completeness.

Thank you for giving us the opportunity to comment on this permit application. We appreciate your cooperation in notifying us of proposed projects with the potential to impact the air quality and related resources of our Class I air quality areas. If you have questions, please contact Ellen Porter of our Air Quality Branch in Denver at (303) 969-2617.

Sincerely,

Noreen K. Clough
Regional Director

cc: Jewell Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxic Management Division
U.S. EPA, Region 4
345 Courtland Street, NE
Atlanta, Georgia 30365

bcc: FWS-REG. 4: AQC
CHAS: Refuge Manager
AQD-DEN: Ellen Porter
National Park Service - AIR
P.O. Box 25287
Denver, CO 80225

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 ▪ FAX 377-7158

KA 527-95-01

April 24, 1995

RECEIVED
APR 26 1995
Bureau of
Air Regulation

Mr. A. A. Linero
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Piney Point Phosphates, Inc.
Sulfuric Acid Plant
AC 41-173305 and PSD-FL-144

Dear Mr. Linero:

This is a follow up to your telephone conversation with Pradeep Raval regarding the above referenced project. Thank you for reviewing the permit application for the proposed project with updated information.

As mentioned to you, there will be no changes to the proposed project. However, the company name has changed from Royster Phosphates, Inc. to Piney Point Phosphates, Inc.; and, the applicant is Mr. Ivan Nance (letter of authorization attached). FDEP is already aware of these changes as a result of recent permitting activity for the facility.

Based on the recent conversations with FDEP staff, it is our understanding that updated information is required on net emission changes; BACT analysis; ambient air quality analysis; and, additional impact analyses. The required information is presented in Attachments 1, 2, and 3. The modeling output is provided on disk.

It is anticipated that the permit application update review will be brief as the project is very similar to several sulfuric acid plant modifications recently permitted by FDEP. We appreciate your kind assistance in this regard. If you have any questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:par
Enc.
c: Ivan Nance, PPP

ATTACHMENT 1

UPDATED INFORMATION FOR PSD REVIEW
OF SULFURIC ACID PLANT PROJECT

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

1.0 NET EMISSION CHANGES

The determination of the net emission changes for the proposed project has been revised based on the current available information. The net contemporaneous emission changes can be determined by evaluating creditable increases and decreases at the facility in the last five year including the emission changes related to this project. A PSD review was recently completed for the steam boiler at this facility. As there are no creditable emission changes in the past five years, the net changes are simply the emission changes related to this project which involves the replacement of the existing 2000 tons per day (TPD) sulfuric acid plant with a new 2700 TPD plant; and, the corresponding increase in the throughput rate of the associated molten sulfur system.

1.1 Actual Emissions

The actual emissions of the existing sulfuric acid plant can be determined based on the most recent, representative, two year average. The following data provide a clear indication of the "representative" years of operation:

OPERATION YEAR	ANNUAL OPERATING HOURS
1988	3982
1989	7762
1990	7875 (1)
1991	6881 (1)
1992	3410
1993	0
1994	0
1995	0

NOTES:

(1) The most recent years deemed representative of normal operations, for the purposes of this analysis.

(2) Data based on annual operation reports submitted to FDEP.

The resulting annual sulfur dioxide (SO_2) and sulfuric acid mist (SAM) emissions, based on annual compliance test data submitted to FDEP's district office, are as follows:

SO_2 = ((7875 hrs/yr x 224.8 lbs/hr) + (6881 hrs/yr x 219.7 lbs/hr))/2 x ton/2000 lbs
= 820.5 tpy ✓

Avg −28.03

SAM = ((7875 hrs/yr x 5.98 lbs/hr) + (6881 hrs/yr x 3.26 lbs/hr))/2 x ton/2000 lbs
= 17.4 tpy ✓

Nitrogen oxides (NOx) emissions based on an emission factor developed from recent tests at IMC-Agrico, of about 0.08 lb/ton of 100% acid, are as follows:

NOx = (436,557 + 546,221)/2 tpy x 0.08 lb/ton x ton/2000 lbs
= 19.7 tpy

As the molten sulfur system has the potential for emissions of sulfur dioxide, the estimated emissions are included in the calculations. For the purposes of this analysis, the actual sulfur dioxide emissions for the molten sulfur system can be assumed to be equal to 1.2 tpy, as stated in the current permit.

1.2 Proposed Emissions

Proposed sulfuric acid plant emissions are as follows (old plant at zero):

SO_2 = 2700 tpd x day/24 hrs x 4 lb/ton
= 450 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 1971.0 tpy

SAM = 2700 tpd x day/24 hrs x 0.15 lb/ton
= 16.9 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 74.0 tpy

Nitrogen oxides (NOx) emissions, similarly calculated are as follows:

NOx = 2700 tpd x day/24 hrs x 0.08 lb/ton
= 9.0 lbs/hr
x 8760 hrs/yr x ton/2000 lbs
= 39.4 tpy

For the purposes of this analysis, the proposed sulfur dioxide emissions for the molten sulfur system can be assumed to be proportional to the sulfuric acid production increase. It should be noted that the maximum hourly emissions remain unchanged as the maximum hourly pumping rates within the system remain the same, while the annual emissions can be expected to increase to correspond to the increased molten sulfur throughput:

SO_2 = 1.2 tpy x 2700 tpd/2000 tpd
= 1.6 tpy

1.3 Net Emissions Increase

The net emissions increase from the proposed project are as follows:

SO_2 = (1971.0 - 820.5) tpy + (1.6 - 1.2) tpy
= 1150.9 tpy

SAM = (74.0 - 17.4) tpy
= 56.6 tpy

NOx = (39.4 - 19.7) tpy
= 19.7 tpy

SUMMARY OF NET EMISSION CHANGES

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

POLLUTANT	PROPOSED EMISSION INCREASE (TPY)	PSD SIGNIFICANCE LEVEL (TPY)	PSD REVIEW REQ'D
Sulfur Dioxide	1150.9 ✓	40	YES ✓
Sulfuric Acid Mist	56.6 ✓	7	YES ✓
Nitrogen Oxides	19.7 ✓	40	NO ✓

Based on the above updated information, it can be seen that FDEP's initial evaluation of pollutants subject to PSD review remains unchanged.

2.0 BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

2.1 Sulfuric Acid Plant

The BACT determination submitted previously to FDEP remains appropriate for the proposed project. There have been no changes to the Federal New Source Performance Standards (NSPS) or the state requirements for emissions from a sulfuric acid plant. The federal standards are codified in 40 CFR 60, Subpart H and require sulfur dioxide emissions to be limited to no more than 4.0 pounds per ton of 100 percent acid produced and require that sulfuric acid mist emissions be limited to no more than 0.15 pounds per ton of 100 percent acid produced. Additionally, the standards limit the opacity of the emissions from new sulfuric acid plants to less than 10 percent. There are no emission standards for nitrogen oxides from sulfuric acid plants.

Recent conversations with Monsanto in early March 1995, by both Koogler & Associates' staff and FDEP staff, indicated that there have been no recent developments in the double absorption plant technology to warrant more restrictive emission limits than those imposed by NSPS. It is our understanding that EPA arrived at a similar conclusion during their most recent NSPS review for sulfuric acid plants in consideration of expected variations in emissions over time. No new demonstrated control alternatives have been applied to sulfuric acid plants that would result in a consistent reduction in sulfur dioxide emission below 4.0 pounds per ton of acid nor would result in a consistent reduction of sulfuric acid mist emissions below 0.15 pounds per ton of acid.

2.2 Molten Sulfur System

The molten sulfur system is subject to standards in Rule 62-296.411, FAC. Specific work practices are required and visible emissions are limited to 20 percent opacity. No control technologies for a molten sulfur system are discussed in either the NSPS review or in BACT/LAER determinations.

2.3 BACT Analysis Conclusion

Based upon the above discussion, the dual absorption process is selected by Piney Point Phosphates as the control alternative for sulfur dioxide to limit emissions to 4.0 lb/ton 100% acid; and, high efficiency mist eliminators have been selected for sulfuric acid mist to limit emissions to 0.15 lb/ton 100% acid.

The emission limits for the molten sulfur system reflecting BACT will be in accordance with Rule 62-296.411, FAC; limiting visible emissions to 20% opacity and maintaining proper operation practices. No add-on control technologies have been required or recommended by EPA or FDEP for molten sulfur systems as the emissions of air pollutants are negligible.

3.0 AMBIENT IMPACT ANALYSIS

An ambient air quality analysis is required for sulfur dioxide and sulfuric acid mist. The previously submitted ambient air impact analysis has been updated to account for the changes in the ISC model and the inventory of sulfur dioxide emitting sources in the region.

3.1 Air Quality Modeling for Sulfur Dioxide

3.1.1 Area of Significant Impact

The emission rates of sulfur dioxide from Piney Point Phosphates used in the air quality modeling to determine the area of significant impact (ASI) represent the proposed net increase in the emission rate associated with the operation of the new sulfuric acid plant and the shutdown of the old plant. It should be noted that the sulfur dioxide emissions from the molten sulfur system were not included as there will be no change in the hourly emissions. A positive emission rate representing proposed sulfur dioxide emissions from the sulfur system would simply offset an identical negative emission rate representing current emissions. Building wake effects were also addressed in the modeling. Table 3-1 contains the input parameters used in the air modeling.

The ASI analysis was conducted using the Industrial Source Complex-Short Term 2 (ISC-ST2) air quality model, Version 93109, in accordance with guidelines established by EPA and published in the document, Guideline on Air Quality Models. The meteorological data used with the model were for Tampa, Florida and represented the period 1987-1991.

The currently permitted sulfuric acid plant emission rates were represented as a negative input while the sulfur dioxide emission rate for the proposed plant was represented as a positive input to the model.

The ASI modeling included discrete receptors at the facility property boundary and additional receptors established by the polar grid system

extending to 10 kilometers from the source. The discrete receptors were placed along the property boundary at 100 meter intervals. The polar grid receptor rings were placed at distances ranging from 1250 to 10,000 meters from the plant with receptors placed at 10 degree intervals from 10° to 360° on each receptor ring, with the exclusion of receptors within the facility property boundary. The downwind receptor distances were selected in order to provide a higher concentration of receptors closer to the source where the maximum impacts were expected. Modeling was also conducted using receptors located at the nearest Class I area; Chassahowitzka National Wildlife Refuge. The receptor locations in the vicinity of the plant are shown in Figures 3-1 and 3-2.

The results of the ASI modeling for the Class II and Class I areas, summarized in Tables 3-2 and 3-3, respectively, demonstrate that the predicted ambient air quality impacts of the sulfur dioxide emission from the proposed project are greater than significant for the 3-hour and 24-hour periods, but less than significant for the annual period.

As the predicted sulfur dioxide impacts from the proposed project are significant for both the Class I and Class II areas, additional modeling was required to determine compliance with the ambient air quality standards and the allowable PSD increments.

ASI

	3hr	24hr
1991	2.5-5.0km 2.7km	2.5-5.0km 2.9km
1989	2.5-5.0k 2.6km	2.5-5.0km 2.9km

3.1.2 AAQS and Class II Area PSD Increment Analysis

The Ambient Air Quality Standards (AAQS) Analysis and the PSD Increment (PSD) Analysis was conducted to determine the combined ambient air impact of the proposed project and other nearby sulfur dioxide emitting sources. The significant facilities included in the analysis were determined based on the "20-D Rule" using an emission inventory most recently utilized by FDEP.

A list of the significant facilities near the proposed project is presented in Table 3-4. The sources at the significant facilities which contribute to the ambient air concentration and the PSD increment consumption/expansion in the Class II area are presented in Tables 3-5 and 3-6, respectively. Although the ISC model is not recommended for modeling sources beyond 50 kilometers, some of the borderline sources were included to be conservative.

The results of the AAQS and PSD analysis indicate that the maximum predicted 3-hour and 24-hour period impacts for the Class II area are well below the standards, as shown in Table 3-7.

3.1.3 Class I Area PSD Increment Analysis

A Class I area PSD increment analysis was performed using the ISC model. The modeling was performed to determine the Class I PSD increment consumption at Chassahowitzka National Wildlife Refuge. All the sources in the Class I area emission inventory, updated by FDEP (see Table 3-8) were included in the modeling. The Class I area receptors recommended by FDEP were used in the modeling.

The modeling results indicate that the maximum predicted impacts exceed the allowable 3-hour and 24-hour Class I area increments (see Table 3-9). Additional analyses were conducted to determine the contribution of the proposed project to the predicted exceedances.

The results of the modeling analyses indicate that the maximum predicted contribution of the proposed project to an exceedance of the allowable Class I area PSD increment is 0.005 ug/m^3 for the 3-hour period and 0.059 ug/m^3 for the 24-hour period. Consequently, the proposed project is not expected to cause or significantly contribute to any violation of the allowable Class I area PSD increment.

3.2 Air Quality Assessment for Sulfuric Acid Mist

No ambient air quality standards, PSD increments or significant impact levels have been established for sulfuric acid mist. FDEP's current permitting guideline for air toxics requires temporary facilities to evaluate short-term impacts for comparison with Air Reference Concentrations (ARC) listed in Version 3 of the Air Toxics List. However, permanent facilities have to evaluate annual impacts to compare with the ARCs. As there is no annual ARC for sulfuric acid mist, no comparisons are required.

It should be noted that the maximum sulfuric acid mist impacts from the proposed project are predicted to occur at locations which are far from population centers (based on the results of the modeling for sulfur dioxide emissions). Also, the sulfuric acid mist will be controlled by the Best Available Control Technology. As a result, the sulfuric acid mist emissions are not expected to be of concern.

FIGURE 3-1

RECEPTOR LOCATIONS FOR ASI MODELING

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

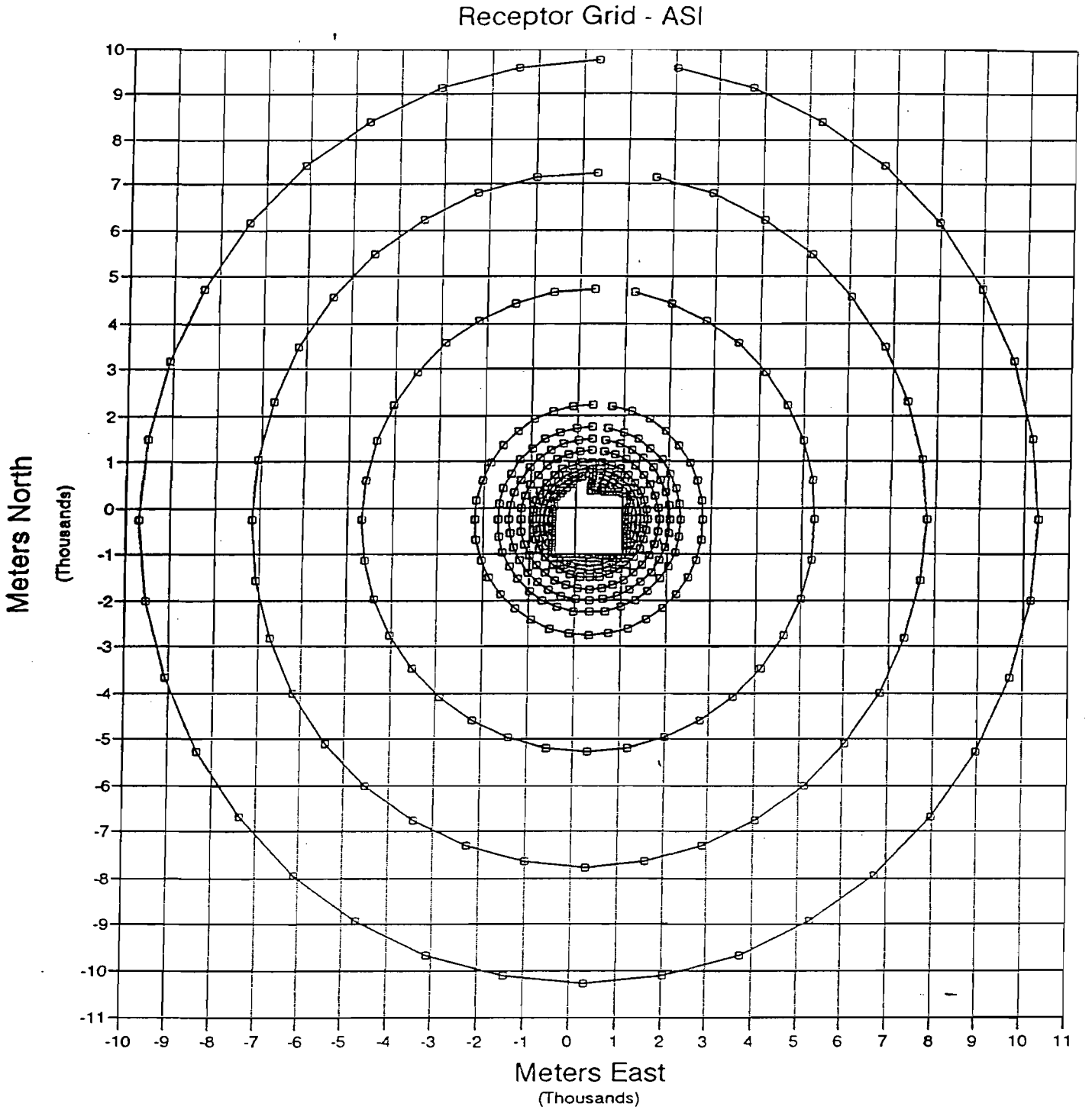

FIGURE 3-2

RECEPTOR LOCATIONS FOR REFINED ASI MODELING

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

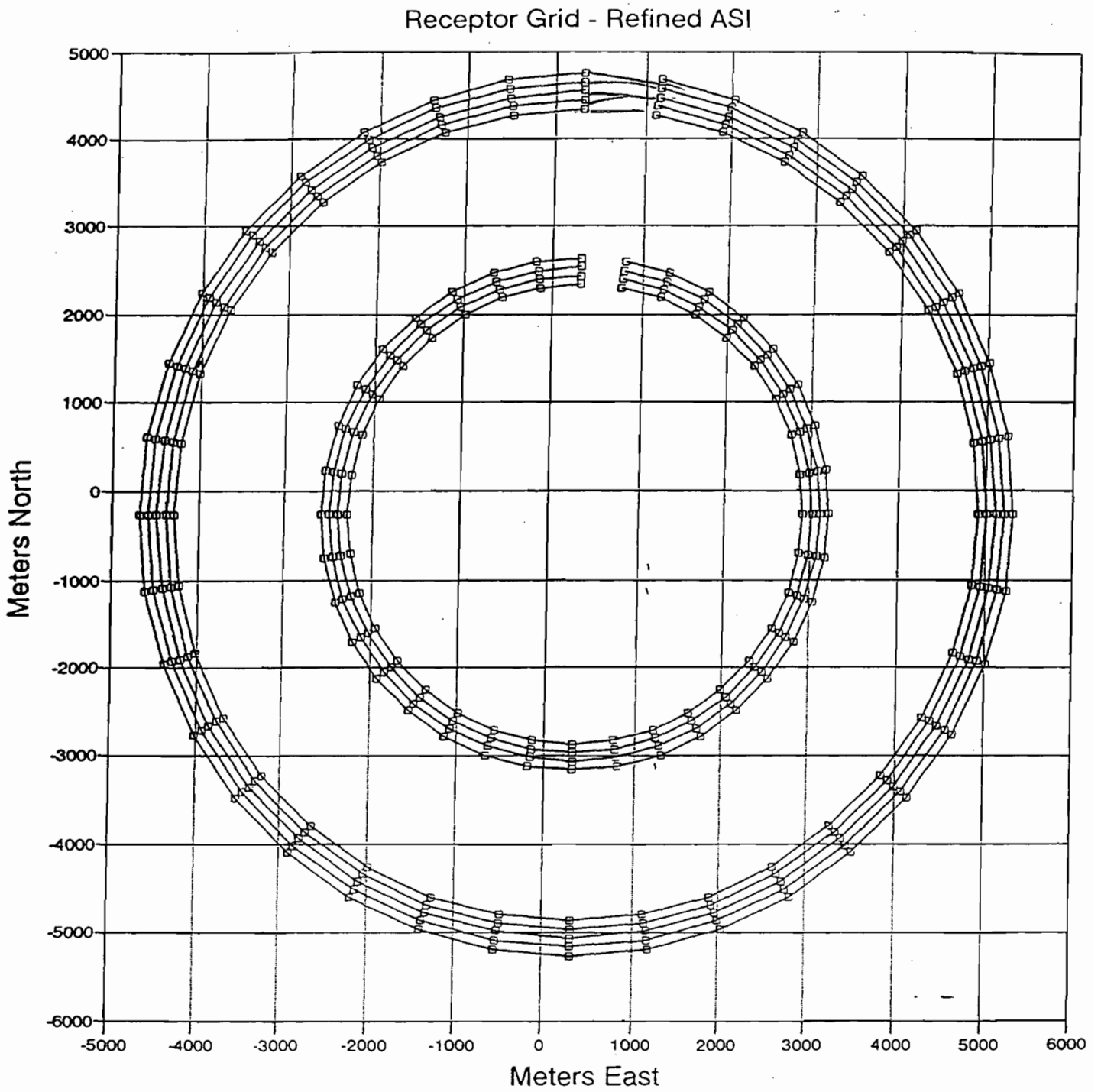

FIGURE 3-3

RECEPTOR LOCATIONS FOR 3-HOUR PERIOD MODELING

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

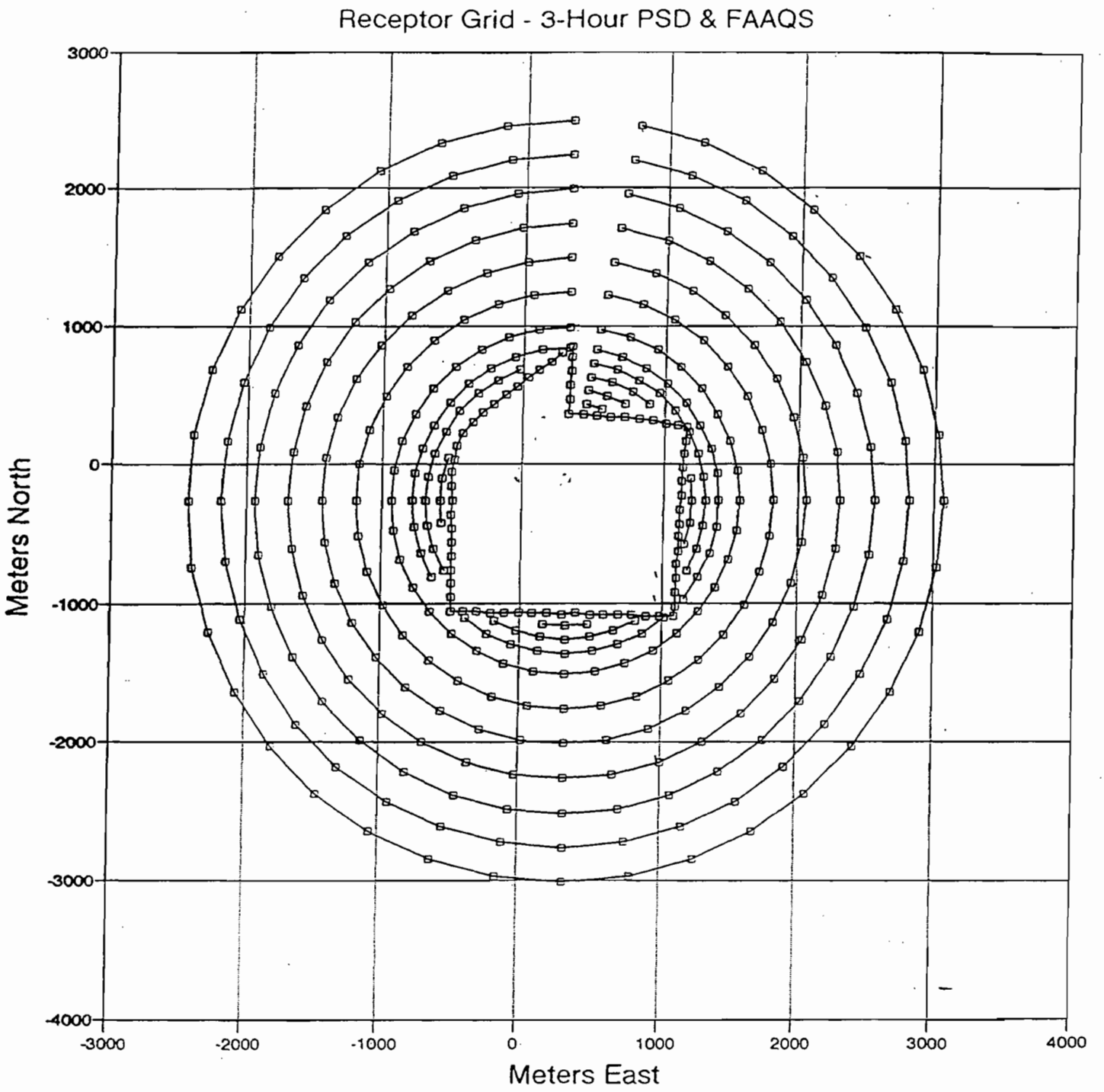

FIGURE 3-4

RECEPTOR LOCATIONS FOR 24-HOUR PERIOD MODELING

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

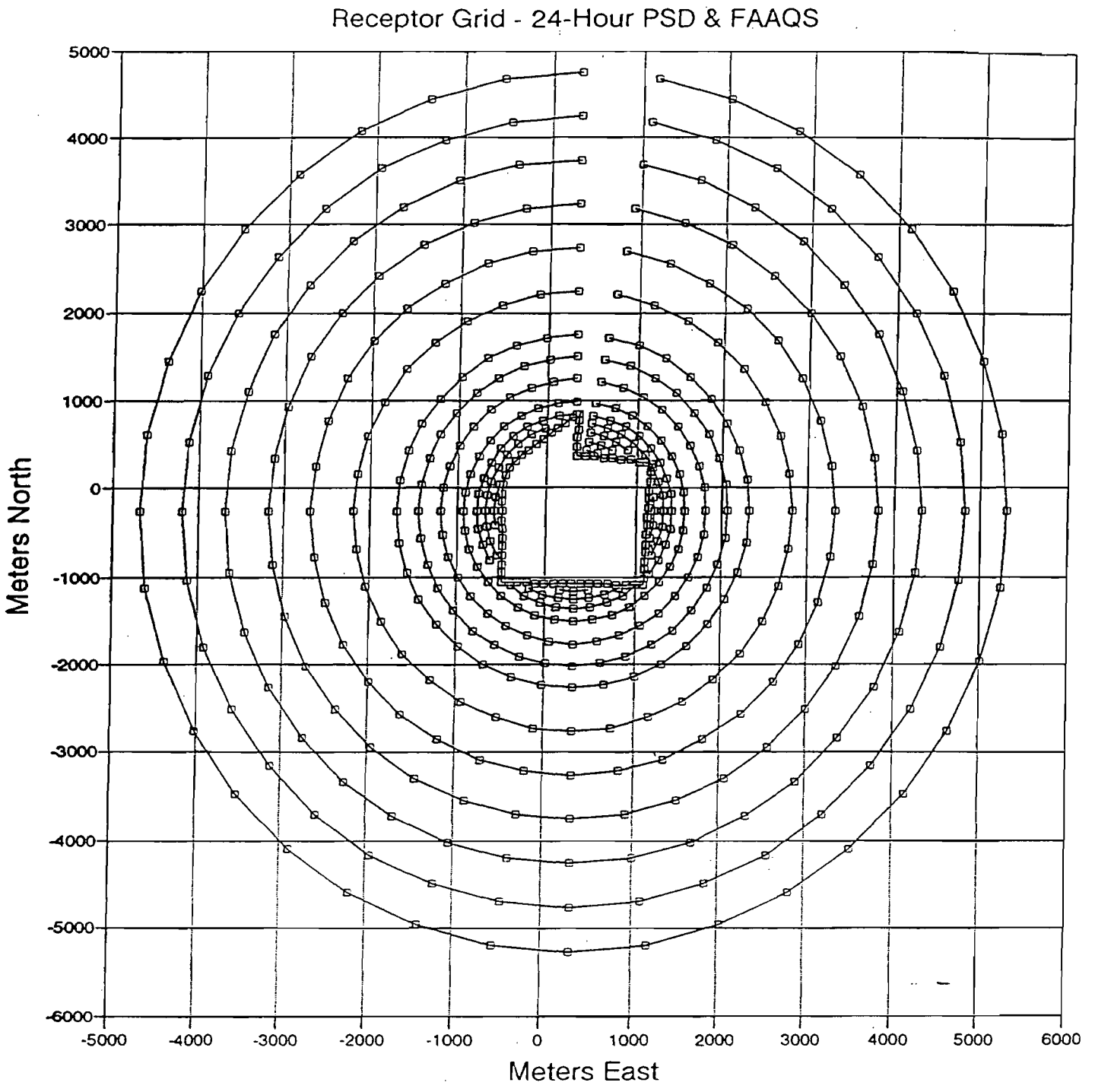

TABLE 3-1

AIR QUALITY MODELING PARAMETERS
FOR SULFUR DIOXIDE

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

H_2SO_4 Plant	SO_2 (g/s)	Ht (m)	Dia (m)	Vel (mps)	Temp (°K)
ASI ANALYSIS:	2000 tpd				
Existing SAP	-42.0	60.98	2.36	8.75	338
Proposed SAP	56.7 2700 tpd	60.98	2.82	9.60	350
PSD INCREMENT ANALYSIS:					
Existing SAP	✓-42.0	60.98	2.36	8.75	338
Old Boiler	✓-11.0	9.15	1.21	7.70	558
Proposed SAP	✓ 56.7	60.98	2.82	9.60	350
New Boiler	1.2	8.84	2.28	14.80	427
Sulfur System	0.03	7.30	1.21	1.00	366
AAQS ANALYSIS:					
Proposed SAP	✓56.7	60.98 ✓	2.82 ✓	9.60 ✓	~~350~~ 338
New Boiler	✓1.2	8.84 ✓	2.28 ✓	14.80	427 ✓
Sulfur System	✓ 0.03	7.30 ✓	1.21 ✓	1.00 ✓	366 ✓
DAP Plant	✓ 7.4	61.0 ✓	3.0 ✓	15.50 ✓	328 ✓

NOTE: Building wake effects were included in the modeling.

TABLE 3-2

SUMMARY OF SULFUR DIOXIDE SIGNIFICANT IMPACT ANALYSIS
FOR THE PLANT VICINITY

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

METEOROLOGICAL DATA	SULFUR DIOXIDE IMPACT ($\mu g/m^3$)		
	ANNUAL	3-HOUR	24-HOUR
1987	0.61	62.86	9.62
1988	0.38	60.08	11.81
1989	0.57	89.24	16.52
1990	0.60	62.40	13.45
1991	0.50	60.52	14.06
Significant Impact (Rule 62-212, FAC)	1.0	25.0	5.0
De minimis Impact (Rule 62-212,FAC)	NA	NA	13.0

NOTE:

(1) The above impacts represent the highest-high impacts.

(2) The impacts are based on the net increase in sulfur dioxide emissions from the proposed project of 14.7 g/s.

TABLE 3-3

SUMMARY OF SULFUR DIOXIDE SIGNIFICANT IMPACT ANALYSIS
FOR THE CLASS I AREA

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

METEOROLOGICAL DATA	SULFUR DIOXIDE IMPACT ($\mu g/m^3$)		
	ANNUAL (1)	3-HOUR (2)	24-HOUR (2)
1987	0.007	0.93	0.14
1988	0.008	0.81	0.19
1989	0.012	1.38	0.23
1990	0.006	0.93	0.15
1991	0.006	0.98	0.14
Significant Impact (NPS Guideline)	0.025	0.48	0.97

NOTE:

(1) The above impacts represent the highest-high impacts.

(2) The impacts are based on the net increase in sulfur dioxide emissions from the proposed project of 14.7 g/s.

TABLE 3-4
Significant SO_2 Emitting Facilities (20 D Table)
Piney Point Phosphates, Inc.
Manatee County, Florida

SO2 "20 D" SOURCE INVENTORY FOR PINEY POINT PHOSPHATES			Source Location	348.700	3057.300	
SOURCE DESCRIPTION	UTM Coordinates (km) EAST	NORTH	SO2 TPY	Distance (Km)	20-D Emission (TPY)	Significant And <70 km?
ASPHALT PAVERS 3	359.900	3162.400	78	106	2114	NO
ASPHALT PAVERS 4	361.400	3168.400	61	112	2236	NO
ATLANTIC SUGAR	553.300	2945.000	567	233	4668	NO
AUBURNDALE	420.800	3103.300	221	86	1710	NO
BORDEN	394.800	3069.600	-225	48	954	NO
BORDEN	414.500	3109.000	-184	84	1674	NO
BREWSTER/IMPERIAL	404.800	3069.500	-670	57	1148	NO
CARGILL/GARDINIER MINE	415.300	3063.300	612	67	1337	NO
CARGILL/GARDINIER	363.400	3082.400	5870	29	582	YES
CARGILL/SEMINOLE/W.R. GRACE	409.770	3086.990	5007	68	1358	YES
CF BARTOW	408.500	3082.500	-29567	65	1298	YES
CF PLANT CITY	388.000	3116.000	-7159	71	1413	NO
CITRUS WORLD	441.000	3087.300	1604	97	1941	NO
CLM CHLORIDE METALS	361.800	3088.300	731	34	673	YES
CONSOLIDATED MINERALS	393.800	3096.300	943	60	1192	NO
COUCH CONST-ODESSA	340.700	3119.500	252	63	1254	NO
COUCH CONST-ZEPHYRHILLS	390.300	3129.400	123	83	1665	NO
DOLIME	404.813	3069.548	-355	57	1149	NO
DRIS PAVING	340.600	3119.200	8	62	1249	NO
ER JAHNA	386.700	3155.800	29	106	2112	NO
ESTECH/SWIFT	411.500	3074.200	-4856	65	1301	YES
EVANS PACKING	383.300	3135.800	2188	86	1716	NO
FARMLAND	409.500	3079.500	-7011	65	1295	YES
FDOC	382.200	3166.100	104	114	2277	NO
FLA MINING & MATERIALS	356.200	3169.900	50	113	2257	NO
FLORIDA CRUSHED STON	360.008	3162.398	3423	106	2114	NO
FPC ANCLOTE	324.400	3118.700	116916	66	1321	YES
FPC BARTOW	342.400	3082.600	65956	26	521	YES
FPC BAYBORO	338.800	3071.300	6881	17	343	YES
FPC CRYSTAL RIVER	334.200	3204.500	133484	148	2958	NO
FPC DEBARY	467.500	3197.200	16224	184	3671	NO
FPC HIGGINS	336.500	3098.400	12082	43	857	YES
FPC OSCEOLA	446.300	3126.000	4380	119	2387	NO
FPC POLK	414.400	3073.910	1720	68	1355	YES
FPL FT MYERS	422.100	2952.900	26872	128	2552	NO
FPL MANATEE	367.200	3054.100	83410	19	375	YES
GAINESVILLE REGIONAL UTILITIES	365.500	3292.700	197	236	4720	NO
GEN. PORT. CEMENT	358.000	3090.600	-4602	35	691	YES
GOLD BOND	347.300	3082.700	320	25	509	NO
GULF COAST LEAD	364.000	3093.500	1711	39	786	YES
HARDEE	404.800	3057.400	9657	56	1122	YES
HILLS. CO. RESOURCE RECOVERY	368.200	3092.700	744	40	808	NO
HOSP CORP OF AM	333.400	3141.000	6	85	1702	NO
IMC - AGRICO /NICHOLS/CONSERVE	398.400	3084.200	1978	57	1130	YES
IMC-AGRICO/NEW WALES	396.600	3078.900	-6271	53	1051	YES
IMC-AGRICO/NORALYN	414.700	3080.300	504	70	1398	NO
IMC-AGRICO/PIERCE	404.100	3078.950	-1646	59	1190	YES
IMC-AGRICO/SO. PIERCE	407.500	3071.300	4676	60	1209	YES
KISSIMMEE KANE IS.	447.680	3127.920	1023	122	2432	NO
KISSIMMEE UTIL	460.100	3129.300	1117	133	2653	NO
LAKE CO. COGEN.	434.000	3198.800	175	165	3304	NO
LAKELAND LARSEN	409.300	3102.800	4944	76	1516	NO
LAKELAND MCINTOSH	409.200	3106.200	30563	78	1556	NO
MOBIL BIG-4	394.850	3069.770	87	48	956	NO
MOBIL NICHOLS	398.300	3084.300	971	56	1129	NO

TABLE 3-4 (Concluded)
Significant SO_2 Emitting Facilities (20 D Table)
Piney Point Phosphates, Inc.
Manatee County, Florida

SO2 "20 D" SOURCE INVENTORY FOR PINEY POINT PHOSPHATES			Source Location	348.700	3057.300	
SOURCE DESCRIPTION	UTM Coordinates (km) EAST	NORTH	SO2 TPY	Distance (Km)	20-D Emission (TPY)	Significant And <70 km?
MOBILE ELECTROPHOS	405.600	3079.400	-3337	61	1221	YES
MULBERRY COGENERATION	413.600	3080.600	466	69	1379	NO
MULBERRY PROSPHATES/ROYSTER	406.700	3085.200	-5312	64	1287	YES
NEW PORT RICHEY HOSP	331.200	3124.500	3	69	1389	NO
NITRAM	363.100	3089.000	108	35	696	NO
OMAN CONST	359.800	3164.900	73	108	2163	NO
ORLANDO UTIL STANTON	483.500	3150.600	24100	164	3279	NO
OVERSTREET PAV.	355.900	3143.700	128	87	1734	NO
PANDA KATHLEEN	398.700	3101.400	25	67	1333	NO
PASCO CO. COGEN.	385.600	3139.000	175	90	1793	NO
PASCO COUNTY RRF	347.100	3139.200	490	82	1638	NO
PINELLAS RRF	335.300	3084.400	2165	30	605	YES
PINEY POINT/ROYSTER	348.700	3057.300	-1844	0	0	YES
REEDY CREEK SERVICES	443.000	3144.300	133	128	2566	NO
RIDGE COGENERATION	416.700	3100.400	480	81	1610	NO
SEBRING UTIL	464.300	3035.400	3868	118	2353	NO
SECI HARDEE	404.900	3057.400	223	56	1124	NO
STAUFFER ROASTER	325.600	3116.700	-2265	64	1275	YES
SUGAR CANE GROWERS	534.900	2953.300	4936	213	4266	NO
SULFUR TERMINALS	358.000	3090.000	104	34	680	NO
TAMPA GENERAL HOSP	356.400	3091.000	59	35	691	NO
TAMPA MCKAY BAY RRF	360.000	3091.000	744	36	711	YES
TECO BIG BEND	361.900	3075.000	-127108	22	442	YES
TECO GANNON	360.000	3087.500	127495	32	645	YES
TECO HOOKERS POINT	358.000	3091.000	13535	35	699	YES
TECO POLK POWER	402.488	3066.914	4031	55	1093	YES
THATCHER GLASS	361.800	3088.300	177	34	673	NO
USS AGRI-CHEM BARTOW	413.200	3086.300	-1580	71	1414	NO
USSAC FT MEADE	416.210	3068.740	-3377	68	1369	YES
USSAC FT MEADE	416.120	3068.620	3217	68	1367	YES

TABLE 3-5
SO_2 FAAQS Inventory
Piney Point Phosphates, Inc.
Manatee County, Florida

FAAQS SOURCE INVENTORY - For Piney Point Phosphates			A A Q S					
SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
CARGILL/GARDINIER SAP #9	P1CAR	67.20	363.400	3082.400	45.60	350.0	12.66	2.74
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	P2CAR	143.64	409.770	3086.990	60.96	347.0	34.00	1.52
CF BARTOW DAP 1-3	P3CF B	3.97	408.500	3082.500	36.40	339.0	16.11	2.13
CF BARTOW H2SO4 5 (2400 TPD)	P4CF B	50.40	408.500	3082.500	63.41	361.0	10.88	2.13
CF BARTOW H2SO4 6 (2400 TPD)	P5CF B	50.40	408.500	3082.500	63.41	370.0	7.28	2.13
CF BARTOW H2SO4 7 (2000 TPD)	P6CF B	42.00	408.500	3082.500	67.10	351.0	9.80	2.40
CLM CHLORIDE METALS	P7CLM	13.00	361.800	3088.300	30.00	375.0	20.10	0.61
FARMLAND 3 & 4 H2SO4 (2100 TPD)	P8FAR	88.20	410.330	3079.655	30.48	355.0	12.02	2.29
FARMLAND 5 H2SO4 (2800 TPD)	P9FAR	58.80	410.330	3079.655	45.72	355.0	13.42	2.44
FARMLAND SULFUR SYSTEM (EXISTING)	P10FAR	0.39	410.330	3079.655	12.19	366.3	2.67	0.61
FARMLAND SULFUR SYSTEM (PROPOSED)	P11FAR	0.16	410.330	3079.655	12.19	366.3	2.67	0.61
FPC POLK	P12FPC	49.44	414.400	3073.910	34.40	400.0	40.50	4.10
HARDEE	P13HA	277.60	404.800	3057.400	22.90	389.0	23.90	4.88
IMC - AGRICO /NICHOLS/CONSERVE	P14IMC	52.50	398.400	3084.200	45.70	352.0	12.00	2.30
IMC-AGRICO/NEW WALES AFI PLANT	P15IMC	0.20	396.600	3078.900	52.40	322.0	13.10	2.40
IMC-AGRICO/NEW WALES DAP	P16IMC	5.54	396.600	3078.900	36.60	319.1	20.15	1.83
IMC-AGRICO/NEW WALES MULTIPHOS	P17IMC	4.80	396.600	3078.900	52.40	314.0	15.80	1.40
IMC-AGRICO/NEW WALES SAP #1,2,3 (3 AT 2900 TPD)	P18IMC	182.85	396.600	3078.900	61.00	350.0	15.31	2.60
IMC-AGRICO/NEW WALES SAP #4,5 (2 AT 2900 TPD)	P19IMC	121.90	396.600	3078.900	60.70	350.0	15.31	2.60
IMC-AGRICO/SO. PIERCE DAP PLANT	P20IMC	4.41	407.500	3071.330	38.10	328.0	14.60	3.10
IMC-AGRICO/SO. PIERCE H2SO4 (2 @ 2700 TPD)	P21IMC	113.40	407.500	3071.300	45.73	350.0	39.06	1.60
PINELLAS RRF	P22PIN	62.24	335.300	3084.400	49.10	522.0	27.72	2.74
PINEY POINT/ROYSTER AUX B	P23PIN	1.20	348.700	3057.300	8.80	427.0	14.80	2.28
PINEY POINT/ROYSTER DAP	P24PIN	7.40	348.700	3057.300	61.00	328.0	15.50	3.00
PINEY POINT/ROYSTER SAP #2	P25PIN	56.70	348.700	3057.300	60.98	350.0	9.60	2.82
PINEY POINT/ROYSTER SULFUR	P26PIN	0.03	348.700	3057.300	7.30	366.0	1.00	1.21
TECO BIG BEND UNIT 4	P27TEC	654.70	361.900	3075.000	149.40	342.2	19.81	7.32
TECO POLK POWER	P28TEC	0.016	402.016	3067.640	22.90	1000.0	20.00	1.20
TECO POLK POWER	P29TEC	0.30	402.420	3067.320	6.10	533.0	13.10	0.91
TECO POLK POWER	P30TEC	8.20	402.328	3067.472	60.70	1033.0	10.70	1.40
TECO POLK POWER	P31TEC	49.68	402.450	3067.350	45.72	400.0	16.76	5.79
TECO POLK POWER	P32TEC	5.42	402.488	3066.954	22.86	812.0	27.43	5.49
TECO POLK POWER	P33TEC	1.27	402.298	3067.297	60.70	1033.0	9.10	1.10
TECO POLK POWER 4 CC	P34TEC	17.60	402.450	3067.216	45.72	389.0	16.15	4.42
TECO POLK POWER 5 CT	P35TEC	33.40	402.488	3066.914	22.86	785.0	31.39	5.49
USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	P36US	92.48	416.120	3068.620	53.40	355.0	10.00	2.59
CARGILL/GARDINIER DAP	P37CA	0.96	363.400	3082.400	60.40	320.0	13.40	2.13
CARGILL/GARDINIER GTSP	P38CA	1.90	363.400	3082.400	38.40	328.0	11.56	2.44
CARGILL/GARDINIER SAP #7	P39CA	46.20	363.400	3082.400	45.60	340.0	12.64	2.29
CARGILL/GARDINIER SAP #8	P40CA	52.50	363.400	3082.400	45.60	339.0	13.93	2.44
CARGILL/SEMINOLE/W.R. GRACE DAP 4	P41CA	0.30	409.770	3086.990	40.20	316.0	26.20	2.10
CF BARTOW DAP 1-3	P42CF	7.93	408.500	3082.500	36.40	339.0	16.11	2.13
CLM CHLORIDE METALS	P43CL	8.02	361.800	3088.300	30.00	375.0	20.00	0.61
FARMLAND	P44FAR	2.33	410.330	3079.655	28.96	605.2	3.58	1.68
FPC ANCLOTE UNITS 1 & 2	P45FPC	3361.00	324.400	3118.700	152.10	433.0	18.90	7.30
FPC BARTOW PEAKING 1-4	P46FPC	286.90	342.400	3082.600	13.70	772.0	22.30	5.30
FPC BARTOW PIPELINE HEATER	P47FPC	1.80	342.400	3082.600	9.10	541.0	5.20	0.90
FPC BARTOW UNIT 1 & 2	P48FPC	896.80	342.400	3082.600	91.40	429.0	36.30	2.70
FPC BARTOW UNIT 3	P49FPC	710.54	342.400	3082.600	91.40	408.0	34.40	3.40
FPC BAYBORO PEAKING 1-4	P50FPC	197.80	338.800	3071.300	12.20	755.0	6.40	7.00
FPC HIGGINS OTHER UNITS	P51FPC	25.21	336.500	3098.400	16.76	727.4	113.47	4.60
FPC HIGGINS UNIT 3	P52FPC	129.90	336.500	3098.400	53.00	423.0	7.30	3.80
FPC HIGGINS UNITS 1&2	P53FPC	192.20	336.500	3098.400	53.00	429.0	8.20	3.80
FPL MANATEE UNIT 1 & 2	P54FPL	2397.80	367.200	3054.100	152.10	426.0	17.10	8.00
GULF COAST LEAD	P55GU	0.75	364.000	3093.500	8.84	309.1	20.85	0.34

TABLE 3-5 (Concluded)
SO_2 FAAQS Inventory
Piney Point Phosphates, Inc.
Manatee County, Florida

FAAQS SOURCE INVENTORY - For Piney Point Phosphates		A A Q S						
SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
GULF COAST LEAD	P56GU	48.45	364.000	3093.500	29.57	344.1	37.59	0.61
IMC - AGRICO /NICHOLS/CONSERVE DAP DRYER	P57IMC	1.01	398.400	3084.200	24.40	333.0	23.10	1.07
IMC - AGRICO /NICHOLS/CONSERVE DRYER	P58IMC	3.34	398.400	3084.200	24.69	327.4	3.77	2.29
IMC-AGRICO/NEW WALES DAP 1	P59IMC	3.70	396.700	3079.400	40.50	314.0	14.90	2.10
IMC-AGRICO/NEW WALES GTSP	P60IMC	9.20	396.700	3079.400	40.50	316.0	20.40	1.80
IMC-AGRICO/SO. PIERCE GTSP PLANT	P61IMC	16.60	407.500	3071.300	42.70	305.0	10.40	2.70
MULBERRY PROSPHATES/ROYSTER (1700 TPD)	P78MU	35.70	406.700	3085.200	61.00	360.0	12.20	2.13
MULBERRY PROSPHATES/ROYSTER DAP	P79MU	1.10	406.700	3085.200	31.10	316.0	7.90	2.70
TAMPA MCKAY BAY RRF 1-4	P62TA	21.40	360.000	3091.000	48.80	555.0	29.60	1.80
TECO BIG BEND TURBINE 1	P63TEC	11.30	361.900	3075.000	10.70	816.0	136.20	1.50
TECO BIG BEND TURBINE 2&3	P64TEC	79.18	361.900	3075.000	22.86	770.8	18.74	4.27
TECO BIG BEND UNIT 1	P65TEC	3309.00	361.900	3075.000	149.35	404.7	13.74	7.32
TECO BIG BEND UNIT 2	P66TEC	3275.32	361.900	3075.000	149.35	404.7	13.02	7.32
TECO BIG BEND UNIT 3	P67TEC	3372.92	361.900	3075.000	149.35	410.2	14.47	7.32
TECO GANNON 1 & 2	P68TEC	760.86	360.000	3087.500	93.27	420.8	30.85	3.05
TECO GANNON 3	P69TEC	483.96	360.000	3087.500	93.27	419.7	38.64	3.23
TECO GANNON 4	P70TEC	567.71	360.000	3087.500	93.27	426.9	22.97	3.05
TECO GANNON 5	P71TEC	691.28	360.000	3087.500	93.27	423.6	23.18	4.45
TECO GANNON 6	P72TEC	1149.41	360.000	3087.500	93.27	433.0	24.74	5.36
TECO GANNON TURBINE	P73TEC	11.90	360.000	3087.500	10.67	816.3	136.61	1.52
TECO HOOKERS POINT 1 & 2	P74TEC	82.60	358.000	3091.000	85.30	419.0	6.10	3.40
TECO HOOKERS POINT 3 & 4	P75TEC	114.00	358.000	3091.000	85.30	434.0	7.90	3.70
TECO HOOKERS POINT 5	P76TEC	84.60	358.000	3091.000	85.30	448.0	11.00	3.40
TECO HOOKERS POINT 6	P77TEC	107.90	358.000	3091.000	85.30	434.0	22.30	2.90

TABLE 3-6
SO_2 Class II Area PSD Inventory
Piney Point Phosphates, Inc.
Manatee County, Florida

SO2 CLASS 2 SOURCE INVENTORY - For Piney Point Phosphates		PSD - CLASS II						
SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
CARGILL/GARDINIER DRYER	N1CAR	-28.89	363.400	3082.400	20.73	310.0	13.12	1.07
CARGILL/GARDINIER SAP #4,5,6	N2CAR	-187.70	363.400	3082.400	22.60	363.0	7.00	1.52
CARGILL/GARDINIER SAP #7	N3CAR	-26.25	363.400	3082.400	45.60	340.0	12.64	2.29
CARGILL/GARDINIER SAP #8	N4CAR	-41.16	363.400	3082.400	45.60	339.0	13.93	2.44
CARGILL/GARDINIER SAP #9	N5CAR	-54.60	363.400	3082.400	45.60	350.0	10.30	2.74
CARGILL/SEMINOLE/W.R. GRACE DRYER	N6CAR	-39.66	409.770	3086.990	15.24	327.0	17.32	2.04
CARGILL/SEMINOLE/W.R. GRACE SAP #1 & #2	N7CAR	-216.00	409.770	3086.990	45.72	352.0	16.50	1.37
CARGILL/SEMINOLE/W.R. GRACE SAP #3	N8CAR	-52.50	409.770	3086.990	45.72	311.0	16.70	1.52
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	N9CAR	-121.07	409.770	3086.990	60.96	347.0	25.10	1.52
CF BARTOW H2SO4 1 (400 TPD)	N10CF	-60.90	408.500	3082.500	30.49	350.0	12.20	1.37
CF BARTOW H2SO4 2 (500 TPD)	N11CF	-110.25	408.500	3082.500	30.49	350.0	10.37	1.68
CF BARTOW H2SO4 3 (600 TPD)	N12CF	-107.10	408.500	3082.500	30.49	364.0	4.27	2.74
CF BARTOW H2SO4 4 (900 TPD)	N13CF	-174.83	408.500	3082.500	30.49	358.0	7.93	2.13
CF BARTOW H2SO4 5 (900 TPD)	N14CF	-226.80	408.500	3082.500	63.41	358.0	10.67	2.13
CF BARTOW H2SO4 6 (900 TPD)	N15CF	-170.10	408.500	3082.500	63.41	359.0	10.37	2.13
ESTECH/SWIFT DRYER	N16ES	-22.80	411.500	3074.200	18.75	340.0	5.06	2.95
ESTECH/SWIFT DRYER	N17ES	-23.94	411.500	3074.200	18.29	339.0	8.47	2.95
ESTECH/SWIFT SAP (610 TPD & 29 LB/TON)	N18ES	-92.87	411.500	3074.200	30.79	358.0	3.90	2.13
FARMLAND 1,2 H2SO4	N19FA	-83.98	410.330	3079.655	30.48	311.0	20.18	1.37
FARMLAND 3 & 4 H2SO4 (1620 TPD)	N20FA	-67.16	410.330	3079.655	30.48	355.0	9.27	2.29
FARMLAND 5 H2SO4 (2400 TPD)	N21FA	-50.40	410.330	3079.655	45.72	355.0	11.55	2.44
GEN. PORT. CEMENT KILN 4	N22GE	-62.99	358.000	3090.600	35.97	505.2	17.61	2.74
GEN. PORT. CEMENT KILN 5	N23GE	-69.30	358.000	3090.600	45.42	494.1	5.80	3.81
IMC - AGRICO /NICHOLS/CONSERVE (2 @ 1300 TPD)	N24IM	-54.60	398.400	3084.200	30.50	308.0	18.90	1.80
IMC - AGRICO /NICHOLS/CONSERVE (2000 TPD)	N25IM	-42.00	398.400	3084.200	45.70	352.0	10.30	2.30
IMC - AGRICO /NICHOLS/CONSERVE ROCK DRYER	N26IM	-3.88	398.400	3084.200	24.40	339.0	12.90	1.52
IMC-AGRICO/NEW WALES ROCK DRYER	N27IM	-34.27	396.600	3078.900	21.00	347.0	18.60	2.13
IMC-AGRICO/NEW WALES SAP #1,2,3 BASELINE	N28IM	-146.00	396.600	3078.900	61.00	350.0	14.28	2.60
IMC-AGRICO/PIERCE DRYERS 1,2	N29IM	-24.32	404.100	3078.950	24.38	339.0	12.94	1.52
IMC-AGRICO/PIERCE DRYERS 3,4	N30IM	-23.00	404.100	3078.950	24.38	339.0	18.82	2.43
IMC-AGRICO/SO. PIERCE H2SO4 (2 @1800 TPD)	N31IM	-75.60	407.500	3071.300	45.73	350.0	26.40	1.60
MOBILE ELECTROPHOS 400HP BOILER	N32MO	-6.53	405.600	3079.400	7.32	464.0	3.23	0.91
MOBILE ELECTROPHOS 600HP BOILER	N33MO	-10.05	405.600	3079.400	6.10	464.0	7.71	0.91
MOBILE ELECTROPHOS CALCINER	N34MO	-7.11	405.600	3079.400	25.61	306.0	6.97	2.13
MOBILE ELECTROPHOS COKE DRYER	N35MO	-3.17	405.600	3079.400	18.29	322.0	22.87	0.70
MOBILE ELECTROPHOS FURNACE (31.25 TPH ROCK)	N36MO	-47.25	405.600	3079.400	29.27	314.0	8.52	2.13
MOBILE ELECTROPHOS ROCK DRYER	N37MO	-21.81	405.600	3079.400	18.29	350.0	6.79	1.83
MULBERRY PROSPHATES/ROYSTER (1003 TPD)	N38MU	-152.71	406.700	3085.200	51.00	356.0	9.90	2.13
PINEY POINT/ROYSTER AUX A	N39PIN	-11.00	348.700	3057.300	9.15	558.0	7.70	1.21
PINEY POINT/ROYSTER SAP #1	N40PIN	-42.02	348.700	3057.300	60.98	350.0	8.08	2.36
STAUFFER BOILER	N41ST	-4.86	325.600	3116.700	7.32	464.0	3.23	0.91
STAUFFER DRYER	N42ST	-1.50	325.600	3116.700	18.29	322.0	22.87	0.70
STAUFFER FURNACE	N43ST	-50.93	325.600	3116.700	49.00	335.0	3.60	1.20
STAUFFER KILN	N44ST	-7.36	325.600	3116.700	25.61	306.0	6.97	2.13
STAUFFER ROASTER	N45ST	-0.45	325.600	3116.700	25.61	322.0	6.97	0.91
TECO BIG BEND UNIT 3 (24-HR)	N46TE	-1218.00	361.900	3075.000	149.40	418.0	14.33	7.32
TECO BIG BEND UNITS 1&2 (24-HR)	N47TE	-2436.00	361.900	3075.000	149.40	422.0	28.65	7.32
USSAC FT MEADE GTSP	N48US	-18.27	416.000	3069.000	28.35	330.0	17.60	1.52
USSAC FT MEADE H2SO4 (1500 TPD @ 10 LB/TON)	N49US	-78.80	416.210	3068.740	29.00	314.0	6.77	3.02
CARGILL/GARDINIER SAP #9 (INCR. IN 9 OF 8 OR 9)	P1CAR	67.20	363.400	3082.400	45.60	350.0	12.66	2.74
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	P2CAR	143.64	409.770	3086.990	60.96	347.0	34.00	1.52
CF BARTOW DAP 1-3	P3CF B	3.97	408.500	3082.500	36.40	339.0	16.11	2.13
CF BARTOW H2SO4 5 (2400 TPD)	P4CF B	50.40	408.500	3082.500	63.41	361.0	10.88	2.13
CF BARTOW H2SO4 6 (2400 TPD)	P5CF B	50.40	408.500	3082.500	63.41	370.0	7.28	2.13
CF BARTOW H2SO4 7 (2000 TPD)	P6CF B	42.00	408.500	3082.500	67.10	351.0	9.80	2.40
CLM CHLORIDE METALS	P7CLM	13.00	361.800	3088.300	30.00	375.0	20.10	0.61

TABLE 3-6 (Concluded)
SO_2 Class II Area PSD Inventory
Piney Point Phosphates, Inc.
Manatee County, Florida

SO2 CLASS 2 SOURCE INVENTORY - For Piney Point Phosphates		PSD - CLASS II						
SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
FARMLAND 3 & 4 H2SO4 (2100 TPD)	P8FAR	88.20	410.330	3079.655	30.48	355.0	12.02	2.29
FARMLAND 5 H2SO4 (2800 TPD)	P9FAR	58.80	410.330	3079.655	45.72	355.0	13.42	2.44
FARMLAND SULFUR SYSTEM (EXISTING)	P10FA	0.39	410.330	3079.655	12.19	366.3	2.67	0.61
FARMLAND SULFUR SYSTEM (PROPOSED)	P11FA	0.16	410.330	3079.655	12.19	366.3	2.67	0.61
FPC POLK	P12FP	49.44	414.400	3073.910	34.40	400.0	40.50	4.10
HARDEE	P13HA	277.60	404.800	3057.400	22.90	389.0	23.90	4.88
IMC - AGRICO /NICHOLS/CONSERVE (2500 TPD)	P14IMC	52.50	398.400	3084.200	45.70	352.0	12.00	2.30
IMC-AGRICO/NEW WALES AFI PLANT	P15IMC	0.20	396.600	3078.900	52.40	322.0	13.10	2.40
IMC-AGRICO/NEW WALES DAP	P16IMC	5.54	396.600	3078.900	36.60	319.1	20.15	1.83
IMC-AGRICO/NEW WALES MULTIPHOS	P17IMC	4.80	396.600	3078.900	52.40	314.0	15.80	1.40
IMC-AGRICO/NEW WALES SAP #1,2,3 (3 AT 2900 TPD)	P18IMC	182.85	396.600	3078.900	61.00	350.0	15.31	2.60
IMC-AGRICO/NEW WALES SAP #4,5 (2 AT 2900 TPD)	P19IMC	121.90	396.600	3078.900	60.70	350.0	15.31	2.60
IMC-AGRICO/SO. PIERCE DAP PLANT	P20IMC	4.41	407.500	3071.330	38.10	328.0	14.60	3.10
IMC-AGRICO/SO. PIERCE H2SO4 (2 @ 2700 TPD)	P21IMC	113.40	407.500	3071.300	45.73	350.0	39.06	1.60
MULBERRY PROSPHATES/ROYSTER (1700 TPD @ 4 LB/TON)	P78MU	35.70	406.700	3085.200	61.00	360.0	12.20	2.13
PINELLAS RRF	P22PIN	62.24	335.300	3084.400	49.10	522.0	27.72	2.74
PINEY POINT/ROYSTER AUX B	P23PIN	1.20	348.700	3057.300	8.80	427.0	14.80	2.28
PINEY POINT/ROYSTER DAP	P24PIN	7.40	348.700	3057.300	61.00	328.0	15.50	3.00
PINEY POINT/ROYSTER SAP #2	P25PIN	56.70	348.700	3057.300	60.98	350.0	9.60	2.82
PINEY POINT/ROYSTER SULFUR	P26PIN	0.03	348.700	3057.300	7.30	366.0	1.00	1.21
TECO BIG BEND UNIT 4	P27TE	654.70	361.900	3075.000	149.40	342.2	19.81	7.32
TECO POLK POWER	P28TE	0.016	402.016	3067.640	22.90	1000.0	20.00	1.20
TECO POLK POWER	P29TE	0.30	402.420	3067.320	6.10	533.0	13.10	0.91
TECO POLK POWER	P30TE	8.20	402.328	3067.472	60.70	1033.0	10.70	1.40
TECO POLK POWER	P31TE	49.68	402.450	3067.350	45.72	400.0	16.76	5.79
TECO POLK POWER	P32TE	5.42	402.488	3066.954	22.86	812.0	27.43	5.49
TECO POLK POWER	P33TE	1.27	402.298	3067.297	60.70	1033.0	9.10	1.10
TECO POLK POWER 4 CC	P34TE	17.60	402.450	3067.216	45.72	389.0	16.15	4.42
TECO POLK POWER 5 CT	P35TE	33.40	402.488	3066.914	22.86	785.0	31.39	5.49
USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	P36US	92.48	416.120	3068.620	53.40	355.0	10.00	2.59

TABLE 3-7
SUMMARY OF CLASS II AREA SULFUR DIOXIDE IMPACTS ANALYSIS

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

MET. DATA	SULFUR DIOXIDE IMPACT ($\mu g/m^3$)			
	PSD		AAQS	
	3-HOUR	24-HOUR	3-HOUR	24-HOUR
1987	50.76	6.93	422.1	161.3
1988	39.04	5.16	587.4	179.4
1989	44.74	5.60	487.4	185.6
1990	39.70	6.62	458.4	119.9
1991	37.73	8.64	464.6	154.5
MAX IMPACT	50.76	8.64	601.4(2)	199.6(2)
INCREMENT & STD. (Rule 62-212 & 275, FAC)	512	91	1300	260

NOTE:

(1) The above impacts represent the highest second-high impacts.

(2) This impact includes a background SO_2 concentration of 14 ug/m^3, as recommended by FDEP.

TABLE 3-8
SO_2 Class I Area PSD Inventory
Piney Point Phosphates, Inc.
Manatee County, Florida

Class 1 Inventory		PSD - CLASS I						
SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
BORDEN DRYER	C1-1BORD	-6.48	394.800	3069.600	30.48	344.0	14.79	1.82
BORDEN DRYER	C1-2BORD	-5.29	414.500	3109.000	17.07	333.0	8.26	2.34
BREWSTER/IMPERIAL DRYER	C1-3BREW	-19.26	404.800	3069.500	27.44	339.0	15.25	2.29
CARGILL/GARDINIER DRYER	C1-4CARG	-28.89	363.400	3082.400	20.73	310.0	13.12	1.07
CARGILL/GARDINIER SAP #4,5,6	C1-5CARG	-187.70	363.400	3082.400	22.60	363.0	7.00	1.52
CARGILL/GARDINIER SAP #7	C1-6CARG	-26.25	363.400	3082.400	45.60	340.0	12.64	2.29
CARGILL/GARDINIER SAP #8	C1-7CARG	-41.16	363.400	3082.400	45.60	339.0	13.93	2.44
CARGILL/GARDINIER SAP #9	C1-8CARG	-54.60	363.400	3082.400	45.60	350.0	10.30	2.74
CARGILL/SEMINOLE/W.R. GRACE DRYER	C1-9CARG	-39.66	409.770	3086.990	15.24	327.0	17.32	2.04
CARGILL/SEMINOLE/W.R. GRACE SAP #1 & #2	C1-10CAR	-216.00	409.770	3086.990	45.72	352.0	16.50	1.37
CARGILL/SEMINOLE/W.R. GRACE SAP #3	C1-11CAR	-52.50	409.770	3086.990	45.72	311.0	16.70	1.52
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	C1-12CAR	-121.07	409.770	3086.990	60.96	347.0	25.10	1.52
CF BARTOW H2SO4 1 (400 TPD)	C1-13CF B	-60.90	408.500	3082.500	30.49	350.0	12.20	1.37
CF BARTOW H2SO4 2 (500 TPD)	C1-14CF B	-110.25	408.500	3082.500	30.49	350.0	10.37	1.68
CF BARTOW H2SO4 3 (600 TPD)	C1-15CF B	-107.10	408.500	3082.500	30.49	364.0	4.27	2.74
CF BARTOW H2SO4 4 (900 TPD)	C1-16CF B	-174.83	408.500	3082.500	30.49	358.0	7.93	2.13
CF BARTOW H2SO4 5 (900 TPD)	C1-17CF B	-226.80	408.500	3082.500	63.41	358.0	10.67	2.13
CF BARTOW H2SO4 6 (900 TPD)	C1-18CF B	-170.10	408.500	3082.500	63.41	359.0	10.37	2.13
CF PLANT CITY BASELINE A & B	C1-19CF P	-105.00	388.000	3116.000	23.80	316.0	18.80	1.52
CF PLANT CITY BASELINE C & D	C1-20CF P	-100.80	388.000	3116.000	60.35	353.0	16.40	2.44
DOLIME BOILER	C1-21DOLI	-4.52	404.813	3069.548	27.43	494.1	7.25	0.61
DOLIME DRYER	C1-22DOLI	-5.68	404.813	3069.548	27.43	333.0	20.67	1.52
ESTECH/SWIFT DRYER	C1-23EST	-22.80	411.500	3074.200	18.75	340.0	5.06	2.95
ESTECH/SWIFT DRYER	C1-24EST	-23.94	411.500	3074.200	18.29	339.0	8.47	2.95
ESTECH/SWIFT SAP (610 TPD & 29 LB/TON)	C1-25EST	-92.87	411.500	3074.200	30.79	358.0	3.90	2.13
FARMLAND 1,2 H2SO4	C1-26FAR	-83.98	410.330	3079.655	30.48	311.0	20.18	1.37
FARMLAND 3 & 4 H2SO4 (1620 TPD)	C1-27FAR	-67.16	410.330	3079.655	30.48	355.0	9.27	2.29
FARMLAND 5 H2SO4 (2400 TPD)	C1-28FAR	-50.40	410.330	3079.655	45.72	355.0	11.55	2.44
FPC CRYSTAL RIVER 1	C1-29FPC	-314.00	334.200	3204.500	152.00	422.0	42.10	4.57
FPC CRYSTAL RIVER 2	C1-30FPC	-1859.00	334.200	3204.500	153.00	422.0	42.10	4.88
GEN. PORT. CEMENT KILN 4	C1-31GEN.	-62.99	358.000	3090.600	35.97	505.2	17.61	2.74
GEN. PORT. CEMENT KILN 5	C1-32GEN.	-69.30	358.000	3090.600	45.42	494.1	5.80	3.81
IMC - AGRICO /NICHOLS/CONSERVE (2 @ 1300 TPD)	C1-33IMC -	-54.60	398.400	3084.200	30.50	308.0	18.90	1.80
IMC - AGRICO /NICHOLS/CONSERVE (2000 TPD)	C1-34IMC -	-42.00	398.400	3084.200	45.70	352.0	10.30	2.30
IMC - AGRICO /NICHOLS/CONSERVE ROCK DRYER	C1-35IMC -	-3.88	398.400	3084.200	24.40	339.0	12.90	1.52
IMC-AGRICO/NEW WALES ROCK DRYER	C1-36IMC-	-34.27	396.600	3078.900	21.00	347.0	18.60	2.13
IMC-AGRICO/NEW WALES SAP #1,2,3 BASELINE	C1-37IMC-	-146.00	396.600	3078.900	61.00	350.0	14.28	2.60
IMC-AGRICO/PIERCE DRYERS 1,2	C1-38IMC-	-24.32	404.100	3078.950	24.38	339.0	12.94	1.52
IMC-AGRICO/PIERCE DRYERS 3,4	C1-39IMC-	-23.00	404.100	3078.950	24.38	339.0	18.82	2.43
IMC-AGRICO/SO. PIERCE H2SO4 (2 @1800 TPD)	C1-40IMC-	-75.60	407.500	3071.300	45.73	350.0	26.40	1.60
MOBIL NICHOLS 75 HP BOILER	C1-41MOB	-0.87	398.300	3084.300	4.00	522.0	1.80	0.80
MOBIL NICHOLS CALCINER	C1-42MOB	-13.89	398.300	3084.300	28.40	340.0	19.24	1.09
MOBILE ELECTROPHOS 400HP BOILER	C1-43MOB	-6.53	405.600	3079.400	7.32	464.0	3.23	0.91
MOBILE ELECTROPHOS 600HP BOILER	C1-44MOB	-10.05	405.600	3079.400	6.10	464.0	7.71	0.91
MOBILE ELECTROPHOS CALCINER	C1-45MOB	-7.11	405.600	3079.400	25.61	306.0	6.97	2.13
MOBILE ELECTROPHOS COKE DRYER	C1-46MOB	-3.17	405.600	3079.400	18.29	322.0	22.87	0.70
MOBILE ELECTROPHOS FURNACE (31.25 TPH ROCK)	C1-47MOB	-47.25	405.600	3079.400	29.27	314.0	8.52	2.13
MOBILE ELECTROPHOS ROCK DRYER	C1-48MOB	-21.81	405.600	3079.400	18.29	350.0	6.79	1.83
MULBERRY PROSPHATES/ROYSTER (1003 TPD)	C1-49MUL	-152.71	406.700	3085.200	51.00	356.0	9.90	2.13
PINEY POINT/ROYSTER AUX A	C1-50PINE	-11.00	348.700	3057.300	9.15	558.0	7.70	1.21
PINEY POINT/ROYSTER SAP #1	C1-51PINE	-42.02	348.700	3057.300	60.98	350.0	8.08	2.36
STAUFFER BOILER	C1-52STA	-4.86	325.600	3116.700	7.32	464.0	3.23	0.91
STAUFFER DRYER	C1-53STA	-1.50	325.600	3116.700	18.29	322.0	22.87	0.70
STAUFFER FURNACE	C1-54STA	-50.93	325.600	3116.700	49.00	335.0	3.60	1.20
STAUFFER KILN	C1-55STA	-7.36	325.600	3116.700	25.61	306.0	6.97	2.13
STAUFFER ROASTER	C1-56STA	-0.45	325.600	3116.700	25.61	322.0	6.97	0.91
TECO BIG BEND UNIT 3 (24-HR)	C1-57TEC	-1218.00	361.900	3075.000	149.40	418.0	14.33	7.32
TECO BIG BEND UNITS 1&2 (24-HR)	C1-58TEC	-2436.00	361.900	3075.000	149.40	422.0	28.65	7.32

TABLE 3-8 (Continued)
SO_2 Class I Area PSD Inventory
Piney Point Phosphates, Inc.
Manatee County, Florida

Class 1 Inventory		PSD - CLASS I						
SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
USS AGRI-CHEM BARTOW DRYER	C1-59USS	-3.41	413.200	3086.300	15.80	332.0	10.01	1.83
USS AGRI-CHEM BARTOW SAP (800 TPD & 10 LB/TON)	C1-60USS	-42.00	413.200	3086.300	28.96	305.0	7.50	2.12
USSAC FT MEADE GTSP	C1-61USS	-18.27	416.000	3069.000	28.35	330.0	17.60	1.52
USSAC FT MEADE H2SO4 (1500 TPD @ 10 LB/TON)	C1-62USS	-78.80	416.210	3068.740	29.00	314.0	6.77	3.02
ASPHALT PAVERS 3 (0700-1800)	C1-63ASP	2.25	359.900	3162.400	12.20	377.0	10.58	1.37
ASPHALT PAVERS 4 (0700-1800)	C1-64ASP	1.76	361.400	3168.400	8.50	357.4	10.95	1.08
AUBURNDALE @ 0.5% SULFUR	C1-65AUB	6.35	420.800	3103.300	48.80	411.0	14.30	5.49
CARGILL/GARDINIER SAP #9 (INCR. IN 9 OF 8 OR 9)	C1-66CAR	67.20	363.400	3082.400	45.60	350.0	12.66	2.74
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	C1-67CAR	143.64	409.770	3086.990	60.96	347.0	34.00	1.52
CF BARTOW DAP 1-3	C1-68CF B	3.97	408.500	3082.500	36.40	339.0	16.11	2.13
CF BARTOW H2SO4 5 (2400 TPD)	C1-69CF B	50.40	408.500	3082.500	63.41	361.0	10.88	2.13
CF BARTOW H2SO4 6 (2400 TPD)	C1-70CF B	50.40	408.500	3082.500	63.41	370.0	7.28	2.13
CF BARTOW H2SO4 7 (2000 TPD)	C1-71CF B	42.00	408.500	3082.500	67.10	351.0	9.80	2.40
CF PLANT CITY H2SO4 A&B	C1-72CF P	88.20	388.000	3116.000	33.50	316.0	19.50	1.52
CF PLANT CITY PROPOSED C & D	C1-73CF P	109.20	388.000	3116.000	60.35	353.0	17.77	2.44
CLM CHLORIDE METALS	C1-74CLM	13.00	361.800	3088.300	30.00	375.0	20.10	0.61
COUCH CONST-ODESSA (ASPHALT)	C1-75COU	7.25	340.700	3119.500	9.14	436.0	22.30	1.40
COUCH CONST-ZEPHYRHILLS (ASPHALT)	C1-76COU	3.54	390.300	3129.400	6.10	422.0	21.00	1.38
DRIS PAVING (ASPHALT)	C1-77DRIS	0.23	340.600	3119.200	12.20	339.0	6.47	3.05
ER JAHNA (LIME DRYER)	C1-78ER J	0.82	386.700	3155.800	10.67	327.0	8.99	1.83
EVANS PACKING	C1-79EVA	0.20	383.300	3135.800	12.30	466.2	9.20	0.40
FARMLAND 3 & 4 H2SO4 (2100 TPD)	C1-80FAR	88.20	410.330	3079.655	30.48	355.0	12.02	2.29
FARMLAND 5 H2SO4 (2800 TPD)	C1-81FAR	58.80	410.330	3079.655	45.72	355.0	13.42	2.44
FARMLAND SULFUR SYSTEM (EXISTING)	C1-82FAR	0.39	410.330	3079.655	12.19	366.3	2.67	0.61
FARMLAND SULFUR SYSTEM (PROPOSED)	C1-83FAR	0.16	410.330	3079.655	12.19	366.3	2.67	0.61
FDOC BOILER #3	C1-84FDO	2.99	382.200	3166.100	9.14	478.0	4.57	0.61
FLA MINING & MATERIALS KILN 2	C1-85FLA	1.45	356.200	3169.900	32.01	394.0	9.90	4.27
FLORIDA CRUSHED STONE KILN 1	C1-86FLO	98.40	360.008	3162.398	97.60	442.0	23.23	4.88
FPC CRYSTAL RIVER 4	C1-87FPC	1008.80	334.200	3204.500	182.90	398.0	21.00	6.90
FPC CRYSTAL RIVER 5	C1-88FPC	1008.80	334.200	3204.500	182.90	398.0	21.00	6.90
FPC DEBARY PROP TURBINES AT 20 DEG F	C1-89FPC	466.40	467.500	3197.200	15.24	819.8	56.21	4.21
FPC INT. CITY PROP TURBINES/7EA AT 20 DEG F	C1-90FPC	124.40	446.300	3126.000	15.24	819.8	56.21	4.21
FPC INT. CITY PROP TURBINES/7FA AT 20 DEG F	C1-91FPC	110.40	446.300	3126.000	15.24	880.8	32.07	7.04
FPC POLK	C1-92FPC	49.44	414.400	3073.910	34.40	400.0	40.50	4.10
GAINESVILLE REGIONAL UTILITIES	C1-93GAIN	5.65	365.500	3292.700	15.80	811.0	46.02	4.30
HARDEE	C1-94HAR	277.60	404.800	3057.400	22.90	389.0	23.90	4.88
HILLS. CO. RESOURCE RECOVERY	C1-95HILL	21.40	368.200	3092.700	50.00	491.0	18.30	1.80
HOSP CORP OF AM BOILER #1	C1-96HOS	0.08	333.400	3141.000	10.98	533.0	4.00	0.31
HOSP CORP OF AM BOILER #2	C1-97HOS	0.08	333.400	3141.000	10.98	533.0	4.00	0.31
IMC - AGRICO /NICHOLS/CONSERVE (2500 TPD)	C1-98IMC -	52.50	398.400	3084.200	45.70	352.0	12.00	2.30
IMC-AGRICO/NEW WALES AFI PLANT	C1-99IMC-	0.20	396.600	3078.900	52.40	322.0	13.10	2.40
IMC-AGRICO/NEW WALES DAP	C100IMC-	5.54	396.600	3078.900	36.60	319.1	20.15	1.83
IMC-AGRICO/NEW WALES MULTIPHOS	C101IMC-	4.80	396.600	3078.900	52.40	314.0	15.80	1.40
IMC-AGRICO/NEW WALES SAP #1,2,3 (3 AT 2900 TPD)	C102IMC-	182.85	396.600	3078.900	61.00	350.0	15.31	2.60
IMC-AGRICO/NEW WALES SAP #4,5 (2 AT 2900 TPD)	C103IMC-	121.90	396.600	3078.900	60.70	350.0	15.31	2.60
IMC-AGRICO/SO. PIERCE DAP PLANT	C104IMC-	4.41	407.500	3071.330	38.10	328.0	14.60	3.10
IMC-AGRICO/SO. PIERCE H2SO4 (2 @ 2700 TPD)	C105IMC-	113.40	407.500	3071.300	45.73	350.0	39.06	1.60
KISSIMMEE KANE IS. @ 0.3% SULFUR	C106KISSI	29.40	447.680	3127.920	12.20	654.0	29.10	3.05
KISSIMMEE UTIL (EXISTING)	C107KISSI	32.10	460.100	3129.300	18.30	422.0	38.00	3.66
LAKE CO. COGEN. FACILITY PROPOSED	C108LAKE	5.04	434.000	3198.800	30.48	384.3	17.13	3.35
LAKELAND LARSEN CT	C109LAKE	29.11	409.300	3102.800	30.48	783.2	28.22	5.79
LAKELAND MCINTOSH 3	C110LAKE	500.10	409.200	3106.200	76.20	350.0	19.70	4.88
MOBIL BIG-4 BOILER	C111MOBI	0.60	394.800	3069.770	8.20	505.0	7.57	0.41
MOBIL BIG-4 DRYER	C112MOBI	1.90	394.850	3069.770	30.50	334.0	7.26	1.82
MOBIL NICHOLS DRYER 4	C113MOBI	2.44	398.300	3084.300	25.90	339.0	16.05	2.29
MULBERRY COGENERATION CT	C114MULB	13.40	413.600	3080.600	51.00	356.0	9.90	2.13
MULBERRY PROSPHATES/ROYSTER (1700 TPD)	C115MULB	35.70	406.700	3085.200	61.00	360.0	12.20	2.13
NEW PORT RICHEY HOSP BLR#1	C116NEW	0.06	331.200	3124.500	10.98	544.0	3.88	0.31

TABLE 3-8 (Concluded)
SO_2 Class I Area PSD Inventory
Piney Point Phosphates, Inc.
Manatee County, Florida

Class 1 Inventory		PSD - CLASS I						
SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
NEW PORT RICHEY HOSP BLR#2	C117NEW	0.03	331.200	3124.500	10.98	544.0	3.88	0.31
OMAN CONST (ASPHALT)	C118OMA	2.09	359.800	3164.900	7.62	347.0	6.29	1.83
ORLANDO UTIL STANTON 1	C119ORLA	601.00	483.500	3150.600	167.60	325.7	21.60	5.80
ORLANDO UTIL STANTON 2 (24-HR)	C120ORLA	91.80	483.500	3150.600	167.60	324.2	23.50	5.80
OVERSTREET PAV. (ASPHALT)	C121OVER	3.67	355.900	3143.700	9.14	408.0	16.00	1.30
PANDA KATHLEEN	C122PAND	0.73	398.700	3101.400	45.72	372.0	14.57	5.33
PASCO CO. COGEN. FACLITY PROPOSED	C123PASC	5.04	385.600	3139.000	30.48	384.3	17.13	3.35
PASCO COUNTY RRF	C124PASC	14.10	347.100	3139.200	83.82	394.3	15.70	3.05
PINELLAS RRF	C125PINE	62.24	335.300	3084.400	49.10	522.0	27.72	2.74
PINEY POINT/ROYSTER AUX B	C126PINE	1.20	348.700	3057.300	8.80	427.0	14.80	2.28
PINEY POINT/ROYSTER DAP	C127PINE	7.40	348.700	3057.300	61.00	328.0	15.50	3.00
PINEY POINT/ROYSTER SAP #2	C128PINE	56.70	348.700	3057.300	60.98	350.0	9.60	2.82
PINEY POINT/ROYSTER SULFUR	C129PINE	0.03	348.700	3057.300	7.30	366.0	1.00	1.21
REEDY CREEK GENERATORS 1 & 2 EPCOT	C130REED	3.66	442.000	3139.000	5.20	616.5	44.12	0.55
REEDY CREEK SERVICES	C131REED	0.15	443.000	3144.300	19.80	414.0	15.56	3.41
RIDGE COGENERATION	C132RIDG	13.80	416.700	3100.400	99.10	350.0	14.54	3.05
SECI HARDEE (50% I)	C133SECI	6.40	404.900	3057.400	27.40	414.0	14.09	5.79
TECO BIG BEND UNIT 4	C134TECO	654.70	361.900	3075.000	149.40	342.2	19.81	7.32
TECO POLK POWER	C135TECO	5.42	402.488	3066.954	22.86	812.0	27.43	5.49
TECO POLK POWER	C136TECO	0.30	402.420	3067.320	6.10	533.0	13.10	0.91
TECO POLK POWER	C137TECO	49.68	402.450	3067.350	45.72	400.0	16.76	5.79
TECO POLK POWER	C138TECO	0.016	402.016	3067.640	22.90	1000.0	20.00	1.20
TECO POLK POWER	C139TECO	8.20	402.328	3067.472	60.70	1033.0	10.70	1.40
TECO POLK POWER	C140TECO	1.27	402.298	3067.297	60.70	1033.0	9.10	1.10
TECO POLK POWER 4 CC	C141TECO	17.60	402.450	3067.216	45.72	389.0	16.15	4.42
TECO POLK POWER 5 CT	C142TECO	33.40	402.488	3066.914	22.86	785.0	31.39	5.49
USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	C143USSA	92.48	416.120	3068.620	53.40	355.0	10.00	2.59

TABLE 3-9
SUMMARY OF CLASS I AREA SULFUR DIOXIDE IMPACTS ANALYSIS

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

METEOROLOGICAL DATA	SULFUR DIOXIDE IMPACT ($\mu g/m^3$) 3-HOUR	24-HOUR
1987	37.60	7.69
1988	33.82	6.56
1989	31.16	5.05
1990	37.87	6.40
1991	39.74	7.27
ALLOWABLE PSD INCREMENT (FAC RULE 17-275)	25	5

NOTES:

(1) The impact represents the highest second-high impact.

(2) Piney Point Phosphates's maximum contribution to these impacts, of 0.005 $\mu g/m^3$ for the 3-hour period, and 0.059 $\mu g/m^3$ for the 24-hour period, are less than the significant levels used by the National Park Service as guidelines for permitting (see analysis in Appendix).

4.0 ADDITIONAL IMPACT ANALYSES

4.1 Impact on Soils and Vegetation

As the predicted ambient air impacts from the revised modeling are virtually the same as the previously predicted ambient air impacts, the previously submitted evaluation of impacts on soils and vegetation is still valid. Consequently, no update to the previously submitted analysis is necessary.

4.2 Growth Related Impacts

The proposed project will require no increase in personnel to operate the facility. Also, the increase in sulfuric acid production may cause a slight increase in delivery truck tanker traffic but will have a negligible impact on traffic in the area as compared with traffic levels that presently exist. Therefore, no additional growth impacts are expected as a result of the proposed project.

4.3 Visibility Impacts

The proposed project will result in an increase in air emissions and therefore has the potential for adverse impacts on visibility. A screening approach suggested by EPA (Workbook for Plume Visual Impact Screening and Analysis, 1988), VISCREEN, was used for the analysis. The emissions of acid mist and nitrogen oxides were input to the model. In the case of sulfur dioxide however, the VISCREEN guidelines state that the sulfur dioxide emissions should be considered only beyond 200 kilometers. Consequently, the sulfur dioxide emissions were not included in the VISCREEN analysis. The VISCREEN - Level 1 modeling results, presented in Table 4-1, indicate that there will be no adverse visibility impacts from the proposed project.

4.4 Impacts on Air Quality Related Values for Class I Area

In the previous section, the impact of the air emission increases on air quality related values in the vicinity of the proposed project was addressed. The analysis addressed in this section extends the review of the impact of increased emissions on air quality related values to the Chassahowitzka Class I PSD area; an area in excess of 100 kilometers north of the Piney Point Phosphates facility.

4.4.1 Impact on Vegetation, Soils and Wildlife, Aquatic

As the predicted sulfur dioxide levels resulting from the proposed project are below those known to affect vegetation, soils and wildlife, no adverse impacts are expected.

4.4.2. Visibility Impairment Analysis

Visibility impairment analysis was performed to determine potential impact of the proposed project in the Chassahowitzka area. The VISCREEN - Level 1 modeling results, presented in Table 4-1, indicate that no adverse visibility impacts are expected as a result of the proposed project.

Additionally, regional haze visibility analysis was conducted in accordance with guidance from the National Park Service and the EPA document Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 1 Report; Interim Recommendation for Modeling Long Range Transport and Impacts on Regional Visibility (EPA-454/R-93-015, April 1993), to account for haze from potential conversion of sulfur dioxide and sulfuric acid mist to sulfate salts. Haze evaluation was conducted using a 100 percent conversion factor for sulfur dioxide and sulfuric acid mist emissions to sulfate salt (see Table 4-2) and also using a 30 percent conversion factor (see Table 4-3). Both results, presented in Tables 4-2 and 4-3, indicate that the proposed project is not expected to contribute significantly to regional haze.

Pradeep needs to address AQRV analysis

Should have used 65.0km

TABLE 4-1

VISCREEN ANALYSIS - LEVEL 1 SCREENING

Source: PINEY POINT PHOSPHATES
Class I Area: CHASSAHOWITZKA

Input Emissions:

Particulates	2.13	G	/S
NOx (as NO2)	1.13	G	/S
Primary NO2	.00	G	/S
Soot	.00	G	/S
Primary SO4	.00	G	/S

Default Particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	.04 ppm
Background Visual Range:	25.00 km
Source-Observer Distance:	108.00 km
Min. Source-Class I Distance:	107.00 km
Max. Source-Class I Distance:	118.00 km
Plume-Source-Observer Angle:	11.25 degrees

Stability: 6
Wind Speed: 1.00 m/s

R E S U L T S

Maximum Visual Impacts INSIDE Class I Area
Sreening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	82.	107.0	87.	2.00	.011	.05	.000
SKY	140.	82.	107.0	87.	2.00	.001	.05	.000
TERRAIN	10.	82.	107.0	87.	2.00	.001	.05	.000
TERRAIN	140.	82.	107.0	87.	2.00	.000	.05	.000

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	70.	102.7	99.	2.00	.011	.05	.000
SKY	140.	70.	102.7	99.	2.00	.001	.05	.000
TERRAIN	10.	60.	98.8	109.	2.00	.001	.05	.000
TERRAIN	140.	60.	98.8	109.	2.00	.000	.05	.000

TABLE 4-2

PINEY POINT PHOSPHATES
REGIONAL HAZE CALCULATIONS

SO2 IMPACT 1st High For 1989 µg/m^3	BACKGROUND VISIBILITY (km)	AMBIENT b(ext)a	ACID MIST IMPACT SO4(am) µg/m^3	SO4(so2) IMPACT µg/m^3	100% (NH4)SO4 IMPACT µg/m^3	TRANSPORT TIME (HR)
0.233	65	0.0602	0.00856	0.3495	0.49233	11.78

CONVERSION	FOR 100% (NH4)SO4 CONVERSION µg/m^3	RELATIVE HIMIDITY FACTOR	PM-10 µg/m^3	Source b(ext)s	DECIVIEW dv	PROBLEM ?
1.00	0.4923	3.5	0	0.00517	0.8240	NO

b(ext)a =	3.912/Background Visibility
SO4(so2) =	SO2 Impact * 1.5
SO4(am) =	= 0.15/4 * SO2 Impact * 96/98
(NH4)SO4 =	1.375*(SO4(so2)+SO4(am))
CONVERSION =	Transport Time (hr) * 0.03 (%/hr)
b(ext)s =	0.003*R/H factor*(NH4)SO4*0.003+PM10
dv =	10*LN(1+(b(ext)s/b(ext)a))

WIND SPEED (m/s)	Distance (km)	TIME (hr)	HIMIDITY FACTOR
3.00	127.267	11.78	3.5

Note: (1) SO4(so2) is the SO4 atributed to SO2.
(2) SO4(am) is the SO4 atributed to Acid Mist.
(3) Acid mist impact can be calculated as a ration of emission rates of SO2 and acid mist from the source , SO2 = 4 lb/ton acid produced; Acid mist = 0.15 lb/ton acid produced.

TABLE 4-3

PINEY POINT PHOSPHATES
REGIONAL HAZE CALCULATIONS

SO2 IMPACT 1st High For 1989 µg/m^3	BACKGROUND VISIBILITY (km)	AMBIENT b(ext)a	ACID MIST IMPACT SO4(am) µg/m^3	SO4(so2) IMPACT µg/m^3	100% (NH4)SO4 IMPACT µg/m^3	TRANSPORT TIME (HR)
0.233	65	0.0602	0.00856	0.3495	0.49233	11.78

CONVERSION	FOR 30% (NH4)SO4 CONVERSION µg/m^3	RELATIVE HIMIDITY FACTOR	PM-10 µg/m^3	Source b(ext)s	DECIVIEW dv	PROBLEM ?
0.30	0.1484	3.5	0	0.00156	0.2556	NO

b(ext)a =	3.912/Background Visibility
SO4(so2) =	SO2 Impact * 1.5
SO4(am) =	= 0.15/4 * SO2 Impact * 96/98
(NH4)SO4 =	1.375*(SO4(so2)+SO4(am))
CONVERSION =	Transport Time (hr) * 0.03 (%/hr)
b(ext)s =	0.003*R/H factor*(NH4)SO4*0.003+PM10
dv =	10*LN(1+(b(ext)s/b(ext)a))

WIND SPEED (m/s)	Distance (km)	TIME (hr)	HIMIDITY FACTOR
3.00	127.267	11.78	3.5

Note: (1) SO4(so2) is the SO4 atributed to SO2.
(2) SO4(am) is the SO4 atributed to Acid Mist.
(3) Acid mist impact can be calculated as a ratio of emission rates of SO2 and acid mist from the source , SO2 = 4 lb/ton acid produced; Acid mist = 0.15 lb/ton acid produced.

TABLE 4-3 (CONTINUED)

HOUR	CONVERSION SO2	SO4		
1	0.233	0.00699		
2	0.22601	0.00678		
3	0.2192297	0.00658		
4	0.2126528	0.00638		
5	0.2062732	0.00619		
6	0.200085	0.006		
7	0.1940825	0.00582		
8	0.18826	0.00565		
9	0.1826122	0.00548		
10	0.1771338	0.00531		
11	0.1718198	0.00515		
11.78	0.1666652	0.0039	CONVERSION % =	30%
	Σ SO4 =	0.07024		

yr	MET DATA mo	dy	hr	dir	ws	temp
89	4	5	11	5	3.6	300.4
89	4	5	12	12	4.12	300.9
89	4	5	13	53	4.63	299.8
89	4	5	14	175	5.14	295.4
89	4	5	15	206	3.09	297.6
89	4	5	16	50	1.54	299.8
89	4	5	17	52	3.09	299.8
89	4	5	18	159	4.63	297.6
89	4	5	19	182	4.12	295.9
89	4	5	20	184	2.57	294.8
89	4	5	21	154	2.06	294.3
89	4	5	22	159	1.54	293.7
89	4	5	23	351	2.06	294.3
89	4	5	24	134	1.54	294.3
				AVERAGE =	3.001	

5.0 GOOD ENGINEERING PRACTICE STACK HEIGHT ANALYSIS

The criteria for good engineering practice stack height in Rule 62-210, FAC, states that the height of a stack should not exceed the greater of 65 meters (213) feet or the height of nearby structures plus the lesser of 1.5 times the height or cross-wind width of the nearby structure. This stack height policy is designed to prevent achieving ambient air quality goals solely through the use of excessive stack heights and air dispersion.

Based on this policy, the limiting height for sources addressed in this application is 213 feet. The Piney Point Phosphates sulfuric acid plant stack is less than 213 feet in height above-grade. This satisfies the good engineering practice (GEP) stack height criteria.

5.0 CONCLUSION

It can be concluded from the information in this updated report that the proposed project, as described in this report, will not cause or significantly contribute to any exceedance of the ambient air quality standards, allowable PSD increments, or any other provision of Chapter 62, FAC.

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KA 527-95-01

June 6, 1995

Mr. A. A. Linero
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Piney Point Phosphates, Inc.
Sulfuric Acid Plant
AC 41-173305 and PSD-FL-144

Dear Mr. Linero:

This is in response to your request for additional information dated May 24, 1995, on the above referenced project. Only a gist of the comments from the National Park Service (NPS) is presented below.

1.1. NPS does not agree that the proposed emission levels represent BACT. Test information in the application indicates that emission rates lower than the NSPS are achievable. FDEP should set BACT for this facility at actual achievable emission rates as demonstrated during compliance tests or over a reasonable amount of operating time.

RESPONSE:

This particular issue has been discussed in great detail with the NPS, EPA, and FDEP staff over the last few years. The EPA has determined in the most recent review of the NSPS for sulfuric acid plants that a more stringent standard is not justified. There is a wide consensus on the part of the regulatory agencies and the industry on this issue. The reason for the consensus is that neither the process design (sulfur dioxide emission control) nor add on control equipment (sulfuric acid mist emission control) have changed significantly in the recent past.

It is generally recognized that the sulfur dioxide emissions can be expected to be low just after plant turnaround (a maintenance cycle which is typically every 18 months), and much higher just prior to a turnaround. The gradual deterioration of the catalyst contributes to higher emissions. The high cost associated with turnarounds (catalyst cost/labor cost/cost due to loss of production) makes it impractical to conduct frequent plant shut downs to replace the catalyst. This aspect of sulfuric acid production was noted by EPA in the most recent review of the NSPS.

It should be noted that setting emission limits based on performance testing is not appropriate because that approach fails to address the variability in the emission rates over time. Also, a statistical determination of the emission limit based on a series of performance tests over time, to provide a 95th percentile confidence level, would likely yield an emission rate in excess of the NSPS.

Imposing progressively lower emission limits on facilities subject to BACT may be valid for industries where emissions are controlled by add-on equipment or manufacturing processes which are subject to rapid or evolutionary changes. However, that rationale is not valid for the sulfuric acid manufacturing process. In discussions with suppliers of sulfuric acid plant equipment (Monsanto) and regulatory agencies (FDEP and EPA), the BACT for a double absorption sulfuric acid plant is 4 pounds of sulfur dioxide per ton acid and, 0.15 pound acid mist per ton of acid.

Based on the above discussion, it is appropriate for FDEP to set BACT limits at the emission levels proposed; an evaluation supported by both the EPA and the NPS in the recent past.

1.2. While we agree that Piney Point Phosphates would not significantly contribute to Class I increment exceedances, we reiterate our concern regarding the status of the Class I SO2 increment consumption at Chassahowitzka WA and urge FDEP to conduct an analysis as soon as possible to determine the cause of these exceedances.

RESPONSE:

It is our understanding from discussions with the NPS staff that this comment is directed to FDEP regarding on going efforts by the Department to generally refine the ambient air impacts protocol and emission inventories. The proposed project is expected to be approved upon FDEP's verification of the air impacts resulting from the proposed modification.

1.3. The VISCREEN analysis was conducted by the applicant using a background visual range (BVR) of 25 km. The Fish & Wildlife Service (FWS) repeated the analysis using the correct BVR of 65 km. The analysis indicated that there would be no coherent plume impact at the Class I area from the proposed project. The regional haze analysis, conducted using the appropriate BVR, indicated that the proposed project would result in a 0.8 deciview (dv) change at the wilderness area. A dv change of less than 1.0 is generally imperceptible, and therefore the source will not contribute significantly to regional haze at Chassahowitzka WA.

RESPONSE:

We concur with the FWS comment regarding the visibility impacts analysis.

1.4. A copy of the air quality related values (AQRV) analysis is required.

RESPONSE:

The requested analysis of the impact of the proposed project on the Class I Area air quality related values (AQRV), is presented in Attachment 1.

2. The annual area of significant impact modeling should be based on the difference between the proposed emissions and the actual annual hourly emissions. Please redo the annual area of significant impact modeling using the correct inputs. OK

RESPONSE:

The sulfur dioxide air dispersion modeling for the significant impact analysis (SIA) has been updated for the annual period, as requested by FDEP. The emission rates representing the actual emissions for the existing sulfuric acid plants and the proposed emissions from the subject project were used in the modeling, in accordance with Table 9-1 in the Guidelines on Air Quality Models (Revised), EPA-450/2-78-027R, to determine the net ambient air impacts from the proposed project. As prescribed by the modeling guidelines, an operating factor representing the most recent two years of operation, was used in the analysis. The modeling inputs for the annual period and the results of the SIA modeling are summarized in Attachment 2. The results of the revised SIA modeling analysis indicate a significant impact for the annual period within the Class II area, and a less than significant impact at the Class I area. The area of significant impact for the annual period is less than the area evaluated previously for the 3-hour and 24-hour averaging periods. Further analysis indicates that the proposed project will be in compliance with the ambient air standards and allowable Class II area increment for the annual period (see Attachment 3). Consequently, the results do not change the ultimate outcome of the previously submitted ambient air quality standards analysis. The revised modeling information is provided on disk (enclosed).

If you have any further questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:par
Enc.

c: Ivan Nance, PPP
C. Reynolds
C. Holladay
G. Kissel, SW Dist
Manatee Co.
J. Harper, EPA
J. Bunyak, NPS

ATTACHMENT 1

EVALUATION OF THE IMPACT ON THE CLASS I AREA AIR QUALITY RELATED VALUES FOR OF THE PROPOSED PROJECT AT PINEY POINT PHOSPHATES, INC.

1.0 IMPACT ON CLASS I AREA AIR QUALITY RELATED VALUES

The Chassahowitzka National Wildlife Refuge (Class I Area) is located more than 100 kilometers north of the Piney Point Phosphates plant. The following analysis addresses the impact of the air emissions from the proposed project on the Class I area air quality related values.

1.1 Impact on Vegetation

The response of vegetation to air pollutants is influenced by the concentration of the pollutant, the duration of the exposure and the frequency of the exposure. The pattern of exposure expected from a single facility is that of a few episodes of relatively high concentrations interdispersed with long periods of no exposure or extremely low concentrations. This is the pattern of exposure that would be expected from sulfur dioxide and acid mist emissions from the proposed project at Chassahowitzka.

Vegetation responds to a dose of an air pollutant with a dose being defined as the product of the concentration of the pollutant and the duration of the exposure. The impact of the sulfur dioxide emissions on Chassahowitzka regional vegetation was assessed by comparing pollutant doses that have been projected with air quality modeling to threshold doses reported in the literature.

Sulfur dioxide damage to vegetation can be grouped into two general categories: acute and chronic. Acute damage is caused by short-term exposure to relatively high concentrations of sulfur dioxide. This damage is usually characterized by a yellowing of leaf tips with a sharp, well defined separation between the damaged and healthy areas of a leaf. In pine trees, injury usually first occurs at the base of the youngest needles (the newest tissue on the plant).

Damaged plants typically show decreased growth and yield. These effects vary widely between species but studies have shown a rough correlation between the loss and yield and the exposure dose. These studies showed approximately a 10 percent yield loss for each 10-fold increase in sulfur dioxide dose beyond 260 micrograms per cubic meter-hour.

Susceptibility to acute damage varies widely with plant species and also with the time of exposure. For example, alfalfa can tolerate 3250 micrograms per cubic meter for one hour (3250 micrograms per cubic meter-hour dose), but only 1850 micrograms per cubic meter for two hours (3700 micrograms per cubic meter-hour dose). Table 1-1 shows the sulfur dioxide concentration/time thresholds for several plant species common to Florida.

The vegetation in the Chassahowitzka area is characterized by flatwoods, brackish-water, marine and halothytic terrestrial species. Predominant tree species are slash pine, laurel oak, sweet gum and palm. Other plants in the area include needlegrass rush, seashore saltgrass, marsh hay and red mangrove.

A study of the tolerance of native Florida species to sulfur dioxide (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak and mangrove exposed to 1300 micrograms per cubic meter of sulfur dioxide for 8-hours were not visibly damaged. This is consistent with the results reported in Table 1-1. Another study (McLaughlin and Lee, 1974) demonstrated that approximately 20 percent of a broad range of plants ranging from sensitive to tolerant were visibly injured when exposed to a sulfur dioxide concentration of 920 micrograms per cubic meter for a 3-hour period.

Acute injury results from a plants inability to quickly convert absorbed sulfur dioxide into the sulfate ion; an essential nutrient to plants. Chronic injury, on the other hand, results from a build-up of sulfate in tissue to the point where it becomes toxic. This sulfate build-up occurs over a relatively long period of time. Symptoms include a reduction in chlorophyll production resulting in decreased photosynthesis and yellow or reddish areas on leaves in a mottled pattern. In pines, sulfate injury is typically shown first at tips of older needles (the oldest tissue in the needle).

Chronic injury can result from sulfur dioxide exposures that are much lower than is required for acute injury. Unfortunately, there is a lack of quantitative experimental data for long term effects of sulfur dioxide exposure. The lowest average concentration for which chronic injury has been shown is 80 micrograms per cubic meter. The Environmental Protection Agency has therefore established an ambient air quality standard of 80 micrograms per cubic meter, annual average. The Florida Department of Environmental Protection adopted a more conservative standard of 60 micrograms per cubic meter, annual average. The sulfur dioxide impacts from the proposed project are expected to be below the ambient air quality standards.

The maximum expected concentrations of acid mist in the Chassahowitzka area resulting from the increased emissions from Piney Point Phosphates will be less than four percent of the expected sulfur dioxide impacts. Furthermore, it would be expected that by the time acid mist droplets have traveled over 100 kilometers from the plant to the Chassahowitzka area, the droplets may react with particles in the atmosphere to produce a sulfate salt.

Salt deposition concentrations in coastal areas are in the range of 25-300 pounds per acre per year and may be as high as 4000 pounds per acre per year on exposed shorelines. Sulfates can account for 5 - 6 percent of the total salt; resulting in a deposition rate in the range of 1-200 pounds per acre per year.

One study (Mulchi Armbruster, 1975) demonstrated leaf damage in reduced yields in corn and soybeans with a salt deposition of 169 - 339 pounds per acre per year. Another study (Curtis, 1975) reported that broad leaf plants absorbed greater amounts of salt than do pines, probably due to leaf shape. It has been found that deciduous trees begin to exhibit adverse effects to salt exposure concentrations in the range of 100 micrograms per cubic meter (DeVine, 1975). The same study reported no observed injury to plants with long-term exposures to salt spray of 40 micrograms per cubic meter.

The sulfate concentrations resulting from acid mist emissions from Piney Point Phosphates are well below concentrations which have been reported to produce vegetation damage.

1.2 Impact on Soils

The major soil classification in the Chassahowitzka area is Weeki Wachee-Durbin muck. This is an euic, hyderthermic typic sufihemist that is characterized by high levels of sulfur and organic matter. This soil is flooded daily with the advent of high tide and the pH ranges between 6.1 and 7.8. The upper level of this soil may contain as much as four percent sulfur (USDA, 1991).

Based upon the expected sulfur dioxide and sulfate concentrations in the Chassahowitzka area resulting from the increased emissions from the Piney Point Phosphates plant, it is not expected that there will be any adverse impact on the native soils. A recent study (in 1994), coordinated by the National Park Service, supports this position.

1.3 Impacts on Wildlife

As the predicted sulfur dioxide levels are below those known to affect vegetation, the proposed project is not expected to have any impact on the wildlife in the Chassahowitzka area.

1.4 Visibility Impairment Analysis

Visibility impairment analysis was performed to determine potential impact of the proposed project in the Chassahowitzka area. The VISCREEN - Level 1 modeling results, previously submitted, indicate that no adverse visibility impacts are expected as a result of the proposed project. An additional analysis was conducted to determine the impact of the project on regional haze. The results, submitted previously, indicated that the impact of the proposed project on the regional haze would be negligible.

TABLE 1-1

SENSITIVITY OF VEGETATION TO SULFUR DIOXIDE

CONCENTRATION - TIME EXPOSURES TO
SULFUR DIOXIDE RESULTING IN DAMAGE TO
SEVERAL SPECIES COMMON TO FLORIDA

Sensitive Plants

Poplar	Radish	Cabbage
Lombardy Poplar	Cucumber	Broccoli
Black Willow	Squash	Spinach
Elm	Bean	Wheat
American Elm	Pea	Begonia
Southern pines	Soybean	Zinnia
Red Oak	Cotton	Rubber plant
Black Oak	Eggplant	Bluegrass
Sumac	Celery	Ryegrass

Intermediate Plants

Basswood	Yellow Poplar	Virginia creeper
Red Oxier Dogwood	Sweetgum	Rose
Maples	Locust	Hibiscus
Red Maple	Eastern Cottonwood	Gladiolus
Elm	Saltgrass	Honeysuckle
Pine	Cucumber	Wisteria
White Oak	Tobacco	Chrysanthemum
Pin Oak	Potato	

Tolerant Plants

Juniper	Pine	Gardenia
Ginkgo	Sumac	Citrus
Dogwood	Cantaloupe	Celery
Oak	Corn	
Live Oak	Lily	

(Continued)

TABLE 1-1 (CONTINUED)

Exposure Time, Hours	Concentration Needed to Produce Injury ($\mu g/m^3$)		
	Sensitive	Intermediate	Tolerant
0.5	2,620 - 10,480	9,170 - 31,440	>26,200
1.0	1,310 - 7,860	6,550 - 26,200	>20,960
2.0	655 - 5,240	3,930 - 19,650	>15,720
4.0	262 - 2,620	1,310 - 13,100	>10,480
8.0	131 - 1,310	524 - 6,550	> 5,240

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ATTACHMENT 2

SUMMARY OF SULFUR DIOXIDE SIGNIFICANT IMPACT ANALYSIS

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

METEOROLOGICAL DATA DATA	ANNUAL SULFUR DIOXIDE IMPACT ($\mu g/m^3$)(1) CLASS I AREA	CLASS II AREA
1987	0.0098	1.11
1988	0.0122	0.71
1989	0.0177	1.04
1990	0.0083	1.07
1991	0.0085	0.91
Significant Impact (Rule 62-212, FAC)	0.025	1.0

NOTE:

(1) The impact represents the highest-high impact.

(2) The impacts are based on an emission rate of -35.77 g/s representing actual emissions and +56.7 g/s representing proposed emissions.

KOOGLER & ASSOCIATES

ATTACHMENT 3

SUMMARY OF SULFUR DIOXIDE
AAQS AND PSD CLASS II INCREMENT ANALYSIS

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

METEOROLOGICAL DATA DATA	ANNUAL SULFUR DIOXIDE IMPACT ($\mu g/m^3$)(1) CLASS II INCREMENT	AAQS
1987	0 (2)	23.98
1988	0 (2)	33.85
1989	0 (2)	34.16
1990	0 (2)	22.69
1991	0 (2)	24.72
Ambient Air Standard (Rule 62-275, FAC)	20	60

NOTE:

(1) The impact represents the highest-high impact.

(2) Negative values are presented as "zero" in the ISC2 modeling output.

KOOGLER & ASSOCIATES

THIS DISK CONTAINS ISCST2 MODELING FOR THE PINEY POINT PHOSPHATES PLANT IN MANATEE COUNTY, FLORIDA. THE FOLLOWING FILES ARE IN SELF EXTRACTING ARCHIVED FORMAT:

ASI-OUT EXE	91,446	06-01-95	ISCST2 OUTPUT FILES FOR PSD ASI ANALYSIS
C2&FQINV EXE	159,613	06-01-95	CLASS 2 AND FAAQS INCREMENT ANALYSIS

TO UNARCHIVE THESE FILES COPY THEM TO A HARD DISK DRIVE AND TYPE THE FILE NAME. FOR EXAMPLE TO UNARCHIVE THE ISCLT2 OUTPUT FILES FOR CLASS 1 AND CLASS 2 ASI ANALYSIS, TYPE "ASI-OUT" AND PRESS ENTER. THE FILES WILL AUTOMATICALLY UNARCHIVE TO THE HARD DISK DRIVE. THE ARCHIVED FILES CONTAIN THE MODELING DATA DESCRIBED AS FOLLOWS:

FILES FOR THE PSD CLASS 1, AND CLASS 2 AREA OF SIGNIFICANT IMPACT (ASI) ANALYSIS FOR THE ANNUAL AVERAGING PERIOD IN ASCII FORMAT ARE CONTAINED IN:
ASI-OUT EXE 91,446 06-01-95 CONTAINS;

ANC1ASI7 OUT	27,650	05-31-95	ANNUAL PSD CLASS 1 ASI FOR 1987
ANC1ASI8 OUT	27,650	05-31-95	ANNUAL PSD CLASS 1 ASI FOR 1988
ANC1ASI9 OUT	27,650	05-31-95	ANNUAL PSD CLASS 1 ASI FOR 1989
ANC1ASI0 OUT	27,650	05-31-95	ANNUAL PSD CLASS 1 ASI FOR 1990
ANC1ASI1 OUT	27,650	05-31-95	ANNUAL PSD CLASS 1 ASI FOR 1991
ANC2ASI7 OUT	67,195	05-31-95	ANNUAL PSD CLASS 2 ASI FOR 1987
ANC2ASI8 OUT	67,195	05-31-95	ANNUAL PSD CLASS 2 ASI FOR 1988
ANC2ASI9 OUT	67,195	05-31-95	ANNUAL PSD CLASS 2 ASI FOR 1989
ANC2ASI0 OUT	67,195	05-31-95	ANNUAL PSD CLASS 2 ASI FOR 1990
ANC2ASI1 OUT	67,195	05-31-95	ANNUAL PSD CLASS 2 ASI FOR 1991

FILES FOR THE FAAQS AND PSD CLASS 2 INCREMENT ANALYSIS FOR THE ANNUAL AVERAGING PERIOD IN ASCII FORMAT ARE CONTAINED IN:
C2&FQINV EXE 159,613 06-01-95 CONTAINS;

C2-AN87 OUT	92,550	05-31-95	ANNUAL CLASS 2 INCREMENT ANALYSIS FOR 1987
C2-AN88 OUT	92,468	05-31-95	ANNUAL CLASS 2 INCREMENT ANALYSIS FOR 1988
C2-AN89 OUT	92,468	05-31-95	ANNUAL CLASS 2 INCREMENT ANALYSIS FOR 1989
C2-AN90 OUT	92,468	05-31-95	ANNUAL CLASS 2 INCREMENT ANALYSIS FOR 1990
C2-AN91 OUT	92,468	05-31-95	ANNUAL CLASS 2 INCREMENT ANALYSIS FOR 1991
FQ-ANN87 OUT	88,207	05-31-95	ANNUAL FAAQS STANDARD ANALYSIS FOR 1987
FQ-ANN88 OUT	88,207	05-31-95	ANNUAL FAAQS STANDARD ANALYSIS FOR 1988
FQ-ANN89 OUT	88,207	05-31-95	ANNUAL FAAQS STANDARD ANALYSIS FOR 1989
FQ-ANN90 OUT	88,207	06-01-95	ANNUAL FAAQS STANDARD ANALYSIS FOR 1990
FQ-ANN91 OUT	88,207	06-01-95	ANNUAL FAAQS STANDARD ANALYSIS FOR 1991

IF I MAY PROVIDE FURTHER CLARIFICATION OR IF ADDITIONAL FILES ARE REQUIRED PLEASE CALL ME.

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