Memorandum

Florida Department of
Environmental Protection

TO: C.H. Fancy

FROM: A.A. Linero *AA Linero*

DATE: September 7, 1995

SUBJ: Piney Point Phosphates, Inc. - TEPD/Proposed Permit

Attached for your review and signature is the preliminary package for the subject company to construct a 2,700 tons/day sulfuric acid plant. This is the same as the previous one (Farmland) except for capacity and emission tonnages. The BACT and the permit conditions are essentially the same.

Attachments

AAL/jr

Clair - Double absorption for SO_2/SO_3 + mist eliminator. New 2700 TPD plant replaces a 2000 TPD plant. Al

Ken [illegible] to Ravan Macaleny

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

September 8, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

Dear Mr. Nance:

Attached is one copy of the Technical Evaluation and Preliminary Determination, Best Available Control Technology (BACT) determination, Intent to Issue, and proposed permit for Piney Point Phosphates, Inc., to construct a 2,700 tons/day sulfuric acid plant at the Piney Point facility, Manatee County, Florida. Also included is the Notice of Intent to Issue for you to publish as indicated.

Please submit any written comments to be considered concerning the Department's proposed action to Mr. A. A. Linero, P.E., Administrator, New Source Review Section, at the above address. If you have any questions, please call Mr. John Reynolds at 904-488-1344.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/jr/t

Attachments

CC: W. Thomas, SWD
G. Johnson, Manatee Co.
J. Harper, EPA
J. Bunyak, NPS
J. Koogler, K&A

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF INTENT TO ISSUE PERMIT

PSD-FL-144

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit to Piney Point Phosphates, Inc., 13300 U.S. Highway 41 North, Palmetto, Florida 34221. This company operates a phosphate fertilizer manufacturing facility at that address. The permit will allow the construction of a 2,700 tons/day sulfuric acid plant to replace the existing 2,000 tons/day plant which will be permanently shut down. A determination of Best Available Control Technology (BACT) was required since the proposed project is subject to Prevention of Significant Deterioration (PSD) regulations. BACT consists of the double absorption process for sulfur dioxide control plus high efficiency mist eliminators for controlling acid mist. Modeling results indicate that the proposed project is not expected to cause or significantly contribute to any violation of the ambient air quality standards. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and, (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

The application/request is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
8407 Laurel Fair Circle
Tampa, Florida 33619

Any person may send written comments on the proposed action to Administrator, New Source Review Section, Bureau of Air Regulation, at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CERTIFIED MAIL

In the Matter of an
Application for Permit by:

DEP File No. PSD-FL-144
AC 41-173305
Manatee County

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

INTENT TO ISSUE

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy attached) for the applicant's facility as detailed in the application specified above for the reasons stated in the Technical Evaluation and Preliminary Determination.

The applicant, Piney Point Phosphates, Inc., applied on April 26, 1995, to the Department for a permit to construct a 2,700 tons/day sulfuric acid plant at their facility located in Manatee County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.). The project is not exempt from permitting procedures. The Department has determined that a permit is required for the proposed project.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under

Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that all copies of this INTENT TO ISSUE PERMIT were mailed by certified mail before the close of business on 8-12-95 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk 8-12-95
Date

Copies furnished to:
- W. Thomas, SWD
- G. Johnson, Manatee Co.
- J. Harper, EPA
- J. Bunyak, NPS
- J. Koogler, K&A

Technical Evaluation
and
Preliminary Determination

Piney Point Phosphates, Inc.
Palmetto, Manatee County, Florida

SULFURIC ACID PLANT

Department File No.: AC 41-173305
PSD-FL-144

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

September 8, 1995

I. General Information

A. Applicant

Piney Point Phosphates, Inc.
13300 U.S. Highway 41 North
Palmetto, Florida 34221

B. Request

On April 26, 1995, the applicant submitted an application for a permit to construct a 2,700 tons/day sulfuric acid plant (SAP) to replace the existing 2,000 tons/day SAP. The application was considered complete on June 8, 1995, when the Department received additional information requested.

C. Classification

The applicant's facility (SIC 2819) is located off U.S. Highway 41 in Piney Point, Manatee County, Florida. The UTM coordinates for this facility are Zone 17, 348.5 km E and 3057.3 km N.

II. Project Description/Emissions

The applicant proposes to construct a 2,700 tons/day sulfuric acid plant (SAP) to replace an outdated SAP that was originally constructed as a single absorption plant in the 1960's and later converted to double absorption with a capacity of 2,000 tons/day. The old SAP will be permanently shut down when the new plant becomes operational. Emissions of sulfur dioxide (SO_2), sulfuric acid mist (SAM) and nitrogen oxides (NO_x) are shown below in tons per year:

Pollutant	Old SAP Actuals (1990/1991 avg.)	New SAP Allowables	Net Increase	PSD Level
SO_2	820.5	1,971.0	1,150.5	40
SAM	17.4	73.9	56.5	7
NO_x	19.7	39.4	19.7	40

As stated in the BACT determination, emission limits for the new plant are based on the applicable federal new source performance standards. An insignificant increase in NOx is presumed based on a previously-assumed NO_x emission factor of 0.12 lb/ton.

The amount by which the allowables exceed actual emissions might suggest the need for lower allowables in the BACT determination. However, in cases such as this where the process itself is the "control device", a lower allowable limit does not of itself force lower emissions. In a typical sulfuric acid plant, SO_2 emissions are lowest just after a catalyst change and gradually rise as the catalyst loses reactivity. Continuous emission monitoring data typically show that SO_2 emissions start out very low after a catalyst change and then may rise to near the new source performance standard (4.0 lb/ton) at the end of the catalyst's life. The effect of lowering the allowable limit would be to require more frequent catalyst changes at greatly increased costs which would likely be prohibitive.

III. Rule Applicability

The construction permit application is subject to review under the provisions of Chapter 403, Florida Statutes, and Chapters 62-209 through 62-297, Florida Administrative Code (F.A.C.). The facility is located in an area designated as attainment for each of the regulated air pollutants. The proposed project is subject to the Prevention of Significant Deterioration Regulations, Rule 62-212.400, F.A.C., because the emissions increases of sulfur dioxide and acid mist from the sulfuric acid plants exceed the significant emission rates listed in Table 212.400-2 of Rule 62-212, F.A.C. Preconstruction review must include a determination of Best Available Control Technology (BACT) pursuant to Rule 62-212.410, F.A.C. The applicant is also subject to the other preconstruction review requirements listed in Rule 62-212.400, F.A.C. In addition, the proposed modifications are subject to 40 CFR 60, Subpart H, Standards of Performance for Sulfuric Acid Plants.

IV. Air Quality Analysis

The production rate increases due to the proposed project will result in emissions increases which are projected to be greater than the PSD significant rates for SO_2 and SAM. The air quality impact analyses required by the PSD regulations for these pollutants include:

- An analysis of existing air quality.
- A PSD increment analysis for SO_2.
- An Ambient Air Quality Standards (AAQS) analysis.
- An analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts.
- A Good Engineering Practice (GEP) stack height determination

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses are based on air quality dispersion modeling completed in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the projected production rate increase, as described and subject to the conditions of approval proposed herein, will not cause or significantly contribute to a violation of any PSD increment or AAQS. However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators."

Preconstruction ambient air quality monitoring may be required for pollutants subject to PSD review. However, an exemption to the monitoring requirement may be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimus concentration. If the projected emissions increase is greater than the de minimus concentration, previously existing representative monitoring data may be used to satisfy the preconstruction monitoring requirement instead of preconstruction ambient air quality monitoring.

However, even if preconstruction ambient monitoring is exempted, determination of background concentrations may still be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from previously existing representative monitoring data. These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling. The predicted maximum concentration increase for SO_2 is given in Table 1.

There are no monitoring de minimus concentrations for SAM. As shown in Table 1, the predicted impact for SO_2 is less than the corresponding de minimus concentration; therefore, no preconstruction monitoring is required for SO_2.

However, there are previously existing representative SO2 monitoring data in the vicinity of the proposed project. Data collected during 1994 from the SO2 monitor in Parrish were used by the Department to establish a background concentration of 14 ug/m3 for use in the SO_2 AAQS analysis for all averaging times.

The EPA-approved Industrial Source Complex Short-Term (ISCST2) dispersion model was used to evaluate the pollutant emissions from the proposed project and other existing major facilities. The model determines ground-level concentrations of gases or small particles emitted into the atmosphere by point, area and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST2 model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options in each modeling scenario. Direction-specific downwash parameters were used for all sources for which downwash was considered.

Initially, for the significant impact analysis, concentrations were predicted at polar receptors placed along 36 standard radial directions (10 degrees apart) surrounding the sulfuric acid plant at downwind distances extending from 1.25 to 10 km. Discrete receptors were placed along the facility property boundary at 100 m intervals. The results of this analysis showed that the increases in ambient ground-level SO_2 concentrations were significant out to 4.9 km, thus requiring the applicant to do a full impact analysis for comparison with the AAQS and the PSD Class II SO_2 increments.

The receptor grids for both the AAQS and PSD Class II analyses contained polar and discrete receptors. Receptors were placed along 36 standard radial directions surrounding the sulfuric acid plant at the following downwind distances: 3.0, 4.0, 5.0, 7.5, 10.0, 13.0, 15.0, 20.0 and 25.0 km. In addition, a total of 240 discrete receptors were placed along the plant boundary.

Impacts for the PSD Class I Chassahowitzka National Wilderness Area (CNWA) were predicted at 13 standard discrete receptors approved by the Department. This Class I area is located 110 km to the northwest of Piney Point.

Five years of sequential hourly surface and mixing depth data from the Tampa, Florida National Weather Service collected during 1987 through 1991 were used in this model. Since five years of data were used, the highest-second high, short-term predicted concentrations are compared with the appropriate ambient air quality standards or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards.

For the pollutants subject to an AAQS review, the total impact on ambient air is obtained by adding a "background concentration" to the maximum modeled concentration. This "background concentration" takes into account all sources of a particular pollutant that are not explicitly modeled. The results of the AAQS analysis for SO_2 are summarized in Table 3. As shown in this table, emissions from the proposed project are not expected to cause or contribute to a violation of an AAQS.

The PSD increment represents the amount that new sources in an area may increase predicted ambient ground level concentrations of a pollutant. Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. The results, summarized in Table 4, show that the maximum SO_2 increment consumption will not exceed the allowable Class II PSD increments.

The nearest PSD Class I area is the CNWA located 110 km northwest of the facility. Maximum SO_2 concentrations predicted for the proposed modification only at receptors in this area show impacts greater than the National Park Service (NPS) recommended significance levels for the 3-hour and 24-hour averaging times, as shown in Table 5. Therefore, for these averaging times, a more extensive PSD Class I modeling analysis was performed using all increment-consuming sources in the area of the CWNA. The results of this analysis are shown in Table 6. The maximum predicted 3-hour and 24-hour concentrations due to all increment-consuming sources in the vicinity of this Class I area exceed the PSD Class I increments on numerous occasions. In order to assess the proposed modification's contribution to any predicted Class I exceedances, an analysis was performed to determine all time periods and receptors at which an exceedance was predicted to occur. For each case, the proposed modification's impact was determined and compared to the NPS recommended significance levels. The impact of the proposed modification was always less than these significance levels at any receptor and for any time period when there were predicted exceedances or violations of increments. Therefore, the proposed modification will not contribute significantly to any predicted exceedance or violation of Class I increments.

SAM is a non-criteria pollutant, which means that neither a national AAQS nor a PSD increment has been defined for this pollutant; therefore, no air quality dispersion modeling was required for SAM.

The applicant did an air quality related values (AQRV) analysis for both the PSD Class II area near the facility and for the Chassahowitzka Class I area located 110 km to the northwest of the project. The increased emissions from the project are not expected to impact the AQRVs of either area. The AQRV analysis includes impacts on vegetation, soils, wildlife and visibility. In addition, the proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

V. Conclusion

Based on the information provided by Piney Point Phosphates, Inc., the Department has reasonable assurance that the proposed project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapters 62-209 through 62-297 of the Florida Administrative Code.

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modification was always less than these significance levels at any receptor and for any time period when there were predicted exceedances or violations of increments. Therefore, the proposed modification will not contribute significantly to any predicted exceedance or violation of Class I increments.

SAM is a non-criteria pollutant, which means that neither a national AAQS nor a PSD increment has been defined for this pollutant; therefore, no air quality dispersion modeling was required for SAM.

The applicant did an air quality related values (AQRV) analysis for both the PSD Class II area near the facility and for the Chassahowitzka Class I area located 110 km to the northwest of the project. The increased emissions from the project are not expected to impact the AQRVs of either area. The AQRV analysis includes impacts on vegetation, soils, wildlife and visibility. In addition, the proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

V. Conclusion

Based on the information provided by Piney Point Phosphates, Inc., the Department has reasonable assurance that the proposed project, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapters 62-209 through 62-297 of the Florida Administrative Code.

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Table 1. Maximum Project Air Quality Impacts for Comparison to the De Minimus Ambient Levels.

Pollutant	Avg. Time	Max Predicted Impact[1] (ug/m^3)	De Minimus Level (ug/m^3)
SO_2	24-hour	11	13

1. Highest, second-highest value over a five year period for 24-hour averaging time.

Table 2. Maximum Project Air Quality Impacts for Comparison to the PSD Class II Significant Impact Levels.

Pollutant	Avg. Time	Max Predicted Impact[1] (ug/m^3)	Significant Impact Level (ug/m^3)
SO_2	Annual	1.1	1
	24-hour	16.5	5
	3-hour	89.2	25

1. Highest, -high value over a five year period for all averaging times.

Table 3. Ambient Air Quality Impacts

Pollutant	Averaging Time	Major Sources Impact[1] (ug/m^3)	Background Conc. (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
SO_2	Annual	20	14	34	60
	24-hour	186	14	200	260
	3-hour	587	14	601	1300

1. Highest, second-highest value over a five year period for 3-hour and 24-hour averaging times.

Table 4. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m³)	Allowable Increment (ug/m³)
SO_2	Annual	0	20
	24-hour	9	91
	3-hour	51	512

1. Highest, second-highest value over a five year period for 3-hour and 24-hour averaging times.

Table 5. Maximum Project Air Quality Impacts for Comparison to the PSD Class I Significant Impact Levels

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m³)	National Park Service (NPS) Significant Impact Level (ug/m³)
SO_2	Annual	0.018	0.025
	24-hour	0.23	0.07
	3-hour	1.38	0.48

1. Highest, -high value over a five year period for all averaging times.

Table 6. PSD Class I Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m³)	Allowable Increment (ug/m³)
SO_2	Annual	0	2
	24-hour	7.7[2]	5
	3-hour	39.7[2]	25

1. Highest, second-highest value over a five year period for 3-hour and 24-hour averaging times.
2. The project has less than significant impacts for all predicted exceedances of SO_2 increments.

Best Available Control Technology (BACT) Determination
Piney Point Phosphates, Inc.
Manatee County
Permit Number AC 41-173305
PSD-FL-144

The applicant proposes to replace its existing 2,000 ton/day sulfuric acid plant (SAP) with a new 2,700 ton/day SAP at the applicant's phosphate fertilizer manufacturing facility on U.S. Highway 41 North in Piney Point, Manatee County, Florida. The proposed project will result in a significant increase in emissions of sulfur dioxide (SO_2) and sulfuric acid mist. The project is therefore subject to Prevention of Significant Deterioration (PSD) review in accordance with Rule 62-212.400, Florida Administrative Code (F.A.C.). The BACT determination is part of the PSD review requirements in accordance with Rule 62-212.410, F.A.C.

Date Application Received: April 26, 1995

Date Application Complete: June 8, 1995

BACT Determination Proposed by Applicant:

Control Technology: Double Absorption/Fiber Mist Eliminators

Emission Limits:
SO_2: 4 lbs/ton of 100% H_2SO_4 produced
Acid Mist: 0.15 lb/ton of 100% H_2SO_4 produced
Visible Emissions: 10% opacity

BACT Determination Procedure:

In accordance with Chapter 62-212, F.A.C., this determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

BACT Determined by the Department:

Same as proposed by applicant

BACT Determination Rationale

The Department's BACT determination is the same as that proposed by the applicant. This is consistent with determinations completed by other states and the Standards of Performance for Sulfuric Acid Plants, 40 CFR 60 Subpart H, (double absorption process). The process itself is the control technology for SO_2. For this reason, more stringent limits have not been required. The emission limits reflect a conversion efficiency of around 99.4% of SO_2 to H_2SO_4. High efficiency mist eliminators are considered BACT for sulfuric acid mist. BACT/LAER Clearinghouse information indicates that double absorption technology and the use of high efficiency mist eliminators are representative of BACT using the top-down approach.

Environmental Impact Analysis

The impact analysis for the BACT determination is based on full-time operation (8,760 hours/year). The increment impact analysis and the ambient air quality analysis resulted in the following for SO_2 emissions:

Avg Time	Increment Impact (ug/m^3)	Allowable Increment (ug/m^3)	Predicted Ambient Air Quality Impact (ug/m^3)	Fla. AAQS (ug/m^3)
24-hr	9	91	200	260
3-hr	51	512	601	1300

Conclusion

The incremental impact and the ambient air quality impact from SO_2 emissions due to the proposed modification is in compliance with all air pollution regulations. It is concluded that the emission limits established herein represent BACT.

BACT Analysis Details Available From:

A. A. Linero, P.E., Administrator
New Source Review Section
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:	Approved by:
______________________	______________________
C. H. Fancy, P.E., Chief Bureau of Air Regulation	Virginia B. Wetherell, Secretary Dept. of Environmental Protection
____________________, 1995 Date	____________________, 1995 Date

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

PERMITTEE:
Piney Point Phosphates, Inc.
13300 U.S. Highway 41 North
Palmetto, Florida 34221

Permit Number: AC 41-173305
PSD-FL-144
Expiration Date: August 31, 1997
County: Manatee
UTM Coordinates: 17-348.5 km E
17-3057.3 km N
Project: New Sulfuric Acid Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes; Chapters 62-210, 212, 272, 296 and 297, Florida Administrative Code (F.A.C.); and, Chapter 62-4, F.A.C. The above named permittee is hereby authorized to perform the work or operate the emission unit/source shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department of Environmental Protection (Department) and specifically described as follows:

For the construction of a 2,700 tons/day sulfuric acid plant. The plant will be located at the permittee's facility in Palmetto, Manatee County, Florida.

The construction shall be in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application received on April 26, 1995
2. Department's letter dated May 24, 1995
3. USDOI's letter dated May 30, 1995
4. Koogler & Assoc. letter dated June 6, 1995
5. Memorandum of Understanding Regarding Best Operational Start-up Practices for Sulfuric Acid Plants, 1989

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or

GENERAL CONDITIONS:

auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and,

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source

GENERAL CONDITIONS:

arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

   (x) Determination of Best Available Control Technology (BACT)
   (x) Determination of Prevention of Significant Deterioration (PSD)
   (x) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

   a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

   b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application

GENERAL CONDITIONS:

for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and,
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. Unless otherwise indicated, the subject modification shall be in accordance with the capacities and specifications stated in the application.

2. The maximum production rate for the sulfuric acid plant shall be 2,700 tons/day based on 100% sulfuric acid (H_2SO_4). [Rule 62-212.200(56), F.A.C.]

3. The sulfuric acid plant may operate on a full-time basis (8,760 hours per year). [Rule 62-212.200(56), F.A.C.]

4. Emissions of sulfur dioxide (SO_2), sulfuric acid mist (SAM) and visible emissions (VE) from the sulfuric acid plant shall not exceed the following limits [Rule 62-212.410, F.A.C.]:

Pollutant	lbs/hr	tons/year
SO_2	450	1,971
SAM	16.9	74
VE	- 10% Opacity	-

SPECIFIC CONDITIONS:

5. Before this permit expires, performance testing of emissions from the unit shall be conducted with the emission unit operating at permitted capacity. Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then emission units may be tested at less than 90% of the maximum operating rate allowed by the permit. In this case, subsequent emission unit operation is limited to 110% of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities (with prior notification provided to the Department) is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.340(1)(a), F.A.C.]

6. Performance testing shall be conducted and compliance determined using the test methods and procedures set forth in 40 CFR 60.85(a) through (c). Pursuant to Rule 62-297.340(1)(i), the Department's Southwest District office shall be notified 15 days prior to performance testing. Pursuant to Rule 62-297.570(1) and (2), written reports of the test results shall be submitted to that office within 45 days of test completion.

7. A continuous monitoring system for the measurement of sulfur dioxide emissions shall be installed, calibrated, operated and maintained as described in 40 CFR 60.84(a) through (e). [Rule 62-296.800, F.A.C.; 40 CFR 60.84]

8. Objectionable odors associated with air emissions shall be prohibited. [Rule 62-296.320(2), F.A.C.]

9. Pursuant to Rule 62-210.700(1), F.A.C., excess emissions from the sulfuric acid plants resulting from startup, shutdown, malfunction, or load change shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed three hours in any 24-hour period unless specifically authorized by the Department for a longer duration. Best operational start-up practices shall be followed as described in the attached Memorandum of Understanding signed in 1989.

10. Stack sampling facilities shall be provided by the permittee in accordance with Rule 62-297.345, F.A.C.

11. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.090, F.A.C.]

SPECIFIC CONDITIONS:

12. An application for an operation permit must be submitted to the Department's Southwest District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. The operation permit application shall include a set of conditions acceptable to the Department for startup/shutdown of the permittee's sulfuric acid plant. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit. [Rules 62-4.055 and 62-4.220, F.A.C.]

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

____
Virginia B. Wetherell, Secretary

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

MANATEE COUNTY BOARD OF COUNTY COMMISSIONERS, Petitioner, vs. PINEY POINT PHOSPHATES, INC., AND DEPARTMENT OF ENVIRONMENTAL PROTECTION, Respondents.	Case No. 95-5795

ORDER CLOSING FILE

This cause having come before the undersigned *sua sponte* on June 10, 2002. An Order to Show Cause was issued on October 9, 2001, directing Piney Point and/or Piney Point's bankruptcy trustee to show cause, within 30 days of the entry of the Order, as to why Piney Point's application for the subject permit (Department file number AC-41-173305; PSD-FL-144) should not be deemed abandoned and an order entered closing the file of this case and returning jurisdiction to the Department for final agency action. Having received no response from Piney Point and/or Piney Point's bankruptcy trustee, and the undersigned being fully advised, it is, therefore,

ORDERED that the file of the Division of Administrative Hearings in the above-captioned matter is hereby closed.

DONE AND ORDERED this 10th day of June, 2002, in Tallahassee, Leon County, Florida.

S

LAWRENCE P. STEVENSON
Administrative Law Judge
Division of Administrative Hearings
The DeSoto Building
1230 Apalachee Parkway
Tallahassee, Florida 32399-3060
(850) 488-9675 SUNCOM 278-9675
Fax Filing (850) 921-6847
www.doah.state.fl.us

Filed with the Clerk of the
Division of Administrative Hearings
this 10th day of June, 2002.

COPIES FURNISHED:

W. Douglas Beason, Esquire
Department of Environmental Protection
3900 Commonwealth Boulevard
The Douglas Building, Mail Station 35
Tallahassee, Florida 32399-3000

David S. Dee, Esquire
Landers & Parsons
310 West College Avenue
Post Office Box 271
Tallahassee, Florida 32301

Herbert R. Donica, Esquire
320 West Kennedy Boulevard, No. 520
Tampa, Florida 33606

Jeffrey Steinsnyder, Esquire
Office of the County Attorney
1112 Manatee Avenue
Post Office Box 1000
Bradenton, Florida 34206-1000

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

August 2, 1996

RECEIVED
AUG 19 1996
BUREAU OF
AIR REGULATION

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 understand that the Department is holding discussions with interested parties regarding the Best Available Control Technology (BACT) analysis for the proposed modification of Piney Point Phosphate's (PPP) sulfuric acid plant in Manatee County. 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. As we indicated in our May 30, 1995, technical review document (see attached), we are very concerned about the status of Class I sulfur dioxide (SO_2) increment consumption at Chassahowitzka WA. Therefore, we are taking this opportunity to reiterate our comments regarding the BACT analysis. As we previously stated, information exists to indicate that emission rates lower than the proposed BACT emission level are technically and consistently achievable at sulfuric acid facilities. Because numerous permit applicants have pre- dicted exceedances of the short-term SO_2 Class I increments at Chassahowitzka WA, we request that you consider a lower BACT emission limit for this facility.

Thank you for considering these comments. 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 me at (303) 969-2814 or Ellen Porter of our Air Quality Branch in Denver at (303) 969-2617.

Sincerely,

Sandra V. Silva

Sandra V. Silva
Chief, Air Quality Branch

Attachment

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

cc: J. Reynolds, BAR
P. Amundsen, A&M
J. Nance,
J. Koogler, K+A
B. Thomas, SWD

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
AIR QUALITY BRANCH
12795 W. ALAMEDA PARKWAY
P.O. BOX 25287
DENVER, COLORADO 80225-0287

Technical Review of a permit application by Piney Point Phosphate for a proposed modification to their Manatee County, FL sulfuric acid plant

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.

F.Y.I.
D. Dee

SARASOTA HERALD-TRIBUNE / SATURDAY, JUNE 8, 1996

EDITORIALS

Pleading with Piney Point

Negotiate protections openly and publicly.

Because it has to beg for performance it once could have demanded, the Manatee County Commission may ask Piney Point Phosphates to voluntarily employ stricter air pollution controls than the state Department of Environmental Protection would require of its resurrected phosphate fertilizer plant.

The county's choices are limited to negotiation or litigation because last fall, it stood by and watched the law authorizing its Environmental Action Commission — and the pollution-control ordinances it enforced — die on Oct. 1. In a timely move made on Oct. 13, Piney Point Phosphates applied to the DEP for an air-quality permit authorizing the return to production of a sulfuric acid plant that has been idle since 1992 — due to a plethora of safety and financial problems.

Since Manatee County's EAC and its air pollution rules expired, the DEP has sole authority for permitting the renovated plant to resume production.

The sulfuric acid plant is the foundation of a three-stage process that results in the production of diammonium phosphate, a fertilizer formerly produced at the Piney Point plant when it was owned by Royster Phosphates. The second- and third-stage plants and related pollution-control facilities in that production stream need only to have their existing permits renewed by June 15 to operate.

Although the firm plans to spend $31 million renovating and replacing aged and worn out plant equipment, and will subject its 400 employees to three to six months' training in occupational health and safety rules and environmental precautions, environmentalists and neighbors remain uneasy. They can't forget a series of accidents and mishaps — eight in 26 years — that its new owners can't even remember.

Those mishaps included — under Royster's management — a release of toxic emissions in 1989 which forced the evacuation of the nearby county jail stockade and 400 nearby residents. Another accident in which three plant workers died released more emissions which caused respiratory distress among several nearby residents.

Under the resulting cloud of apprehension, not even the assurances by officials of Mulberry Phosphates of Polk County that a sister plant has operated for three years without any "reportable" mishap are reassuring.

There also is a widespread public perception that the DEP's review of this permit application has been too narrowly focused. The DEP has adamantly refused to consider the plant's troubled past and put excessive faith in the combination of renovated protocols and new replacement parts to provide safe production.

DEP administrators and permitting engineers have said the agency's rules "do not require that we look at everything else in the process of issuing a permit" and acknowledged that while the agency *could* conduct comprehensive tests and performance checks to assure compliance with pollution rules, its officials "don't know of any requirement on us to do that."

Since the Manatee County Commission has chosen negotiation over litigation as a means of securing pledges of performance from Piney Point Phosphates, the goals and terms of its negotiations should be discussed openly and publicly to ensure that the concerns of its troubled constituents are heard and addressed.

The commission's failure to provide that access during closed-door negotiations of permit stipulations with Florida Power & Light Co. officials prior to their unsuccessful Orimulsion project application bred public distrust and discontent. The commission should avoid perpetuating that mood among already disaffected constituents as it negotiates with Piney Point Phosphates.

Donald L. Price, Ph.D.
324 Springdale Drive
Bradenton, FL 34210
(941)755-3135

February 16, 1996

Douglas Beason
Assistant General Counsel, State of Florida
Dept. of Environmental Protection
Twin Towers Office Bldg. MS35
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED
FEB 22 1996
BUREAU OF
AIR REGULATION

Dear Mr. Beason:

I was late arriving at the Community Center in Palmetto for the meeting on Phosphate Mining Permits for the area. The comments I intended to make relate to phosphates and the algae causing "red tide". I realize that the issue is primarily about air pollution relative to sulfuric acid but I believe that when the State is imposing regulations on businesses all aspects should be placed on the table.

The citizens living in the counties adjacent to the Gulf of Mexico have been greatly concerned by the apparent increase in the incidence of red tide along the coast and the prolonged duration of the blooms. There is no question that the increased incidence of blooms has had a negative effect on the tourist business for the West Coast of Florida. At a recent meeting on Anna Maria Island the impact on the community and business in the area and measures to control or prevent red tide in the area were discussed. No solutions were proposed.

In 1948, I had the opportunity to work with a Ph.D. at the US Department of Commerce laboratory which was located on Sarasota Bay where Marina Jack's restaurant is now located. We identified the organism that caused red tide, then classified as a dinoflagellate and considered to be a protozoa. In 1929, G.W. Martin published on finding dinoflagellates that were extremely abundant in Delaware Bay and gave the water a red coloration (red water). The organism is now classified as an algae. What we were able to demonstrate in the laboratory was that the addition of phosphates to cultures greatly increased growth and multiplication of the organisms. In the absence of phosphates there was little increase in multiplication.

The influence of phosphates on the growth and multiplication of the agent causing red tide was established in 1948. During the period of extensive mining of phosphate in western Florida there were increases in the incidence of red tide blooms. In the years when rainfall is greatest, the incidence of red tide is greatest. There appears to be a direct correlation between surface water runoff into the rivers, bays, and gulf and the occurrence of red tide blooms. Even though phosphate mining has been greatly reduced, there continues to be intrusion of phosphates into the surrounding waters. It takes a long time for the phosphates to be combined with other chemicals to make them ineffective in stimulating algal growth.

An important question to consider is, does phosphate mining increase the amount of phosphates in the runoff and the incidence and duration of red tide blooms? Since there is still phosphate in runoff water from old phosphate mining areas where mining no longer occurs, there is probably little chance of controlling phosphate runoff in active operations.

The importance of phosphates in surface water runoff is not so obvious as air pollution resulting from sulfuric acid in factory exhausts but equally important. What does the State gain from phosphate mining and what does it lose? If the incidence of red tide increases, there will be a reduction in tourist business. Will State revenue from phosphate mining offset the losses in tourism? Who will buy the phosphate extracted? If it is sold to any of the third world nations where demand is greatest, it will have to be subsidized by the Federal Government because third world countries do not have sufficient dollars. The United States already has billions of dollars in counter-part funds in India. I don't know how much might be in other countries but I imagine that it is considerable. It seems to me that the risk far outweighs the benefits.

Perhaps, the State should rethink phosphate mining in Florida since the losses are probably greater than the benefits.

Sincerely yours,

Donald L Price

Donald L. Price, Ph.D.

New Source Review Section 2-21-96

Bureau of Air Regulation

Talahassee, FL.

Attn: Al Linero

Dear Mr. Linero:

RECEIVED

FEB 23 1996

BUREAU OF
AIR REGULATION

As new Manatee County residents since April of 1995, we strongly protest Piney Point's reopening a new sulfuric acid plant in N. Manatee County.

We don't want or need the effects of air pollution this could cause - the smell of rotten eggs in the air or worse chemical odors.

Manatee County is mostly a bedroom community and property values would drop to the bottom if this plant was allowed.

From what I've read, Piney Points' Phosphates track record of controlling pollution is very poor - so why trust them now?

Please add our names to the list of protesters.

you may contact us here or in Ohio - where we reside equally six months of the year. We will return to Ohio in May, 96

We purchased our home in Florida in Country Lakes Village in April of '95.

Robert & Elaine Oppenborn
5700 Bayshore RD., # 231
Palmetto, FL 34221

OHIO

154 Seneca Dr.
Montpelier, OH 43543

Bradenton Herald

102 MANATEE AVE. WEST, P.O. BOX 921
BRADENTON, FLORIDA 34206
TELEPHONE (813) 748-0411

BEST AVAILABLE COPY

RECEIVED

FEB 16 1996

BUREAU OF
AIR REGULATION

Copy to Sharollyn Wood for pmt.

7056 St. of Fl. Dept. Environmental Protection

Feb	5 12	54 lines Public Hearing 53700671548	104	60

County, Florida; that the attached copy of the advertisement, being a Legal Advertisement in the matter of

Notice of Public Hearing

in the Court,

was published in said newspaper in the issues of

2/5, 12, '96

Affiant further says that the said publication is a newspaper published at Bradenton, in said Manatee County, Florida, and that the said newspaper has heretofore been continuously published in said Manatee County, Florida, each day and has been entered as second-class mail matter at the post office in Bradenton, in said Manatee County, Florida, for a period of 1 year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

(Signature of Affiant)

Sworn to and subscribed before me this 12 day of February 1996.

SEAL & Notary Public

Personally Known ✓ or Produced Identification

Type of Identification Produced

State of Florida
Department of
Environmental Protection
Notice of Public Hearing

The Department of Environmental Protection gives notice that a public meeting will be held regarding the Department's intent to issue a Prevention of Significant Deterioration (PSD) air permit to Piney Point Phosphates, Inc. for construction of a 2,700 ton per day (TPD) sulfuric acid plant to replace the existing 2000 TPD plant at the site of its existing fertilizer complex at 13300 U.S. Highway 41 North, Palmetto in Manatee County.

The meeting will be held Thursday, February 15, 1996 at 10:00 a.m., at the Manatee County Civic Center's Longboat Key Room located at 1 Haben Boulevard, Palmetto, Florida. Oral or written comments about the Department's intended action may be submitted at that time and those related to the air permit will be considered by the Department in its permit decisions.

The application and Department's previously noticed Intent to Issue package is available for public inspection during normal business hours, 8:00 a.m. to 5 p.m., Monday through Friday, except legal holidays, at its offices at:

DEP Division of Air Resources Management
111 S. Magnolia Drive
Tallahassee, FL 32301
(904) 488-1344

DEP Southwest District Air Program
8407 Laurel Fair Circle
Tampa, FL 33619
(813) 744-6100
2/5,12, '96

Bradenton Herald

102 MANATEE AVE. WEST, P.O. BOX 921
BRADENTON, FLORIDA 34206
TELEPHONE (813) 748-0411

Bradenton Herald
Published Daily
Bradenton, Manatee, Florida

STATE OF FLORIDA
COUNTY OF MANATEE:

Before the undersigned authority personally appeared Jill Headings, who on oath says that she is Legal Advertising Representative of the Bradenton Herald, a daily newspaper published at Bradenton in Manatee County, Florida; that the attached copy of the advertisement, being a Legal Advertisement in the matter of

Notice of Public Hearing

________ in the ________ Court,

was published in said newspaper in the issues of

2/5, 12, '96

Affiant further says that the said publication is a newspaper published at Bradenton, in said Manatee County, Florida, and that the said newspaper has heretofore been continuously published in said Manatee County, Florida, each day and has been entered as second-class mail matter at the post office in Bradenton, in said Manatee County, Florida, for a period of 1 year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Jill Headings
(Signature of Affiant)

Sworn to and subscribed before me this 12 day of February 1996.

SEAL & Notary Public

Personally Known ✓ or Produced Identification ________

Type of Identification Produced ________

State of Florida
Department of
Environmental Protection
Notice of Public Hearing

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DEP Division of Air Resources Management
111 S. Magnolia Drive
Tallahassee, FL 32301
(904) 488-1344

DEP Southwest District Air Program
8407 Laurel Fair Circle
Tampa, FL 33619
(813) 744-6100
2/5,12, '96

FLORIDA DEP AIR PERMITTING SUMMARY SHEET
PINEY POINT PHOSPHATES SULFURIC ACID PLANT
PUBLIC MEETING - MANATEE COUNTY
FEBRUARY 15, 1996

Piney Point Phosphates (PPP) is proposing to construct and operate a 2700 ton per day sulfuric acid plant at its phosphate fertilizer facility off Highway 41 near Palmetto in Manatee County. The new plant will replace the existing 2000 ton per day sulfuric acid plant which is presently inactive. Sulfuric acid is used as a reactant in the existing, but inactive, phosphoric acid plant at the facility.

The new plant will employ state of the art technology developed by Monsanto Enviro-Chem Systems. The project includes a sulfur burner to generate sulfur dioxide, catalytic beds where material is converted to sulfur trioxide, and absorbers to absorb and convert the sulfur trioxide to sulfuric acid. It will also include equipment to recover and use heat generated by the combustion of sulfur.

The significant air emissions will consist of sulfur dioxide and sulfuric acid mist. Because the new plant has never operated we have to assume that it will operate continuously and at its full capacity. That is the main reason why it appears that emissions will increase over the old one. Realistically, the more modern plant will have lower actual emissions, less upsets and malfunctions, and a lower probability of an emergency spill. The details of the emissions limits and control technology will be explained in more detail during the presentation.

The Florida Department of Environmental Protection (DEP) is the permitting authority for the air construction permit under the provisions of Florida Statutes, the Florida Administrative Code, and our EPA-approved State Implementation Plan per the Code of Federal Regulations.

The DEP Bureau of Air Regulation in Tallahassee received a complete air permit application from PPP on April 26, 1995. Copies of the application package were made available to the EPA Region 4 in Atlanta, the Department of Interior Fish and Wildlife Service Air Quality Branch in Denver, Colorado, the DEP Southwest District Office in Tampa and the Manatee County Air Pollution Control Program.

The Technical Evaluation and Preliminary Determination and the draft air permit were completed and sent to the applicant along with the Department's Intent to Issue. Copies were provided to the same agencies. Copies were made available for public inspection at DEP offices in Tallahassee and Tampa.

The Department's Notice of Intent to Issue was published in the Bradenton Herald on October 28, 1995. It provided a 30 day period for anyone to submit comments on the Department's proposed action or to request this public meeting. It also provided a 14 day period for anyone whose substantial interests were affected by the project to file a petition for an administrative hearing. Comments were received from several residents and Manatee County. A petition for an administrative hearing was filed by Manatee County. Because of the interest in the project, the Department decided to hold this public meeting to provide the public an additional opportunity to comment on the proposed permit. The Administrative Hearing will be held in the summer and the Department will not take final action until it receives the recommendations of the Hearing Officer in the Fall.

This public meeting was noticed on February 5, 1996 and on February 12, 1996 in the Bradenton Herald. Both the application and the Intent to Issue package are still available for public review and copying at the Department's Tampa and Tallahassee offices. The Department will accept additional comments today and for the next week. We are maintaining a dialogue with Manatee County about the project and addressing their comments irrespective of the Administrative Hearing.

DEP will consider all relevant comments specifically related to air emissions which are presented here and over the next week. These comments as well as the recommendations of the administrative hearing officer will be considered in issuing a final permit decision. The criteria which the Department must use to evaluate the permit application and issue the final air permit decision center around whether the project will meet emission limits according to Best Available Control Technology (BACT) requirements established under existing rules. Comments may be submitted at the public meeting or sent to:

CONTACT: A. A. Linero, Administrator
New Source Review Section
Bureau of Air Regulation
2600 Blair Stone Road., M.S. 5505
Tallahassee, Florida 32399
Tel: (904)488-1344
Internet: Linero_A@DEP.STATE.FL.US

AGENCY CONTACTS
PINEY POINT PHOSPHATES SULFURIC ACID PLANT

Following is a list of contacts who can assist with questions regarding air permitting and other matters related to the Piney Point Phosphates Sulfuric Acid Plant:

AIR ADMINISTRATOR:	Al Linero, Administrator New Source Review Section, Tallahassee Tel: (904)488-1344
AIR PERMITTING:	John Reynolds, Engineer New Source Review Section, Tallahassee Tel: (904)488-1344
AIR MODELING:	Cleve Holladay, Meteorologist New Source Review Section, Tallahassee Tel: (904)488-1344
AIR COMPLIANCE:	Bill Proses S.W. District, Tampa Tel: (813)744-6100
PHOSPHOGYPSUM/WATER:	Vishwas Sathe S.W. District, Tampa Tel: (813)744-6100
MANATEE COUNTY:	Karen Collins Environmental Management Department Tel: (941)742-5980
LEGAL CONTACT:	Doug Beason, Attorney Office of General Counsel, Tallahassee Tel: (904)488-9730

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: Randolph Snell

ADDRESS: 10608 US 41 N
Palmetto, FL 34221

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: Vicki Welch

ADDRESS: 1820 26th AV East

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: Gloria Kain

ADDRESS: 5314 Bay State Rd.
Palmetto 34221

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: CATHERINE FERNALD

ADDRESS: 5970 GULF OF MEXICO DR
LONGBOAT KEY, FL

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: Werner Schulte

ADDRESS: 2400 East BAY Isle DR SE
St Petersburg FL 33705

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: Mary Sheppard

ADDRESS: 3120 38th Ave. E. Bradenton, FL 34208

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: Pierre Ficheroulle

ADDRESS: 1001-3rd. Ave. W. Ste 350
Bradenton, FL. 34205

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: H. Hamilton Rice

ADDRESS: P.O. Box 1000
Bradenton, FL 34206

SPEAKER CARD
DEP PUBLIC MEETING
FEBRUARY 15, 1996

(please print)

NAME: Jeffrey Steinsnyder

ADDRESS: P.O. Box 1000
Bradenton, FL 34206

Officials listen as plant decried

Neighbors and would-be neighbors tell regulators they don't want a phosphate plant to reopen.

By Tom Spalding
STAFF WRITER

Vicki Welch was about to buy a house in northwest Manatee County this week until she heard about something else possibly moving in — Piney Point Phosphates Inc.

The Bradenton woman told state regulators Thursday that she and her husband are now reconsidering because of the fertilizer-maker's not-so-stellar safety history and the threat of air pollution.

"I'm frightened," she said during a public hearing. "... If it's going to cause a problem, I don't want it."

Though Department of Environmental Protection official John Reynolds assured Welch that Piney Point's proposed new sulfuric acid plant is safe, she still was unsure.

"It all looks good on paper, and your color slides," Welch said of the agency's presentation. "But you are not the ones who are gonna be living there, we are."

That concern was echoed by the 25 people who attended a public hearing Thursday at the Manatee Civic Center.

The hearing allowed residents to voice concerns about the DEP's recent decision to award — tentatively — a permit to allow Piney Point to construct a 2,700-tons-per day sulfuric acid production plant to replace the existing but unused one.

The plant at 13300 U.S. 41 N. was once a Manatee County fixture.

The operation was controlled by five owners from 1966 to 1992, when then-owners Royster Phosphates shut it down because of financial problems.

A French company bought the firm out of bankruptcy in 1993. According to documents, it wants to restart operations to take advantage of the rebound in the phosphate fertilizer market and the availability of

 2-16-96

Neighbors decry plant

PINEY POINT FROM 1A

phosphate ore from Central Florida.

Piney Point officials promise the reopening will create 400 jobs.

But residents who attended the hearing still had doubts.

"This is not the type of growth that will help the county. We don't need that type of industry," said Pierre Ficheroulle, a Bradenton businessman.

That's also the opinion of Manatee County officials, who are taking Piney Point and the DEP to court this summer to argue against the plant, in part because of sulfur dioxide and sulfuric acid mist emissions.

The plant's main function is to create a dimmonium phosphate product that would be sold to various users, including fertilizer manufacturers. Phosphate ore is processed through a sulfuric acid plant, the source of emissions.

"The history of Piney Point is that it's an abysmal failure ... We see no reason to have confidence at all in this new plant," argued Werner Schulte of St. Petersburg, who drove to Palmetto with his wife, Janis.

Randolph Snell, a Palmetto resident who lives about two miles from the plant, said he wasn't much in favor of the plant when it first opened 30 years ago.

"We protested the site in 1965 and '66. We expected to have damages from the plant. We were not disappointed."

"Because of the past, we don't have a lot of confidence in the future," he said.

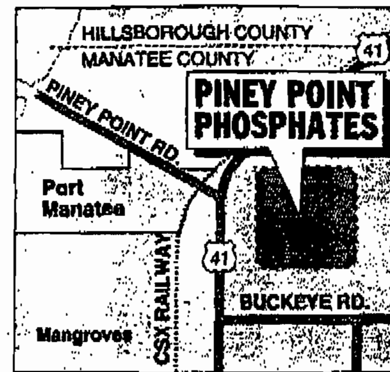
That "past" refers to spills:

- In 1989, the plant released toxic gases that forced authorities to evacuate Port Manatee, the county stockade and nearby homes.
- In 1991, toxic emissions from the plant caused respiratory problems for at least a dozen residents in the county.

But DEP officials stressed Thursday that Piney Point is now under different ownership, one committed to safety.

"Realistically, the more modern plant will have lower actual emissions, less 'upsets' and malfunctions and a lower probability of an emergency spill," said Al Linero, a DEP administrator.

Linero and Reynolds seemed to



STAFF MAP / STEVE DUCKETT

inflame the crowd by admitting that if Piney Point follows the rules and regulations, the state can negotiate, but has no reason not to award a permit.

Catherine Fernald of Manatee County Save Our Bays yelled out: "Then you shouldn't be called the Department of Environmental Protection."

During her time at the podium, Gloria Rains, chairman of the environmental group ManaSota-88, asked the DEP to produce a list of Piney Point managers so she could compare staffs under the current owners and previous owners. Linero said he could not. Rains said she thinks that's an important safety issue.

Robert Stewart, Piney Point senior president, told *Manatee/AM* he could not provide such a list but he said management is different.

At the hearing, Dan Smithwick of Palmetto questioned why the sulfuric acid plant is the only structure on the site being replaced. What about the other structures there that are sure to be rusty or corroding, he asked.

Manatee County also has questions.

Senior Assistant County Attorney Jeff Steinsnyder told DEP officials that county consultants think the DEP can make Piney Point reduce sulfur dioxide emissions more than it is requiring and at an affordable cost.

Degrading the air will hurt workers and tenants at Port Manatee, the county says.

The DEP attorney on the case, Doug Beason, said that although the state is inclined to approve a permit, it's not a "done deal."

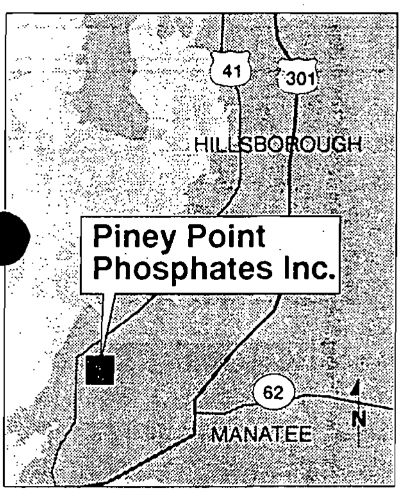
Phosphate proposal draws fire

Manatee County objects to the planned sulfuric acid plant.

By RICK BARRY
Tribune Staff Writer

PALMETTO — Until recently, dump trucks again were rumbling across the white mountain of gypsum that rises on the east side of U.S. 41 a half-mile south of the Hillsborough County line, moving piles of the fertilizer waste product from place to place.

Now, even that activity at the idle Piney Point Phosphates Inc. fertilizer plant has ceased.



Tribune map

But plans to build a new sulfuric acid plant northwest of the gypsum pile remain on track for later this year, according to state officials, to the chagrin of those both close by and many miles away.

Scores of residents, growers and other businesses have objected to the plan, as has Manatee County government. As a result, two public hearings on those plans have been scheduled.

The first, a question-and-answer session, will be at 10 a.m. Thursday. The second, a formal administrative hearing, will be April 25. Both hearings will be at the Manatee Civic Center in Palmetto. A state hearing officer will preside and make an of-

See ACID, Page 2

Acid plant foes get chance to make case

■ From Page 1

ficial recommendation to the governor and Cabinet.

But the burden of proof will be on those who doubt the company's promises of a modern, trouble-free operation, under the watchful eye of a vigilant new management team. The company has proper zoning and many critical permits in hand already, and the state already has published its "Intent to Issue Permit Notice" to Piney Point, the corporate successor to Royster Phosphates Inc.

Company officers have not returned telephone messages.

The old 1950s-era fertilizer plant has been shut down since 1992, following years of environmental problems that resulted in eight acid spills and periodic releases of toxic gases that sent neighbors and passers-by to hospital emergency rooms. Three times industrial accidents proved fatal.

But it was a worldwide drop in the price of phosphate that ultimately closed the plant, not tens of thousands of dollars in fines levied for safety and environmental problems.

The plant's new corporate owner — a French chemical conglomerate — wants to build a new plant to produce 2,700 tons of sulfuric acid a day. The old plant produced 2,000 tons daily.

The state Department of Environmental Protection engineer assigned to evaluate the project, John Reynolds, says that Piney Point could reopen the old plant at any time. But a modern plant will make a big, positive difference, because of new technologies, he says.

"We understand the concerns residents have about the prior history of that plant," Reynolds said. "Although the new plant will be larger, it'll be much more efficient. Put it this way: I would much rather live next to a new plant than an old one."

Critics, like ManaSota-88 lawyer Tom Reese, say the company couldn't reopen the old plant because it wouldn't be feasible economically, not because it might be environmentally unfriendly.

In fact, Manatee County contends emissions of key pollutants — including sulfur dioxide, sulfuric acid mist and nitrogen oxide — will rise significantly with the new plant and threaten air quality in Manatee, which today meets federal clean air standards.

It also will further harm air quality in adjacent Hillsborough and Pinellas counties, which are in violation of the standards, Manatee's petition states.

Likewise, plant emissions also will pollute surrounding, protected waters, including nearby Tampa, Cockroach and Terra Ceia bays.

The county's petition also notes that in 1993, DEP denied the plant's application for a permit for its wastewater treatment system. That system includes the existing, unlined gypsum stack, which some tests say is leaking radioactive liquid into groundwater. That permit is still being withheld. A new round of tests will be complete July 1, DEP engineer Sam Zamoni said.

"People want that plant to stay shut down and never open again," Reynolds said. "Part of that is because of the lack of enforcement in the past.

"I don't think that would be the case today."

Florida Department of

Memorandum — Environmental Protection

TO: Bill Thomas

FROM: Tom Ellison TWE

DATE: February 14, 1996

SUBJECT: Piney Point Phosphates, Inc., Summary of Air Quality Related Incidents

At your request, I've summarized Piney Point's air quality related incidents that I saw documented in our files. I found no record in our files of an incident where water sprays damaged trees on nearby property.

12/6/89: During an inspection DEP observed fugitive emissions from the DAP storage building caused by a number of uncontrolled pick and transfer points within the building. A 30 minute visible emissions test recorded a 6-minute of 37 percent opacity. During a subsequent meeting, Royster, then the plant owner, informed DEP that most of the openings in the building had been sealed. As additional corrective action the company received DEP permission to remove the bags from an interior baghouse and connect the ductwork to a scrubber. During a follow up inspection, DEP engineers did not observe any further fugitive emissions. The District did not pursue enforcement action.

6/12/91: SO_2 emissions resulting from a startup of the sulfuric acid plant caused 14 people working at Port Manatee to suffer burning sensations in their eyes and noses. The release last for about 40 minutes before the plant was shut down. DEP alleged plant operators failed to use best operational practices by following warm start up procedures after the plant had been shutdown for 11.5 hours prior to the incident. DEP's investigation concluded plant conditions at the time of the startup did not meet any one of the three temperature conditions for a warm restart and that, consequently, plant operators should have used cold restart procedures. Plant management, at that time Royster Phosphates, denied DEP's allegation and contended the temperature of the first catalyst bed dropped only after operators starter the blower motor. Rather than contiinue to dispute DEP's allegation, the company signed a consent order and paid a penalty of $4,999.

12/6/91: SO_3 emissions from the sulfuric acid plant injured six people. An investigation determined that the release was caused by inadequate acid flow in the final absorber. To prevent recurrence, plant management instituted a number of procedures: establishing acid flow in the absorbers at least 20 minutes prior to plant startup; monitoring and recording absorber acid flows; and expanding the low acid flow automatic shutdown system to the sulfur burner. DEP incorporated the first two procedures as an amendment to the sulfuric acid plant permit. Piney Point Phosphates signed a consent order and agreed to pay a $10,000 penalty. Although the company filed for bankruptcy shortly after signing the consent order, they eventually paid the penalty on 3/19/93.

cc: Bill Proses, SWD

This public meeting was noticed on February 5, 1996 and on February 12, 1996 in the Bradenton Herald. Both the application and the Intent to Issue package are still available for public review and copying at the Department's Tampa and Tallahassee offices. The Department will accept additional comments today and for the next week. We are maintaining a dialogue with Manatee County about the project and addressing their comments irrespective of the Administrative Hearing.

DEP will consider all relevant comments specifically related to air emissions which are presented here and over the next week. These comments as well as the recommendations of the administrative hearing officer will be considered in issuing a final permit decision. The criteria which the Department must use to evaluate the permit application and issue the final air permit decision center around whether the project will meet emission limits according to Best Available Control Technology (BACT) requirements established under existing rules. Comments may be submitted at the public meeting or sent to:

<u>CONTACT:</u> A. A. Linero, Administrator
New Source Review Section
Bureau of Air Regulation
2600 Blair Stone Road., M.S. 5505
Tallahassee, Florida 32399
Tel: (904)488-1344
Internet: Linero_A@DEP.STATE.FL.US

R. File

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

August 29, 1996

Ms. Sandra V. Silva, Chief
Air Quality Branch
Air Resources Center
National Park Service
P.O. Box 25287
Denver, CO 80225-0287

Re: Piney Point Sulfuric Acid Plant
Manatee County, Florida

Dear Ms. Silva:

Thank you for your letter of August 2 regarding the Piney Point Sulfuric Acid Plant Replacement Project. We appreciate your concern about the sulfur dioxide (SO_2) increment exceedances in the Chassahowitzka Class I Area predicted by some applicants. Our review indicates that this source will not cause or significantly contribute to any predicted exceedances of ambient SO2 standards or increments.

At this time, the applicant, Piney Point Phosphates, and the petitioner, Manatee County, are discussing the matter of the Best Available Control Technology (BACT) for SO_2. We passed your comments along to the parties. In our own review, we did not find the consistency indicated by your letter in achievement of lower emissions within or between plants. This plant will have to meet the limit of 4 pounds per ton of acid *at all times* by continuous emissions monitoring and not just during annual compliance tests. We would appreciate any information available which shows that lower emissions are consistently achieved.

If you have any questions regarding this matter, please call Al Linero or John Reynolds at (904)488-1344.

Sincerely,

A A Linero 8/29 for

C. H. Fancy, Chief,
Bureau of Air Regulation

CHF/aal/l

cc: J. Harper, EPA

I N T E R O F F I C E   M E M O R A N D U M

Date: 15-Dec-1995 03:14pm EST
From: Alvaro Linero TAL
LINERO_A
Dept: Air Resources Management
Tel No: 904/921-9532
SUNCOM: 291-9532

TO: See Below

Subject: Public Hearing Plans

Bill. How are you? I am getting ready to go on leave. I spoke with Karen Collins today and asked her if she can coordinate setting up a venue for the Piney Point Public Hearing. I told her that the key person for scheduling purposes is Dr. Garrity and asked her to check his availablity and then just let me know what date the meeting place is available. I'll be available anytime after January 8, 1996 except January 24-29.

I envision running this somewhat like a Reality Workshop. We will develop some speaker and comment cards. I foresee Dr. Garrity kicking the meeting off and presiding over it. Then John Reynolds and I will go over the status of the permit application. Then we will take questions and comments about the air permit.

The meeting is really an extension of the 30-day public comment period. We will use the questions and comments in our permit processing. If questions come up related to other sources or permitting actions, maybe these can be recorded and referred to the group(s) handling those issues.

As you know, there will be a separate Administrative Hearing with a Hearing Officer from the Division of Administrative Hearings (DOAH) at a future date at the request of the Manattee County Board of County Commissioners.

Kanani Winans and John Reynolds of BAR staff will cooridinate preparing a purchase order for publication in a local newspaper (Bradenton Herald?) once we have scheduled dates. We will copy County Commissioners, nearby City Councilmen, and other interested parties once we have a firm schedule.

Happy Holidays. I can be beeped at 1(800)241-4653 PIN 273-3396 while on vacation.

Distribution:

TO:	Bill Thomas	TPA	(THOMAS_B @ A1 @ TPA1)
CC:	Clair Fancy	TAL	(FANCY_C)
CC:	Doug Beason	TAL	(BEASON_D)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PUBLIC HEARING

The Department of Environmental Protection gives notice that a public hearing will be held regarding the Department's intent to issue a Prevention of Significant Deterioration (PSD) air permit to Piney Point Phosphates, Inc. for construction of a 2,700 ton per day (TPD) sulfuric acid plant to replace the existing 2000 TPD plant at the site of its existing fertilizer complex at 13300 U.S. Highway 41 North, Palmetto in Manattee County.

The hearing will be held _____________, 1996 at _____ p.m. at the ________________________________, Florida. Oral or written comments about the Department's intended action may be submitted at that time and those related to the air permit will be considered by the Department in its permit decisions.

The application and Department's previously noticed Intent to Issue package is available for public inspection during normal business hours, 8:00 a.m. to 5 p.m., Monday through Friday, except legal holidays, at its offices at:

DEP Division of Air Resources Management
111 S. Magnolia Drive
Tallahassee, Florida 32301
(904)488-1344

DEP Southwest District Air Program
8407 Laurel Fair Circle
Tampa, Florida 33619
(813)744-6100

CC:	Richard Garrity TPA	(GARRITY_R @ A1 @ TPA1)
CC:	John Reynolds TAL	(REYNOLDS_J)
CC:	Kanani Winans TAL	(WINANS_K)
CC:	FAX (619417425996,Karen Collins)	(TLXA1MAIL_\F:619417425996\C:Karen Co

al

MANATEE COUNTY GOVERNMENT

"To Serve With Excellence"

ENVIRONMENTAL MANAGEMENT DEPARTMENT

December 20, 1995

Clair
Howard 1/2/96

Mr. Howard Rhodes, Director
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: PUBLIC HEARING TO BE HELD IN MANATEE COUNTY ON PINEY POINT PHOSPHATES' SULFURIC ACID PLANT PERMIT

Dear Mr. Rhodes:

Pursuant to discussions with your staff, I have reserved the Manatee County Civic Center's Longboat Key Room for 10:00 a.m., Wednesday, January 31, 1996 for the referenced event. The Civic Center is located at 1 Haben Boulevard, Palmetto, Florida. This room should easily accommodate the 100-150 people that your staff expects to attend.

DEP representatives have committed to publish the appropriate advertisement in the Bradenton Herald. Attached is a copy of the language needed for the newspaper notice. We will broadcast a separate notice on Manatee County's government access television channel.

Please let me know if you have any questions or concerns that I have not addressed.

Sincerely,

Karen M. Collins
Director

RECEIVED

DEC 26 1995

DIVISION OF AIR RESOURCES MANAGEMENT

KMC:hs

cc: Clair Fancy, DEP Tallahassee
Al Linero, DEP Tallahassee
Richard Garrity, Ph.D., DEP Tampa District
Bill Thomas, DEP Tampa District
Ernie Padgett, County Administrator
Tedd Williams, Chief Assistant County Attorney
Jeffrey N. Steinsnyder, Senior Asst. County Attorney
Linda M. Novak, EMD Air Quality Administrator

202 6th Avenue East • Bradenton, Florida 34208 • (941) 742-5980 • Fax (941) 742-5996

P.O. Box 1000 • Bradenton, Florida 34206-1000

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PUBLIC HEARING

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The hearing will be held on Wednesday, January 31, 1996 at 10:00 a.m., at the Manatee Civic Center, 1 Haben Boulevard, Palmetto, Florida. Oral or written comments about the Department's intended action may be submitted at that time and those related to the air permit will be considered by the Department in its permit decisions.

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111 S. Magnolia Drive
Tallahassee, Florida 32301
(904)488-1344

DEP Southwest District Air Program
8407 Laurel Fair Circle
Tampa, Florida 33619
(813)744-6100

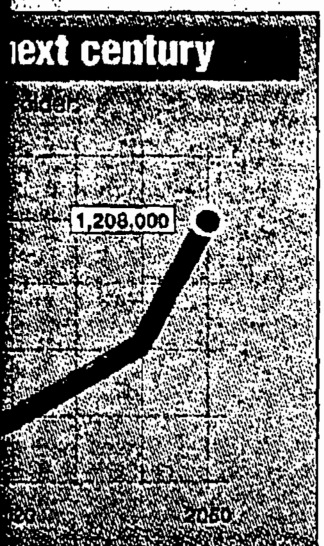
Best Available Copy

Troubled plant plans to reopen

KNIGHT-RIDDER TRIBUNE PHOTO SERVICE

Americans over 100.

next century



KNIGHT-RIDDER TRIBUNE graphic

Piney Point Phosphates, which has a history of pollution problems, has plans to replace an old sulfuric acid plant with a new, bigger one.

■ **History of problems.** Front section, Page 2

KIM ATAMIAN
Herald Staff Writer

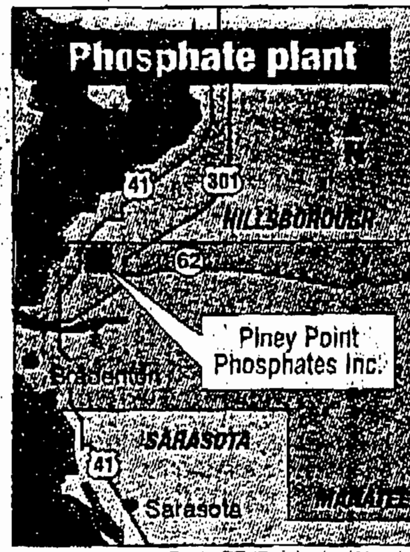
Residents who live near a defunct phosphate plant in north Manatee County are banding together to try to stop the plant from opening a new, bigger plant next year.

Piney Point Phosphates, which has a history of pollution problems — including the largest recorded in Manatee County history — was slated to move forward next month with plans to replace an old sulfuric acid plant with a new, bigger one.

However, an error last month in a published legal notice about a construction permit gives residents at least two more weeks to challenge plans at the phosphate complex, on U.S. 41 near Port Manatee.

Pollutants emitted from the plant's smoke stacks would rise by about 30 percent above the old sulfuric acid plant because of the increase in production. However, day-to-day emissions should be cleaner because the company will install new equipment, state environmental regulators said.

Still, several dozen people who live or work near the plant said they will request an administrative hearing to protest the new plant. They have 14 days from today to lodge their concerns with the state



NANCY ZEIGLER/Bradenton Herald

Department of Environmental Protection, according to a corrected legal notice published in the classified section of today's *Bradenton Herald*.

"Based on it's past performance, we're not confident they can control pollution at that facility," said Pat Lucey, a resident of the area and safety director for about 100 people who work across the street from the plant at Trilectron Industries Inc., 12297 U.S. 41 N.

"We're not just worried about the pollution equipment. It's also their safety procedures. People have died at that plant."

Piney Point officials could not immediately be reached for comment Friday afternoon; no one answered the telephone listed for the Palmetto plant.

Had the company not been forced to re-publicize its plan,

PLANT To Page 2

t virtually every American

FLORIDA LOTTERY

.SH 3/Oct. 27	0-8-8
Oct. 26	8-1-7
Oct. 25	2-7-4
.AY 4/Oct. 27	8-3-4-8
Oct. 26	1-0-4-1
Oct. 25	6-5-3-1

LOTTO/Oct. 21
3-8-10-32-33-36

.mber rect	Payoff	No. of winners
6	Rolls over	
6	$1,643.50	171
6	$67.50	9,947
6	$4.00	201,573

FANTASY 5/Oct. 27
9-12-20-23-25

nber rect	Payoff per ticket	No. of winners
5	Results	
5	printed	
5	Sunday	

FANTASY 5/Oct. 26
4-18-20-21-22

aber rect	Payoff per ticket	No. of winners
5	$52,182.90	6
5	$38.50	1,351
5	$5.00	29,256

inning Fantasy 5 and Lotto bers can be in any order. more information on the ry call 1-800-752-9352 or 487-7777.

ıelp?

desk; fax 745-7097.

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PLANT

From Page 1

officials with the state Department of Environmental Protection (DEP) said they were prepared to issue Piney Point a construction permit by the month's end. They will reconsider that decision if residents or Manatee County government submits valid objections, said Al Linero, an DEP air resources administrator overseeing the plant's permit application.

Piney Point is slated to apply for a federal operation permit sometime in late 1996. At that time, residents and local government officials will have another chance to register concerns at a public hearing, Linero said.

Manatee County government environmental regulators recently reviewed reports DEP prepared on the construction permit and said they found no reason to object to the plan.

If approved, the construction permit will allow Piney Point to replace its 2,000-ton-per-day plant with a 2,700-ton-per-day plant and increase the cap on daily emissions by about 30 percent. The facility will use the same technology as before, but the equipment will be more effective because it will be new, Linero said. The old plant was built in 1967 and suffered some problems because the equipment was failing, Linero said.

Under the proposal, sulfur dioxide emissions are slated to rise from 820.5 tons per year to 1,107 tons per year; sulfuric acid mist is slated to rise from 17.4 tons per year to 23.5 tons per year; and nitrogen oxide emissions are slated to rise from 19.7 tons per year to 26.6 tons per year, said John Reynolds, DEP's permit engineer.

"Even though it looks like emissions are going up, that's because it's a bigger plant. In the long run, on a day-to-day basis, that shouldn't be the case," Linero said.

History of problems

Here is a look at some of the problems at Piney Point Phosphates before the plant shut down in 1992.

■ **1989:** The plant was the site of the county's biggest environmental accident in 1989 when 23,000 gallons of sulfuric acid spilled and created a large sulfuric acid cloud. More than 30 nearby residents became ill; authorities evacuated the area.

■ **1985-1990:** The plant's 175 workers had an almost one-in-five chance of being injured, according to an Occupational Safety and Health Administration (OSHA) report. Broken bones, chemical burns, eye injuries and chemical-related illnesses were reported frequently for workers in the plant during that time. In less than four months, 18 separate accidents caused 14 employees to miss time from work, OSHA reported.

■ **1990:** A U.S. Environmental Protection Agency study cited Piney Point as a high risk for a sinkhole and subsequent groundwater contamination. The report presented to Congress said Piney Point Phosphates has a towering pile of phosphogypsum — an unusable byproduct created during the fertilizer-making process — that covers 300 acres and ranges from 40 to 80 feet in height. The geology below the Piney Point stack is conducive to contamination of the area's groundwater, the report stated.

■ **1991:** Three employees died at the plant. Rodolfo "Rudy" Sanchez Jr., 21, of Bradenton, died after he fell about 20 feet from the top of a railroad car; James Edward Schwind, 40, died when a metal rod impaled him after he fell from an elevated platform; Rocco Marsh, 35, died when he was crushed by a motor he was maneuvering on a hoist.

■ **MAY 1992:** The company filed for Chapter 11 bankruptcy protection.

■ **JULY 5, 1992:** The plant closed and laid off more than 100 employees.

Black poet game shov

Maya Angelou said: ' on a program like *Jeopardy!*. . . and I s black people on it.

Knight-Ridder Tribune News Wi

Maya Angelou took iss the racial makeup of the *Je* quiz show in a TV intervie last night on *Talking Wit Frost* on PBS.

In a discussion about sul ism in mass entertainment, et said: "I turn on a progr *Jeopardy!* — where quite am featured, or my name music I've written — and black people on it. . . I seen a black person for tw

TAMPA TRIBUNE

P.1

Manatee pushes to keep plant closed

By RICK BARRY
Tribune Staff Writer

BRADENTON — Manatee County decided Tuesday to try to block a state permit for the resumption of sulfuric acid production at a long-troubled fertilizer plant just south of the Hillsborough County line.

But even commissioners don't hold much hope they'll be able to halt the progress of Piney Point Phosphates Inc., for which the state already has issued one notice that it intends to grant a permit.

Manatee commissioners unanimously voted to assign County Attorney Hamilton Rice to challenge the permit, which Rice predicted could end in an expensive court battle if the long-shot administrative effort fails.

"Our last run-in with them was in 1991," Rice said. "Back then we had to get administrative warrants just to get on their property" to conduct an inspection of the plant after the release of a toxic acid mist.

Historically, the plant has not been a good corporate citizen, he said.

The company has provided the county with no information on its current plans, Commissioner Lari Ann Harris said Tuesday, "but neither has the state."

"We wanted to sit in on the [permit] hearing scheduled for Friday," she said, "but DEP [the Department of Environmental Protection] told us it was a closed hearing."

"We wanted to sit in on the [permit] hearing scheduled for Friday, but DEP [the Department of Environmental Protection] told us it was a closed hearing."

— Lari Ann Harris
Manatee County commissioner

State records show the company has been charged with obtaining an operating permit based on a map that misrepresented the size of its huge waste gypsum mound.

Piney Point also has been accused of directing wastewater through an unauthorized pipe onto a neighbor's citrus groves, flooding the land so nothing could grow there.

The plant operated for years despite a long series of reports showing the release of excessive levels of water pollutants, which the DEP noted in its files. There is no mention of follow-up action, fines or cease-operation orders.

However, two sealed administrative actions are pending.

In the wake of three fatal industrial accidents and major acid mist discharges, increasing financial pressures led the company to seek bankruptcy court protection. One of the discharges forced the evacuation of area homes, Port Manatee and a prison and the closure of U.S. 41.

The plant shut down in 1991.

A French company reportedly has bought Piney Point out of bankruptcy and proposes buying new equipment and boosting acid production by 35 percent. Air pollution would increase by a similar amount.

Until this fall, Manatee County had considerable clout with its own Environmental Action Commission. It could impose standards higher than the state and federal governments' and enforce standards locally.

But a majority of commissioners let the agency, similar to Hillsborough's Environmental Protection Commission, die Oct. 1.

The acid-manufacturer's permit was submitted a week later.

"It's so frustrating," said Harris, who tried to save the EAC. "We might have had a chance [opposing Piney Point] then, but we cut ourselves off at the knees."

Chiles willing to testify

A committee may ask him about deceptive phone calls.

By KEVIN METZ
Tribune Staff Writer

TALLAHASSEE — Although

Mercury may dip into 50s

By ROB SHAW
Tribune Staff Writer

CLEARWATER — It's not ever the weekend, and there's a cold front coming.

Like clockwork, the last three weekends have seen cold fronts bring in a dose of cooler air across West Central Florida. But one should arrive today that brings a

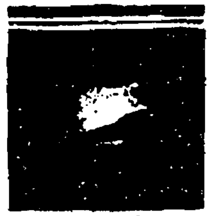
County moves to block plant from reopening

KIM ATAMIAN
Herald Staff Writer

Public health risks prompted local officials Tuesday to try to stop a phosphate company from replacing a defunct fertilizer plant in north Manatee County with a larger facility.

After residents condemned them for not fully evaluating Piney Point Phosphate's expansion plans, Manatee County commissioners agreed to file a petition with the state temporarily halting the permitting process.

That will give local officials at least a few more weeks to evaluate the company's application to replace its defunct 2,000-ton-per-day sulfuric acid plant with a 2,700-ton-per-day plant at the phosphate complex, off U.S. 41 at Port Manatee.



Manatee's environment

Residents appealed to commissioners ~~Tuesday~~ after discovering the state Department of Environmental Protection (DEP) intends to grant Piney Point a construction permit as early as this month.

They recited Piney Point Phosphate's history of pollution problems. People who live and work near the plant fear more toxic emissions and greater levels of radioactivity detected in the groundwater near the plant.

"These are documented incidents, not hypothetical situations," Parrish resident Amy Stein said of published health risks linked to Piney Point. "They are very real and very disturbing."

Among other things, she cited a 1990 U.S. Environmental Protection Agency report that ranks Piney Point among the top six places in the nation that pose the greatest cancer risks to people because of radon emitted from the facility's smokestacks.

Ivan Nance, Piney Point's environmental manager, could not be reached for comment last week or Tuesday. No one answered the telephone at the Manatee County plant; calls to Nance at the company's headquarters in Mulberry were not returned.

DEP regulators said they will review, but not necessarily grant, Manatee County's petition for an administrative hearing. To avoid last-minute objections, DEP sent local officials a copy of Piney Point's application in April and subsequent correspondence about the project. No one registered any concerns or objections, said Al Linero, a DEP air resources administrator overseeing the plant's permit application.

The deadline is Friday for people to relay comments to DEP about the plan.

Manatee County Commissioner Stan Stephens said county staff erred by not notifying commissioners of the plant's plans to expand. Commissioners asked county environmental managers to prepare and present a full report as soon as possible.

Bradenton Herald

Nov. 8, 1995

BEST AVAILABLE COPY

COUNTY MOVES TO BLOCK ACID PLANT

Sarasota Herald Tribune

Nov. 8, 1995

Officials want a closer look at plans to build the new sulfuric acid plant at Piney Point Phosphates Inc.

By Tom Spalding
STAFF WRITER

The Manatee County commissioners voted Tuesday to intervene in plans by a defunct Palmetto-based phosphate plant with a history of environmental troubles to revive its operations.

The commissioners voted 6-0 to file for an administrative hearing with the state over Piney Point Phosphates Inc.'s proposed construction of a plant that would produce 2,700 tons of sulfuric acid a day.

The hearing would allow the county to question aspects of the air and water quality permits required for the project.

"We are going to go against it, if there's not safeguards to our satisfaction – our total satisfaction," said Manatee County Administrator Ernie Padgett. "Given that plant's track record, they're going to have to go a long way to satisfy this board."

"They don't have a good record of doing the right thing," said Commissioner Maxine Hooper.

To get a say in the state permits, Manatee has to act quick: a filing is due by Friday.

"We want to take an adversarial role in this," said Commissioner Gwen Brown.

Commissioners say their reasons are justified.

Until shutting down for financial reasons in 1992, the Piney Point plant – once called Royster Phosphates – had been beset by several safety and environmental problems. Most notable of those was in 1989, when a toxic cloud emitted from the plant forced authorities to evacuate Port Manatee, the county stockade and nearby homes.

The county's pollution control chief at the time labeled it as the county's worst environmental disaster. In 1991, a toxic emission caused respiratory problems for at least a dozen residents in the county.

Officials say concern is warranted even though the company is under new ownership. A French firm bought the company out of bankruptcy in 1993 for $13 million.

The plans by Piney Point are to replace the sulfuric acid plant that was constructed in 1967. In the production of phosphate fertilizer, sulfuric acid is used to react with phosphate to produce phosphoric acid, which makes the phosphate ions available to plants. It can be used at that point as fertilizer, or further concentrated.

The commissioners voted to get involved in the process Tuesday after their staff told them of potential problems with oversight of the project.

For example, County Ecosystems Manager Charlie Hunsicker told commissioners that to his surprise, the DEP's Tallahassee and Tampa offices were handling air and water permits separately.

He said DEP in Tallahassee had provided notice of their intent to issue an air permit.

Meanwhile, the Tampa branch of DEP has been withholding its ground water permit because monitoring tests have shown the presence of radioactive materials that might be linked to a stack of gypsum on the Piney Point property.

Since the same state group is not in accord, the county should step in and "tie those shoelaces together."

PLEASE SEE PINEY POINT ON 6A

1 of 2

County moves to block new acid plant

PINEY POINT FROM 1A

Hunsicker said.

County officials also need to learn about the state of the plant, and its management, said Karen Collins, director of the county's environmental management department.

Besides getting a say with the state, Manatee County officials may have another recourse.

Piney Point's site plan expired in 1991 and the county's Land Development Code under which they would refile is much stricter, said Carol Clarke, director of county planning, permitting and inspections.

A new plant or equipment expansion could require administrative action because the Piney Point plant would have to meet an "adverse impact performance standard", which looks at toxic and hazardous issues.

Piney Point's new sulfuric acid plant could result in the increase of three pollutants, according to state documents:

- The amount of sulfur dioxide emissions would increase from 820.5 tons per year to a permitted "cap" of 1,971 tons per year.
- Emissions of sulfuric acid mist would jump from 17.4 tons in 1990-91 to a cap of 73.9 tons.
- The emissions of nitrogen oxide would potentially increase from 19.7 tons to 39.4 tons per year.

Besides those air pollutant increases is a concern about ground water. The huge stack of gypsum — a byproduct created during the fertilizer-making process — stored at the plant may be to blame for radioactive substances found in nearby ground water, a state engineer said last week.

Piney Point has told DEP that the radioactivity found in the ground is naturally occuring.

The county's action pleased Pat Lucey, who is safety director for Trilectron Industries Inc., a 105-employee manufacturing firm across from Piney Point's operation.

"I sense there is definitely support for blocking or impeding that plant's request," said Lucey, who provided commissioners with a laundry list of unpunished violations that records show Piney Point committed.

His company uses bottled water, but he fears for the safety of residents whose drinking water could be compromised.

County Commissioner Joe McClash said he was concerned that the County Board wasn't given an update sooner than three days before the deadline.

"Something of that magnitude, you'd think someone was keeping an eye on it," McClash said.

But Collins who directs the environmental management department, said the county staff has been monitoring Piney Point since 1991 and only knew of action when, as the former Environmental Action Commission, her office received a copy of the DEP's intent to issue an air quality permit on Sept. 14.

"This is a big thing," Collins maintained. "We have been watching."

Piney Point officials did not answer repeated telephone calls placed on Tuesday.

The county will try to attend a Nov. 14 meeting between DEP and Piney Point.

Manatee may also use hearings to revisit adopting air quality rules that expired Oct. 1.

Other commission action

In other action from Tuesday's meeting of the Manatee County Commission:

- In addition to voting to oppose Piney Point's permit application to reopen its plant, the commissioners voted unanimously to schedule a work session so the public can speak and so that a history of the phosphate operations can be told. No date was set.
- Without voting, the commissioners agreed to continue negotiations with the U.S. Immigration and Naturalization Service to house illegal aliens in Manatee County's vacant downtown Bradenton jail. Manatee Sheriff Charlie Wells and County Administrator Ernie Padgett figure between 150 and 200 immigrants awaiting trial for deportation could be held in the jail on a continual basis. The county would be paid $50 a day for each person held.
- The commissioners voted unanimously to accept a grant from the Southwest Florida Water Management District to help pay for the continued restoration of Emerson Point, west of Palmetto.
- The commissioners approved the first stages of a nearly $2 million upgrade of laboratory facilities at its water treatment plant. The vote pays a Tampa firm up to $227,900 for engineering services that include design of the buildings.
- The commissioners deferred a request for a substantial pay raise for four court reporters. They instead voted 6-0 to give the request to Padgett for further study.

2 of 2

Howard Rhodes

Claire

Al

Thought you'd like to see your fan mail!

Roy

Manasota 88 Nov. Newsletter

PETITION FOR REVIEW OF AGENCY RULEMAKING___Along with the Natural Resources Defense Council and the Louisiana Environmental Network, ManaSota-88 has challenged a final EPA rule in the U.S. Court of Appeals. Under the Clean Air Act, the EPA has promulgated emissions standards for many of the air toxics to which ManaSota-88 members and others are exposed. However, EPA has issued a delegation rule that allows states to implement their own programs and standards "in lieu" of national standards.

The substitution of state rules is likely to delay the implementation of effective emission standards. Any delay in the implementation of these standards will prolong and increase exposure to air toxics. Many of ManaSota-88 members live near a facility, such as Piney Point, regulated by National Emission Standards for Hazardous Air Pollutants ("NESHAPS"). These members are directly affected by any rules or regulation that changes national standards in any way.

Substitution or delegation of rules is likely to cause a delay in Florida because the state already has difficulty enforcing its own air pollution regulations. Due to inadequate staffing and political pressure, proper enforcement of air pollution regulations is difficult to obtain. As noted by ManaSota-88 attorney Tom Reese, the Florida Department of Environmental Regulation is considering raising the acceptable levels of various kinds of contamination.

The substitution of state rules for EPA emission standards is also likely to reduce or eliminate ManaSota-88's opportunity to comment on the emission standards that will ultimately regulate the air we breathe. It is also likely to reduce or eliminate ManaSota-88's opportunity to challenge these regulations in court.

Finally, air toxics travel across state lines. We are affected by changes in emission standards in other areas or delay in their promulgation, implementation or enforcement. National regulations are the only way to address the problems we have cited.

PINEY POINT___ManaSota-88 has advised the Florida DEP of our objection to plans to issue an air permit to Piney Point Phosphates, Inc. The permit will allow the construction of a 2,700 tons per day sulfuric acid plant to replace the existing 2,000 tons per day plant. Expansion of this plant was supported by the Manatee County Chamber of Commerce and a majority of the county commissioners.

Groundwater violations at the plant identified by EPA will be made worse if the air permit is issued and the plant reopens. Stacking additional amounts of phosphogypsum at the site will increased pressure in the pile, resulting in greater discharges of contaminants to the groundwater.

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RECEIVED
NOV 09 1995
BUREAU OF
AIR REGULATION

Faxed on November 9, 1995

AL LINERO
DEP Air Resources Administrator

Re: Manatee County, Pitney Point Phosphate's plant

Dear Mr. Linero:

Information is known for not traveling fast when it is supposed to and after the Orimulsion misrepresentation, the county is waking up to another environmental danger.

Our Manatee County commissioners have been known for their secret closed doors meetings and realize, after the Orimulsion disaster, that voters are tired of their mismanagement. The commission filed a petition with the State asking to give us a chance to review the case and have hearings to discuss the facts.

Most of us remember the major problems the plant has given. A 1990 U.S. EPA report ranked Piney Point among the top six places in the nation posing the greatest cancer risks to people because of radon emitted from the facility's smokestacks. It is my understanding that our State is the last one in the Union allowing the production of Phosphate and I am working on using my political friends to propose legislation to change this.

With this fax, I want to ask you to give our county a chance to share our feelings and technical data in a fully advertized hearing process. Orimulsion has drastically increased our interest on our air and other environmental resources. We will hold personally responsible anyone signing on permit application putting us and our economy in jeopardy.

Thank you for your help and consideration in this matter.

Sincerely,

Pierre Ficheroulle

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Licensed Real Estate Corporation
National Affiliate Business Brokers Network
Member Manatee & Sarasota Chamber of Commerce
1001 Third Avenue West, Ste. 350 Bradenton, FL. 34205 - USA
Tel.. 941 746-5581 Fax. 941-741-8642 Brinc@is netcom com

LAW OFFICE OF GARY R. JODAT
1001 - 3rd Ave. W., Suite 350
Bradenton, Florida 34205
(941) 749-1901
Fax: (941) 741-8642

fax transmittal

to: Mr. Alvaro Linero

fax: 922-6979

from: GARY R. JODAT

date: November 13, 1995

re: Piney Point

pages: 1, including cover sheet.

Dear Mr. Linero:

I believe that it is important to have a public hearing to determine whether a permit should be granted to replace the sulfuric acid plant at Piney Point Phosphate.

It is my understanding that the reopening of this plant may lead to toxic emissions into the air we breath and in the groundwater that may make its way into our water supply.

The Bradenton Herald in an 11-8-95 article quotes Amy Stein citing a 1990 U.S. Environmental Protection Agency report that ranks Piney Point as a top six place in the nation posing greatest cancer risks because of radon emitted from the facility's smokestacks.

Sincerely,

Gary R. Jodat

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

November 14, 1995

Mr. Mary Sheppard
Conservation Chair
Manatee-Sarasota Group
of the Sierra Club
Post Office Box 3485
Sarasota, Florida 34230

Dear Ms. Sheppard:

Thank you for your preliminary comments. We will consider them and include them in the project file. Please be advised that you still have until approximately November 27, 1995 to provide your detailed comments. That should provide sufficient time for your organization to comment. We will review and consider those comments before any final Department action is taken.

Please feel free to call me at (904)488-1344 if you have any questions.

Sincerely,

AA Linero 11/14

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

AAL/kt

cc: C. Fancy, BAR
B. Thomas, SWD
L. Novak, Manatee Co.

(941)

Best Available Copy

Manatee-Sarasota Group of th SIERRA CLUB
P.O. Box 3485 Sarasota FL or 925-9000

November 10, 1995

Mr. Al Linero
FDEP Air Resources Administrator

FAX 904 922-6979

Dear Mr. Linero,

The citizens of Manatee County need to know the facts in the application to build a new sulfuric acid plant near Port Manatee and U. S. 41. For years violations have occurred in the old plant. Local environmental staff have not had the power to enter and assess problems much less inspire compliance with health and safety regulations. Today that is still the status.

This is the sixth day that I have been aware that there was a permit being requested and an opportunity to make comments. I have not had time to find out the facts and consult experts to see if the requirements of the proposed permit would protect this area's health.

Sierra Club supports Manatee County's petition to halt the permitting process so we can evaluate the proposal and submit comments.

Sincerely,

Mary Sheppard

Mary Sheppard
Conservation Chair

MANATEE-SARASOTA FISH & GAME ASSOCIATION INC.
CLUB HOUSE • UPPER BRADEN RIVER • P.O. BOX 116 • ONECO, FL 34264

November 10, 1995

Mr. Al Linero
FDEP Air Resources Administrator

FAX 904 922-6979

Dear Mr. Linero,

The Manatee/Sarasota Fish and Game Assocition's Board meets Novembe
14. We just learned of the permit to build a new sulfuric acid plant n
Port Manatee and U. S. 41. The old one had many problems - both plants
animals and humans were injured by illegal emissions.

We support Manatee County's Commissioners in asking for more time t
research the permit and make comments.

Sincerely,

Mary Sheppard

Mary Sheppard
Conservation Chair

Kim - To file, Copy
JR.

THE EXECUTIVE OFFICES
AT BARNETT CENTER

RECEIVED
NOV 09 1995
BUREAU OF
AIR REGULATION

FACSIMILE TRANSMITTAL

TO	DEP
ATTENTION	Al Linero
FROM	Barbara Sharpe
DATE & TIME	11/09/95 10:15 a.m.
FAX NUMBER	(941) 748-1049
NO. OF PAGES	1

I am a resident of north Manatee County and I want to know when the state Department of Environmental Protection is planning to start protecting the environment!

How can they even consider permitting Piney Point Phosphate Company to expand their sulfuric acid plant at Port Manatee after the findings of the 1990 EPA report on radon emissions?! We all breathed a sigh of relief when they closed that plant. **Please, please** don't let them pollute our air and groundwater. We need your help to stop the permitting process **now!**

1001 Third Avenue, West • Suite 350 • Bradenton, Florida 34205 (813) 747-4886

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

KA 527-95-01

October 2, 1995

RECEIVED
OCT 5 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 Production Increase
AC 41-173305 and PSD-FL-144

Dear Mr. Linero:

This is in response to FDEP's Intent to Issue a construction permit for the above referenced project.

We appreciate the effort of the FDEP staff in preparing a well drafted and concise permit for the proposed project. We have only two comments on the FDEP's draft permit.

We request that the permit expiration date be revised to December 30, 1998 to allow adequate time for the sulfuric acid plant construction, process debugging, compliance testing and applying for the operation permit (under Title V).

It is our understanding that Specific Condition 1 refers to the sulfuric acid plant and the associated molten sulfur system addressed in this project review, and covered under PSD-FL-144.

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

c: Ivan Nance, PPP

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

KA 527-95-01

June 6, 1995

RECEIVED
JUN 8 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 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.

<u>RESPONSE</u>:

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.

<u>RESPONSE</u>:

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.

<u>RESPONSE</u>:

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 <u>Guidelines on Air Quality Models (Revised), EPA-450/2-78-027R</u>, 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
J. Reynolds
C. Holladay
J. Kissel, SW Dist
Manatee Co.
J. Harper, EPA
J. Bunyak, NPS

KOOGLER & ASSOCIATES

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

<u>Sensitive Plants</u>

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

<u>Intermediate Plants</u>

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	

<u>Tolerant Plants</u>

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

KOOGLER & ASSOCIATES

REFERENCES

Curtis, C.R., L.R. Krusbert, T.L. Lauver, and B.A. Francis. 1975. Chalk Point Cooling Tower Project: Field Research on Native Vegetation. Maryland Water Resources Research Center. Maryland Department of Natural Resources - Power Plant Siting Program. p.107.

McLaughlin, S.B. and N.T. Lee. 1974 Botanical Studies in the Vicinity of the Widows Creek Steam Plant. Review of Air Pollution Effects Studies, 1952-1972, and Results of 1973 Surveys. Internal Report I-EB-74-1. TVA.

United States Environmental Protection Agency, 1988. Workbook for Plume Visual Impact Screen and Analysis. EPA-450/4-88-015, September 1988.

United States Department of Agriculture, 1991. Surveys of Hernando and Citrus Counties, Florida. USDA Soil Conservation Service in cooperation with University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations and Soil Science Department.

Woltz, S.S. and T.K. Howe, 1981. Effects of Coal Burning Emissions on Florida Agriculture. In: The Impact of Increased Coal Use in Florida. Interdisciplinary Center for Aeronomy and (other) Atmospheric Sciences. University of Florida, Gainesville, Florida.

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

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

Fold at line over top of envelope to the right of the return address.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Ivan Nance, Env. Mgr
Piney Point Phosphates
13300 US Hwy 41 North
Palmetto, Fl 34221

4a. Article Number

4b. Service Type
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery 5/29/95

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ★U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 311 902 895

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to: Ivan Nance	
Street and No.: Piney Point Phos.	
P.O., State and ZIP Code: Palmetto, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date: 5-25-95 AC41-173305 PSD-Fl-144	

PS Form 3800, March 1993

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

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

KA 527-95-01

February 27, 1995

RECEIVED
MAR 2 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: Manatee County-AP
Piney Point Phosphates, Inc.
Sulfuric Acid Plant
AC 41-173305 and PSD-FL-144

Dear Mr. Linero:

Thank you for your letter dated February 6, 1995, regarding the above referenced project.

Based on our recent discussions with the applicant, we have decided to pursue the above referenced project to obtain a construction permit.

As you may be aware, the applicant has not been in a position to maintain the permitting schedule originally intended for the proposed project due to unfavorable fertilizer market conditions which eventually led to the plant shutdown. Although the plant is still shutdown, the applicant anticipates resuming operations later this year given the improving market conditions. It is anticipated that the proposed project can be accomplished if the fertilizer demand stays stable.

Piney Point Phosphates has indicated that the proposed project will be in accordance with the application submitted to FDEP. Based on current state and federal air permitting requirements, it is our understanding that the PSD applicability, specifically the BACT and ambient air quality analysis requirements, will remain unchanged for the project. We have noted that the BACT determinations for recently permitted sulfuric acid plants are identical to the proposed BACT for this project. To update the current FDEP file, however, the applicant will repeat the air dispersion modeling to include recently permitted sources which affect the pollutant emission inventory. The FDEP review effort for the application update is not expected to be significant as the project will be "substantially unchanged" and similar to the two sulfuric acid plant projects just recently evaluated.

We look forward to providing the necessary information to FDEP staff to draft the construction permit for the proposed project.

We appreciate FDEP's patience and willingness in this matter and welcome the practical approach used in concluding this permit application review which was/is almost complete.

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

c: Ivan Nance, PPP

KOOGLER & ASSOCIATES

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

47092.5 22,432

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:

982,778/2 = 491389.

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.

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

0,0
Centered on
SAP 1
Polar Coord. Origin
315.0 -260.0
or in the center
of the property

Receptor Grid - ASI

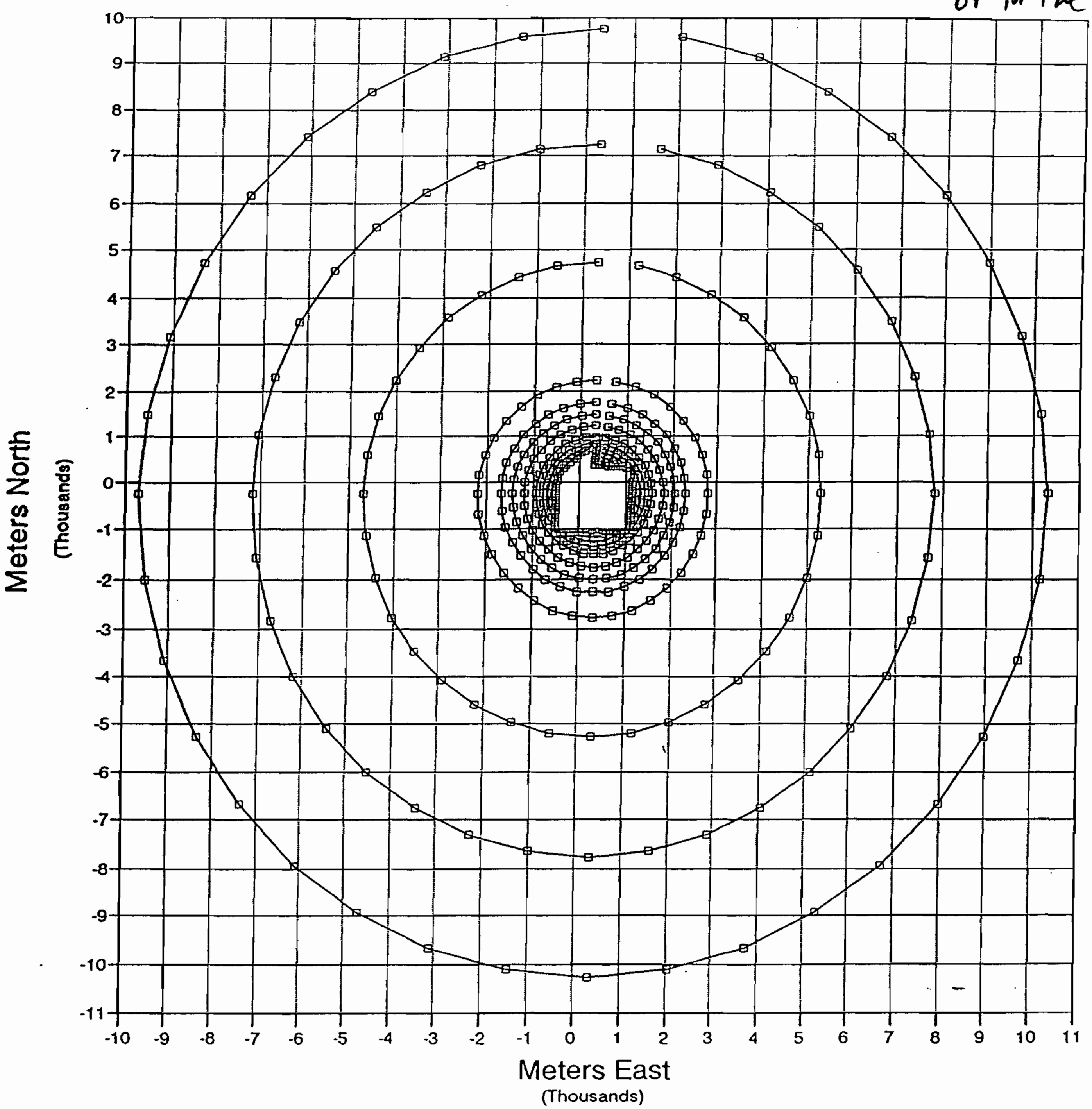

FIGURE 3-3

RECEPTOR LOCATIONS FOR 3-HOUR PERIOD MODELING

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

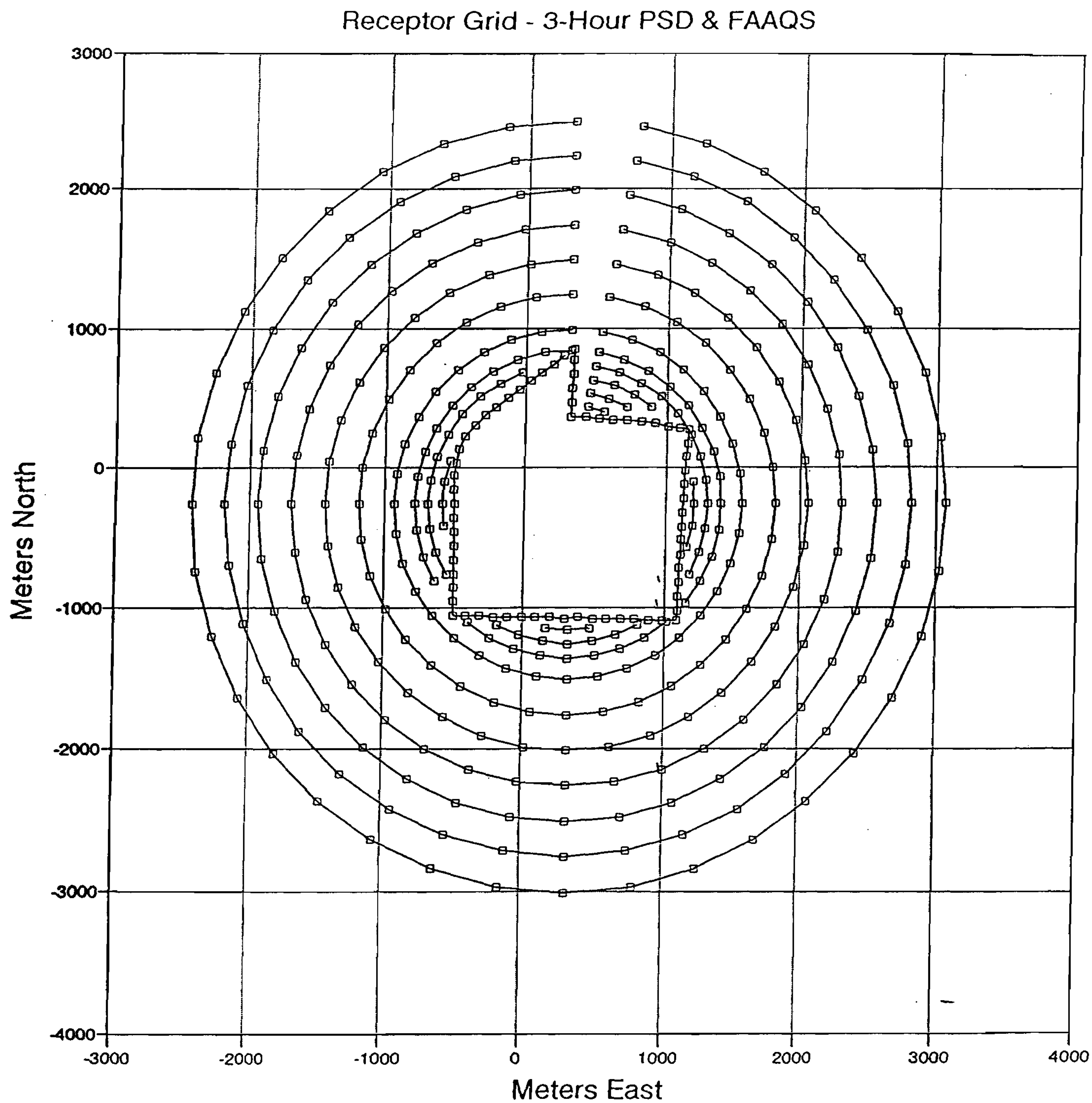

FIGURE 3-2

RECEPTOR LOCATIONS FOR REFINED ASI MODELING

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

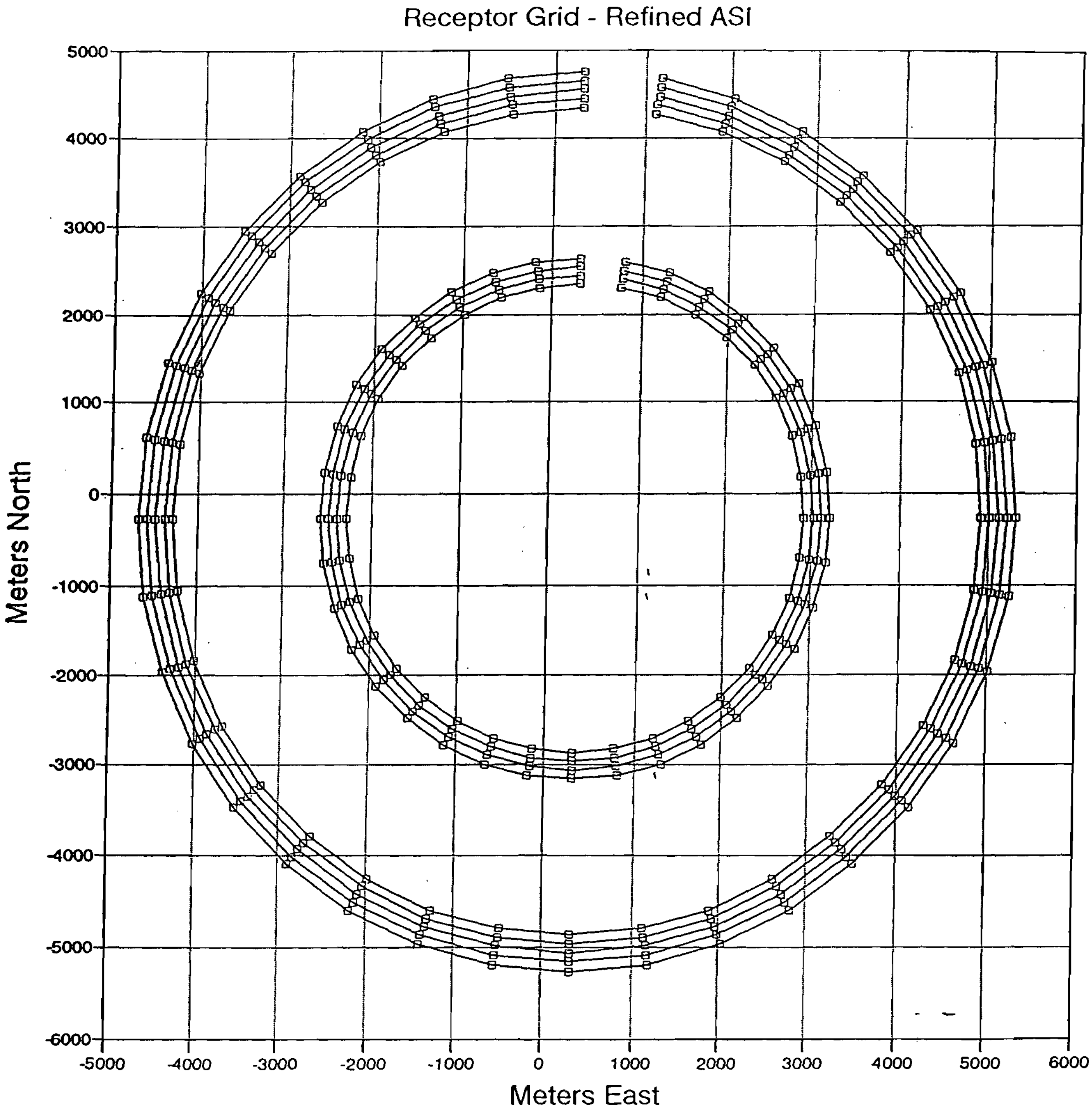

FIGURE 3-4

RECEPTOR LOCATIONS FOR 24-HOUR PERIOD MODELING

PINEY POINT PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

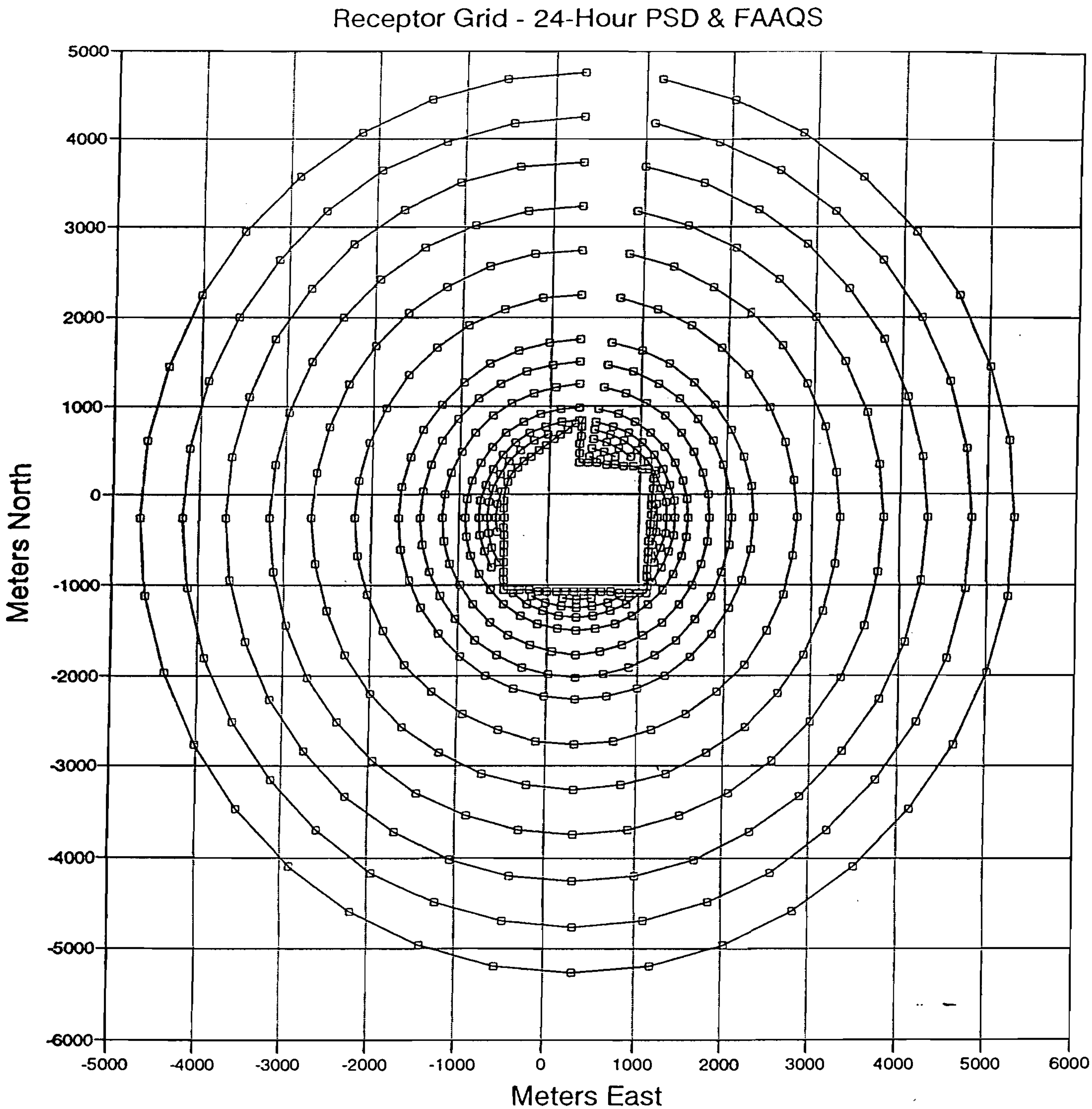

TABLE 3-1

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:					
Existing SAP	-42.0	60.98	2.36	8.75	338
Proposed SAP	56.7	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
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	0.07

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	-164	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			AAQS					
	MODELING							
	DESIG.	Emissions	UTM COORDINATES (km)		Height	Temp.	Velocity	Diameter
SOURCE DESCRIPTION		(g/s)	EAST	NORTH	(m)	(K)	(m/s)	(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			AAQS					
	MODELING							
	DESIG.	Emissions	UTM COORDINATES (km)		Height	Temp.	Velocity	Diameter
SOURCE DESCRIPTION		(g/s)	EAST	NORTH	(m)	(K)	(m/s)	(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 SOURCE DESCRIPTION	MODELING DESIG.	Emissions (g/s)	UTM COORDINATES (km) EAST	NORTH	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
			PSD - CLASS II					
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						
	MODELING							
	DESIG.	Emissions	UTM COORDINATES (km)		Height	Temp.	Velocity	Diameter
SOURCE DESCRIPTION		(g/s)	EAST	NORTH	(m)	(K)	(m/s)	(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

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.

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		

MET DATA

yr	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.

REFERENCES

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ATTACHMENT 2

SUMMARY OF PINEY POINT PHOSPHATES' CONTRIBUTION
TO PREDICTED EXCEEDANCES OF THE
ALLOWABLE CLASS I AREA PSD INCREMENT

ISCEV2 Event Modeling Summary
For Class 1 PSD SO2 Impact
1987 Meteorology

	EVENT	Period	Day	Receptor (meters)		All-Source	SAP1	SAP2	SAP1+SAP	Significant ?
1	TH030001	3	87011003	-7600	126100	27.25052	0	0	0	NO
2	TH030002	3	87013006	-7600	126100	25.11363	-0.01354	0.01896	0.00542	NO
3	TH240001	24	87032924	-8000	114600	5.10761	-0.1199	0.16236	0.04246	NO
4	TH030003	3	87041503	-8400	108400	27.53865	0	0	0	NO
5	TH030004	3	87041503	-8400	110400	31.02364	0	0	0	NO
6	TH030005	3	87041503	-8400	112500	31.94185	0	0	0	NO
7	TH030006	3	87041503	-17200	126100	27.4479	N/A (1)	N/A	N/A	NO
8	TH030007	3	87042512	-12200	126100	37.59612	N/A	N/A	N/A	NO
9	TH240002	24	87052424	-8400	108400	5.68743	0	0	0	NO
10	TH240003	24	87061124	-6700	116700	5.07954	0	0	0	NO
11	TH240004	24	87061124	-5700	118900	5.10494	N/A	N/A	N/A	NO
12	TH030008	3	87062906	-7600	126100	30.12427	N/A	N/A	N/A	NO
13	TH030009	3	87062906	-9700	126100	27.82199	0	0	0	NO
14	TH030010	3	87073024	-5700	118900	28.06933	N/A	N/A	N/A	NO
15	TH030011	3	87073024	-5000	121000	28.88358	N/A	N/A	N/A	NO
16	TH030012	3	87073024	-6300	123300	26.93504	N/A	N/A	N/A	NO
17	TH030013	3	87073103	-8400	108400	29.42648	0	0	0	NO
18	TH030014	3	87073103	-8400	110400	28.28997	0	0	0	NO
19	TH030015	3	87080203	-8400	112500	29.11746	0	0	0	NO
20	TH030016	3	87080203	-8000	114600	34.65942	0	0	0	NO
21	TH030017	3	87080203	-6700	116700	26.29462	N/A	N/A	N/A	NO
22	TH030018	3	87082412	-8400	108400	37.30017	N/A	N/A	N/A	NO
23	TH030019	3	87082412	-8400	110400	37.53451	N/A	N/A	N/A	NO
24	TH030020	3	87082412	-8400	112500	37.88968	N/A	N/A	N/A	NO
25	TH030021	3	87082412	-8000	114600	34.91389	N/A	N/A	N/A	NO
26	TH030022	3	87082412	-9700	126100	38.64014	N/A	N/A	N/A	NO
27	TH030023	3	87082412	-12200	126100	47.20793	N/A	N/A	N/A	NO
28	TH240005	24	87082424	-8400	108400	7.05797	0	0	0	NO
29	TH240006	24	87082424	-8400	110400	7.782	N/A	N/A	N/A	NO
30	TH240007	24	87082424	-8400	112500	7.67223	0	0	0	NO
31	TH240008	24	87082424	-8000	114600	7.62506	0	0	0	NO
32	TH240009	24	87082424	-6700	116700	5.69298	0	0	0	NO
33	TH240010	24	87082424	-9700	126100	7.70317	N/A	N/A	N/A	NO
34	TH240011	24	87082424	-12200	126100	8.62121	N/A	N/A	N/A	NO
35	TH240012	24	87083024	-7600	126100	5.56133	-0.01402	0.01907	0.00505	NO
36	TH240013	24	87110924	-8400	108400	6.68772	0	0	0	NO
37	TH240014	24	87110924	-8400	110400	5.15522	0	0	0	NO
38	TH240015	24	87120624	-8400	108400	5.17382	0	0	0	NO
39	TH240016	24	87120724	-8400	108400	5.62667	0	0	0	NO
40	TH240017	24	87120724	-8400	112500	5.29381	0	0	0	NO
41	TH240018	24	87120724	-8000	114600	5.19058	0	0	0	NO
42	TH240019	24	87120824	-8400	110400	5.08916	0	0	0	NO
43	TH240020	24	87120824	-8400	112500	5.63131	0	0	0	NO
44	TH240021	24	87120824	-8000	114600	5.53162	0	0	0	NO
45	TH240022	24	87120824	-6700	116700	5.09958	0	0	0	NO
46	TH240023	24	87121324	-8400	108400	7.23724	N/A	N/A	N/A	NO
47	TH240024	24	87121324	-8400	110400	7.69371	N/A	N/A	N/A	NO
48	TH240025	24	87121324	-8400	112500	9.16264	N/A	N/A	N/A	NO
49	TH240026	24	87121324	-8000	114600	8.68141	N/A	N/A	N/A	NO
50	TH240027	24	87121324	-6700	116700	5.41092	N/A	N/A	N/A	NO
51	TH240028	24	87121324	-14700	126100	5.11655	N/A	N/A	N/A	NO
52	TH240029	24	87121324	-17200	126100	5.26279	N/A	N/A	N/A	NO
53	TH030024	3	87122021	-7600	126100	28.56264	0	0	0	NO
54	TH030025	3	87122109	-8400	108400	26.26426	0	0	0	NO
55	TH030026	3	87122109	-8400	110400	26.47425	0	0	0	NO

NOTE: (1) THESE ALL-SOURCE GROUP VALUES REPRESENT THE FIRST-HIGH FOR THIS AVERAGING PERIOD

ISCEV2 Event Modeling Summary
For Class 1 PSD SO2 Impact
1988 Meteorology

	EVENT	Period	Day	Receptor (meters)		All-Source	SAP1	SAP2	SAP1+SAP	Significant ?
1	TH240001	24	88010124	-8400	112500	6.69075	N/A (1)	N/A	N/A	NO
2	TH240002	24	88010124	-8000	114600	7.28864	N/A	N/A	N/A	NO
3	TH240003	24	88010124	-6700	116700	6.9932	N/A	N/A	N/A	NO
4	TH240004	24	88010124	-5700	118900	6.90434	N/A	N/A	N/A	NO
5	TH240005	24	88020124	-8000	114600	5.91477	0	0	0	NO
6	TH240006	24	88020124	-6700	116700	5.78862	0	0	0	NO
7	TH240007	24	88022324	-5700	118900	5.3151	0	0	0	NO
8	TH240008	24	88022324	-5000	121000	6.22279	0	0	0	NO
9	TH240009	24	88022324	-6300	123300	6.55925	0	0	0	NO
10	TH240010	24	88040124	-6700	116700	4.99596	0	0	0	NO
11	TH240011	24	88050324	-8400	110400	5.1664	N/A	N/A	N/A	NO
12	TH030001	3	88051209	-14700	126100	40.61581	N/A	N/A	N/A	NO
13	TH030002	3	88051209	-17200	126100	41.51995	N/A	N/A	N/A	NO
14	TH240012	24	88051224	-14700	126100	5.26128	N/A	N/A	N/A	NO
15	TH240013	24	88051224	-17200	126100	5.66115	N/A	N/A	N/A	NO
16	TH030003	3	88052306	-8000	114600	28.12578	0	0	0	NO
17	TH240014	24	88062124	-6300	123300	5.2293	0	0	0	NO
18	TH240015	24	88062124	-7600	126100	5.67131	0	0	0	NO
19	TH240016	24	88062124	-9700	126100	5.10725	0	0	0	NO
20	TH030004	3	88071103	-5700	118900	33.81589	0	0	0	NO
21	TH030005	3	88071103	-5000	121000	41.7298	N/A	N/A	N/A	NO
22	TH030006	3	88071103	-6300	123300	41.01123	N/A	N/A	N/A	NO
23	TH030007	3	88071103	-7600	126100	40.6154	N/A	N/A	N/A	NO
24	TH030008	3	88071103	-9700	126100	30.46249	0	0	0	NO
25	TH240017	24	88071124	-5000	121000	5.07889	-0.0086	0.01158	0.00298	NO
26	TH030009	3	88073121	-5000	121000	26.66171	0	0	0	NO
27	TH030010	3	88073121	-6300	123300	27.41668	0	0	0	NO
28	TH030011	3	88073121	-9700	126100	25.85497	0	0	0	NO
29	TH030012	3	88073124	-8400	108400	26.85836	N/A	N/A	N/A	NO
30	TH030013	3	88073124	-8400	110400	25.72122	0	0	0	NO
31	TH030014	3	88081103	-6300	123300	26.08096	0	0	0	NO
32	TH240018	24	88081124	-5000	121000	6.44311	N/A	N/A	N/A	NO
33	TH240019	24	88081124	-6300	123300	7.2389	N/A	N/A	N/A	NO
34	TH240020	24	88081124	-7600	126100	7.73296	N/A	N/A	N/A	NO
35	TH240021	24	88081124	-9700	126100	6.20148	N/A	N/A	N/A	NO
36	TH030015	3	88092606	-8400	110400	26.1077	N/A	N/A	N/A	NO
37	TH030016	3	88092606	-8400	112500	35.78509	N/A	N/A	N/A	NO
38	TH030017	3	88092606	-8000	114600	31.50182	N/A	N/A	N/A	NO
39	TH240022	24	88092624	-8400	112500	5.68086	-0.0021	0.003	0.00088	NO
40	TH030018	3	88101206	-5000	121000	29.09631	0	0	0	NO
41	TH030019	3	88101206	-6300	123300	29.91664	0	0	0	NO
42	TH030020	3	88101206	-7600	126100	26.36363	0	0	0	NO
43	TH030021	3	88101206	-9700	126100	28.83829	0	0	0	NO
44	TH030022	3	88122803	-6700	116700	26.67262	0	0	0	NO
45	TH030023	3	88122803	-12200	126100	25.53777	0	0	0	NO
46	TH030024	3	88122806	-8000	114600	29.90612	0	0	0	NO
47	TH030025	3	88122806	-6700	116700	28.69025	0	0	0	NO
48	TH030026	3	88122806	-12200	126100	27.96252	0	0	0	NO
49	TH030027	3	88122806	-14700	126100	27.45217	0	0	0	NO
50	TH030028	3	88123103	-6700	116700	36.41319	N/A	N/A	N/A	NO
51	TH030029	3	88123103	-5700	118900	41.2741	N/A	N/A	N/A	NO
52	TH030030	3	88123103	-5000	121000	32.17603	0	0	0	NO
53	TH030031	3	88123103	-6300	123300	30.84542	0	0	0	NO
54	TH030032	3	88123103	-7600	126100	25.47324	0	0	0	NO
55	TH030033	3	88123103	-9700	126100	37.82979	N/A	N/A	N/A	NO
56	TH030034	3	88123103	-12200	126100	36.35717	N/A	N/A	N/A	NO
57	TH030035	3	88123103	-14700	126100	27.70756	0	0	0	NO

NOTE: (1) THESE ALL-SOURCE GROUP VALUES REPRESENT THE FIRST-HIGH FOR THIS AVERAGING PERIOD

ISCEV2 Event Modeling Summary
For Class 1 PSD SO2 Impact
1989 Meteorology

	EVENT	Period	Day	Receptor (meters)		All-Source	SAP1	SAP2	SAP1+SAP	Significant ?
1	TH030001	3	89011815	-14700	126100	33.37497	N/A (1)	N/A	N/A	NO
2	TH030002	3	89011815	-17200	126100	40.30951	N/A	N/A	N/A	NO
3	TH240001	24	89011824	-17200	126100	5.2569	N/A	N/A	N/A	NO
4	TH240002	24	89042424	-17200	126100	5.04979	-0.0001	0.00013	3E-05	NO
5	TH030003	3	89060506	-5000	121000	28.4526	0	0	0	NO
6	TH030004	3	89060506	-6300	123300	27.49686	0	0	0	NO
7	TH030005	3	89062421	-9700	126100	25.13908	0	0	0	NO
8	TH030006	3	89070509	-5000	121000	27.13714	0	0	0	NO
9	TH030007	3	89070509	-6300	123300	26.86652	0	0	0	NO
10	TH030008	3	89070509	-7600	126100	26.16553	N/A	N/A	N/A	NO
11	TH240003	24	89070524	-5000	121000	5.21011	N/A	N/A	N/A	NO
12	TH030009	3	89100803	-17200	126100	26.68777	0	0	0	NO
13	TH030010	3	89101424	-8400	112500	26.40637	N/A	N/A	N/A	NO
14	TH030011	3	89101424	-8000	114600	36.82485	N/A	N/A	N/A	NO
15	TH030012	3	89101424	-6700	116700	32.36975	N/A	N/A	N/A	NO
16	TH030013	3	89101424	-12200	126100	26.66565	0	0	0	NO
17	TH030014	3	89101424	-14700	126100	28.14948	0	0	0	NO
18	TH240004	24	89101424	-6700	116700	5.13215	N/A	N/A	N/A	NO
19	TH030015	3	89101709	-5000	121000	25.17052	0	0	0	NO
20	TH030016	3	89101709	-6300	123300	25.24318	0	0	0	NO
21	TH030017	3	89111506	-6700	116700	26.12467	0	0	0	NO
22	TH030018	3	89111506	-5700	118900	31.44467	N/A	N/A	N/A	NO
23	TH030019	3	89111506	-5000	121000	29.11637	N/A	N/A	N/A	NO
24	TH030020	3	89111506	-6300	123300	29.17698	N/A	N/A	N/A	NO
25	TH030021	3	89111506	-7600	126100	25.81621	0	0	0	NO
26	TH030022	3	89111506	-9700	126100	31.16102	0	0	0	NO
27	TH030023	3	89111506	-12200	126100	29.46452	N/A	N/A	N/A	NO
28	TH030024	3	89121512	-9700	126100	35.61158	N/A	N/A	N/A	NO

NOTE: (1) THESE ALL-SOURCE GROUP VALUES REPRESENT THE FIRST-HIGH FOR THIS AVERAGING PERIOD

ISCEV2 Event Modeling Summary
For Class 1 PSD SO2 Impact
1990 Meteorology

	EVENT	Period	Day	Receptor (meters)		All-Source	SAP1	SAP2	SAP1+SAP	Significant ?
1	TH240001	24	90031124	-8400	108400	5.56436	0	0	0	NO
2	TH240002	24	90031124	-8400	110400	6.06743	N/A (1)	N/A	N/A	NO
3	TH240003	24	90031124	-8400	112500	6.66236	N/A	N/A	N/A	NO
4	TH240004	24	90031124	-8000	114600	5.92886	0	0	0	NO
5	TH240005	24	90031224	-8000	114600	5.56542	0	0	0	NO
6	TH240006	24	90031224	-6700	116700	5.8554	0	0	0	NO
7	TH240007	24	90042624	-5700	118900	5.77984	N/A	N/A	N/A	NO
8	TH240008	24	90042624	-5000	121000	6.24233	N/A	N/A	N/A	NO
9	TH240009	24	90042624	-6300	123300	5.75258	0	0	0	NO
10	TH240010	24	90061324	-8400	112500	5.39793	0	0	0	NO
11	TH240011	24	90061324	-8000	114600	5.24259	0	0	0	NO
12	TH030001	3	90070812	-6700	116700	25.24676	-0.00318	0.00441	0.00123	NO
13	TH030002	3	90070812	-5700	118900	26.72943	-0.00207	0.00286	0.00079	NO
14	TH030003	3	90070812	-6300	123300	28.77812	-0.00213	0.00295	0.00082	NO
15	TH030004	3	90070812	-7600	126100	33.19394	-0.00292	0.00404	0.00112	NO
16	TH030005	3	90070812	-9700	126100	32.53244	N/A	N/A	N/A	NO
17	TH240012	24	90070824	-6700	116700	5.84076	-0.02614	0.03572	0.00958	NO
18	TH240013	24	90070824	-5700	118900	5.37863	-0.02126	0.02909	0.00783	NO
19	TH240014	24	90070824	-5000	121000	5.60094	-0.01801	0.02467	0.00666	NO
20	TH240015	24	90070824	-6300	123300	5.31537	-0.02181	0.02982	0.00801	NO
21	TH240016	24	90070824	-7600	126100	5.81337	-0.0254	0.03466	0.00926	NO
22	TH240017	24	90070824	-9700	126100	5.88974	N/A	N/A	N/A	NO
23	TH240018	24	90080324	-8400	108400	6.36923	N/A	N/A	N/A	NO
24	TH240019	24	90080324	-8400	110400	5.1202	0	0	0	NO
25	TH030006	3	90080612	-14700	126100	37.87193	0	0	0	NO
26	TH030007	3	90080612	-17200	126100	37.21006	N/A	N/A	N/A	NO
27	TH240020	24	90081024	-8400	112500	5.48703	-0.12667	0.15581	0.02914	NO
28	TH240021	24	90081024	-8000	114600	5.89175	-0.15815	0.19628	0.03813	NO
29	TH240022	24	90081024	-6700	116700	5.2624	-0.22056	0.27951	0.05895	NO
30	TH240023	24	90081024	-5000	121000	5.00481	-0.18866	0.24546	0.0568	NO
31	TH240024	24	90081424	-8000	114600	5.47775	-0.02476	0.03354	0.00878	NO
32	TH240025	24	90082524	-5700	118900	5.26911	-0.01736	0.02342	0.00606	NO
33	TH240026	24	90082524	-5000	121000	5.0914	-0.0173	0.02334	0.00604	NO
34	TH240027	24	90083124	-6700	116700	5.16321	0	0	0	NO
35	TH240028	24	90090124	-8400	110400	5.42055	-5E-05	6E-05	1E-05	NO
36	TH240029	24	90091024	-6700	116700	6.24899	N/A	N/A	N/A	NO
37	TH240030	24	90102024	-8400	108400	5.38546	0	0	0	NO
38	TH030008	3	90112612	-5700	118900	29.35899	N/A	N/A	N/A	NO
39	TH030009	3	90112612	-5000	121000	31.79339	N/A	N/A	N/A	NO
40	TH030010	3	90112612	-6300	123300	34.90555	N/A	N/A	N/A	NO
41	TH030011	3	90112612	-7600	126100	38.5651	N/A	N/A	N/A	NO
42	TH240031	24	90112624	-6700	116700	5.22659	0	0	0	NO
43	TH240032	24	90112624	-5700	118900	5.31806	0	0	0	NO
44	TH240033	24	90112624	-5000	121000	5.56788	0	0	0	NO
45	TH240034	24	90112624	-6300	123300	6.22882	N/A	N/A	N/A	NO
46	TH240035	24	90112624	-7600	126100	6.72723	N/A	N/A	N/A	NO
47	TH030012	3	90121112	-14700	126100	38.0578	N/A	N/A	N/A	NO
48	TH240036	24	90121124	-14700	126100	6.22905	N/A	N/A	N/A	NO
49	TH030013	3	90121421	-8000	114600	27.72037	N/A	N/A	N/A	NO
50	TH030014	3	90121421	-6700	116700	25.79901	N/A	N/A	N/A	NO
51	TH240037	24	90121424	-8400	112500	6.39864	0	0	0	NO
52	TH240038	24	90121424	-8000	114600	6.31722	N/A	N/A	N/A	NO
53	TH240039	24	90121424	-6700	116700	5.08558	0	0	0	NO
54	TH030015	3	90121603	-8000	114600	26.86696	0	0	0	NO

NOTE: (1) THESE ALL-SOURCE GROUP VALUES REPRESENT THE FIRST-HIGH FOR THIS AVERAGING PERIOD

ISCEV2 Event Modeling Summary
For Class 1 PSD SO2 Impact
1991 Meteorology

	EVENT	Period	Day	Receptor (meters)		All-Source	SAP1	SAP2	SAP1+SA	Significant ?
1	TH240001	24	91010724	-8400	112500	5.40119	0	0	0	NO
2	TH240002	24	91011024	-9700	126100	5.26812	0	0	0	NO
3	TH240003	24	91011024	-12200	126100	5.40907	0	0	0	NO
4	TH240004	24	91011024	-14700	126100	5.43076	0	0	0	NO
5	TH240005	24	91011024	-17200	126100	5.25475	0	0	0	NO
6	TH030001	3	91012315	-12200	126100	28.30238	0	0	0	NO
7	TH030002	3	91012315	-14700	126100	39.74169	0	0	0	NO
8	TH240006	24	91012724	-8000	114600	5.0572	0	0	0	NO
9	TH240007	24	91020524	-8000	114600	5.52423	0	0	0	NO
10	TH240008	24	91020524	-6700	116700	5.96279	0	0	0	NO
11	TH240009	24	91020524	-5700	118900	5.06234	0	0	0	NO
12	TH240010	24	91020524	-5000	121000	5.66942	0	0	0	NO
13	TH240011	24	91020524	-6300	123300	5.4603	0	0	0	NO
14	TH030003	3	91033115	-12200	126100	33.80421	N/A (1)	N/A	N/A	NO
15	TH030004	3	91033115	-14700	126100	45.99344	N/A	N/A	N/A	NO
16	TH240012	24	91033124	-14700	126100	6.14253	0	0	0	NO
17	TH240013	24	91041324	-6700	116700	5.12512	-0.0041	0.00567	0.00153	NO
18	TH030005	3	91041803	-7600	126100	31.0184	N/A	N/A	N/A	NO
19	TH240014	24	91051024	-6700	116700	5.27559	0	0	0	NO
20	TH240015	24	91051024	-17200	126100	5.25368	0	0	0	NO
21	TH030006	3	91052524	-8400	110400	25.64172	N/A	N/A	N/A	NO
22	TH240016	24	91052524	-8400	108400	5.94531	0	0	0	NO
23	TH240017	24	91052524	-8400	110400	7.27442	0	0	0	NO
24	TH240018	24	91052524	-8400	112500	6.94205	0	0	0	NO
25	TH240019	24	91052524	-8000	114600	5.26446	0	0	0	NO
26	TH030007	3	91061924	-6700	116700	25.79292	0	0	0	NO
27	TH030008	3	91061924	-5700	118900	28.39454	N/A	N/A	N/A	NO
28	TH030009	3	91061924	-5000	121000	31.6785	N/A	N/A	N/A	NO
29	TH030010	3	91061924	-6300	123300	30.94321	N/A	N/A	N/A	NO
30	TH030011	3	91061924	-7600	126100	25.90688	0	0	0	NO
31	TH030012	3	91061924	-9700	126100	30.68844	N/A	N/A	N/A	NO
32	TH030013	3	91061924	-12200	126100	27.61492	0	0	0	NO
33	TH030014	3	91072012	-17200	126100	35.75118	0	0	0	NO
34	TH240020	24	91072024	-17200	126100	6.72761	-0.0019	0.00258	0.00073	NO
35	TH030015	3	91072806	-8400	108400	25.32495	N/A	N/A	N/A	NO
36	TH240021	24	91072824	-8400	108400	6.69994	-0.1404	0.18985	0.04948	NO
37	TH240022	24	91072824	-8400	110400	5.06012	-0.1377	0.18625	0.04857	NO
38	TH030016	3	91072903	-8400	112500	26.43226	N/A	N/A	N/A	NO
39	TH030017	3	91072924	-6700	116700	25.82158	N/A	N/A	N/A	NO
40	TH240023	24	91072924	-6700	116700	5.38143	-0.0047	0.00632	0.00163	NO
41	TH240024	24	91080724	-5000	121000	5.02082	0	0	0	NO
42	TH240025	24	91080824	-8000	114600	5.63876	-2E-05	2E-05	0	NO
43	TH240026	24	91082424	-8000	114600	5.61988	-0.0252	0.0336	0.0084	NO
44	TH030018	3	91101112	-17200	126100	36.5206	0	0	0	NO
45	TH240027	24	91101124	-17200	126100	5.49345	0	0	0	NO
46	TH030019	3	91101312	-17200	126100	53.827	N/A	N/A	N/A	NO
47	TH240028	24	91101324	-17200	126100	9.44915	0	0	0	NO
48	TH240029	24	91111924	-8400	108400	6.38634	0	0	0	NO
49	TH240030	24	91111924	-8400	110400	7.45896	0	0	0	NO
50	TH240031	24	91111924	-8400	112500	6.30203	0	0	0	NO
51	TH240032	24	91113024	-6700	116700	5.05819	0	0	0	NO

NOTE: (1) THESE ALL-SOURCE GROUP VALUES REPRESENT THE FIRST-HIGH FOR THIS AVERAGING PERIOD

ATTACHMENT 3

LETTER OF AUTHORIZATION

PINEY POINT PHOSPHATES, INC.

13300 U. S. Hwy. 41 North
Palmetto, Florida 34221
(813) 722-4555

November 19, 1993

State of Florida
Florida Department of Environmental Protection
3304 Coconut Palm Drive
Tampa, Florida 33619

State of Florida
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32301

RE: Appointment of Authorized Representatives

Gentlemen:

I hereby appoint Robert C. Stewart, Senior Vice President-Operations & Administration, Leon Willis, Production Manager, M. Alan Castle, Plant Manager, Ivan Nance, Director of Environmental Services, and Lynn Werner, General Counsel, as authorized representatives of Piney Point Phosphates, Inc. in matters relating to your offices.

Please contact our Piney Point Office if further information is required.

Regards,

Philip L. Rinaldi
President and C.E.O.

/rmm

PINEY POINT PHOSPHATES, INC.

13300 U. S. Hwy. 41 North
Palmetto, Florida 34221
(813) 722-4555

RECEIVED
NOV 07 1995
BUREAU OF
AIR REGULATION

31 October 1995

Mr. John Reynolds
State of Florida
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: DEP File No. AC41-173305;
Proof of Publication

Dear Sir:

Find accompanying this transmittal letter a proof of publication from the Bradenton Herald for the "Notice of Intent to Issue Permit" for the above-referenced permit.

Should further information or response be required, please contact our offices.

Very truly yours,

Ivan Nance

Ivan Nance
Environmental Manager

/rmm

Enclosure

cc: SWD ✓
G. Johnson, Manatee Co. ✓
J. Koogler ✓
EPA
NPS

Bradenton Herald

102 MANATEE AVE. WEST, P.O. BOX 921
BRADENTON, FLORIDA 34206
TELEPHONE (813) 748-0411

Bradenton Herald
Published Daily
Bradenton, Manatee, Florida

STATE OF FLORIDA
COUNTY OF MANATEE:

Before the undersigned authority personally appeared Jill Headings, who on oath says that she is Legal Advertising Representative of the Bradenton Herald, a daily newspaper published at Bradenton in Manatee County, Florida; that the attached copy of the advertisement, being a Legal Advertisement in the matter of

Notice of Intent

________________in the________________Court,

was published in said newspaper in the issues of

10/28/95

Affiant further says that the said publication is a newspaper published at Bradenton, in said Manatee County, Florida, and that the said newspaper has heretofore been continuously published in said Manatee County, Florida, each day and has been entered as second-class mail matter at the post office in Bradenton, in said Manatee County, Florida, for a period of 1 year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Jill Headings
(Signature of Affiant)

Sworn to and subscribed before me this
30 day of October, 1995
Donna Marie Saalfeld
SEAL & Notary Public

Official Seal
DONNA MARIE SAALFELD
Notary Public, State of Florida
My comm. expires Sept. 29, 1996
Comm. No. CC232211

Personally Known ______ or Produced ______
Type of Identification Produced ______

State of Florida
Department of
Environmental Protection
Notice of Intent
To Issue Permit
PSD-FL-144

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit to Piney Point Phosphates, Inc., 13300 U.S. Highway 41 North, Palmetto, Florida 34221. This company operates a phosphate fertilizer manufacturing facility at that address. The permit will allow the construction of a 2,700 tons/day sulfuric acid plant to replace the existing 2,000 tons/day plant which will be permanently shut down. A determination of Best Available Control Technology (BACT) was required since the proposed project is subjet to Prevention of Significant Deterioration (PSD) regulations. BACT consists of the double absorption process for sulfur dioxide control plus high efficiency mist eliminators for controlling acid mist. Modeling results indicate that the proposed project is not expected to cause or significantly contribute to any violation of the ambient air quality standards. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination..

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under section 120.57, Florida Statutes, F.S.

The Petition shall contain the following information; (a) The name, address, and the telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrants reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice, in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive
Tallahassee, FL 32301

Department of Environmental Protection
Southwest District
8407 Laurel Fair Circle
Tampa, FL 33619

Any person may send written comments on the proposed action to Administrator, New Source Review Section, Bureau of Air Regulation, at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

10/28/95

BEST AVAILABLE COPY

Piney Point PHosphates,Inc.
13300 U.S. 41 N
Palmetto,Fl.34221

CERTIFIED MAIL # Z136648234

RECEIVED
OCT 5 1995
Bureau of
Air Regulation

October 2,1995

Dept. Of Environmental Regulation
Bureau Of Air Regulation
2600 Blair Stone Road
Tallahassee,Florida 32399-2400

Re: Construction Permit For Sulfuric Acid Plant
DEP File No. PSD - FL - 144
AC 41 - 173305
Manatee County

Dear Sirs:

Enclosed is proof of publication as required by rule 62-103.150, F.A.C. for the aforementioned subject facility in Manatee County, Florida.

I hope this meets your approval.

Sincerely,
ERIC P. BUSH,P.E.

Eric P. Bush

Enclosure
c.c. IVAN NANCE,Corporate Environmental Director

Bradenton Herald

102 MANATEE AVE. WEST, P.O. BOX 921
BRADENTON, FLORIDA 34206
TELEPHONE (813) 748-0411

Bradenton Herald
Published Daily
Bradenton, Manatee, Florida

STATE OF FLORIDA
COUNTY OF MANATEE:

Before the undersigned authority personally appeared Jill Headings, who on oath says that she is Legal Advertising Representative of the Bradenton Herald, a daily newspaper published at Bradenton in Manatee County, Florida; that the attached copy of the advertisement, being a Legal Advertisement in the matter of

Intent To Issue

______ in the ______ Court,

was published in said newspaper in the issues of

9/27/95

Affiant further says that the said publication is a newspaper published at Bradenton, in said Manatee County, Florida, and that the said newspaper has heretofore been continuously published in said Manatee County, Florida, each day and has been entered as second-class mail matter at the post office in Bradenton, in said Manatee County, Florida, for a period of 1 year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Jill Headings
(Signature of Affiant)

Sworn to and subscribed before me this
27 day of September, 1995.
Donna Marie Saalfeld
SEAL & Notary Public

Official Seal
DONNA MARIE SAALFELD
Notary Public, State of Florida
My comm. expires Sept. 29, 1996
Comm. No. CC232211

Personally Known ✓ ______ or Produced Identification ______
Type of Identification Produced ______

State of Florida
Department of Environmental Protection
CERTIFIED MAIL
In the Matter of an Application for Permit by:
Mr. Ivan Nance
Environmental/Technical Manager
Piney Point Phosphates, Inc.
13300 U.S. Highway 41 North
Palmetto, Florida 34221
DEP File No. PSD-FL-144
AC 41-173305
Manatee County

INTENT TO ISSUE

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy attached) for the applicant's facility as detailed in the application specified above for the reasons stated in the Technical Evaluation and Preliminary Determination.

The applicant, Piney Point Phosphates, Inc., applied on April 26, 1995, to the Department for a permit to construct a 2,700 tons/day sulfuric acid plant at their facility located in Manatee County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62.4, Florida Administrative Code (F.A.C.). The project is not exempt from permitting procedures. The Department has determined that a permit is required for the proposed project.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Section 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.
9/27/95

Royster Phosphates, Inc.

13300 U. S. Hwy. 41 North
Palmetto, Florida 34221
(813) 722-4555

CERT MAIL
ART NO. P 082 796 939

RECEIVED
OCT 07 1991
Division of Air
Resources Management

October 4, 1991

Mr. C. H. Fancy, Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Re: Royster Phosphates, Inc.; AC41-173305, PSD-FL-144

Dear Sirs:

On 23 September 1991 Royster Phosphates, Inc. (RPI), received your request for an update on the status of the above referenced permit application. RPI on 21 August 1991 received from Manatee County Planning and Zoning Department approval of our 1989 submittal of site plans. With receipt of this approval RPI has reason to continue the permitting with your office.

RPI has contacted Monsanto/Enviro Chem in an effort to acquire outstanding information needed to complete the permitting effort. Upon receipt of needed emissions data RPI will forward this information to your office.

Should further information or response be required prior to that submittal, please contact our office.

Very truly yours,

Ivan Nance

F. Ivan Nance
Environmental/Technical Manager

FIN:dam

cc: G. Dahms
R. Fleming
J. Shafer, Monsanto
J. Heron
C. Holladay
B. Thomas, SW Dist
R. Baum, Manatee Co.
BA/PL

Royster Phosphates, Inc.
13300 U.S. Hwy. 41 North
Palmetto, Florida 34221

Fold at line over top of envelope to the right of the return address.

CERTIFIED

P 082 796 939

MAIL

PALMETTO FLA. OCT 4 '91

POSTAGE 2.20
P.B. 3303033

Mr. C. H. Fancy, Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

RECEIVED
OCT 07 1991
Division of Air
Resources Management

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

September 12, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gary L. Dahms
Vice President and General Manager
Royster Phosphates, Inc.
P. O. Box 1329
Palmetto, Florida 34220

Dear Mr. Dahms:

Re: Royster Phosphates, Inc.
AC 41-173305, PSD-FL-144

The Department has not heard from you concerning the above referenced project since your October 2, 1990, letter. Please let us know if you plan to pursue obtaining a permit for this project. If you do not respond to this letter within 30 days of receipt of it, the Department will assume you have changed your plans and will deny your request for the permit.

Sincerely,

Barry D. Andrews

for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/TH/plm

c: Bill Thomas, SWD
Rob Baum, Manatee Co.
John Koogler, P.E.
Jewell Harper, EPA

P 832 538 961

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Gary L. Dahms	
Street & No. Royster Phosphates	
P.O., State & ZIP Code Palmetto Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date	

PS Form **3800**, June 1990

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. ↑*(Extra charge)*↑
2. ☐ Restricted Delivery ↑*(Extra charge)*↑

3. Article Addressed to:
Gary L. Dahms, V.P.
Royster Phosphates, Inc.
13300 U.S. Hwy 41 North
Palmetto, Fl 34221

4. Article Number
P 832 538 961

Type of Service:
- ☐ Registered
- ☐ Insured
- ☒ Certified
- ☐ COD
- ☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X D. Haley

6. Signature – Agent
X

7. Date of Delivery
9/23/91

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

November 2, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gary L. Dahms
Vice President and General Manager
Royster Phosphates, Inc.
P. O. Box 1329
Palmetto, Florida 34220

Dear Mr. Dahms:

Re: Permit No. AC 41-173305 and PSD-FL-144
Sulfuric Acid Plant

The Department acknowledges receipt of the additional information for a permit to construct a double absorption sulfuric acid plant at Royster Phosphates, Inc.'s chemical complex in Palmetto, Manatee County, Florida.

As indicated on Page 4 of your letter dated October 2, 1990, the information regarding design parameters has not been addressed. Therefore, we inform you that as of November 2, 1990, the status of your application is incomplete.

If you have any questions, please call Teresa Heron at 904-488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/TH/plm

c: Bill Thomas, SW Dist.
Rob Baum, Manatee County
John Koogler, P.E.
Jewell Harper, EPA

P 256 396 227

RECEIPT FOR CERTIFIED MAIL

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★U.S.G.P.O. 1989-234-555

Sent to Mr. Gary L. Dahms, Royster	
Street and No. P. O. Box 1329	
P.O., State and ZIP Code Palmetto, FL 34220	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 11-2-90 Permit: AC 41-173305 PSD-FL-144	

PS Form 3800, June 1985

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1. ☒ Show to whom-delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Mr. Gary L. Dahms
Vice President and General Mgr.
Royster Phsophates, Inc.
P. O. Box 1329
Palmetto, FL 34220

4. Article Number
P 256 396 227

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X A. Lippert - K.S.

6. Signature — Agent
X

7. Date of Delivery

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form 3811, Apr. 1989 ★U.S.G.P.O. 1989-238-815 DOMESTIC RETURN RECEIPT

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

KA 230-89-01

October 2, 1990

RECEIVED
OCT 5 1990
DER-BAQM

Mr. Clair H. Fancy
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Royster Sulfuric Acid Plant
AC41-173305 and PSD-FL-144

Dear Clair:

This is in response to the Department's incompleteness letter dated August 14, 1990, and discussions with FDER staff on September 12, 1990.

The responses below are in the order of the questions asked by FDER.

Actual Emissions Issues

> **Response No. 1 on page two of your July 6, 1990, letter and the application originally submitted, specifically page 4, item 2.1 of Section 2.0, indicate that the past five years of operating data were used to calculate the actual emission rates. However, Appendix 3-B (documentation of this data) only lists an April 12, 1989, test result and a table containing annual operating factors based on 1984 data. This data is not acceptable for purpose of PSD regulations. The air quality modeling submitted with this application cannot be properly evaluated without an acceptable response to this question.**
>
> **Please submit actual emissions for SO2, NOx, and sulfuric acid mist for the previous two years operation (years 1988 and 1989). Another period deemed to be more representative of normal operating conditions may be substituted for this period.**

In the PSD application package, the actual emissions from the existing sulfuric acid plant were calculated using the hourly emissions recorded during a stack test in April 1989 and projected annual emissions based on the reported sulfuric acid production rate of 1984. That year was the only year of full plant operation in the previous several years at the time of application was submitted in 1989.

While the stack test data of April 1989 are acceptable to FDER, Ms. Teresa Heron of your staff has requested more recent sulfuric acid production data. Since the application was first submitted in 1989, Royster has developed production data through June 1990 and is, therefore, submitting the most recent two year production data as requested by FDER and EPA (see Attachment 1).

As reflected in Attachment 1, the sulfuric acid plant was down for major repairs and maintenance in February 1989, for approximately 415 hours. The sulfuric acid production during that month was about one third of the normal production rate. It is therefore requested that the twelve-month period of operation, from July 1989 to June 1990, be considered as the period representative of normal operation as allowed by Rule 17-2.100(3)(a) of the Florida Administrative Code.

The annual sulfuric acid production rate used in the calculations submitted previously to FDER based on 1984 records was 538,046 tons. The 1989-90 sulfuric acid production rate is 559,208 tons per year. Since the more recent data reflects higher production, the actual emissions calculated on the higher production are greater and the net emissions increase as a result of the proposed project will be less. The ambient air impacts will also be correspondingly less.

The revised operating factors are as follows (see page 22 of PSD application for comparison):

Annual Operating Factor
Based on Operating Time = (7989 hrs/yr)/(8760 hrs/yr)

= 0.91 (previously 0.972)

Annual Operating Factor
Based on Production = (559,208 tpy)/(2000 TPD x 365 days/yr)

= 0.766 (previously 0.737)

The actual emissions have been recalculated based on the revised operating factor as shown below (see page 18 of PSD application for comparison). The amended page 18 is presented in Attachment 2.

Pollutant	Actual Emissions (TPY) Initially Submitted	Updated	Increase
SO2	906.4	942.1	35.7
Acid Mist	23.9	24.8	0.9
NOx	33.6	34.9	1.3

The updated actual emissions are reflected in revised Table 3-1. The net emissions increase based on the updated actual emissions are presented in revised Table 3-2.

Air Modeling Issues

In a conversation with Mr. Cleve Holladay of your staff, the following concerns were discussed:

1. The modeling submitted may need to be updated if revised actual emissions are different from those used in the ambient air impact analysis.

2. The 24-hour SO_2 modeling results shown in Figure 7A-4 and 7A-9 should be refined to show the extent of the areas with higher impacts.

In response to Comment No. 1 regarding the effect of revised actual emissions on the modeling, Royster will not need to submitted revised modeling. Since the net emissions modeled will be less based on the updated actual emissions, the resultant air impacts will be lower than those predicted earlier. Mr. Holladay has indicated that since the modeling submitted to FDER is more conservative than that which would be obtained using the updated net emissions increase, no revised modeling is necessary.

In response to Comment No. 2 regarding refinement of the receptor locations, revised Figures 7A-4 and 7A-9 are submitted in Attachment 2. Both figures include additional receptors which were added to the north, south and east of the original receptor locations. The model input parameters were left unchanged.

Revised Figure 7A-4, 24-hour SO_2 Significant Impact Area, shows the extent of the significant impact to the south which was projected in the initial submittal. Revised Figure 7A-9, 24-hour SO_2 Impact of All Proposed and Permitted SO_2 Sources, shows the increasing trend of SO_2 concentration toward the southwest of the plant. It should be noted that the higher impacts beyond the area of significant impact of Royster's sources are caused by emissions from facilities other than Royster. The highest average 24-hour SO_2 impact within the area in which Royster has a significant impact is 181.5 ug/m^3; well below the 24-hour Air Quality Standard for SO_2 of 260 ug/m^3.

Acid Plant Design Issues

The issues raised in FDER's letter concerning the sulfuric acid plant design parameters will be addressed by Royster under separate cover.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

Pradeep A. Raval

PAR:wa
Enc.

cc. Mr. Ivan Nance
J. Heron
C. Holladay
B. Andrews
R. Baum, Manatee Co.
B. Thomas, SW Dist.
J. Harper, EPA

ATTACHMENT 1

SUMMARY OF ANNUAL OPERATIONS
EXISTING SULFURIC ACID PLANT

Month	Down Time (hours)	Acid Production (tons)
July 1988	47.8	33,770
August	27.8	47,501
September	59.5	40,876
October	19.6	43,299
November	63.1	42,653
December	60.5	44,118
January 1989	44.2	44,777
February	415.0	15,897
March	104.6	42,204
April	72.4	43,833
May	48.6	52,293
June	36.8	47,447
July	51.3	49,551
August	42.1	49,061
September	25.3	43,284
October	26.5	51,734
November	21.9	50,924
December	91.5	45,463
January 1990	51.9	48,307
February	106.2	39,261
March	84.7	48,303
April	50.7	49,803
May	168.5	39,245
June	51.1	44,272

ATTACHMENT 2

KOOGLER & ASSOCIATES

REVISED EMISSION RATE CALCULATIONS

EXISTING SULFURIC ACID PLANT

PERMITTED: 2000 tons per day 100% acid
SO_2 - 4.0 lb/ton, 333.2 lb/hr
Mist - 0.15 lb/ton, 12.5 lb/hr
Operating Factor - 1.0
(Based on Permit No. A041-121085)

ACTUAL: 2000 tons per day 100% acid
SO_2 - 3.37 lb/ton
Mist - 0.089 lb/ton
Operating Factor - 0.766, Annual
(Based on historic production data documented in Attachment 1)

PROPOSED: Plant to be permanently shutdown

NOX: 59,394 dscf per ton of 100% acid (See Appendix 3-B)
2.1 x 10(-6) lb NOX per dscf at 68°F (See IMC-New Wales PSD application for third train expansion)

EMISSION RATES

Actual

SO_2: Hourly = 3.37 lb/ton x 2000/24 ton/hr
= 280.8 lb/hr

Annual = 280.8 lb/hr x 8760 hr/yr x 1/2000 ton/lb
x 0.766
= 942.1 TPY

MIST: Hourly = 0.089 lb/ton x 2000/24 ton/hr
= 7.4 lb/hr

Annual = 7.4 lb/hr x 8760 hr/yr x 1/2000 ton/lb
x 0.766
= 24.8 TPY

NOX Hourly = 2000 ton/day x 59394 dscf/ton
x 2.1 x 10(-6) lb/dscf x 1/24 day/hr
= 10.4 lb/hr

Annual = 10.4 lb/hr x 8760 hr/yr x 1/2000 ton/lb
x 0.766
= 34.9 TPY

REVISED 10/2/90

REVISED
TABLE 3-1
EXISTING PRODUCTION RATES AND
EMISSION RATES AFFECTED BY PROPOSED
SULFURIC ACID PLANT CHANGES

ROYSTER INDUSTRIES, INC.
MANATEE COUNTY, FLORIDA

	Existing Plant	Proposed Plant
Date Permitted	1966	NA
<u>Current Permit Conditions</u>		
Rate (TPD)	2000	0
SO2 (lb/ton)	4.0	0
(lb/hr)	333.2	0
(TPY)	1459	0
Mist (lb/ton)	0.15	0
(lb/hr)	12.5	0
(TPY)	54.8	0
Operating Factor	1.0	0
<u>Actual Conditions</u>		
Rate (TPD)	2000	0
SO2 (lb/ton)	3.37	0
(lb/hr)	280.8	0
(TPY)	942.1	0
Mist (lb/ton)	0.089	0
(lb/hr)	7.4	0
(TPY)	24.8	0
NOx (lb/hr)	10.4	0
(TPY)	34.9	0
Operating Factor	0.766	0
<u>Proposed Conditions</u>		
Rate (TPD)	0	2700
SO2 (lb/ton)	0	4.0
(lb/hr)	0	450
(TPY)	0	1971
Mist (lb/ton)	0	0.15
(lb/hr)	0	16.9
(TPY)	0	74.0
NOx (lb/hr)	0	13.4
(TPY)	0	58.7
Operating Factor	0	1.0

REVISED 10/2/90

REVISED
TABLE 3-2

ANNUAL AIR POLLUTANT EMISSION CHANGES RESULTING FROM THE PROPOSED SULFURIC ACID PLANT CHANGES(1)

ROYSTER INDUSTRIES, INC.
MANATEE COUNTY, FLORIDA

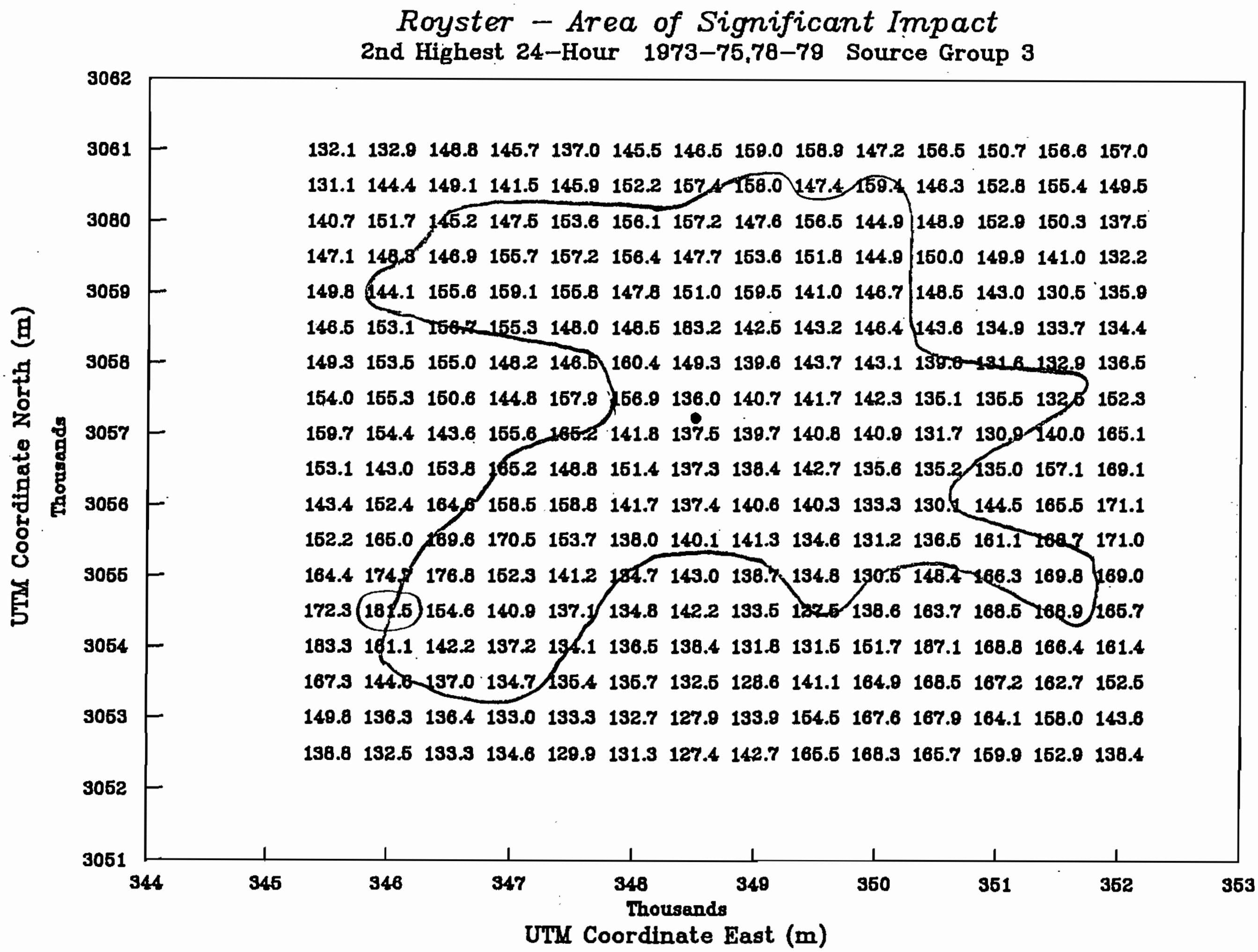
Pollutant Tons/year	Existing Plant		Proposed Plant
SO_2			
Present (actual)	942.1		0
Proposed	0		1971
Change	(942.1)		1971
Subtotal		1028.9	
Significant Increase (2)		40	
MIST			
Present (actual)	24.8		0
Proposed	0		74.0
Change	(24.8)		74.0
Subtotal		49.2	
Significant Increase (2)		7	
NOX			
Present (actual)	34.9		0
Proposed	0		58.7
Change	(34.9)		58.7
Subtotal		23.8	
Significant Increase (2)		40	

(1) Based on differences between present, actual and proposed operating conditions.
(2) Defined in 17-2.500(2)(e)2, FAC.

NOTE: Rate changes in ( ) represent decreases in annual emissions.

REVISED 10/2/90

ATTACHMENT 3



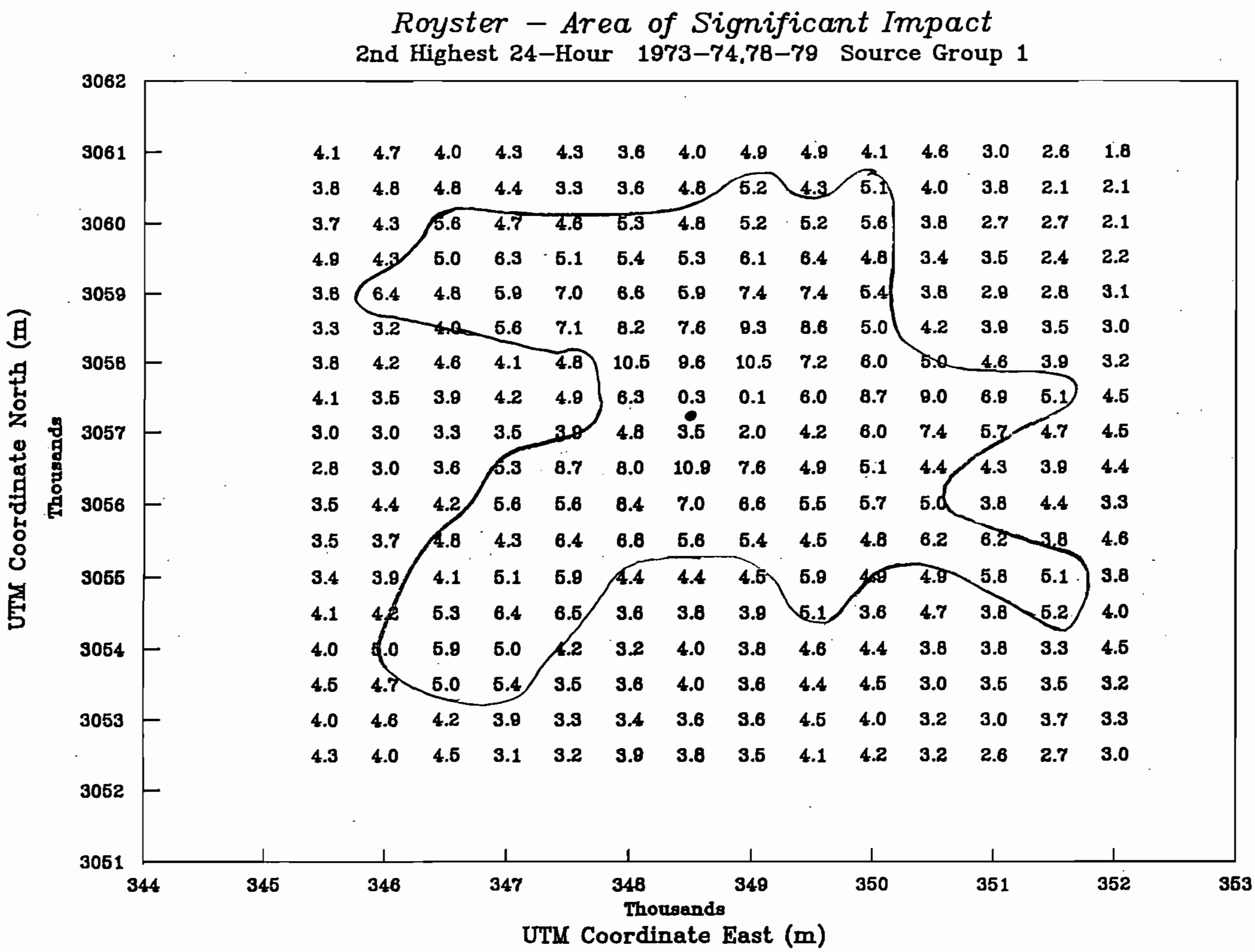
24-hr Air Quality Standard - 260 ug/m^3

REVISED FIGURE 7A-9

24-hour Average Impact of All Proposed
and Permitted SO_2 Emitting Sources

Maximum Impact at Each Receptor for 5-year Period
1973, 1974, 1975, 1978, 1979

Royster Phosphates, Inc.
Manatee County, Florida



24-hr Significant Impact - 5 ug/m^3

REVISED FIGURE 7A-4

24-hr. Average Impact of Contemporaneous
SO_2 Emission Changes at Royster

Maximum Impact at Each Receptor for 5-year Period
1973, 1974, 1975, 1978, 1979

Royster Phosphates, Inc.
Manatee County, Florida

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Bob Martinez, Governor · Dale Twachtmann, Secretary · John Shearer, Assistant Secretary

August 14, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gary L. Dahms
Vice President & General Manager
Royster Phosphates, Inc.
P. O. Box 1329
Palmetto, Florida 34220

Dear Mr. Dahms:

Re: AC 41-173305 and PSD-FL-144
Double Absorption Sulfuric Acid Plant

The Department has reviewed your letter dated July 6, 1990, which contains additional information for a permit to construct a double absorption sulfuric acid plant in Palmetto, Manatee County, Florida. Although the information submitted responded to most of the Department and local program concerns, your response to our first question is still unclear.

Response No. 1 on page two of your July 6, 1990, letter and the application originally submitted, specifically page 4, item 2.1 of Section 2.0, indicate that the past five years of operating data were used to calculate the actual emission rates. However, Appendix 3-B (documentation of this data) only lists an April 12, 1989, test result and a table containing annual operating factors based on 1984 data. This data is not acceptable for purpose of PSD regulations. The air quality modeling submitted with this application cannot be properly evaluated without an acceptable response to this question.

Please submit actual emissions for SO_2, NO_x, and sulfuric acid mist for the previous two years operation (years 1988 and 1989). Another period deemed to be more representative of normal operating conditions may be substituted for this period.

Furthermore, during the May 21, 1990 meeting between FDER, Royster, Manatee County, and Monsanto, the FDER agreed to waive the detailed technical questions in items #2, #3, and #4 of Gary Maier's December 21, 1989 memo if Royster would provide satisfactory sulfur dioxide and acid mist stack test emission data from an operating plant that is similar to the proposed project. Roysters' response, dated July 6, 1990, does not provide such data.

These questions still need to be responded to unless Royster provides the stack test data that they agreed to provide during the May 21, 1990 meeting. Please provide responses or provide the data requested.

We will continue processing your application as soon as this information is received.

If you have any questions on this matter, please call Teresa M. Heron at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/TH/plm

Attachment: EPA's letter dated January 10, 1990

c: W. Thomas, SW District
R. Baum, Manatee County
P. Raval, Koogler & Associates
G. Maier, SW District

Best Available Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

JAN 10 1990

4APT-APB-cdw

Ms. Patricia G. Adams
Planner
Bureau of Air Quality Management
Florida Department of Environmental
  Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Royster Phosphates, Inc. (PSD-FL-144)

Dear Ms. Adams:

This is to acknowledge receipt of the permit application for the above referenced source, dated December 6, 1989. As discussed between Mr. Barry Andrews of FDER and Mr. Gregg Worley of my staff on January 8, 1990, we have the following comment.

In determining the "actual" emissions of the existing sulfuric acid plant, the maximum production rate and emission rates which occurred during the previous five years were used. The "actual" emissions, however, should be an average of the previous two years operating data unless another period is more representative. Therefore, it is likely that the actual emissions from the existing facility are in fact lower than the maximum numbers presented by the source. Consequently, the source may also be subject to PSD review for NO_x. In any case the greater changes in emissions should be included in the modelling.

By letter dated December 14, 1989, we transmitted to your office a copy of the First Circuit Court of Appeals upholding the "actual-to-potential" applicability rules of the PSD requirements. Please refer to this ruling as a basis for our comments.

Thank you for the opportunity to review this package. Any questions or comments may be directed to Mr. Gregg Worley of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
  Management Division

copied: C. Fancy
B. Andrews
C. Holladay
[illegible]
[illegible]HF/PT

P 256 396 164

RECEIPT FOR CERTIFIED MAIL

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Sent to Mr. Gary L. Dahms, Royster Co.	
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P.O., State and ZIP Code Palmetto, FL 34220	
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TOTAL Postage and Fees	$
Postmark or Date Mailed: 8-14-90 Permit: AC 41-173305 PSD-FL-144	

PS Form 3800, June 1985 ☆U.S.G.P.O. 1989-234-555

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Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to: Mr. Gary L. Dahms Vice President & Gen. Manager Royster Phosphates, Inc. P. O. Box 1329 Palmetto, FL 34220	4. Article Number P 256 396 164 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X Lisa Sprunger	
7. Date of Delivery 8/16/90	

PS Form 3811, Apr. 1989 ★U.S.G.P.O. 1989-238-815 DOMESTIC RETURN RECEIPT

MEMORANDUM

TO: Teresa M. Heron, DER BAR, Tallahassee

THRU: W. C. Thomas, P.E. and J. Harry Kerns, P.E.

FROM: Gary A. Maier, DER Tampa Gary A. Maier

DATE: August 9, 1990

SUBJECT: Permit Application No. AC41-173305
County: Manatee
Project: Sulfuric Acid Plant
Applicant: Royster Phosphates, Inc.

During the May 21, 1990 meeting between FDER, Royster, Manatee County, and Monsanto, the FDER agreed to waive the detailed technical questions in items #2, #3, and #4 of my December 21, 1989 memo if Royster would provide satisfactory sulfur dioxide and acid mist stack test emission data from an operating plant that is similar to the proposed project. Roysters' response, dated July 6, 1990, does not provide such data.

Questions #2, #3, and #4 of my December 21, 1989 memo to you still stand, until and unless Royster provides the stack test data that they agreed to provide during the May 21, 1990 meeting.

INTER-OFFICE MEMORANDUM

TO: Teresa M. Heron, DER Air BAQM, Tallahassee

THRU: W. C. Thomas, P.E. WCT

FROM: Gary A. Maier, DER Tampa Gary A. Maier

DATE: December 21, 1989

SUBJECT: Permit Application No.: AC41-173305
County: Manatee
Project: New Sulfuric Acid Plant
Royster Phosphates, Inc.

The Southwest District office has reviewed the above referenced application. We have the following comments.

~~(1) The application does not contain a process flow diagram for the proposed facility. The process flow diagram in Figure 3-1 is described as "typical"; however, Figure 3-1 and the plant layout shown in Figure 3-2 do not agree with each other. (For example, Figure 3-1 places a Dryer upstream of the Furnace, but Figure 3-2 does not show a Dryer.) A process flow diagram for the proposed facility should be requested.~~

(2) The lack of a Dryer upstream of the Furnace raises a concern as to whether the acid mist emission limits will be met. The application does not contain design information, calculations, or historical operating experience for the Fiber Mist Eliminators. Design calculations and the design information listed below should be requested.

- (a) What is the controlling mechanism for mist collection, Inertial Impaction or Brownian Diffusion?
- (b) What is the design Superficial Velocity?
- (c) What is the Mist Loading of gases leaving the absorber and entering the mist eliminators (mg./SCF)?
- (d) What is the Mist Loading of gases leaving the mist eliminators (mg./SCF)?
- (e) What are the particle-size distributions of the mists entering and leaving the fiber mist eliminators?
- (f) What is the Volumetric Flow Rate through the mist eliminators?
- (g) What are the design pressure drop and filtering area?
- (h) What is the effect of "turn-down" on collection efficiency?

In addition to the above, historical operating data for identical mist eliminators on sulfuric acid plants without a dryer upstream of the furnace should be requested.

(3) The application does not contain design information, calculations, or historical operating experience for the proposed absorbers. Information such as size, packing type, liquid rate, pressure drop, efficiency as a function of gas rate, inlet/outlet compositions, superficial gas velocity, flood and load points, etc., should be requested.

(4) The application does not contain design information, calculations, or historical operating experience for the proposed converters. Engineering estimates for SO2 emissions are not possible based upon the information submitted by the applicant. Information such as size, number of passes, efficiency, flow rates, reaction rates, vendor guarantees, maintenance plans, etc., should be requested.

(5) The applicant has misinterpreted Rule 17-2.270 regarding "Good Engineering Practice Stack Height" (see page 38 of the application). The rule defines a minimum stack height. The applicant has interpreted the rule as defining a maximum stack height and has proposed a stack height that does not comply with the minimum requirements of the rule. The applicant should be requested to change the stack height proposal.

(6) All of the Air Quality Modeling submitted by the applicant was based on a stack height that does not comply with Rule 17-2.270. Air Quality Modeling should be re-done based upon an appropriate stack height.

If you have any questions regarding these comments, please call me at Suncom 552-7612 ext 360.

copy to: J. Harry Kerns

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor   Dale Twachtmann, Secretary   John Shearer, Assistant Secretary

July 24, 1990

Mr. Greg Worley
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, NE
Atlanta, Georgia 30365

Dear Mr. Worley:

Re: Royster Phosphates, Inc.
Manatee County
PSD-FL-144

Enclosed for your review and comment is supplementary information to the above referenced PSD permit application. If you have any comments or questions, please contact Teresa Heron, Barry Andrews, or Cleve Holladay at the above address or at (904)488-1344.

Sincerely,

Kari Daber for

Patricia G. Adams
Planner
Bureau of Air Regulation

PAG/kt

enclosures

CM: P 377 462 161
7/13/90 (Post Mark)
Palmetto, FL

File Copy

Royster Phosphates, Inc.

13300 U. S. Hwy. 41 North
Palmetto, Florida 34221
(813) 722-4555

Cert. Mail
Number 377 462 161

July 6, 1990

RECEIVED

JUL 20 1990

DER - BAQM

Mr. C. H. Fancy
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Fl 32899-2400

Re: Permit Application Number AC 41-173305
Royster Phosphates, Inc, Sulfuric Acid Plant

Dear Mr. Fancy:

In the following, please find responses to your request for further information dated 13 April 1990. In an effort to gain understanding of the department's request and to provide the requested information in a positive manner, a meeting was held on 21 May 1990 with FDER staff from your office, Southwest District office, Manatee County Public Health Unit, Royster, and Monsanto, (see attachment one). In this meeting, the request was thoroughly discussed with Monsanto staff addressing many of the technical issues.

Monsanto staff provided a technical paper entitled, "The Monarch Process," (provided as attachment two). This paper describes several process variations that will be incorporated into the sulfuric acid plant contemplated in the above referenced permit application. Foremost of the variations is a new method that allows for higher operating temperatures in the interstage absortion step. Monsanto further provided their current strategy for controlling acid mist formation in the interstage absorption step.

During the meeting, many of the issues concerning the lack of drying tower and acid mist formation were addressed to the satisfaction of those present. Further information and data were requested on the proposed plants ability to meet sulfur dioxide and acid mist limitations. Monsanto staff offered to attempt to assimilate available data on these items from actual operating plants where the process variations are being utilized. Find in attachment three that available information. (At present, the only plant utilizing these variations is located in Namhae, Korea). Routine tests on acid mist are not performed, however, the paper provided in attachment three does review sulfur dioxide emissions at that facility.

In the following, please find more specific responses to your request -- in request and response format:

REQUEST ONE
Page 4, Item 2.1 of Section 2.0 - Description of Existing Facility (see table of contents) indicate that actual emission rates of sulfur dioxide and acid mist from the existing plant were determined from a review of emission measurement and production data from the past five years. For purpose of PSD regulations, the "actual" emissions shall be an average of the previous two years operating data unless another period is deemed to be more representative of normal operating conditions. Please submit this data (actual emissions) for the previous two years period for all criteria pollutants at this facility.

RESPONSE ONE
Emission measurements and production data for the pevious five year period is not available due to the plant not being in operation during that entire period. The data submitted with the application represents the most recent information available for emissions measurements and plant production.

REQUEST TWO
Are there any emissions from the waste heat boiler and the HRS boilers? If so, please quantify. Are they new sources? What type of fuel are they burning?

RESPONSE TWO
There are no emissions from the waste heat boiler or the HRS boiler. Both of the referenced boilers receive heat energy from process gas streams within the sulfuric acid manufacturing process. No other fuels are utilized nor do they have emission points that qualify as new sources.

REQUEST THREE
Submit a complete block flow diagram that will include all units in the proposed new sulfuric acid plant (i.e., waste heat boiler, HRS boiler, turbine generator, etc.).

RESPONSE THREE
The previously supplied diagram accurately reflects the components mentioned. Please accept the diagram on page three of attachment two if further documentation is needed.

REQUEST FOUR
In reference to Mr. F. Ivan Nance's letter of March 13, 1990, Mr. Gary A. Maier, of the DER Tampa office, feels the responses are inadequate. Please refer to his memo dated December 21, 1989, and provide answers to items No. 2, 3, and 4 as requested.

RESPONSE FOUR

Mr. Maier's request was discussed in detail during the 21 May 1990 meeting. In brief, the need for details concerning the generation af acid mist were resolved upon explanation of process control methods within the interstage absorption step. Monsanto has identified process conditions that diminish greatly the generation acid mists in the manufacturing process with or without a drying tower present. This concept is found in detail on page eight of attachment two.

REQUEST FIVE

Mr. Ivan Nance's letter of March 13, 1990 also stated that Koogler and Associates would be forwarding under separate cover the computer printouts for the modeling results in both magnetic and paper format. We have not received any of this information.

RESPONSE FIVE

Koogler and Associates have provided the requested information at this time.

REQUEST SIX

Please respond to attached memo from Mr. Rob Baum, of the Manatee County HRS.

ITEM ONE

In regards to Royster's response #2 about the lack of a drying tower, are there any operational plants in the United States which do not use a drying tower upstream of the sulfur furnace in a double absorption sulfuric acid plant? If there are no other plants like this would this be the first plant of its kind including any pilot type plants?

ITEM ONE RESPONSE

Monsanto constructed in 1962 for Climax Chemical a sulfuric acid plant with no drying tower. It operated successfully for 25 years prior to shut down a few years ago.

Please see further information on this subject at page two of attachment two, "Wet catalytic Process."

ITEM TWO

If there are sulfuric acid plants of this kind (no upstream dryer) do they operate in a high humidity environment such as Florida and what impact will the high humidity have on the operation of the plant concerning emission of Sulfur Dioxide? If there is a relationship between humidity and emissions of sulfur dioxide please provide a graph showing the relative relationship.

ITEM TWO RESPONSE

No specific knowledge of a relationship between humidity and sulfur dioxide emissions is known. Please see page two of attachment two, "Wet Catalytic Process."

ITEM THREE
Would the addition of a drying tower reduce the emission of sulfur dioxide with all other factors being equal even though it is known that the energy consumption would be greater using the drying tower, and that cogeneration could be used to offset this additional energy usage.

ITEM THREE RESPONSE
Utilization of a drying tower would not reduce sulfur dioxide emissions as contemplated in this request. Please see pages two and four of attachment two "Process Overview."

Hopefully, the foregoing responses and information in attachment three will satisfy the departments request. Royster appreciates the departments cooperation in this matter. Should further information be required, please contact our office.

Very truly yours,

Ivan Nance

F. Ivan Nance
Environmental/Technical
Manager

FIN: dam
Attachments
cc: R. Baum, MCPHU
W. C. Thomas, FDER SW District
G. Maier, FDER SW District
P. Raval, Koogler & Associates

cc: Barry Andrews
Clere Holladay
Teresa Horon
} 7/24/90 KT
Greg Worley - EPA

ATTACHMENT ONE

BEST AVAILABLE COPY

Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347 • 813-623-5561

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary

Dr. Richard Garrity, Deputy Assistant Secretary

DATE: May 21, 90

TIME: 9:30 a.m.

SUBJECT: Royster Phosphates

A T T E N D E E S

Name	Affiliation	Telephone
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Bill Thomas	"	" 339
Gary Maier	FDER	623-5561 (360)
Barry Andrews	FDER (Tallahassee)	(904) 488-1344
Raul Alonso	H.R.S. (Manatee	813-748-0666
Rob Baum	HRS (MANATEE CO.)	813-748-0666
James R. Shafer	Monsanto St. Louis	(314) 275-5749
Robert W. Grendel	Monsanto St Louis	314/275-5743
Richard P. Fleming	Royster	813-222-4555
Susanne Neubauer	Royster	813-722-4555
Steven Vance	Royster	" "

TPA-02
06/81

ATTACHMENT TWO

THE MONARCH PROCESS

A Sulfuric Acid Plant for the 90's

A Sulfuric Acid Plant for the 1990's

**D. R. McAlister, R. W. Grendel, D. R. Schneider,
J. R. Shafer, and J. S. Tucker**

Monsanto Enviro-Chem Systems, Inc.
Corporate Pointe, P.O. Box 14547
St. Louis, Missouri 63178

ABSTRACT

An active research and development program combined with the experience gained from designing and operating Heat Recovery Systems has led to another major advance which significantly improves the economics of sulfuric acid heat recovery. Monsanto Enviro-Chem's new process is based on the highly synergistic combination of two well proven technologies. This new acid plant rejects essentially no heat to cooling water, and a 2500 t/d plant can export at least 32 MW of electricity. Power generation is approaching the point where the acid plant can be justified on the basis of energy alone, with sulfuric acid being the by-product. The acid plant of the future will be the one that is most successful in maximizing energy credits, and Enviro-Chem's process represents a step change toward accomplishing that goal.

BACKGROUND

In the 1970's a typical sulfur burning sulfuric acid plant recovered only about 55% to 60% of the process heat as steam. With Monsanto Enviro-Chem's Heat Recovery System (HRS), 95% of the process heat can be recovered as steam. The HRS process involves holding absorbing tower exit acid concentrations at 99% to 100%. This protects stainless steel equipment at operating temperatures which are high enough to generate medium pressure (10 bar) steam. (1, 2) While most prospective customers have been fascinated by the simplicity of the process, there were critics who insisted it wouldn't work.

A pilot plant was constructed and first operated in 1983. Today, more than 9000 operating hours have been logged on the pilot plant. Three plants with HRS have operated for over two years, and construction has started on three new installations. The first HRS, which started up at Namhae (Korea) in November 1987, continues to meet or exceed design expectations. (3) There was a process excursion at the Falconbridge plant in Norway, but this was unrelated to the basic technology.

Whenever a new technology is introduced, opportunities for optimization and improvement quickly follow. An active research and development program combined with the experience gained from designing and operating full scale systems has lead to another major advance which significantly improves the economics of recovering energy from sulfuric acid. Enviro-Chem's new process is based on the highly synergistic combination of two well proven technologies: HRS and the wet catalytic process. This new technology is the basis of several pending patent applications.

There are two major features of this technology. First, essentially all the process heat is recovered as steam, which eliminates the need for cooling water in the acid plant. Second, heat is shifted from the production of medium pressure steam to the production of high pressure steam. In the future, the successful sulfuric acid plants will be those that concentrate on generating maximum electric power.

WET CATALYTIC PROCESS

The manufacture of sulfuric acid by processing gas containing water, sulfur dioxide, and sulfur trioxide is a well established and proven technology. It is sometimes referred to as the wet catalytic process. Such plants typically operate on feedstocks like hydrogen sulfide, which produce water when burned.

Cooled combustion gases are taken directly to the converter, thus eliminating the capital cost associated with drying. Conventional vanadium catalysts have worked very successfully under these conditions. Enviro-Chem built such a plant for Climax Chemical in 1962. It operated for 25 years before it was shut down a few years ago.

PROCESS OVERVIEW

A flow diagram for the new process is shown in Figure 1. Moist ambient air is drawn through a filter by the main blower. The compressed air is preheated prior to entering the sulfur burner. The preheater uses hot acid from the heat recovery system (HRS) to heat combustion air, which effectively shifts additional heat to high pressure steam production. The gas exiting the sulfur burner is cooled by a waste heat boiler before entering the first converter pass. A superheater after the first pass and a hot heat exchanger after the second pass are standard gas cooling equipment for these locations.

Dilution water, in the form of 0.3 bar saturated steam, is added to the gas leaving the third pass. As the gas is cooled in superheater 3A and economizer 3B, some of the sulfur trioxide reacts with the water vapor to form sulfuric acid vapor. About one fourth of this reaction heat is recovered in the superheater and three fourths is recovered in the economizer 3B. Some acid is condensed in the economizer. This heat of reaction and condensation is recovered as high pressure steam.

The gas from the economizer enters the first of two HRT stages. High temperature absorption and condensation occurs in the lower stage. The upper stage is a cooler condenser, where the gas is contacted with cool sulfuric acid to reduce sulfur trioxide and sulfuric acid vapor to normal levels. The gas is slowly cooled in the upper stage to minimize mist formation. Acid circulating through the tower absorbs the heat from acid condensation and sensible gas cooling. The circulating acid

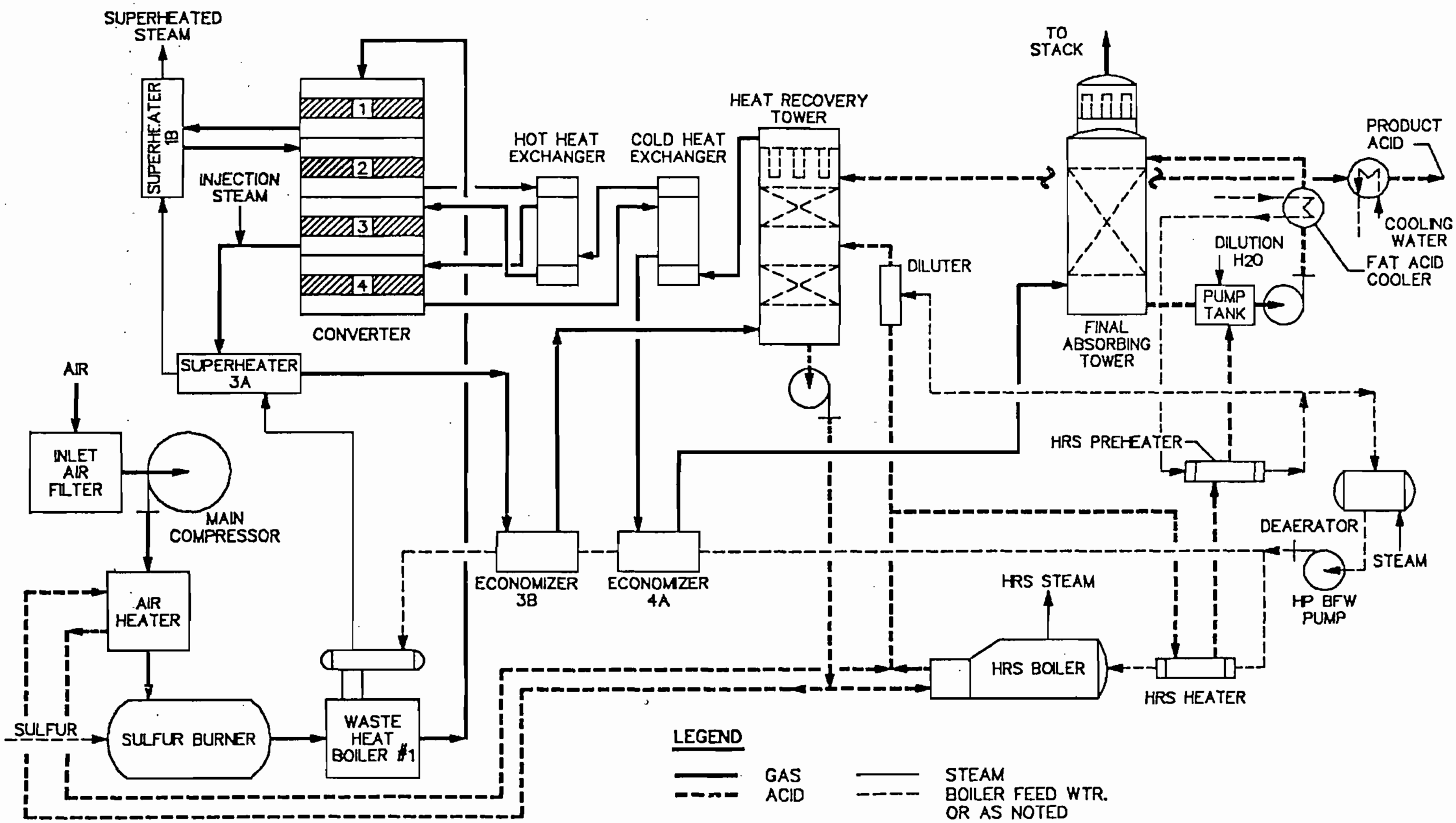

FIG.1 : PROCESS FLOW DIAGRAM

is cooled in the air preheater and the HRS boiler. The cooled acid stream flows to the dilutor where it is mixed with boiler feed water for trim concentration control, before flowing back to the first HRT stage.

The overflow from the HRT flows to the HRS heater where it is cooled by feed water to the HRS boiler. This acid stream is further cooled in the HRS preheater before flowing into the final tower pump tank.

The gas leaving the HRT is heated in the cold and hot interpass heat exchangers before entering the fourth converter pass. The cold interpass heat exchanger is located after the fourth pass, so it is only exposed to dry gases with a low dew point. The cold gas leaving the cold interpass exchanger enters the hot interpass exchanger at a temperature above the dew point of the hot gas entering the hot interpass exchanger. The gas leaving the fourth pass is cooled in the cold interpass exchanger and economizer 4A before entering the final absorbing tower (FAT). From there it exhausts to the atmosphere through the plant stack.

The acid from the FAT is pumped through the FAT acid cooler, which uses demineralized water to cool the acid. The cooled acid is then distributed to the FAT and the upper stage of the HRT. The water leaving the FAT cooler is further heated in the HRS preheater before going to the deaerator. The deaerator is operated at a pressure high enough to allow all the acid heat to be recovered.

The product acid cooler and the compressor lube oil cooler are the only cooling water requirements, so no cooling tower is installed in the acid plant area. The only cooling tower is for the steam condenser in the turbogenerator area.

For minimum capital cost (low power value), the process can be modified by eliminating the air preheater, steam injection system, and the alloy condensing economizer. This flow scheme shifts more heat to 10 bar steam production in the HRS. The dry tower is eliminated to take advantage of that cost savings.

The following sections provide additional information on the major equipment changes.

ELIMINATE DRYING TOWER

One of the key features of the new process is that there is no drying tower (DT). Eliminating the drying tower produces a number of advantages. The cost of the DT and its associated pump, piping, pump tank, acid cooler, and cooling water system is saved. Cross flow from the DT (or DT/FAT) pump tank to the HRT is not required to maintain the DT acid strength. This eliminates the problem of recovering energy from the hot cross flow acid leaving the HRT circuit, and that potential heat loss is avoided. Concentration control is also simplified.

There are several other factors which contribute to increased energy recovery. The heat of condensation of water vapor normally removed in the DT cooler is shifted to the HRT, where it is available to generate steam. The low blower suction temperature reduces the blower power, and the heat of compression is recovered in the high pressure boiler without the problems associated with suction drying towers.

AIR FILTER

While the flow diagram shows a conventional air filter, the process is adaptable to using a wet scrubber, which eliminates the maintenance problems associated with conventional air filters. The air enters the process at a temperature close to the wet bulb temperature. Hot water from elsewhere in the complex can be used for scrubbing. This supplies the heat needed to evaporate additional water; however, the increased blower horsepower limits the effectiveness of this approach, especially if the same heat can be utilized downstream of the blower.

COMBUSTION AIR PREHEATER

Using HRS acid to preheat combustion air provides an effective means of moving heat from medium pressure steam production to high pressure steam production. There is a synergism with eliminating the dry tower, wherein the cold suction temperature minimizes the horsepower and reduces blower discharge temperature. Substantial heat is recovered in the preheater, and the burner inlet temperature is increased. The water vapor increases the mass flow and specific heat, which keeps the burner exit temperature down.

The preheater is a fin tube heat exchanger. Alloy materials are required where the tubes contact hot acid; however, the fins may be constructed of less expensive materials.

STEAM INJECTION

Table I shows the heat evolved when sulfur trioxide and water react to form sulfuric acid under different phase conditions. The gas phase reaction (Equation 2) produces 74% of the heat produced by the normal liquid phase reaction (Equation 1). Figure 2 shows the extent of the gas phase reaction of an equimolar mixture of sulfur trioxide and water at various temperatures. With steam injection, much of the reaction heat is available at temperatures considerably higher than the HRS operating temperature.

The steam injection is carried out after the third catalyst stage. While some reaction heat is picked up in the 3A superheater, this is not thermodynamically efficient because of the large difference in stream temperatures. The purpose of injecting steam after the third pass is to maintain temperatures well above the dew point until the gases are completely mixed. At this location, the bulk gas temperature is about 200°C above the dew point.

Potential sources of injection steam are boiler blowdown flash, deaerator vent steam, turbine low pressure port, steam generated from low temperature acid, HRS steam, and low pressure steam sources from outside the acid plant.

Table I

Sulfuric Acid Standard Heats of Reaction

No.	Reaction Conditions	Heat of Reaction
1)	SO_3 (g) + H_2O (l) $\longrightarrow$ H_2SO_4 (l)	31.7 kcal/mole
2)	SO_3 (g) + H_2O (g) $\longrightarrow$ H_2SO_4 (g)	23.3 kcal/mole
3)	SO_3 (g) + H_2O (g) $\longrightarrow$ H_2SO_4 (l)	42.2 kcal/mole

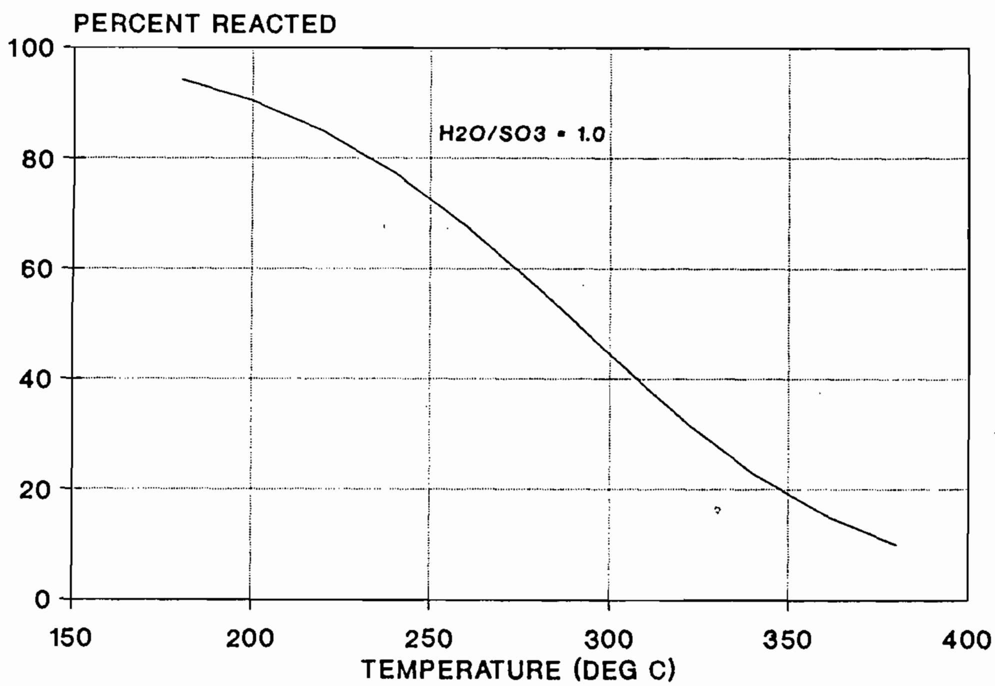

FIG. 2: EXTENT OF VAPOR PHASE REACTION

Localized cooling and high water concentration produces weak acid on the steam injection nozzle. This nozzle is constructed of ceramic material to withstand the aggressive corrosive conditions.

CONDENSING ECONOMIZER

The 3B economizer allows more of the acid heat of reaction to be recovered as high pressure steam. The gas phase reaction is approximately 60% complete at the economizer exit. Since the tube wall temperatures are below the dew point, some condensation heat is also recovered. The economizer is constructed of the same corrosion resistant alloy materials that have been proven in HRS service.

The dew point of the gas stream ranges from about 210°C to about 270°C. The lower end of this range is typical for a plant where ambient air is the main source of moisture. The upper end of the range is typical for a plant where steam injection is used to produce a nearly equimolar mixture of sulfur trioxide and water.

The mole ratio of water to sulfur trioxide is kept below 1.05, which corresponds approximately to the concentration of the sulfuric acid azeotrope. This insures that the condensation product will have a concentration greater than the sulfuric acid azeotrope, which is about 99% at 210°C and 98.6% at 270°C. These high acid concentrations are well suited to alloy materials previously described. (4, 5, 6)

The condensate concentration is not very sensitive to water vapor content. If there are excursions in the steam addition rate, the condensate film is maintained at relatively high acid strength, where the corrosion rate is low. Figure 3 shows that 140% of the stoichiometric water can be added without decreasing the condensate concentration below 98% acid. The excess water vapor passes to the HRT, where the large holdup of acid prevents the concentration from dropping rapidly. As a concentration decrease is detected, the steam valve is throttled.

While not shown in the flow diagram, under some circumstances it is advantageous to employ a heat exchanger to heat high pressure boiler feed water with HRS acid. Such a unit can operate in parallel or series with the HRS boiler. This is another way of utilizing acid heat to produce high pressure steam rather than medium pressure steam. Such a unit can not recover heat at as high a temperature as a condensing economizer, but the better heat transfer can reduce equipment cost.

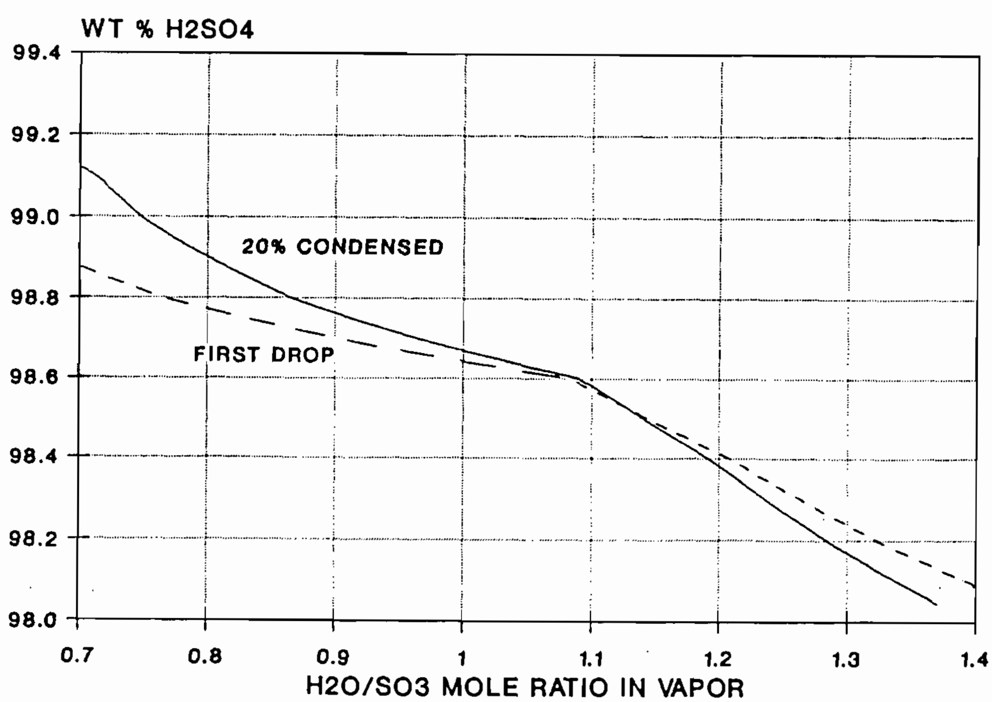

FIG. 3: CONDENSATE COMPOSITION

HEAT RECOVERY TOWER

Increased Steam Production

Table I shows the reaction of sulfur trioxide with water vapor (Equation 3) produces 33% more heat than the reaction with liquid water (Equation 1). This heat of reaction can be converted to medium pressure steam in the HRS. Sources of water vapor are humid air and low pressure injection steam, as previously described. The HRS acts like a chemical heat pump, in that low pressure steam used for acid dilution in the HRT is effectively upgraded to medium pressure steam.

Mist Formation

When a wet catalytic process is operated with a conventional absorbing tower, large quantities of acid mist are formed. Sulfur burning plants with steam leaks have had similar experience. Fortunately, there is a synergism at work where the wet gases are advantageous to HRS, and HRS provides a means of overcoming the high mist levels that can be experienced in a wet catalytic process. The key is that the HRT operates with exit acid temperatures of 200°C to 230°C, which approach or even exceed the dew point of the inlet wet gas stream. This prevents rapid cooling and minimizes mist formation by an order of magnitude, as shown in Figure 4. Higher acid temperature is required as the water vapor content increases. The results shown in Figure 4 are based on an inlet gas temperature of 300°C and a constant liquid to gas ratio. HRS pilot plant tests confirm that mist is reduced to a level that is easily handled by high efficiency mist eliminators.

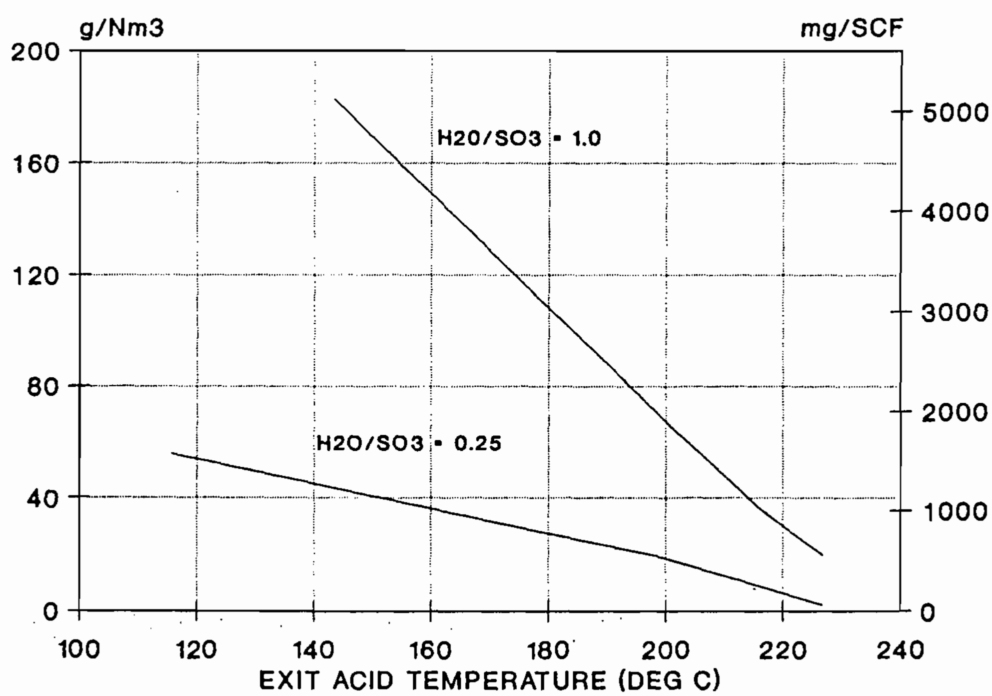

FIG. 4: MIST GENERATION IN ABSORBER

MATERIALS OF CONSTRUCTION

Wet sulfur trioxide-containing gas can be handled in carbon steel equipment provided the gas temperature is kept above the dew point. Carbon steel construction was used for the Climax Chemical plant mentioned earlier. The relatively high dewpoint generally limits cooling equipment to boilers and superheaters. Equipment operated below the dew point must be constructed of alloys or other corrosion resistant material.

There are a number of stainless steel and nickel alloys that can be used in high temperature strong acid service. This is well proven by HRS experience. Alloy performance can be characterized by a corrosion index (CI) which is defined in terms of alloy composition by the relationship:

$$CI = 0.4[Cr] - 0.05[Ni] - 0.1[Mo] - 0.1[Ni] \times [Mo] \quad > 8$$

Where: [Cr] = Weight percent chromium
[Ni] = Weight percent nickel
[Mo] = Weight percent molybdenum

Alloys most likely to exhibit low corrosion rates in strong high temperature sulfuric acid are those with the highest corrosion index. Preferably the corrosion index should be greater than 8. As indicated by the corrosion index formula, high chromium is desirable, and it is preferable to avoid alloys which have both high nickel and high molybdenum. Alloys with 18 to 30% chromium which contain high nickel and very low molybdenum, or low nickel and moderate amounts of molybdenum usually give satisfactory service.

PILOT PLANT CORROSION TESTS

HRS pilot plant tests with wet sulfur trioxide containing feed gas has confirmed low corrosion rates. More than 1000 operating hours have been logged to date.

Table II shows corrosion rates for a number of alloys placed about 1.5 meters downstream of the steam injection nozzle. This data was taken with steam injection supplying 100% of the dilution water requirement. At 235°C, the metal surface temperature was well below the dew point.

Table II

Corrosion Rates Measured in Pilot Plant

Alloy	Corrosion Rate mm/a	Corrosion Rate (mpy)
304 Stainless	0.020	0.8
309 Stainless	0.013	0.5
310 Stainless	0.008	0.3

START UP AND SHUT DOWN

For safe and corrosion free start ups and shut downs, two extra ducts have been added (not shown in the process flow diagram). There is a recycle duct from the final absorbing tower outlet to the blower inlet, and a heat recovery system bypass from the third pass outlet to the fourth pass outlet. In this plant, the cold interpass heat exchanger is after the fourth pass instead of the more typical third pass.

For cooling and purging the plant, dry air is recycled through the entire plant. Residual sulfur trioxide and heat are removed in the final tower and its acid cooler.

At start up, liquid dilution water is used instead of steam injection. This lowers the dew point by about 60°C. Steam injection is initiated when the heat exchanger surfaces are close to the steady state operating temperature.

ECONOMIC BENEFITS

While the development of a new technology is always interesting, what is most important is the results achieved. Table III shows the benefits of Enviro-Chem's new design are quite impressive.

The three cases shown in Table III are all based on a 2500 t/d sulfuric acid plant in a typical phosphate fertilizer operation. In all cases, 54.5 t/h (120,000 lb/h) of 3 bar steam is exported for phosphoric acid evaporation. Some additional 3 bar steam is required for the deaerator, and about 5.9 t/h (13,000 lb/hr) of nominal 10 bar steam is utilized for ejector operation and sulfur melting/heating. The main compressor is turbine driven, and all the excess steam from the acid plant goes to the turbine generator to produce electric power. About 2 MW of power is used in the acid plant, and the rest is available for export. The scope for the turbine generator area includes all the normal ancillary facilities such as cooling tower, building, and electrical distribution.

The "conventional plant", case 1, is a typical plant built in the 1980's with a nominal 70% energy recovery. About 25% of the reaction heat is rejected to cooling water. A portion of the export steam is supplied by a back pressure turbine on the main compressor. The balance is obtained by extraction from the generator turbine. The net export power for this case is about 21 MW.

The "high power" design, case 3, can export about 32 MW of electric power. Comparing case 3 and case 1, the economics for the new design are seen to be outstanding. The export power is increased by about 11 MW (more than 50%), while the capital cost for the new design is only about $6 million more than the conventional plant. In terms of investment equivalents, this is about $550/kW, whereas a typical hurdle rate for $0.05/kWh power is about $1200/kW. Based on these economics, the new process is extremely attractive and would pay out in about one year. With 32 MW being generated for an investment of $1380/kW, the economics are approaching the point where the plant can be justified on the basis of power alone, with sulfuric acid being the by-product.

Table III

Capital Cost and Operating Credits
2500 t/d Sulfur Burning Plant

		Conventional (Case 1)	New Process Low Capital (Case 2)	New Process High Power (Case 3)
High Pressure Steam				
Nominal Press	(bar)	50	50	60
Temperature	(^{o}C)	400	400	480
Production	(t/h)	143	128	151
Production	(t/t)	1.37	1.23	1.45
Medium Pressure Steam				
Production	(t/h)	0	65	40
Production	(t/t)	0	0.63	0.38
Electric Power				
Gross	(MW)	23	30	34
Internal Use	(MW)	2	2	2
Net Export	(MW)	21	28	32
Capital Cost				
Acid Plant	(M$)	26	27	30
TG Area	(M$)	12	13	14
Total	(M$)	38	40	44
Investment Equivalent				
Total Plant	($/kW)	1810	1430	1380
Incremental	($/kW)	-	280	1000
Case 1—> 3	($/kW)	-	-	550

The "low capital" option, case 2, should be considered when the value of electric power is in the range of $0.02/kWh. This option basically deletes some of the energy recovery equipment with a corresponding reduction in capital cost. As can be seen, the capital cost is about $2 million more than case 1, and the power generation is about 7 MW higher. The investment equivalent for this increment is only $280/kW.

While only two examples of the new process are presented, there are intermediate options which can be considered. Specific project needs might require more low pressure steam and less power generation. The process provides considerable flexibility, and an optimum design can be developed to match specific site requirements.

In either case the sulfuric acid plant is not tied to the phosphoric acid operation. Considerable work can be produced when 10 bar steam is expanded to 3 bar before exporting to the phosphoric acid evaporators. Furthermore, when the evaporator rates are reduced, the turbine generator can be designed to utilize that excess steam. The new process takes full advantage of these opportunities, and this provides a significant benefit over simply recovering process heat as hot water.

SUMMARY

Sulfuric acid heat recovery is well proven by more than two years of successful operating experience. Monsanto Enviro-Chem's new process is based on a highly synergistic combination of HRS and the wet catalytic process. By recovering more process heat and by shifting heat to high pressure steam production, the new process increases electric power generation by more than 50%. The process is highly economical, with the investment for incremental power ranging from $280 to $1000/kW. It is our belief that this process is so significant it will set the standard for sulfuric acid plants for the next decade and perhaps longer.

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1. McAlister, D. R., Corey, A. G., Ewing, L. J., and Ziebold, S. A., (1986): "Economically recovering sulfuric acid heat". Chemical Engineering Progress **82** (7), 34-38.

2. McAlister, D. R., and Ziebold, S. A., (Monsanto Company) (1986): "Heat recovery from concentrated sulfuric acid". US Patent No. 4,576,813.

3. Kim, U. B., Chin, Y. B., Smith, R. M., and Sheputis, J., (1988): "Sulfuric acid heat recovery (HRS) operations at Namhae Chemical Corporation, Korea". In "Sulfur-88", Proceedings of the International Conference, Vienna, 59-72.

4. Sulfur (1987) (189), 43-50: "HRS fronts Monsanto's latest push in sulfuric acid technology"

5. McAlister, D. R., and Ziebold, S. A., (Monsanto Company) (1987): "Heat recovery from concentrated sulfuric acid". US Patent No. 4,670,242.

6. Niesse, J. E., and McAlister, D. R., (1987): "Stainless steels for heat recovery from high temperature sulfuric acid". Paper No. 22, National Association of Corrosion Engineers Corrosion/87 Symposium, San Francisco.

ATTACHMENT THREE

Monsanto Enviro-Chem

Monsanto Enviro-Chem Systems, Inc.
Corporate Pointe
P.O. Box 14547
St. Louis, Missouri 63178-4547
Phone: (314) 275-5700

June 11, 1990

Mr. Richard Fleming
Royster Phosphates
Highway 41 North
Palmetto, FL 34221

Dear Dick:

During our joint meeting of May 21, 1990 with the Florida Department of Environmental Regulation, they requested some additional information from Monsanto Enviro-Chem Systems, Inc. For background, in 1987 Monsanto's technology was used to modify two 1500 STPD sulfuric acid plants in Korea. The primary objective of the project was to reduce the sulfur dioxide emissions to 500 ppm to meet the Korean Government regulation of 99.6% conversion. This was accomplished by converting each plant from single absorption to double absorption by the addition of an interpass tower. The interpass towers employed Monsanto's patented heat recovery system technology. With this technology the interpass tower serves its normal function of absorbing sulfur trioxide for achieving the required overall sulfur dioxide conversion. In addition and most significant is the process heat is recovered as intermediate pressure steam for electrical power generation. This is process heat that traditionally is rejected to a cooling tower.

When the modified sulfuric plants were started up in 1987, sulfur dioxide conversion of 99.8% was demonstrated and today with well over two years of operation conversion is still over 99.7%. This data demonstrates that Monsanto's interpass tower heat recovery system continues to meet the original design Korean Government sulfur dioxide conversion regulation of 99.6%. Further, it also meets the United States New Source Performance Standards of 4.0 pounds sulfur dioxide per ton sulfuric acid which is equivalent to 99.7% conversion. The enclosed report, "Sulfuric Acid Heat Recovery System (HRS) Operations at Namhae Chemical Corporation, Korea", by Smith, Sheputis, Kim, and Chin was given at "Sulfur 88" in Vienna, Austria. A summary of the startup data is included on page 10.

While there was major emphasis on sulfur dioxide conversion, the Korean Government did not impose regulation on sulfuric acid mist emissions. Consequently acid mist emissions have not been measured.

In terms of reliability, the on-stream time of the interpass tower heat recovery system has proven to be equal to or better than traditional interpass tower systems. For example, during the first four months of operation in Korea, the total downtime attributed to the Heat Recovery System interpass tower heat recovery system was four hours. Overall since 1987 high on-stream time has been achieved and there has been no replacement of major components.

In summary, Monsanto's interpass tower heat recovery system is well proven. The Korean project demonstrates that the specified design criteria can be met or exceeded on large sulfuric acid plants.

Sincerely,

Robert W. Grendel

Robert W. Grendel
Process Design Manager

RWG:pap

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Monsanto Enviro-Chem

SULFURIC ACID HEAT RECOVERY SYSTEM (HRS) OPERATIONS AT NAMHAE CHEMICAL CORPORATION, KOREA

R. M. Smith, J. Sheputis

Monsanto Enviro-Chem Systems, Inc.
P. O. Box 14547, St. Louis, Missouri 63178 USA

U. B. Kim, Y. B. Chin

Namhae Chemical Corporation
CPO Box 3259, Seoul, Korea

Presented at "Sulphur 88" - Vienna, Austria
November, 1988

ABSTRACT

Monsanto Enviro-Chem's (MEC) patented new Heat Recovery System (HRS) recovers most of the heat from sulfuric acid plant absorbers at up to 10 bars pressure. HRS was proven in pilot plant operation from 1983 to 1985. The first commercial unit was started up very successfully on Namhae Chemical Corporation's (NCC) 1350 t/d plant in November, 1987. With almost a year of operating experience, HRS has proven easy to operate, met all design criteria and has operated with a high on-stream time. HRS has been sold to several other customers and many others are evaluating the economics in their plants.

The following comment was made by K.P. Chae, Managing Director of Engineering and Projects and former Plant Manager of Namhae's Yeosu site:

> **"Without challenging spirit, you can't get much. We are proud of being the first case of commercial application of Monsanto Enviro-Chem's HRS technology.**
>
> **After many sleepless nights during the initial start-up and then following eight months' uninterrupted operation, now I can comfortably say that Namhae has made the right decision to go ahead with HRS, which has been tremendously profitable for Namhae Chemical Corporation by killing 'three birds with one stone': Energy saving, production increase and lowering emission."**

TECHNICAL BACKGROUND

The production of sulfuric acid in sulfur burning acid plants generates large quantities of heat from the combustion of sulfur to sulfur dioxide; the catalytic oxidation of sulfur dioxide to sulfur trioxide; and the heat of formation of acid as SO_3 is absorbed in sulfuric acid.

The heat of sulfur combustion and oxidation of sulfur dioxide have been utilized for years to generate steam. Until the mid-1970's, energy recovery from acid plants was about 55%. Then, as fuel prices increased, acid plants were optimized to generate more steam. Low gas-temperature economizers, low pressure drop catalyst, suction drying towers, increased SO_2 gas concentration and preheating boiler feedwater with acid became commonplace and energy recovery from acid plants increased to 70%. However, 30% of the heat was still lost. This heat loss was primarily in the acid formation and cooling process.

Monsanto Enviro-Chem initiated a major research effort in the late 1970's to recover more of this lost energy. The research progressed through studies and laboratory tests until 1983 when a pilot tower was installed in a 550 t/d acid plant to demonstrate the now patented Heat Recovery System (HRS).

The basis of the HRS is that sulfuric acid in the 99% range has low corrosivity toward certain commercially available alloys at temperatures up to 220°C and higher. The high acid temperature provides the driving force to economically generate steam while the acid still readily absorbs SO_3 gas.

The HRS becomes commercially viable when it is located before existing absorption towers or is used as the interpass absorption tower in a new plant. Figure 1 is a process diagram showing the major equipment items. The sulfur trioxide ladened gas flows to the Heat Recovery Tower (HRT) where the sulfur trioxide is absorbed in sulfuric acid. The absorption of the sulfur trioxide increases the temperature and concentration of the sulfuric acid. Concentrated, hot sulfuric acid leaves the tower at Point B. The acid is cooled by generating steam in a boiler and leaves the boiler at Point C. After the product is removed, the remaining acid is diluted with water and recirculated to the tower at Point A.

The process is shown on the HRS operating cycle diagram in Figure 2. The curves on the left are isocorrosion lines for 310 stainless steel. The right hand line defines the limiting conditions for the absorption of sulfur trioxide. The points on the triangle correspond to the process conditions identified in the Figure 1 process diagram. Acid near 100% concentration leaves the tower at 200°C (Point B). The acid is cooled in the boiler to approximately 160°C (Point C). The acid is diluted to 99% with a temperature rise due to heat of dilution (Point A). Finally, sulfur trioxide is absorbed in the tower, raising the acid concentration and temperature to complete the cycle.

This example is a 3.5 bar (50 psig) steam system but steam can be generated at up to 10 bar (150 psig). HRS can boost energy recovery to 90% to 95% of the total energy generated in a sulfur burning plant.

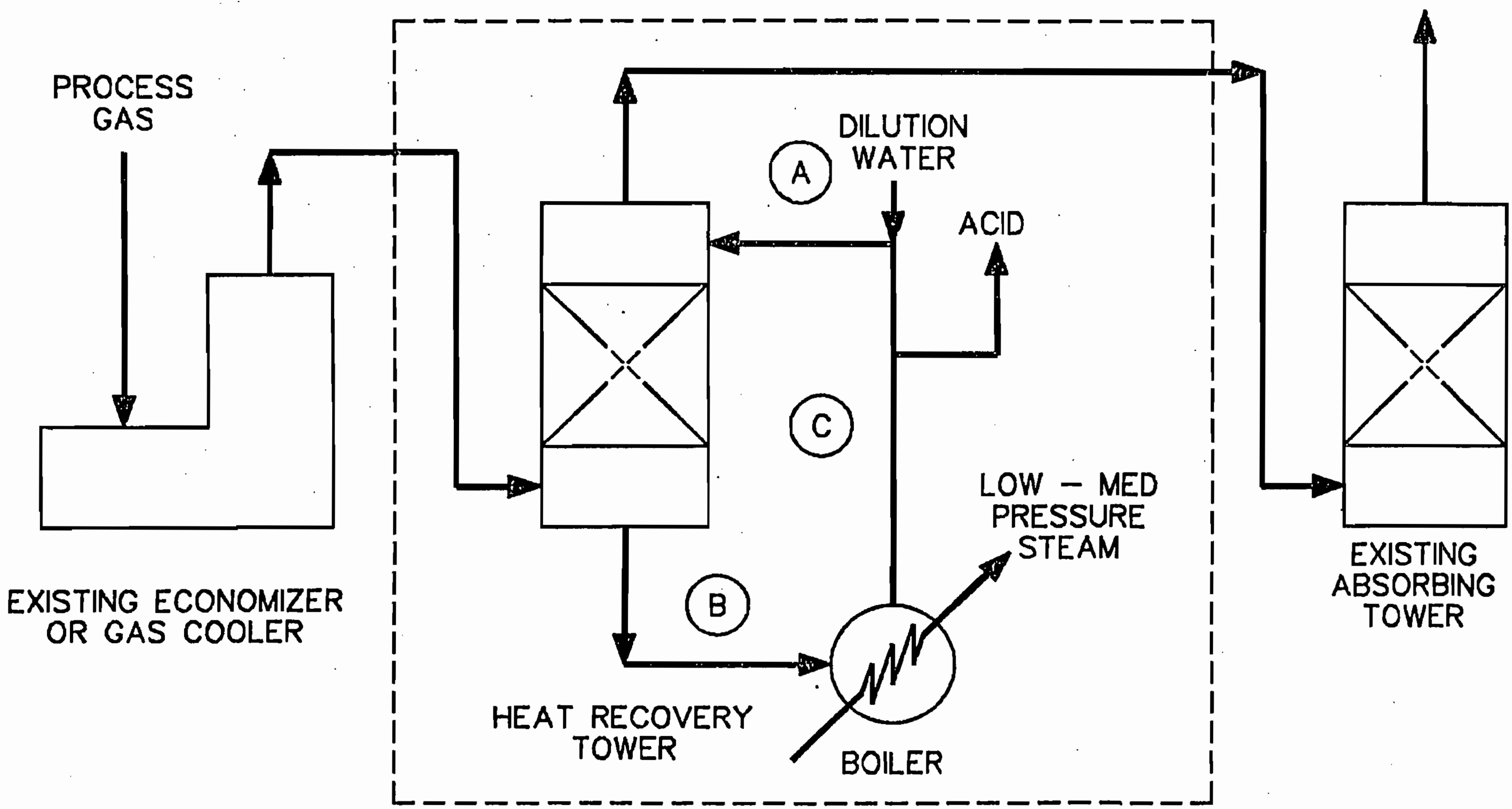

FIGURE 1 – HEAT RECOVERY SYSTEM

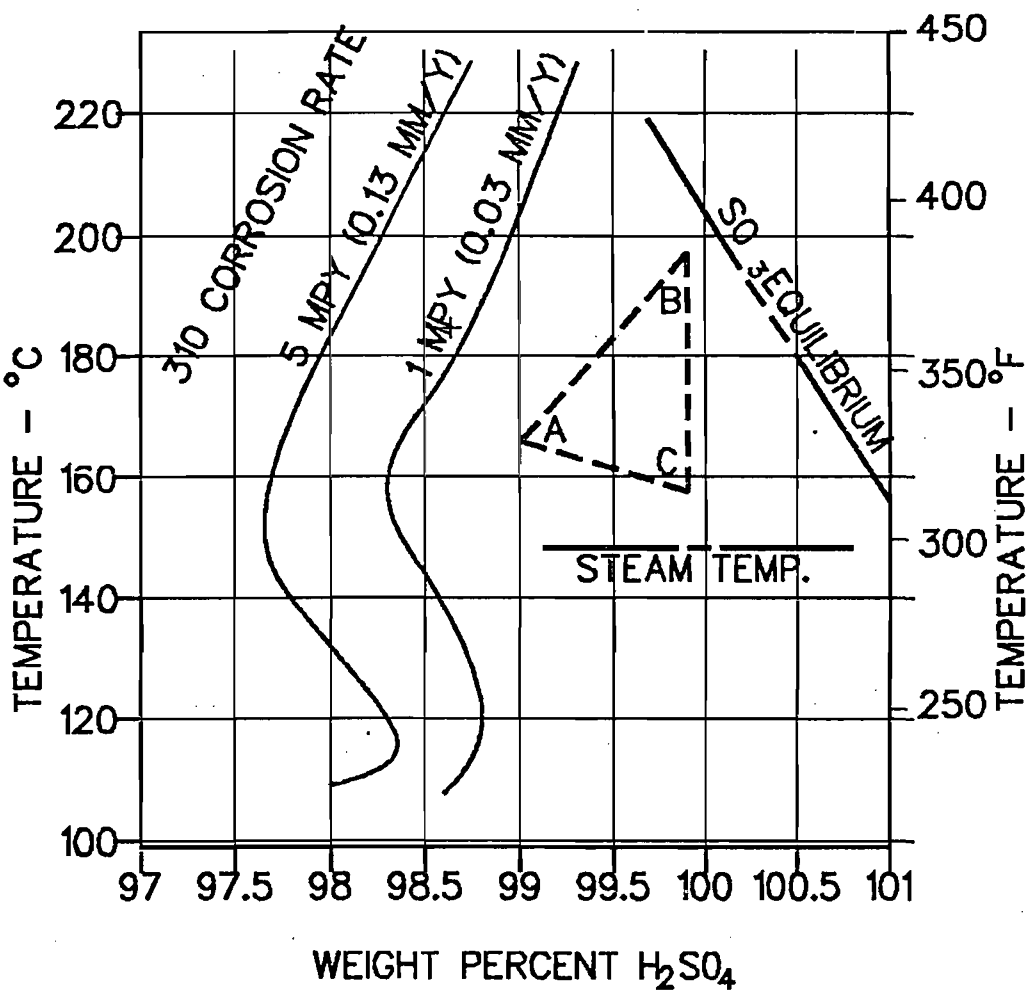

FIGURE 2 – HRS OPERATING CYCLE

NAMHAE HRS PROJECT

Namhae of Yeosu, South Korea is a billion dollar a year producer of fertilizer chemicals. Namhae is committed to supply competitively priced quality products to their worldwide clients through efficient operations and best available up-to-date plant technology.

In 1986, Namhae initiated a project to reduce the SO_2 emissions from their two existing, ten year old, single absorption sulfur burning sulfuric acid plants. Monsanto Enviro-Chem of St. Louis, Missouri, U.S.A., made several proposals for Namhae's consideration:

- Add tail gas ammonia scrubbing tower to the plants.
- Convert the plants to double absorption plants with an interpass tower and acid cooler addition.
- Convert the plants to double absorption using the new Heat Recovery System (HRS) as the interpass tower.

Although Monsanto Enviro-Chem had extensive pilot plant experience and data, there were no commercial Heat Recovery Systems in existence at that time. However, Namhae's commitment to cost effective operations and confidence in Monsanto Enviro-Chem's 55 years of reliable acid plant design experience convinced K. P. Chae, Namhae's Managing Director of Engineering and Projects, to select the new Heat Recovery System for Namhae's sulfuric acid plants.

In October, 1986, Namhae awarded Monsanto Enviro-Chem the contract to modify the plants. The project goals were to:

- Increase SO_2 to SO_3 conversion from 97.7% to 99.6%.
- Maintain each plant capacity at 1350 t/d. The original 1050 t/d plants were debottlenecked using Monsanto LP catalyst, increasing gas strength to 8.3% from 7.8% and adding low-temperature economics.
- Increase steam production by adding HRS and adding a new turbine generator dedicated to HRS steam.
- Maximize use of existing plant equipment.

The final design included:

- The Monsanto Enviro-Chem Heat Recovery System as the interpass absorption tower to remove SO_3 and a 150 psig heat recovery boiler to remove the heat of acid formation.
- A final separate one-pass stainless steel converter for the after interpass absorption conversion of SO_2 to SO_3. Monsanto Enviro-Chem LP catalyst was used here and in some passes in the existing converter to lower pressure drop and ensure required conversion was met.

- Cold interpass and hot interpass heat exchangers to heat gas going from the HRS interpass absorption tower to the final catalyst pass.

- Additional economizers and superheaters to recover more heat in the form of high pressure steam than in the form of low pressure steam.

- Much existing equipment was reused without modifications (blower, boiler, economizers and superheaters).

The gas flow diagram in Figure 3 shows the modifications.

In addition, a 9000 kWh turbogenerator was installed to convert the 130,000 lbs/hr of 150 psig steam from HRS to electricity.

Namhae's Project Manager, M. K. Oh, committed to a fast 14 month schedule. The first plant came on-line 13 months after the contract award and both plants and the turbogenerator were demonstrated in an excellent 14-1/2 months.

NAMHAE HEAT RECOVERY SYSTEM

The HRS operates very similar to a sulfuric acid plant absorbing tower. The main difference is higher acid temperatures; the acid is cooled in a boiler rather than an acid cooler; and the tower is stainless steel rather than bricklined steel. The flow diagram for HRS is shown in Figure 4.

The main equipment items in an HRS are:

1. Heat Recovery Tower

   This is a two stage 310 stainless steel tower with ceramic Intalox packing and Monsanto Enviro-Chem ES mist eliminators.

2. HRS Acid Circulation Pump

   This is a vertical submerged stainless steel pump manufactured by the Lewis Pump Co. The pump design is very similar to the proven design of the many vertical sulfuric acid pumps now in service.

3. HRS Boiler and Heaters

   This is a "kettle" type boiler with acid flow through stainless steel tubes. The water side of the boiler is operated and controlled similar to other firetube boilers.

   The HRS water heaters are similar to shell and tube acid coolers but without anodic protection. Their function is to cool product acid by heating the boiler feedwater coming to the HRS boiler.

4. The diluter is where hot dilution water is mixed and absorbed by the hot acid in a turbulent reaction.

5. Instrumention

   HRS includes flow, temperature and pressure measurement and control instruments that are normally used in acid plants, but there are also three special instruments that we want to tell you more about.

   A. Concentration Control

      The acid concentration to the tower must be controlled above 98.5% acid to minimize corrosion. Modern electrodeless torroidal conductivity analyzers were used to provide the reliable and accurate concentration measurement that is needed. These improved analyzers will rapidly become the standard of the industry in all drying and absorbing towers as well as in HRS.

   B. Corrosion Monitor

      The corrosion monitor measures the current generated by the corrosion reaction of the stainless steel probes in the acid circuit. The monitor, located in the control room, indicates the corrosion rate of the stainless steel and alarms if the rate exceeds set limits for any reason.

   C. Acoustic Leak Monitor (ALM)

      The acoustic leak monitor was especially developed several years ago by Monsanto and the manufacturer to detect boiler or heat exchanger leaks using acoustic (sound) emissions. The acoustic (sound) wave is transformed into an electric signal and is monitored in the control room.

      Boiler or heat exchanger leaks cause an increase in the acoustic emission which sounds the alarm so the plant can be shutdown safely for repairs. There have been no leaks at Namhae.

The other materials in an HRS such as pipe, valves, thermowells and etc. are made of stainless steels compatible with high temperature sulfuric acid.

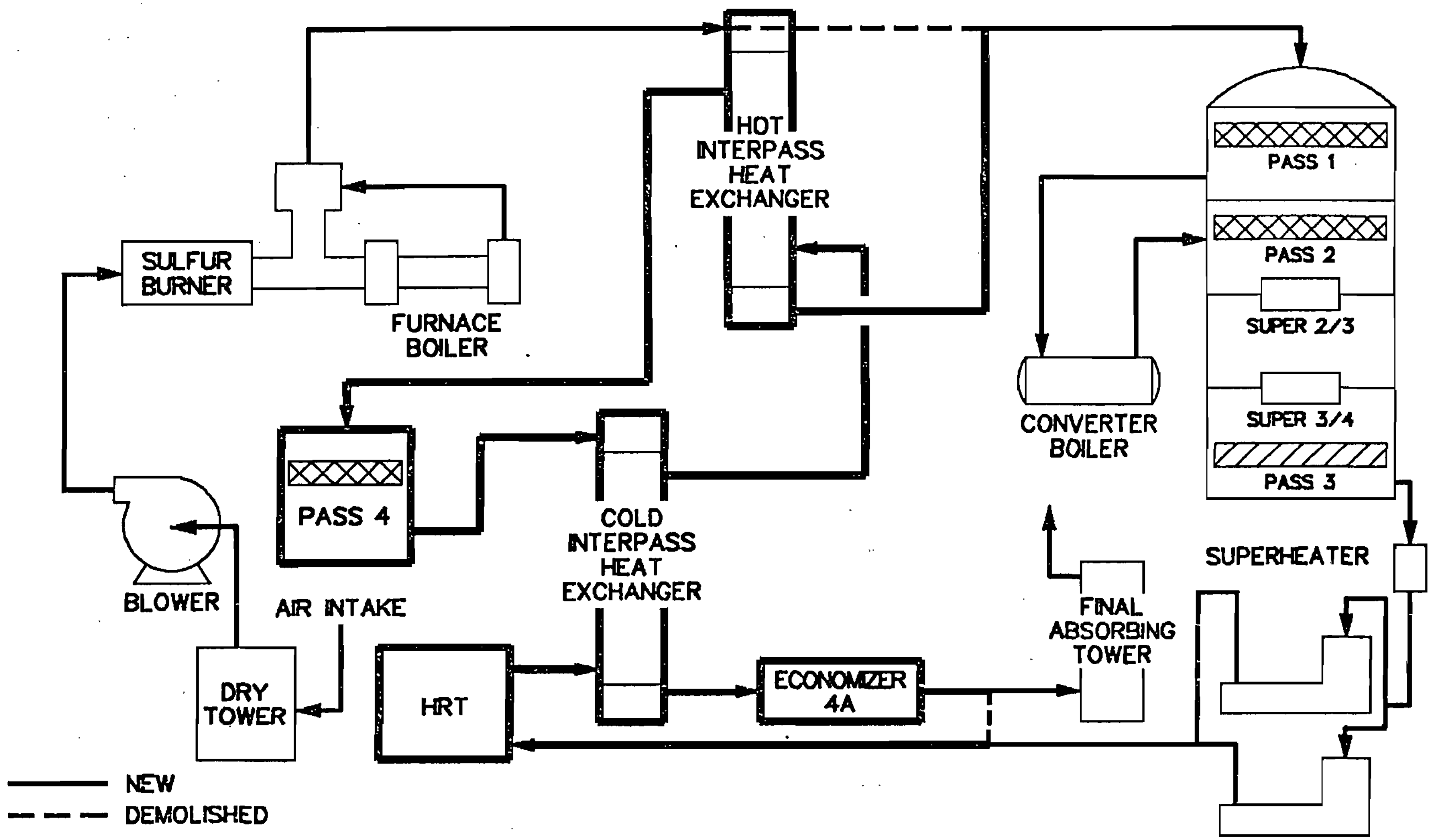

FIGURE 3 — GAS FLOW DIAGRAM

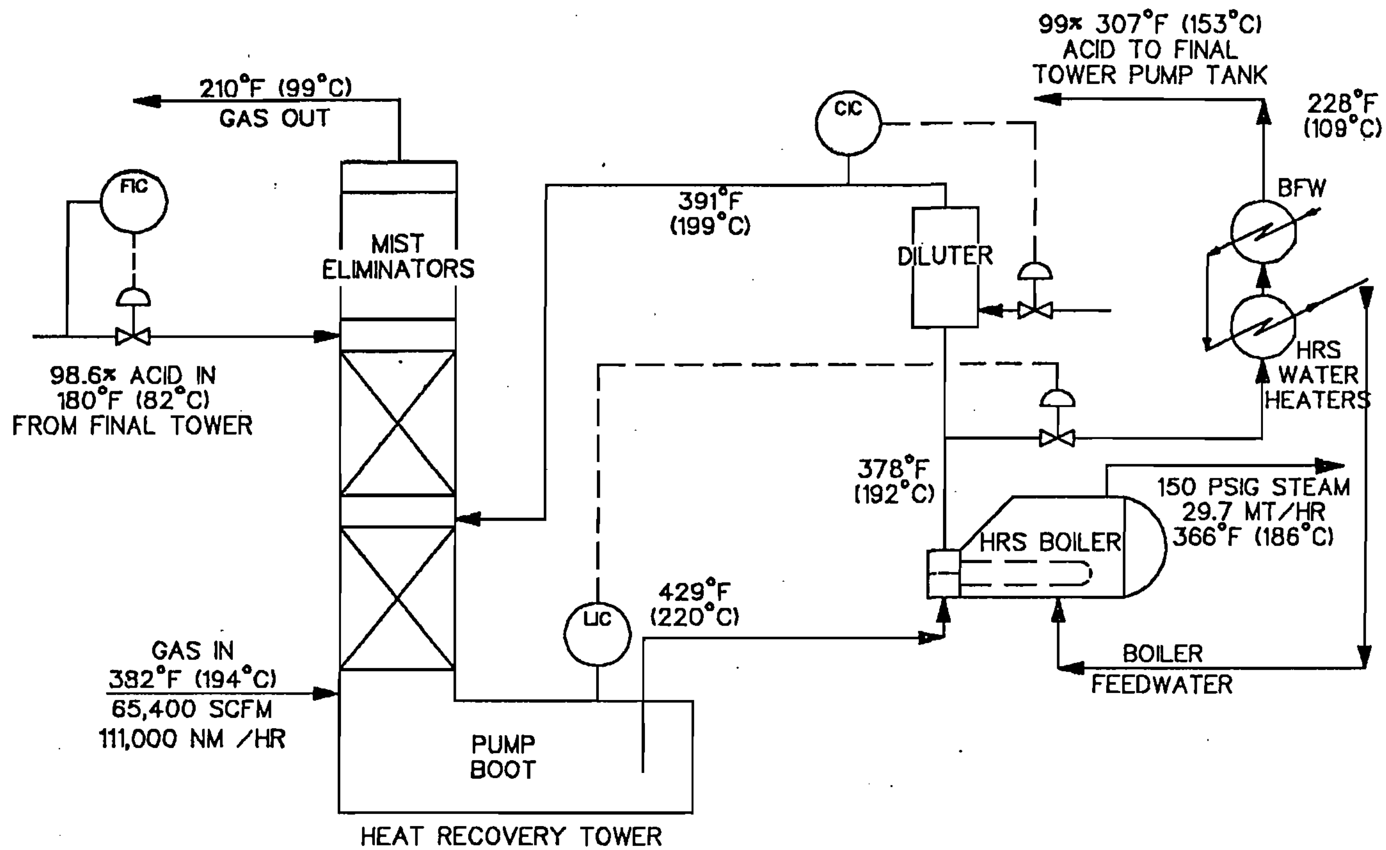

FIGURE 4 — HEAT RECOVERY SYSTEM

HRS START-UP (NOVEMBER AND DECEMBER, 1987)

The plant and HRS start-ups went extremely well. The first plant started up November 19, 1987, and all guarantees were demonstrated within 2-1/2 weeks. The second plant and the turbogenerator power guarantees were demonstrated 1 week after the Plant No. 2 start-up December 23, 1987.

All project guarantees and expectations were readily achieved. The conversion of SO_2 to SO_3 was much better than expected. In fact, the conversion analysis was double and triple checked before it was accepted.

HRS DEMONSTRATION RESULTS

	Guarantee	Expected	Plant #1	Plant #2
Production, t/d	1350	1350	1442	1430
SO_2 Emission, ppm	500	370	208	152
Steam Production, t/hr	27.9	29.7	33.2	30.6
Tons/Ton Acid	.50	.53	.55	.51
Conversion	99.6	99.7	99.85	99.9
T/G Electrical Power kWh	8760		8772 for both plants	

There were a few minor problems during the start-up. In fact, loss of control of acid strength, which is the major concern of many customers, occurred a few hours after start-up. When acid concentration was first put on automatic control, acid strength was rapidly dropped to 94% because the control action was reversed. It took a few hours to get the acid strenth into control and the plant was exposed to 200°C and 94% concentration. Inspection of the plant showed that the only damage was excessive corrosion on the acid pump impeller and wear parts where velocity is highest. However, the pump was still serviceable and was put back into operation. After examination of the pump, Lewis and Monsanto metallurgists concluded that damage was related completely to the low acid strength. However, Namhae had some concerns so some parts of alternate materials were installed for testing in one pump.

A second problem was excessive vibrations transmitted from the diluter to the platform walkway. The mixing of hot water and hot acid produces a turbulent reaction. The diluter requires a solid structural support to grade. The original diluter was supported from horizontal steel beams that support the walkway. The support was redesigned on heavier steel beams that extend down to grade. Excessive walkway vibrations were eliminated.

A third problem was collapse of some teflon lined pipe that was used between the diluter and the tower as a precaution against incomplete mixing which would cause higher than expected localized corrosion rates. Part of the pipe liner collapsed during the start-up period when the plant was shutdown and the acid was drained from the diluter causing a vacuum in the line. Some of the liner was removed as not being necessary and a vacuum breaker will be installed to further protect the remaining liner.

Typical start-up instrument adjustment difficulties were experienced on the Plant No. 1 start-up for the acoustic leak detector and the corrater. However, the Plant No. 2 instrument adjustment was minimal after Namhae's Instrument Section assumed responsibility from the construction contractor.

OPERATION - (JANUARY TO AUGUST, 1988)

Following the demonstration in December, both HRS units continued to operate according to the design and there were no significant operating or equipment problems.

In April, Namhae and Enviro-Chem showed the plant to 40 potential customers from all over the world. During the discussion a customer asked Namhae how many acid plant shutdowns had been caused by HRS equipment. After checking the record, Namhae stated there had only been one 4 hour shutdown to inspect the acid pump on the No. 1 plant. The pump was inspected in March and showed little additional corrosion since exposure to 94% acid during the initial start-up. The No. 2 acid plant continued to run well and was not even inspected until August.

Corrosion coupons that were installed in the acid system were checked occasionally. All showed the expected low corrosion rate except the one located directly after the diluter which showed 20 mils per year. This showed the need for improved mixing of the acid and water in the diluter. These modifications were delayed until the diluter supports were strengthened during the August turnaround because of the possibility that vibration would increase. It was not considered urgent because piping after the dilutor was teflon and no damage was being done.

During normal operation 0.5 to 1.0 liters per shift of drip acid was drained ahead of the cold interpass heat exchanger. This was considered to be condensation particularly on the dome of the tower which was not insulated and did not cause much concern. We have increased our attention to this matter since some duct leaks developed prior to the August turnaround. Improvements are being implemented which are expected to stop the drip acid.

The HRS performed well, consistently producing steam to generate over 9 MW of electrical power. HRS equipment performed as expected. Acid quality is significantly improved with the elimination of iron sulfates, cast iron slag, brick mortar particles and etc. as compared to bricklined acid towers.

The annual gross savings for both plants is 6600 tons of sulfur saved based on a 2.1% conversion improvement and a 350 day per year operating schedule at design rate. Also, 74,000 MWh of electrical power is generated under these conditions. The savings in U.S. dollars would be $0.9 million for sulfur, based on a $130/t delivered price, and $4.6 million for electrical power, based on $0.062/kWh costs, for a total yearly savings of $5.5 million. These cost figures are used for illustration only and are not necessarily those used by Namhae.

TURNAROUND INSPECTION - (AUGUST, 1988)

Plant No. 2 was shutdown for scheduled maintenance on August 20 after eight (8) months of operation. Plant No. 1 was shutdown on September 3 after nine (9) months of service. Both HRS units and sulfuric plants were inspected carefully to determine if any problems were developing.

Overall, both HRS units were in excellent condition. The corrosion rates were as expected.

The corrosion rates were determined by exact weight losses of metal coupons placed throughout the system and numerous metal thickness measurements of pipe and tower walls. Excluding the first start-up days, the corrosion rate of the tower and piping system was less than 2 mils per year (0.050 mm/yr) in all areas. The corrosion rate of the acid pipe from the tower to the boiler was about 1.5 mils per year (0.037 mm/yr) and less than 0.5 mil per year (0.012 mm/yr) after the boiler.

The corrosion rate of the coupons in the teflon lined pipe between the diluter and the tower was between 20 and 30 mils per year (.5 and .75 mm/yr). This higher than expected rate was attributed to inadequate mixing of the acid and water in the diluter. Inspection showed only normal corrosion on the tower as is discussed below. However, the diluter is being modified to improve acid and water mixing.

In addition to the corrosion coupons, the HRS units were checked by taking thickness readings with an ultrasonic thickness gauge ("D" meter) and micrometer. The ultrasonic thickness gauge uses sound waves to measure the thickness of equipment when it is impractical to reach both sides of a plate or pipe wall. The actual measured corrosion rates of HRS plate and pipe supported the data of the corrosion coupons.

The No. 2 plant HRS acid pump was pulled for the first time and inspected. The visual inspection of the pump showed it to be in good condition. Corrosion was no more than that experienced on other absorbing tower circulation pumps. The replaceable static wear rings were replaced to assure reliable service until the next turnaround and the pump was placed back in service. Although replaced, most of the wear rings were still within specification. We have concluded that the original materials of construction specification for the HRS pump was the proper choice for long-term life.

The HRS boiler was in excellent condition on both the acid and water side. The corrosion rate on the acid side was less than 2 mils per year.

All HRS equipment was inspected and found to be in good condition. The HRS tower shell, packing, packing supports and mist eliminators checked out in fine condition. Acid distributor header orifices showed some corrosion which could result from the poor mixing in the diluter or it could have occurred at the time the 94% acid corroded the acid pump.

The gas duct from the HRS tower to the cold interpass heat exchanger and the shell side inlet to the exchanger were inspected since drip acid had been routinely drained from the duct. There was significant iron sulfate in the bottom of the duct and on the exchanger tubesheet. There were a few leaking tubes which were repaired by driving a smaller tube inside. During the turnaround the top of the tower was insulated and the acid drain system ahead of the heat exchanger was modified to improve drainage and keep acid from getting into the exchanger. Drains will be monitored and gas sampling is planned to see that the problem has been solved.

The design, construction and successful demonstration of the first two commercial Heat Recovery Systems, complete with dedicated turbogenerator, is considered an outstanding success by Namhae Chemical Corporation and Monsanto Enviro-Chem Systems, Inc.

Many sulfuric acid plant operators from around the world have visited the Namhae acid plant. Visitors are quite impressed with the Namhae's HRS installation, clean and orderly facilities and Namhae's courage and dedication to install the first HRS.

SUMMARY

Namhae Chemical Corporation has proven that the HRS is a successful commercial process.

The initial concerns have been laid to rest and most of the minor problems have been solved. And, as a customer who visited the plant during the recent turnaround said, "The few remaining problems can be readily solved and I am not afraid of the Heat Recovery System".

Namhae and Monsanto Enviro-Chem will continue to review the HRS operations for good performance and maintenance. As with all new technology, improvements in design and HRS products are expected as experience is gained.

Three new HRS units are now being designed for clients who have visited the Namhae facilities. HRS projects are under consideration by other clients.

The attraction of using the HRS as an interpass absorption tower to reduce SO_2 emissions while producing an additional 0.5 t steam/t acid produced or 3.1 kWh of electrical power per t/d of H_2SO_4 will make the HRS a key component of future sulfuric acid plants.

FALCONBRIDGE, NORWAY

Several people have asked about the Falconbridge HRS start-up status. Falconbridge Nikkelverks of Kristiansand, Norway has a 240 t/d sulfuric acid plant and HRS for their smelter SO_2 offgas. Fenco Engineers of Toronto, Canada designed and constructed the acid plant as well as the SO_2 gas purification system. The acid plant is designed so that the HRS can operate as an interpass tower with normal interpass acid temperatures or as an HRS where steam is generated from cooling the acid.

The acid plant started up in October, 1987, in the conventional acid plant mode without steam generation. The HRS circuit has not operated much of the time because of operating problems in other parts of the acid plant and roasters. However, the HRS was successfully operated several weeks during mid-1988 and tests showed that it is operating in accordance with design. However, Falconbridge has commitments to produce liquid SO_2 which have required that the acid plant be shutdown until the last quarter of 1988.

REFERENCES

McAlister, D. R.; Corey, A. G.; Ewing, L. J.; Ziebold, S.A., "A Major Breakthrough in Sulfuric Acid Heat Recovery", paper presented at the 1986 Annual Meeting of AIChE, New Orleans, Louisiana.

Johnson, C. A.; Smith, R. M., "Reduce P_2O_5 Costs 10% by Recovering 95% of the Energy from Your Sulfuric Plants". Proceedings of the IFA Technical Conference, Port el Kantoui, Tunisia (October, 1986).

Niesse, J. E.; McAlister, D. R., "Stainless Steels for Heat Recovery from High Temperature Sulfuric Acid", Paper No. 22 presented at the March, 1987, "Corrosion 87" Meeting of NACE.

"HRS Fronts Monsanto's Latest Push in Sulphuric Acid Technology". Supplement to Sulphur 189 (March-April, 1987).

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

RECEIVED
APR 30 1990
DER - BAQM

KA 230-89-01

April 27, 1990

Mr. C.H. Fancy
Florida Department
of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Subject: Air Quality Modeling
Royster Phosphates, Inc.
Manatee County, Florida

Dear Mr. Fancy:

Enclosed are the computer print-outs for the air quality modeling we conducted for Royster Phosphates, Inc. in Manatee County, Florida.

If you have any questions concerning the enclosed print-outs, please do not hesitate to give me a call.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler / MAB

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

JBK:mab

cc: Mr. Ivan Nance, Royster Phosphates, Inc.

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

April 13, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gary L. Dahms
Vice President and General Manager
Royster Phosphates, Inc.
P. O. Box 1329
Palmetto, Florida 34220

Dear Mr. Dahms:

The Department has reviewed the additional information for a permit to construct a double absorption sulfuric acid plant at Royster Phosphates, Inc.'s chemical complex in Palmetto, Manatee County, Florida. We still need additional information to continue processing this application. Please complete the application by supplying the information requested below:

General Information

- o Page 4, Item 2.1 of Section 2.0 - Description of Existing Facility (see table of content) indicate that actual emission rates of sulfur dioxide and acid mist from the existing plant were determined from a review of emission measurement and production data from the past five years. For purpose of PSD regulations, the "actual" emissions shall be an average of the previous two years operating data unless another period is deemed to be more representative of normal operating conditions. Please submit this data (actual emissions) for the previous two years period for all criteria pollutants at this facility.

- o Are there any emissions from the waste heat boiler and the HRS boilers? If so, please quantify. Are they new sources? What type of fuel are they burning?

- o Submit a complete block flow diagram that will include all units in the proposed new sulfuric acid plant (i.e., waste heat boiler, HRS boiler, turbine generator, etc.).

- o In reference to Mr. F. Ivan Nance's letter of March 13, 1990, Mr. Gary A. Maier, of the DER Tampa office, feels the responses are inadequate. Please refer to his memo dated December 21, 1989, and provide answers to items No. 2, 3, and 4 as requested.

- Mr. Ivan Nance's letter of March 13, 1990 also stated that Koogler and Associates would be forwarding under separate cover the computer printouts for the modeling results in both magnetic and paper format. We have not received any of this information.

- Please respond to attached memo from Mr. Rob Baum, of the Manatee County HRS.

We will resume processing your application upon receipt of the requested information.

If you have any questions on this matter, please contact Gary Maier at (813)623-5561, Rob Baum at (813)542-1408, Cleve Holladay or Teresa Heron at (904)488-1344, or write to me at the Department's Tallahassee address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/plm

Attachment:
Mr. Rob Baum's memo dated April 10, 1990.

c: Bill Thomas, SW District
Rob Baum, Manatee County
John Koogler, P.E.
Teresa Heron
Barry Andrews
Cleve Holladay
(RF)
(File Copy)

P 938 762 861

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Gary Dahms	
Street and No. P.O. BOX 1329 Royster Phosphates	
P.O., State and ZIP Code Palmetto, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date 4-13-90	

PS Form 3800, June 1985

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to: Gary L. Dahms V P & General Mgr. Royster Phosphates, Inc. P.O. BOX 1329 Palmetto, Fl 34220	4. Article Number P 938 762 861 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X Delina Ellis	
7. Date of Delivery 4/19/90	

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

HRS STATE OF FLORIDA
DEPARTMENT OF HEALTH AND REHABILITATIVE SERVICES

Tuesday April 10,1990

RECEIVED

APR 13 1990

DER - BAQM

Teresa Heron, Air Permitting Engineer
Department of Environment Regulation
2600 Blair Stone Rd
Tallahassee, Florida 32399-2400

RE: Manatee County Public Health Unit (MCPHU) Review of Royster Phosphates new Sulfuric Acid Plant

Dear Teresa;

Enclosed is Manatee County Pollution Control questions in response to Royster's response to the first set of questions concerning the Air Permit Application submitted by Royster Phosphates for a new Sulfuric Acid Plant.

Questions to Applicant:

1. In regards to Royster's response #2 about the lack of a drying tower are there any operational plants in the United States which do not use a drying tower upstream of the sulfur furnace in a double absorption sulfuric acid plant. If there are no other plants like this would this be the first plant of its kind including any pilot type plants.

2. If there are sulfuric acid plants of this kind (no upstream dryer) do they operate in a high humidity environment such as Florida and what impact will the high humidity have on the operation of the plant concerning emission of Sulfur dioxide. If there is a relationship between Humidity and emissions of Sulfur dioxide please provide a graph showing the relative relationship.

3. Would the addition of a drying tower reduce the emission of sulfur dioxide with all other factors been equal even thought it is known that the energy consumption would be greater using the drying tower, and that cogeneration could be used to offset this additional energy usage.

Very Truly Yours

Rob Baum

Rob Baum P.E.

/rab

xc: R Alonso
B.Priesmeyer
J.Bruens
Bill Thomas , DER Tampa

DISTRICT SIX
MANATEE COUNTY PUBLIC HEALTH UNIT
410 SIXTH AVENUE EAST, BRADENTON, FLORIDA 34208-1986
(813) 748-0666

Royster Phosphates, Inc.

P. O. Box 1329
Palmetto, Florida 34220
(813) 722-4555

March 13, 1990

Mr. Clair H. Fancy
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Re: AC41-173305

Dear Mr. Fancy:

Please find enclosed our responses to your request for further information. Note the attached computer modeling results found in appendix one to our response. Koogler and Associates will forward under separate cover the computer printouts for the modeling results in both magnetic and paper formats.

Should further information be required, please contact our office.

Very truly yours,

Ivan Nance

F. Ivan Nance
Environmental/Technical Manager

RECEIVED
MAR 15 1990
DER - BAQM

FIN/dam
cc: Koogler and Associates
J. Heron
B. Andrews
C. Halladay
B. Thomas, SW Dist
J. Aronson, EPA
Manatee County
CHF/JKP/BT

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P 168 562 800

MAIL

Royster PHOSPHATES, INC.
P.O. BOX 1329
PALMETTO, FL 34220-1329
Royster

U.S. HWY. 41 NORTH OF PALMETTO

TO:

Mr. C. H. Fancy
Bureau of Air Regulation
Fl Dept of Env Reg
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Cert. Mail
3/13/90
P 168 562 800

Royster Phosphates, Inc.

P. O. Box 1329
Palmetto, Florida 34220
(813) 722-4555

February 7, 1990

Mr. C. H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Re: FDER Permit Application Number AC41-173305

Dear Mr. Fancy:

Please find in the following responses to your request for further information concerning the above referenced permit application. Royster in formulating these responses, has in several instances relied upon proprietary and confidental information supplied by the design engineering firm of Monsanto Envirochem. In responses containing such information Royster has supplied separate cover sheets labeled as follows:

> "Royster requests this information be maintained pursuant to title 42 USC 7414; 40 CFR 60.9; 40 CFR 2.203; 40 CFR 2.301; section 403.111, Fla. Stat.; Section 119.07(3), Fla. Stat.; Section 812.081, Fla. Stat; as proprietary and confidential business information. Royster requests the department to maintain, utilize, and reference the provided information in a manner such that its content is not revealed or made available to the public, press, non-essential FDER staff, or others without express written consent from Royster management."

Results of further air quality modeling generated by Koogler and Associates is found in appendix one.

The following information is supplied in response to issues raised in Gary Maier's memorandum:

1) Under separate cover.

2) Under separate cover.

3) Under separate cover.

4) Under separate cover.

5) The applicant has not misinterpreted Rule 17-2.270 regarding Good Engineering Practice stack height.

The purpose of GEP stack height is not to define actual stack heights. In 17-2.270(1) the rule states, "This provision shall not restrict in any manner the actual stack height of any source." Rather, the purpose of GEP stack height regulations is to require that the stack height used in modeling for determining compliance of any air pollutant with Ambient Air Quality Standards (AAQS) and PSD increments not exceed the GEP stack height. Again, Rule 17-2.270(1) states that the "degree of emission limitation required of any source for control of any air pollutant on a continuous basis shall not be affected by so much of any source's stack height that exceeds good engineering practice...."

The actual stack height can be less than GEP stack height if modeling indicates compliance with air quality standards at the lower stack height. Also, the actual stack height can be higher than GEP stack height provided ambient air quality modeling evaluations are conducted at the GEP stack height. However, using a stack height for modeling purposes which is greater than the GEP stack height in order to demonstrate compliance with ambient air quality standards and PSD increments is not allowed.

In the application, the design stack height is 200 feet which is below the maximum GEP stack height of 213 feet. This is an acceptable stack height by all criteria.

6) Please refer to the response in No.5 regarding stack height. The modeling submitted with the original application was preliminary as stated in the application. The final, detailed modeling required for the application is being submitted under separate cover.

In the following, find responses to issues from Manatee County Public Health Unit (MCPHU) memo to Teresa Heron. It should be noted that in many instances responses are provided even though the issues appear to be irrelevant to an air emissions construction permit. These responses are:

1) No additional sulfuric acid storage tank capacity will be added.

2) Product acid lines will be installed from the new sulfuric acid plant to the existing acid storage tanks. Detailed engineering drawings are not complete at this time.

3) Royster has executed the referenced "Memoranda of Understanding" with FDER for the existing plant and would anticipate that same commitment for the new plant."

4) No projected emission is postulated in the construction permit application other than complying with current regulatory levels. Operation and testing of the new plant under the authority of the construction permit will allow for determination of actual levels prior to issuance of an operation permit.

5) No new industrial wastewaters will be generated by the plant. A net decrease in discharge of wastewaters should occur as greater re-use of steam condensates will take place in the new facility.

6) Plant containment measures will rely on an encircling containment ditch/berm around the plant perimeter. A minimum cross-section of 22 ft^2 is planned.

7) Manufacturers name of the continuous emission monitor has not been determined at this time.

8) A virgin number four fuel oil with less than 1% total sulfur content will be utilized during cold starts. Further, an effort to ascertain the availability of an adequate natural gas supply is underway.

9) The capability of the proposed turbine generator set is 34 Megawatts at maximum conditions.

10) Catalyst will be changed or maintenanced when either analysis of the catalyst indicates decreased activity, or unsatisfactory pressure changes indicate the need for revitalization, or plant performance indicates catalyst activity deterioration.

11) Catalyst will likely be a low pressure type from any of several available manufacturers.

12) When in operation the turbine/generator set associated with the new sulfuric acid plant will supply adequate electrical power to meet all of Royster's demand.

13) The net electrical power consumption of the Piney Point Phosphoric Products facility will remain constant for the areas of the facility other than the new sulfuric acid plant. Therefore, when generation capacity is not being utilized, electrical demand should remain constant. Only those pollutants described in the construction permit application associated with the operation of the new sulfuric acid plant will be affected by Royster.

14) The final detailed computer modeling of this emission source is being submitted as an appendix. In that appendix is found details of modeling assumptions.

Very truly yours,

Ivan Nance

F. Ivan Nance
Environmental/Technical Manager

FIN/dam
Enclosures

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET. N.E.
ATLANTA. GEORGIA 30365

JAN 10 1990

4APT-APB-cdw

Ms. Patricia G. Adams
Planner
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Royster Phosphates, Inc. (PSD-FL-144)

Dear Ms. Adams:

This is to acknowledge receipt of the permit application for the above referenced source, dated December 6, 1989. As discussed between Mr. Barry Andrews of FDER and Mr. Gregg Worley of my staff on January 8, 1990, we have the following comment.

In determining the "actual" emissions of the existing sulfuric acid plant, the maximum production rate and emission rates which occurred during the previous five years were used. The "actual" emissions, however, should be an average of the previous two years operating data unless another period is more representative. Therefore, it is likely that the actual emissions from the existing facility are in fact lower than the maximum numbers presented by the source. Consequently, the source may also be subject to PSD review for NO_x. In any case the greater changes in emissions should be included in the modelling.

By letter dated December 14, 1989, we transmitted to your office a copy of the First Circuit Court of Appeals upholding the "actual-to-potential" applicability rules of the PSD requirements. Please refer to this ruling as a basis for our comments.

Thank you for the opportunity to review this package. Any questions or comments may be directed to Mr. Gregg Worley of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

copied: J. Heron
B. Andrews
C. Holladay
B. Thomas, SW Dist
CHF/BT
} 1-16-90

cc: J. Koogler - 1-25-90

AN APPLICATION FOR A PSD CONSTRUCTION PERMIT REVIEW AIR QUALITY REVIEW

PREPARED FOR:

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY
PALMETTO, FLORIDA

MARCH 8, 1990

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609
(904) 377-5822

KOOGLER & ASSOCIATES

AIR QUALITY REVIEW

Royster Phosphates, Inc. is proposing to construct a Monsanto Enviro-Chem double absorption sulfuric acid plant and an co-generation facility which will use export steam from the sulfuric acid plant to generate electrical power. The new sulfuric acid plant will operate at a capacity of 2700 short tons per day of 100 percent sulfuric acid and will replace an existing double absorption sulfuric acid plant having a permitted capacity of 2000 short tons per day of 100 percent sulfuric acid. The co-generation facility will be rated at 20.8 megawatts, average annual export of electrical power.

The project will result in a significant increase in the emission rates of sulfur dioxide and sulfuric acid mist. The emission rate increase of nitrogen oxides will be less than significant. "Significant," as used in this context, is defined by Rule 17-2.500(2)(e)2,FAC. As a result, of the significance of the emission rate increases, the air quality review for the project must address both sulfur dioxide and sulfuric acid mist.

The air quality review for the project was designed to provide the Florida Department of Environmental Regulation (FDER) with the assurance that the proposed increases in sulfur dioxide and acid mist emission rates, together will all other applicable increases and decreases in emissions from any facility significantly impacting the project area, will not cause or contribute to a violation of any ambient air quality standard or to exceedances of the allowable incremental increases in pollutant levels.

Additionally, the modeling associated with the review provides criteria for determining if pre-construction ambient air quality monitoring will be required. Monitoring may be required if the net increase in emissions resulting from the proposed project are expected to have an impact on air quality that is greater on de minimis. The de minimis impacts are defined in Rule 17-2.500(3)(e)1,FAC. For sulfur dioxide, the de minimis impact level is defined as 13 micrograms per cubic meter, 24-hour average. No de minimis impact level is defined for sulfuric acid mist.

The air quality review reported in this section shows that the net increase in sulfur dioxide emissions resulting from the proposed Royster project will be significant for the three-hour and 24-hour averaging periods (greater than 25 micrograms per cubic meter, three-hour average, and greater than 5.0 micrograms per cubic meter, 24-hour average). The impact of the emission increase will not be significant however, for the annual averaging period (less than 1.0 micrograms per cubic meter, annual average) and the impact will be less than the de minimis impact level of 13.0 micrograms per cubic meter, 24-hour average. As a result of these findings, additional air quality modeling is required and has been conducted to define:

1. The areas of significant sulfur dioxide impacts,
2. PSD increment consumption, and
3. Compliance with ambient air quality standards.

The fact that the impact of the increased sulfur dioxide emissions is less than de minimis indicates that no pre-construction ambient air quality monitoring will be required.

EXISTING AIR QUALITY DATA

Existing ambient monitoring data collected by the Hillsborough County Environmental Protection Commission (HCEPC) were reviewed to establish a sulfur dioxide background level for the Royster site. Continuous sulfur dioxide monitoring data from the HCEPC Monitoring Site No. 116 at Apollo Beach and Site No. 54 at Big Bend Road were reviewed. The monitoring data from each site represented data from the most recent year of operation; 11/1986-10/1987 for Station No. 116 (the station was discontinued in November 1987) and 1989 for Station No. 54. For the one year of data from Station 116, the measured ambient sulfur dioxide concentration was zero (instrument baseline) during 2966 hours; or 36 percent of the time the station operated. At Station No. 54, the sulfur dioxide concentration was zero during 3870 hours; or 45 percent of the time the station operated. The locations of these sites is shown in Figure 7A-1.

Based upon the review of the HCEPC monitoring data and the fact that sulfur dioxide emissions from all major and minor sources impacting project site were accounted for in the air quality modeling, it is reasonable to assume that the sulfur dioxide background level at the Royster site will be zero.

EMISSION INVENTORIES

The air pollutants considered in the air quality review were sulfur dioxide and sulfuric acid mist. An emission inventory was developed for sulfur dioxide from data contained in FDER permit files, from the FDER Air Pollution Inventory System (APIS), and from studies previously conducted by Koogler & Associates and other consultants. For sulfuric acid mist, only the emissions of the existing and proposed sulfuric acid plants at the Royster site were considered as other sources of sulfuric acid mist are approximately 30 kilometers to the northeast of the Royster site.

The sulfur dioxide emitting sources included in the air quality review are tabulated in Table 7A-1 and the locations of the major sources are shown in Figure 7A-1. In developing this emission inventory, some screening was conducted using the "20 X D" Rule. This rule states that sources that should be considered in an air quality review are sources with annual emissions (reported in tons per year) greater than the product of 20 X D; or:

$$Q > 20 \times D$$

where Q = Annual emission rate (tons per year) of sources that should be included in the air quality review,

20 = a constant, and

D = the distance from the source to the project area under review (kilometers).

The "20 X D" Rule has been developed to limit the number of air pollutant sources that must be considered in an air quality review by eliminating sources that will obviously have no impact on the study area. Several small sources were eliminated from the initial sulfur dioxide emission inventory list by the "20 X D" Rule. These sources included facilities such as asphalt plants, small industrial sources and small fuel-burning sources.

The sources listed in the emission inventory (Table 7A-1) include both baseline sources and PSD increment consuming and expanding sources. The PSD increment consuming and expanding sources are identified in Table 7A-1 as Sources 1-460. This source group includes the existing Royster sulfuric acid plant and the proposed sulfuric acid plant. The existing Royster plant is a baseline source that will be shut down, thus expanding the PSD increment, while the new plant is an increment consuming source. The baseline sources are identified in Table 7A-1 as sources 470-1060.

The emission inventory for sulfuric acid mist was limited to emissions from the Royster facility. Included in the inventory were the emissions from the existing 2000 ton-per-day sulfuric acid plant, which will be shut down, and emissions from the proposed 2700 ton-per-day sulfuric acid plant. The other sources of sulfuric acid mist in the west central Florida area are other phosphate fertilizer complexes and possibly coal-burning electric utilities; all of which are 30 kilometers or more from the Royster site.

METEOROLOGICAL DATA

The EPA guideline for air quality modeling suggests that five years of meteorological data be used for air quality modeling. The possible sources of meteorological data for the Royster air quality review were Tampa, Florida, (38 kilometers north of the site) and Ft. Myers, Florida (145 kilometers south-southeast of the site). The meteorological data from Tampa was selected for the review because of the closer proximity of Tampa to the Royster site.

The hourly surface meteorological data from the National Weather Service station at the Tampa International Airport for calendar years 1973-1975, 1978 and 1979, and twice-daily upper air soundings from the National Weather Service station at Ruskin, Florida, were selected for the review.

The surface observations used for the air quality modeling include wind speed, wind direction, ambient temperature and a measure of the atmospheric stability. The stability was determined as a function of wind speed, cloud cover and cloud ceiling height. The upper air soundings were used to estimate the atmospheric mixing heights; i.e., the thickness of the atmospheric layer through which air pollutants will be dispersed.

RECEPTOR LOCATIONS

Preliminary air quality modeling demonstrated that the impact of the increased sulfur dioxide emissions from the Royster site would be significant to a distance of approximately three kilometers from the plant. To cover the area of significant impact, a six-kilometer by six-kilometer receptor grid was established, with receptors spaced at 0.5 kilometers center-to-center. In addition to the rectangular grid, a series of discrete receptors were spaced at 0.1 kilometer intervals around the Royster property boundary. The layout of the grid system is shown in Figure 7A-2.

GOOD ENGINEERING PRACTICE STACK HEIGHT

As described in the original application, the height of the proposed sulfuric acid plant stack will be 200 feet above grade. This stack height is less than the 213-foot (65 meters) maximum stack height allowed by the Good Engineering Practice Stack Height Rule (17-2.270,FAC). The 200-foot height will place the top of the stack at least 2.5 times the height of a nearby structure; thus, minimizing the potential for plume downwash. The height of the stack on the existing sulfuric acid plant is also 200 feet above grade.

PLUME DOWNWASH

It is generally accepted that if the height of a stack is equal to the height of nearby structures plus 1.5 times the lesser of the height or width of the structure, the wake generated by the structure will not affect the dispersion of air pollutants emitted from the stack. In the case of the existing and proposed sulfuric acid plants, the "nearby structures" are the absorption and drying towers of each plant. In both cases, the towers are 86 feet high and have a crosswind dimension of 70 feet. The height plus 1.5 times the width of the structures is approximately 191 feet; or less than the 200-foot high stacks on both plants. As a result, plume downwash is not expected to be a major consideration in the air quality review.

Even though downwash is not considered to be a major factor, the air quality modeling was done taking into consideration the possibility of plume downwash. The height (86 feet) and the width (70 feet) of the absorption and drying towers of both plants were inputs to the air quality modeling.

AIR QUALITY MODELING METHODOLOGY

The project proposed by Royster will result in significant emission rate increases in sulfur dioxide and sulfuric acid mist, but a less than significant increase in nitrogen oxides emissions. Hence, the air quality modeling required for the project permit application will address only sulfur dioxide and sulfuric acid mist emissions.

The impact of sulfur dioxide emissions was assessed with the Industrial Source Complex-Short Term (ISC-ST) air quality model. The modeling was conducted in accordance with guidelines established by EPA and published in the document, Guideline for Air Quality Modeling, (Revised), July 1986.

The sulfur dioxide emissions used in the impact analyses are summarized in Table 7A-1. The sulfur dioxide emission rate increases and decreases at the Royster site are documented in Section 3.0 of the original permit application and are summarized in Table 7A-2.

The air quality modeling that was reported in the original permit application demonstrated that the impact of the net change in sulfur dioxide emissions from the Royster complex would be significant for the three-hour and 24-hour periods, but not significant for the annual period. The distance to which the impacts are significant is approximately 3.0 kilometers. These data are graphically presented in Figures 7A-3, 7A-4 and 7A-5 for the three-hour, 24-hour and annual periods, respectively. Because the annual impact of sulfur dioxide emission increases at the Royster plant is not significant at any distance, no additional sulfur dioxide air quality modeling is required for the annual period.

The modeling for PSD increment consumption was conducted using only sulfur dioxide emitting sources whose emissions are considered to be increment expanding or consuming. These sources are identified as Sources 1-460 in Table 7A-1 and include the existing and proposed sulfuric acid plants at Royster.

The modeling for PSD increment consumption shows the maximum increment consumption for the three-hour period to be 91.2 micrograms per cubic meter, compared with a Class II PSD increment of 512 micrograms per cubic meter. The maximum 24-hour incremental consumption is 20.9 micrograms per cubic meter, compared with a Class II PSD increment of 91 micrograms per cubic meter. These data are summarized in Figures 7A-6 and 7A-7 for the three-hour and 24-hour averaging periods, respectively.

The modeling of all existing and proposed sulfur dioxide sources for compliance with Ambient Air Quality Standards (AAQS) is summarized in Figures 7A-8 and 7A-9. The modeling to demonstrate compliance with the three-hour sulfur dioxide AAQS (Figure 7A-8) shows the maximum impact to be 484 micrograms per cubic meter and the modeling for the 24-hour averaging period (Figure 7A-9) shows a maximum impact of 182 micrograms per cubic meter. Both of these impacts are well below the ambient air quality standards for sulfur dioxide of 1300 micrograms per cubic meter for the three-hour period and 260 micrograms per cubic meter for the 24-hour period.

Results of the air quality modeling for sulfuric acid mist were presented in the original application. These results demonstrated that the maximum expected increase in ambient sulfuric acid mist levels would be approximately 0.4 micrograms per cubic meter, over a 24-hour period. Modeling also shows that the maximum expected sulfuric acid mist impact resulting from the operation of the proposed sulfuric acid plant would be approximately 1.4 micrograms per cubic meter, 24-hour average. These impacts compare with an ambient guideline concentration for sulfuric acid mist of 4.8 micrograms per cubic meter, 24-hour average.

TABLE 7A-1

INVENTORY OF SULFUR DIOXIDE EMITTING SOURCES
USED IN AIR QUALITY MODELING

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

SOURCE NUMBER	SO2 EMISSIONS	LOCATION X	Y	STACK HEIGHT	STACK TEMP	STACK VEL	STACK DIAM	BLDG. HEIGHT	BLDG. LENGTH	BLDG. WIDTH	NAME
1	-35.38	348546	3057307	60.96	338	8.75	2.36	26.21	21.34	21.34	ROYSTER
2	56.70	348680	3057318	60.96	350	9.60	2.82	26.21	21.34	21.34	ROYSTER
10	462.65	404800	3057400	22.90	389	23.90	4.88	0	0	0	HARDEE POWER PLANT
20	-52.50	388076	3116011	18.75	316	18.75	1.52	0	0	0	CPI A H2SO4 EXIST
30	-52.50	388085	3115976	18.75	316	18.75	1.52	0	0	0	CPI B H2SO4 EXIST
40	35.83	388085	3115976	27.44	316	19.69	1.52	0	0	0	CPI A H2SO4 PROP
50	35.83	388085	3115976	27.44	316	19.69	1.52	0	0	0	CPI B H2SO4 PROP
60	-37.80	388155	3116034	60.52	352	13.00	2.44	0	0	0	CPI C H2SO4 EXIST
70	-37.80	388211	3116047	60.52	352	13.00	2.44	0	0	0	CPI D H2SO4 EXIST
80	50.40	388155	3116034	60.52	352	16.40	2.44	0	0	0	CPI C H2SO4 PROP
90	50.40	388211	3116047	60.52	352	16.40	2.44	0	0	0	CPI D H2SO4 PROP
100	7.36	407380	3071700	38.10	328	14.60	3.10	0	0	0	AGRICO DAP
110	-110.60	408500	3083000	30.50	350	14.60	1.68	0	0	0	CF BARTOW RE. H2SO4
120	4.30	408500	3083000	9.10	450	22.50	0.70	0	0	0	CF BARTOW DAP
130	52.90	408500	3083000	67.10	351	9.80	2.40	0	0	0	CF BARTOW #7 H2SO4
140	21.02	361800	3088300	30.00	375	20.00	0.61	0	0	0	CLM CHLORIDE METALS
150	-15.20	398400	3084200	30.50	308	18.90	1.80	0	0	0	CONSERVE
160	42.00	398400	3084200	45.70	352	10.30	2.30	0	0	0	CONSERVE NO. 1 H2SO4 PLT.
160	-54.56	409500	3079500	30.48	311	20.18	1.37	0	0	0	FARMLAND 1,2 H2SO4
180	67.16	409500	3079500	30.48	355	9.27	2.29	0	0	0	FARMLAND 3,4 H2SO4
190	41.96	409500	3079500	45.72	355	9.65	2.44	0	0	0	FARMLAND 5 H2SO4
200	-121.84	336500	3098300	16.80	727	61.00	4.60	0	0	0	FPC HIGGINS PEAK
210	588.46	336500	3098200	52.90	424	12.60	3.80	0	0	0	FPC HIGGINS 1-3
220	559.53	367200	3054100	152.10	425	23.47	7.99	0	0	0	FPL MANATEE
230	514.14	367200	3054100	152.10	425	23.77	7.92	0	0	0	FPL MANATEE
240	18.40	389550	3067930	38.10	339	10.13	2.90	0	0	0	IMC LONESOME MINE DRY. 1
250	21.17	389550	3067930	38.10	346	18.40	2.44	0	0	0	IMC LONESOME MINE DRY. 2
260	352.53	409200	3106200	45.72	419	23.77	2.74	0	0	0	LAKELAND CITY POWER PLANT
270	500.12	409200	3106200	76.20	350	32.61	4.88	0	0	0	LAKELAND CITY POWER PLANT
280	63.00	396560	3078640	60.70	350	15.55	2.60	0	0	0	NEW WALES #4 H2SO4
290	3.78	396750	3079350	52.40	322	13.00	2.40	0	0	0	NEW WALES AFI
300	5.36	396830	3079430	52.40	319	7.10	2.40	0	0	0	NEW WALES MULTIPHOS
310	5.54	396450	3079150	36.60	319	20.80	1.80	0	0	0	NEW WALES #2 DAP
320	63.00	396490	3078640	60.70	350	15.55	2.60	0	0	0	NEW WALES #5 H2SO4
330	-34.27	396680	3078860	21.04	347	18.56	2.13	0	0	0	NEW WALES ROCK DRYER
340	-146.00	396530	3078750	61.00	350	11.14	2.50	0	0	0	NEW WALES #1-3 H2SO4 EXIST
350	189.00	396530	3078750	61.00	350	16.71	2.50	0	0	0	NEW WALES #1-3 H2SO4 MOD
360	-257.60	406700	3085200	51.00	356	9.90	2.13	0	0	0	ROYSTER #1
370	35.70	406700	3085200	61.00	360	12.20	2.13	0	0	0	ROYSTER #2
380	-1764.00	361500	3075000	149.40	415	22.90	7.30	0	0	0	TECO BIG BEND 1-3 RED.
390	653.94	361900	3075000	149.35	342	17.98	7.32	0	0	0	TECO BIG BEND #4
400	63.00	416120	3068620	53.40	355	15.91	2.59	0	0	0	USSAC FT MEADE H2SO4 1
410	63.00	416120	3068620	53.40	355	15.91	2.59	0	0	0	USSAC FT MEADE H2SO4 2
420	-78.80	416210	3068740	29.00	314	6.77	3.02	0	0	0	USSAC FT MEADE H2SO4 X
430	-216.00	409700	3086000	45.70	352	16.50	1.40	0	0	0	WR GRACE RET. H2SO4
440	36.80	409700	3086000	61.00	346	7.30	2.80	0	0	0	WR GRACE 2 46 16
450	36.80	409700	3086000	61.00	346	7.30	2.80	0	0	0	WR GRACE 2 46 17
460	21.40	360300	3092300	50.00	491	18.30	1.80	0	0	0	HILLSCO RESOURCE RECOVERY
470	52.50	388085	3115976	18.75	316	18.75	1.52	0	0	0	CPI A H2SO4 B.L.
480	52.50	388085	3115976	18.75	316	18.75	1.52	0	0	0	CPI B H2SO4 B.L.
490	37.80	388155	3116034	60.52	352	13.00	2.44	0	0	0	CPI C H2SO4 B.L.
500	37.80	388211	3116047	60.52	352	13.00	2.44	0	0	0	CPI D H2SO4 B.L.
510	1.72	387858	3115904	28.66	322	7.20	3.05	0	0	0	CPI A DAP
520	3.13	387890	3115918	54.88	322	9.79	2.79	0	0	0	CPI Z DAP
530	15.63	387813	3116041	41.45	313	9.24	2.79	0	0	0	CPI X GTSP
540	15.63	387838	3116052	54.88	333	13.41	2.79	0	0	0	CPI Y GTSP
550	37.80	407570	3071240	45.72	350	11.21	2.74	0	0	0	AGRICO #11 H2SO4

(Continued)

TABLE 7A-1 (Continued)

560	37.80	407520	3071240	45.72	350	11.21	2.74	0	0	0	AGRICO #10 H2SO4
570	19.35	407520	3071520	42.67	315	12.46	2.74	0	0	0	AGRICO GTSP
580	110.60	408500	3083000	30.50	350	14.60	1.68	0	0	0	CF BARTOW RET. H2SO4
590	46.70	408500	3083000	34.50	319	20.00	1.30	0	0	0	CF BARTOW #3 H2SO4
600	56.70	408500	3083000	63.40	351	6.90	2.10	0	0	0	CF BARTOW #6 H2SO4
610	45.40	408500	3083000	34.50	319	14.20	1.30	0	0	0	CF BARTOW #4 H2SO4
620	56.70	408500	3083000	63.40	347	6.90	2.10	0	0	0	CF BARTOW #5 H2SO4
630	3.65	408100	3081800	38.60	341	11.00	2.19	0	0	0	CF BARTOW 3-DAP
640	15.20	398400	3084200	30.50	308	18.90	1.80	0	0	0	CONSERVE
650	17.20	398400	3084200	24.40	330	5.00	1.70	0	0	0	CONSERVE
660	3.34	398700	3084200	24.69	328	3.66	2.29	0	0	0	CONSERVE PHOS ROCK DRYER
670	0.32	398700	3084200	15.85	322	20.12	0.76	0	0	0	CONSERVE DAP COOLER
680	54.56	409500	3079500	30.48	311	20.18	1.37	0	0	0	FARMLAND 1,2 H2SO4
690	1007.45	342400	3082700	91.50	422	31.10	2.70	0	0	0	FPC BARTOW 1 & 2
700	710.00	342400	3082700	91.50	430	29.10	3.40	0	0	0	FPC BARTOW 3
710	154.42	342200	3083900	13.70	839	61.00	5.30	0	0	0	FPC BARTOW PEAK
720	149.22	338800	3071300	13.40	728	61.00	3.40	0	0	0	FPC BAYB
730	121.84	336500	3098300	16.80	727	61.00	4.60	0	0	0	FPC HIGGINS PEAK
740	46.20	363200	3082300	45.72	340	13.41	2.29	0	0	0	GARDINIER 7 H2SO4
750	93.66	363200	3082300	45.72	351	7.90	2.59	0	0	0	GARDENIER 8 H2SO4
760	58.84	363200	3082300	45.72	344	12.19	2.74	0	0	0	GARDENIER 9 H2SO4
770	41.50	360100	3087500	13.10	349	9.70	0.30	0	0	0	IMC TAMPA
780	115.47	409000	3106200	50.29	433	5.49	3.05	0	0	0	LAKELAND CITY POWER PLANT
790	2.40	398000	3085300	25.90	339	16.00	2.30	0	0	0	MOBIL
800	56.50	398000	3085300	30.50	350	11.00	2.00	0	0	0	MOBIL
810	146.00	396600	3078750	61.00	350	11.14	2.50	0	0	0	NEW WALES #1-3 H2SO4 EXIST
820	0.82	396540	3079030	36.60	319	15.60	2.10	0	0	0	NEW WALES #1 DAP
830	1.89	396550	3079150	36.60	325	20.40	1.80	0	0	0	NEW WALES GTSP
840	34.27	396680	3078860	21.04	347	18.56	2.13	0	0	0	NEW WALES ROCK DRYER
850	257.60	406700	3085200	51.00	356	9.90	2.13	0	0	0	ROYSTER #1
860	1.88	406800	3085200	31.10	322	8.26	2.67	0	0	0	ROYSTER DAP/GTSP
870	10039.82	361900	3075000	149.35	410	14.33	7.32	0	0	0	TECO BIG BEND
880	3650.20	360000	3087500	93.30	430	26.50	3.90	0	0	0	TECO GANNON (COMPOSITE)
890	388.90	358000	3091000	85.40	402	15.90	3.40	0	0	0	TECO HOOKERS PT. (COMP)
900	78.80	416210	3068740	29.00	314	6.77	3.02	0	0	0	USSAC FT. MEADE H2SO4
910	9.60	415920	3068890	28.40	314	9.33	1.45	0	0	0	USSAC FT. MEADE GTSP DRYER
920	34.80	415860	3068550	15.90	336	11.04	1.83	0	0	0	USSAC FT. MEADE ROCK DRYER
930	216.00	409700	3086000	45.70	352	16.50	1.40	0	0	0	WR GRACE RET. H2SO4 B.L.
940	57.70	409700	3086000	45.70	322	16.70	1.50	0	0	0	WR GRACE 3 46 15
950	91.80	409700	3086000	61.00	346	25.90	1.50	0	0	0	WR GRACE 3 46 14
960	47.20	363900	3093850	30.50	350	22.40	0.61	0	0	0	GULF COAST LEAD
1050	35.38	348546	3057307	60.96	338	8.75	2.36	26.21	21.34	21.34	ROYSTER B.L.
1060	7.36	348546	3057307	60.96	328	15.60	3.10	0	0	0	ROYSTER DAP

NOTES:

1. Sources 1-460 are PSD increment expanding (-) and consuming (+) sources.

2. Sources 470-1060 are baseline sources.

TABLE 7A-2

PLANT CHARACTERISTICS USED FOR AIR QUALITY MODELING

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

PLANT	STACK Ht (ft)	STACK Dia (ft)	STACK GAS Vel (FPS)°	STACK GAS Temp (F)	EMISSION RATES (1) SO2 (lb/hr)	EMISSION RATES (1) SO2 (TPY)	EMISSION RATES (1) Acid Mist (lb/hr)	EMISSION RATES (1) Acid Mist (TPY)
Existing H2SO4 #1 (2)	200	7.75	28.7	150	280.8	906	7.4	23.9
New H2SO4 #2 (3)	200	9.25	31.5	170	450.0	1971	16.9	74.0

(1) Annual emission rates are based on the following assumptions:

(a) Existing H2SO4 - An annual operating factor, based on production, of 0.737.
(b) New H2SO4 - Operating time will be 8760 hours/year.

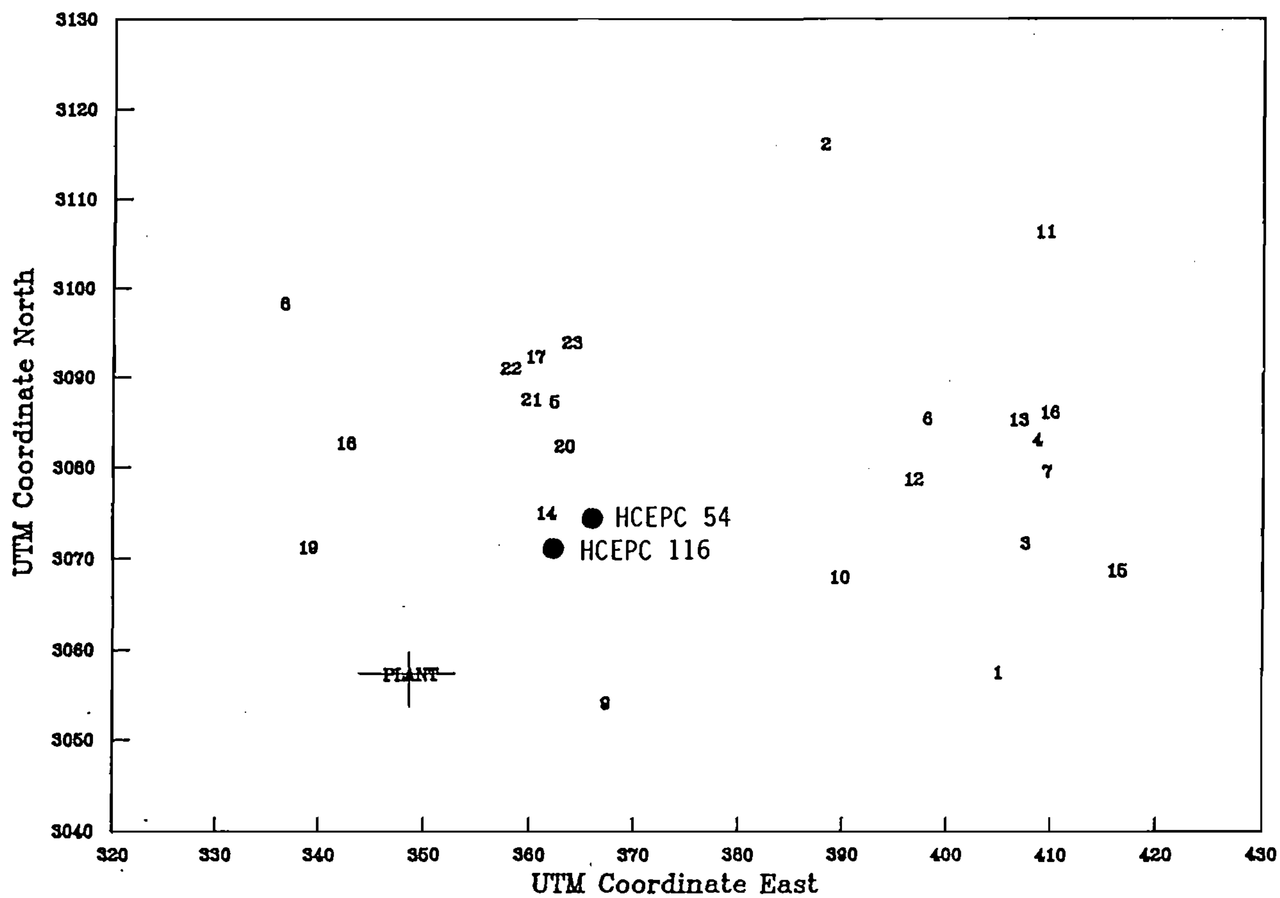
(2) Plant to be shut down. Emissions represent a decrease in sulfur dioxide emissions.

(3) New plant to replace existing plant. Emissions represent an increase in sulfur dioxide emissions.

FIGURE 7A-1

MAJOR SOURCES OF SULFUR DIOXIDE
WITHIN 100 KM OF ROYSTER PHOSPHATES

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA



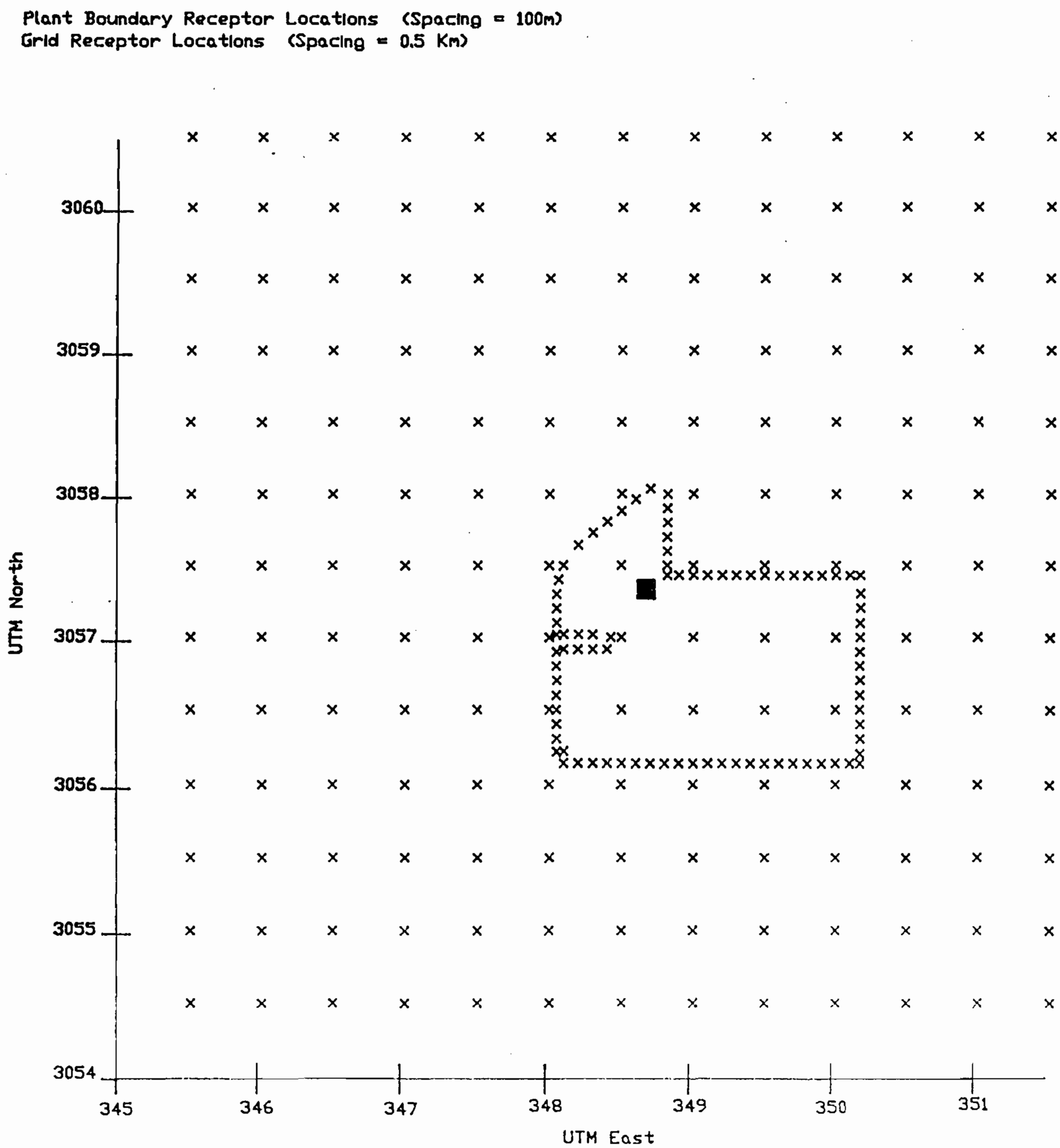
● AMBIENT MONITORING SITES

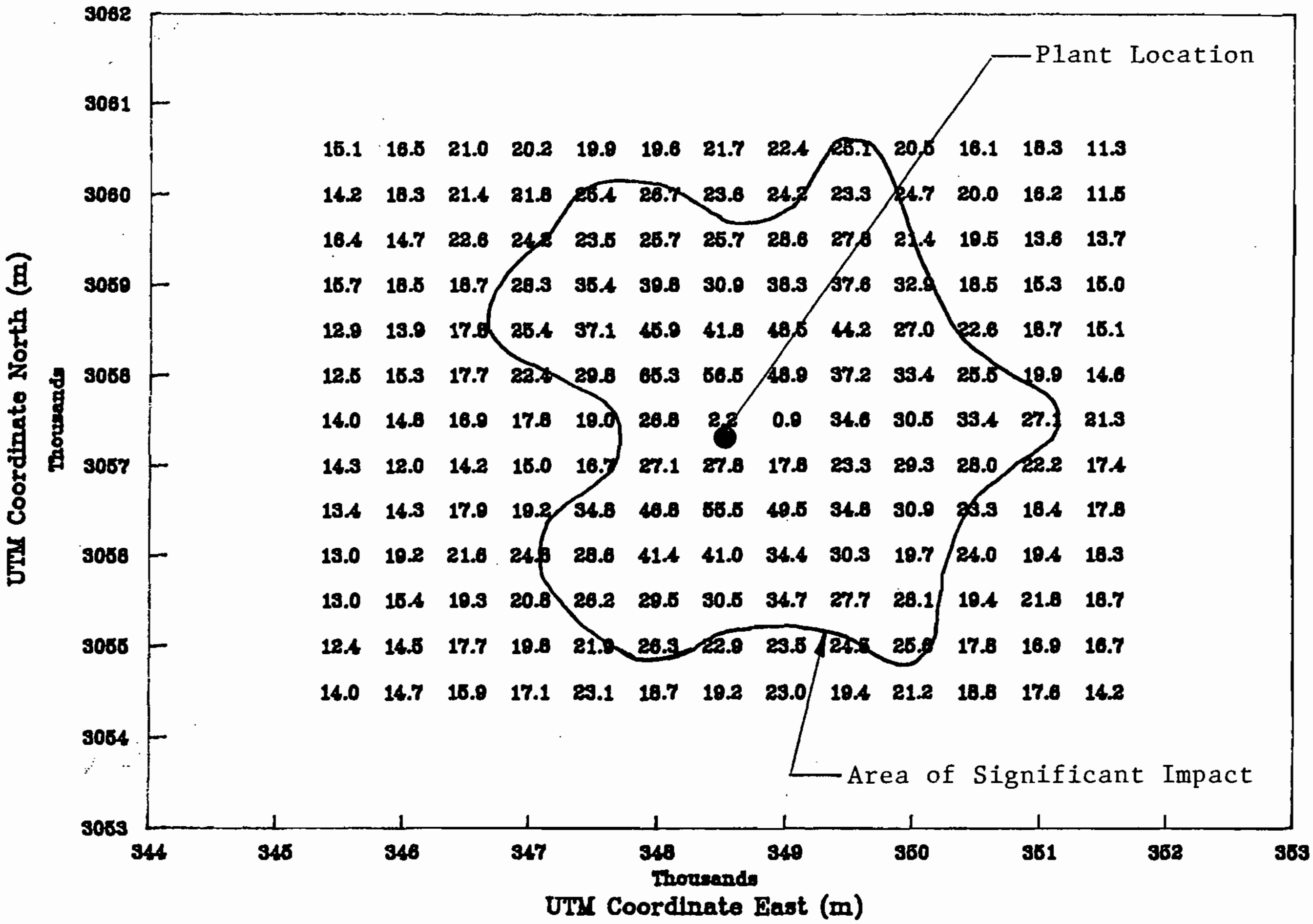
PLANT ROYSTER
1 HARDEE POWER PLANT
2 CPI
3 AGRICO
4 CF BARTOW
5 CLM CHLORIDE METALS
6 CONSERVE
MOBIL
7 FARMLAND
8 FPC HIGGINS PEAK
9 FPL MANATEE
10 IMC LONESOME MINE
11 LAKELAND CITY POWER PLANT
12 NEW WALES
13 ROYSTER
14 TECO BIG BEND
15 USSAC FT MEADE
16 WR GRACE
17 HILLSCO RESOURCE RECOVERY
18 FPC BARTOW
19 FPC BAYB
20 GARDINIER
21 IMC TAMPA
TECO GANNON
22 TECO HOOKERS PT.
23 GULF COAST LEAD

FIGURE 7A-2

RECEPTOR LOCATIONS FOR AIR QUALITY MODELING

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA



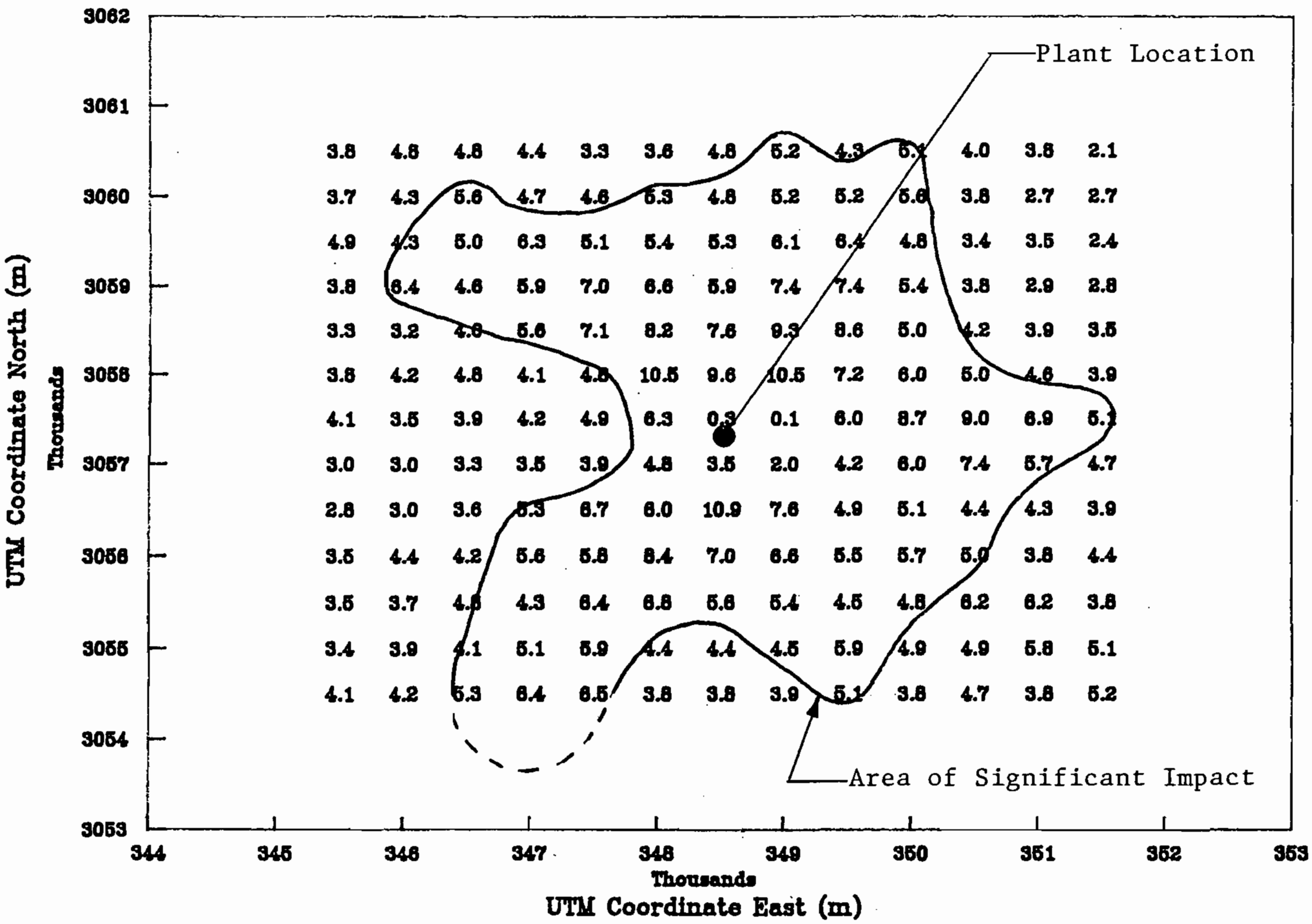


3-hour Significant Impact - 25 ug/m³

FIGURE 7A-3

3-hour Average Impact of Contemporaneous
SO_2 Emission Changes at Royster
Maximum Impact at Each Receptor for 5-Year Period - 1973-75, 78, 79

Royster Phosphates, Inc.
Manatee County, Florida



24-hour Significant Impact - 5 ug/m³

FIGURE 7A-4

24-hour Average Impact of Contemporaneous
SO_2 Emission Changes at Royster
Maximum Impact at Each Receptor for 5-Year Period - 1973-75, 78, 79

Royster Phosphates, Inc.
Manatee County, Florida

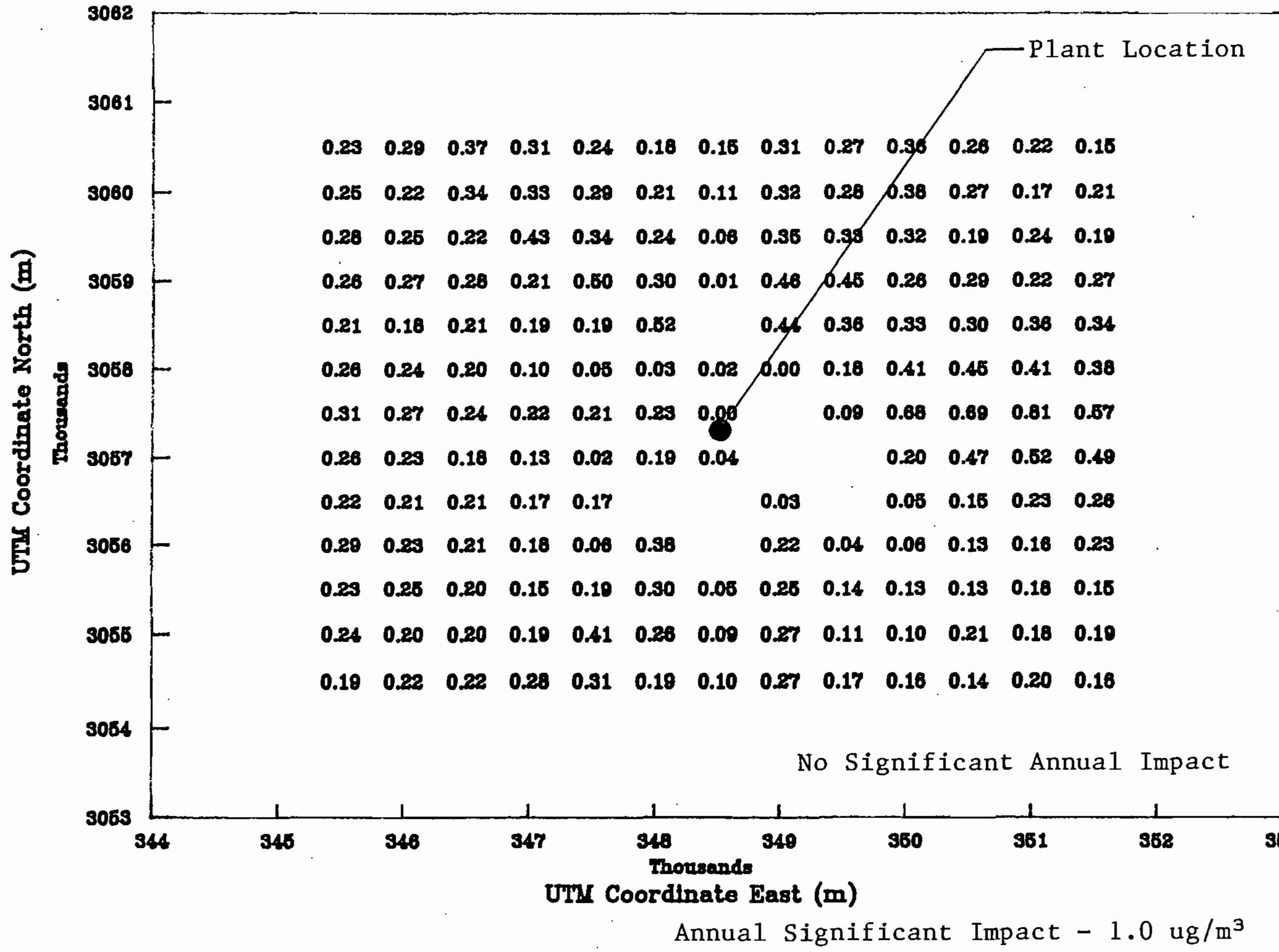
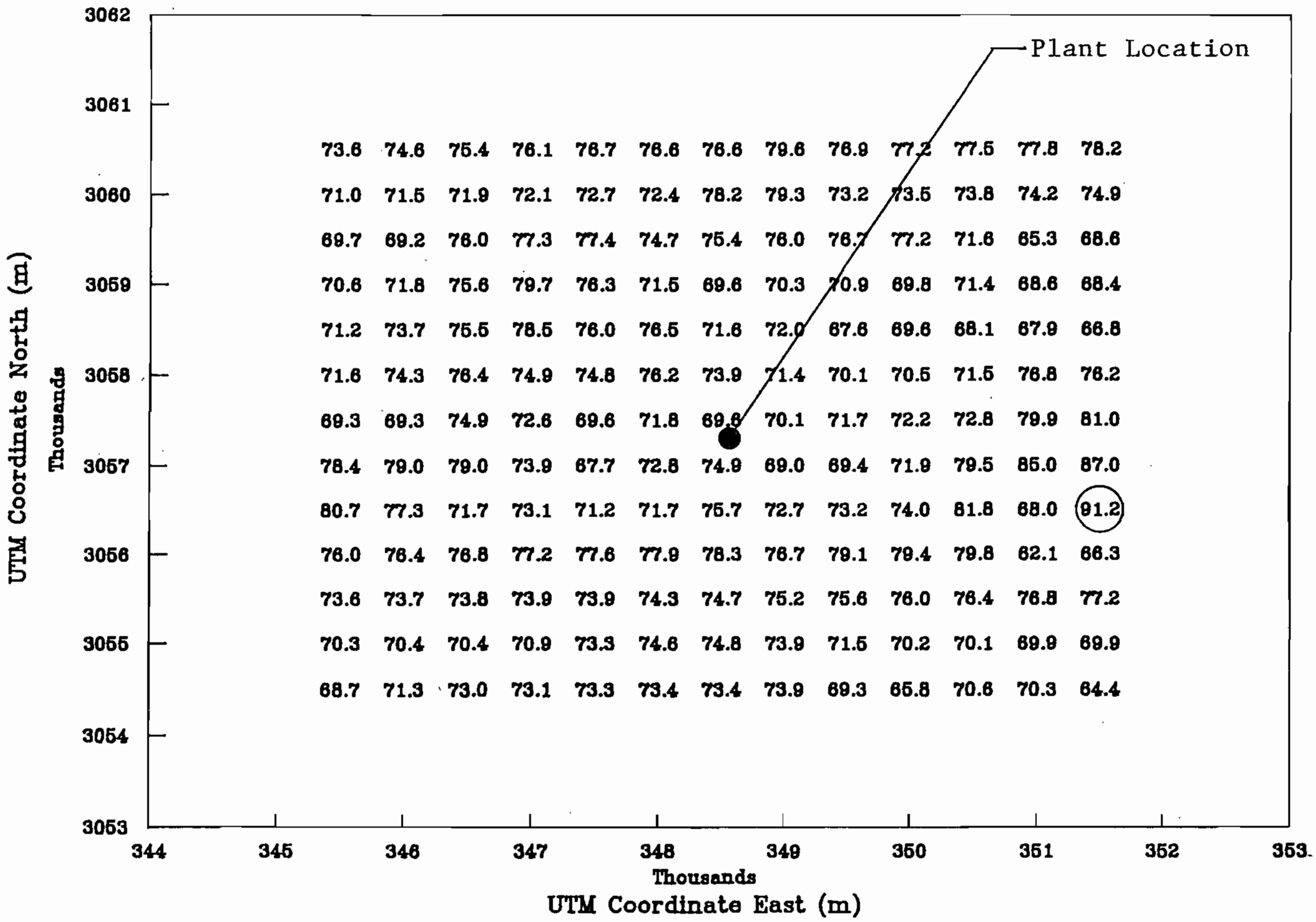


FIGURE 7A-5

Annual Average Impact of Contemporaneous
SO_2 Emission Changes at Royster
Maximum Impact at Each Receptor for 5-Year Period - 1973-75, 78, 79

Royster Phosphates, Inc.
Manatee County, Florida

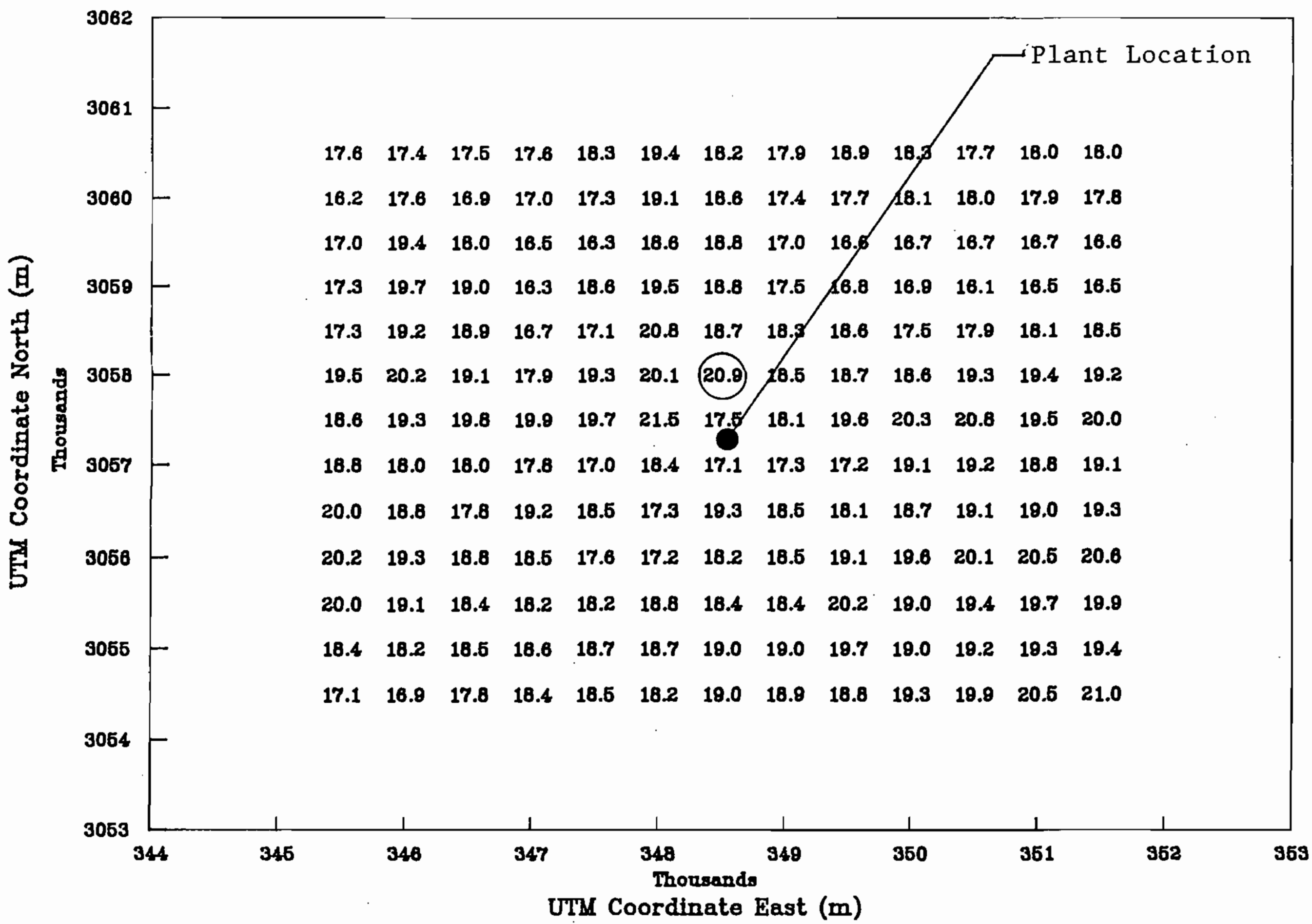


3-hour PSD Increment - 512 ug/m³

FIGURE 7A-6

3-hour Average Impact of All
SO_2 PSD Increment Consuming Sources (ug/m³)
Maximum Impact at Each Receptor for 5-Year Period - 1973-75, 78, 79

Royster Phosphates, Inc.
Manatee County, Florida

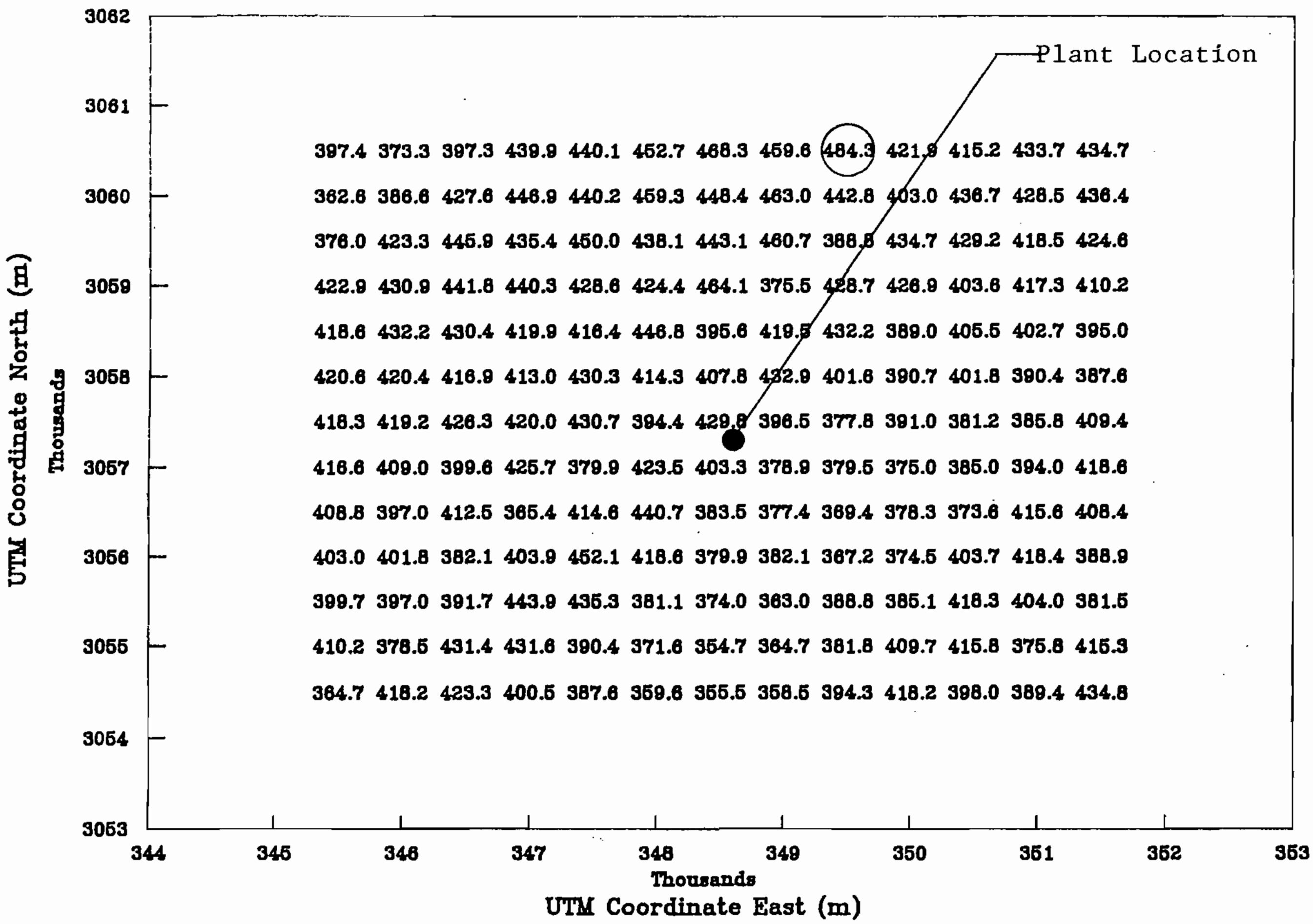


24-hour PSD Increment - 91 ug/m³

FIGURE 7A-7

24-hour Average Impact of All
SO_2 PSD Increment Consuming Sources (ug/m³)
Maximum Impact at Each Receptor for 5-Year Period - 1973-75, 78, 79

Royster Phosphates, Inc.
Manatee County, Florida

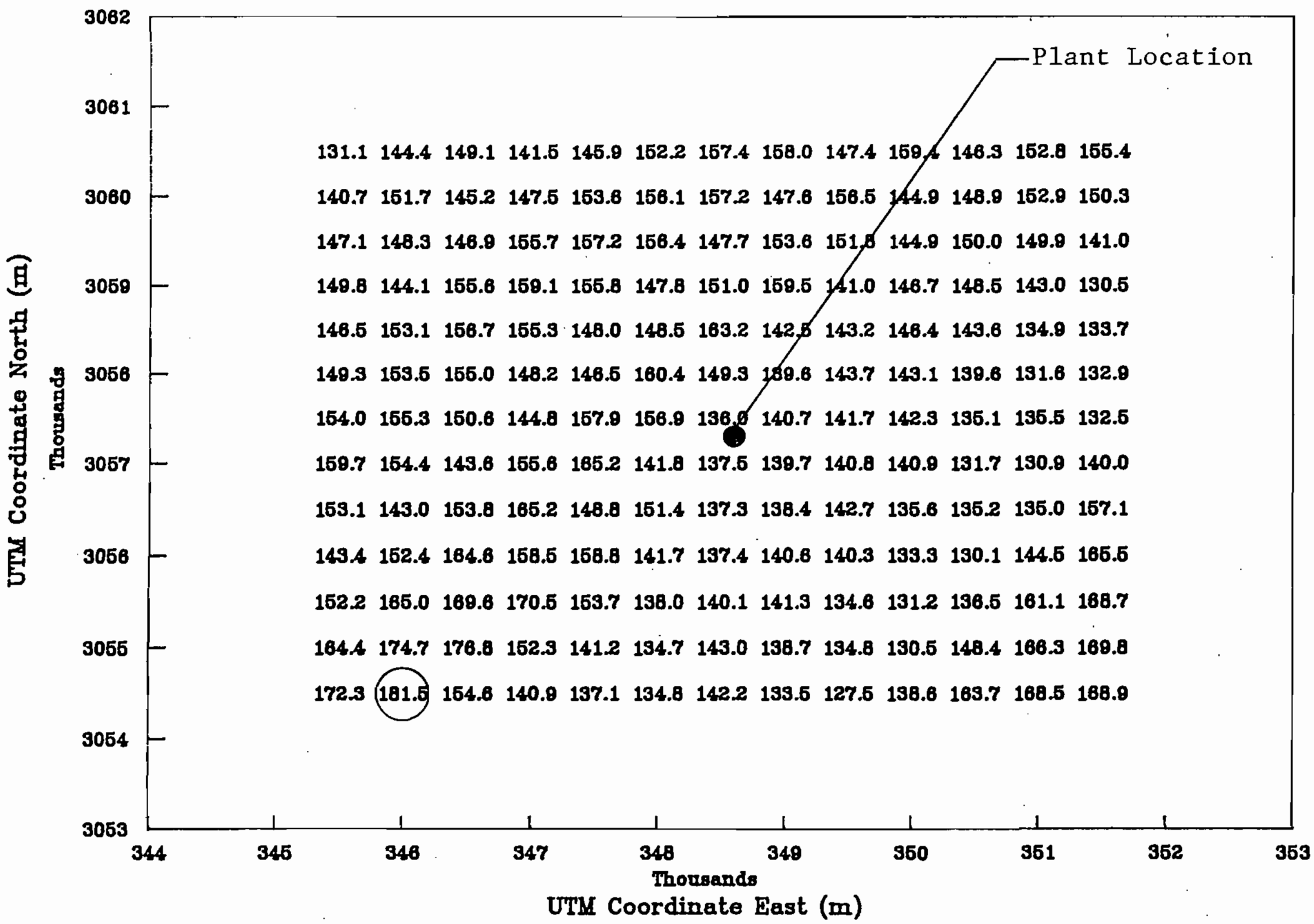


3-hr Air Quality Standard - 1300 ug/m³

FIGURE 7A-8

3-hr. Average Impact of All Proposed
and Permitted SO_2 Emitting Sources (ug/m³)
Maximum Impact at Each Receptor for 5-Year Period - 1973-75, 78, 79

Royster Phosphates, Inc.
Manatee County, Florida



24-hr Air Quality Standard - 260 ug/m³

FIGURE 7A-9

24-hr. Average Impact of All Proposed
and Permitted SO_2 Emitting Sources (ug/m³)
Maximum Impact at Each Receptor for 5-Year Period - 1973-75, 78, 79

Royster Phosphates, Inc.
Manatee County, Florida

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

December 28, 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gary L. Dahns
Vice President and General Manager
Royster Phosphates, Inc.
P. O. Box 1329
Palmetto, Florida 34220

Dear Mr. Dahns:

Re: Completeness Review for Proposed Sulfuric Acid Plant

The Department has reviewed your application for a permit to construct a double absorption sulfuric acid plant at Royster Phosphates, Inc.'s chemical complex in Palmetto, Manatee County, Florida. The Department needs additional information before we can process this application. In addition to the questions raised in the enclosed December 21, 1989, and December 22, 1989 memos from Mr. Gary Maier and Mr. Rob Baum, respectively, please provide the required air quality modeling for this project.

We will resume processing your application upon receipt of the requested information. If you have any questions on this matter, please contact Gary Maier at (813) 623-5561, Rob Baum at (813) 542-1408, Cleve Holladay at (904) 488-1344 or write to me at the Department's Tallahassee address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/TH/plm

Attachments:
Gary Maier's memo dated December 21, 1989
Rob Baum's memo dated December 22, 1989

c: Bill Thomas, SW District
Rob Baum, Manatee County
John Koogler, P.E.

P 938 762 794

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Gary L. Dahns	
Street and No. PO Box 1329	
P.O., State and ZIP Code Palmetto, FL 34220	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed 12/28/89 Dated 12/28/89 Completeness Review for Proposed Sulfuric Acid Plant	

PS Form 3800, June 1985

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to: Mr. Gary L. Dahns Vice President & General Mgr Royster Phosphates, Inc. P. O. Box 1329 Palmetto, FL 34220	4. Article Number P 938 762 794 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X J Burnell	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery 3 Jan 90	

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

INTER-OFFICE MEMORANDUM

TO: Teresa M. Heron, DER Air BAQM, Tallahassee

THRU: W. C. Thomas, P.E.

FROM: Gary A. Maier, DER Tampa Gary A. Maier

DATE: December 21, 1989

SUBJECT: Permit Application No.: AC41-173305
County: Manatee
Project: New Sulfuric Acid Plant
Royster Phosphates, Inc.

The Southwest District office has reviewed the above referenced application. We have the following comments.

(1) The application does not contain a process flow diagram for the proposed facility. The process flow diagram in Figure 3-1 is described as "typical"; however, Figure 3-1 and the plant layout shown in Figure 3-2 do not agree with each other. (For example, Figure 3-1 places a Dryer upstream of the Furnace, but Figure 3-2 does not show a Dryer.) A process flow diagram for the proposed facility should be requested.

(2) The lack of a Dryer upstream of the Furnace raises a concern as to whether the acid mist emission limits will be met. The application does not contain design information, calculations, or historical operating experience for the Fiber Mist Eliminators. Design calculations and the design information listed below should be requested.

- (a) What is the controlling mechanism for mist collection, Inertial Impaction or Brownian Diffusion?
- (b) What is the design Superficial Velocity?
- (c) What is the Mist Loading of gases leaving the absorber and entering the mist eliminators (mg./SCF)?
- (d) What is the Mist Loading of gases leaving the mist eliminators (mg./SCF)?
- (e) What are the particle-size distributions of the mists entering and leaving the fiber mist eliminators?
- (f) What is the Volumetric Flow Rate through the mist eliminators?
- (g) What are the design pressure drop and filtering area?
- (h) What is the effect of "turn-down" on collection efficiency?

In addition to the above, historical operating data for identical mist eliminators on sulfuric acid plants without a dryer upstream of the furnace should be requested.

(3) The application does not contain design information, calculations, or historical operating experience for the proposed absorbers. Information such as size, packing type, liquid rate, pressure drop, efficiency as a function of gas rate, inlet/outlet compositions, superficial gas velocity, flood and load points, etc., should be requested.

(4) The application does not contain design information, calculations, or historical operating experience for the proposed converters. Engineering estimates for SO2 emissions are not possible based upon the information submitted by the applicant. Information such as size, number of passes, efficiency, flow rates, reaction rates, vendor guarantees, maintenance plans, etc., should be requested.

(5) The applicant has misinterpreted Rule 17-2.270 regarding "Good Engineering Practice Stack Height" (see page 38 of the application). The rule defines a minimum stack height. The applicant has interpreted the rule as defining a maximum stack height and has proposed a stack height that does not comply with the minimum requirements of the rule. The applicant should be requested to change the stack height proposal.

(6) All of the Air Quality Modeling submitted by the applicant was based on a stack height that does not comply with Rule 17-2.270. Air Quality Modeling should be re-done based upon an appropriate stack height.

If you have any questions regarding these comments, please call me at Suncom 552-7612 ext 360.

copy to: J. Harry Kerns

Teresa

STATE OF FLORIDA
DEPARTMENT OF HEALTH AND REHABILITATIVE SERVICES

December 22, 1989

DEC 26 1989

DER-BAQM

Teresa Heron, Air Permitting Engineer
Department of Environment Regulation
2600 Blair Stone Rd
Tallahassee, Florida 32399-2400

RE: Manatee County Public Health Unit (MCPHU) Review of Royster Phosphates new Sulfuric Acid Plant

Dear Teresa;

Enclosed is Manatee County Pollution Control questions in response to the Air Permit Application submitted by Royster Phosphates for a new Sulfuric Acid Plant. This completes the initial review of subject source . In order to complete our review addition information is required of the applicant.

Questions to Applicant:

1. Will any additional sulfuric acid storage tank be required for the new plant ?

2. If no new storage tanks are required how much new plumbing will be required to hook up to the old tanks. Please provide a sketch showing the new piping and old piping connection locations and placements.

3. Submit information showing that the new plant will comply with the recently adopted DER policy for the start up of sulfuric acid plants?

4. Based on the fact that the old plant maintained an emission rate of 3.37 lbs per ton what is the actual projected emission rate for the new plant?

5. Identify any industrial wastewater that the new plant will discharge and submit a water balance for the plant.

6. Provide detail description of the in-plant spill containment measures that the new plant will have?

7. Provide manufacture name and specification of continuous stack monitoring instruments provided on the new plant?

DISTRICT SIX
HRS MANATEE COUNTY PUBLIC HEALTH UNIT
410 SIXTH AVENUE EAST, BRADENTON, FLORIDA 34208-1986
(813) 748-0666

BOB MARTINEZ, GOVERNOR
GREGORY L. COLER, SECRETARY

8. Submit an analysis of fuel that will be used to bring the plant up during cold start up ?

9. What will be the gross electric power produced by co-generation process ?

10. What is the planned schedule for catalyst changes?

11. What planned catalyst manufacture and type will be used in the converter?

12. Will there be a imported electric power usage reduction at the Royster facility due to the use of the co-generation sulfuric acid plant?

13. If there is electrical power change due to this co-generation acid plant what will be the power requirement change in Mega watts at the Royster facility and what increase or decrease in pollutants is expected due to this electrical power requirement change?

14. Submit addition information regarding type and rational of computer air analysis performed , the actual computer output sheet and assumption made in the analysis.

If there are any question or comments on this letter please don't hesitate to call me at Suncom 542-1408. Please advise if any meeting on this subject as this office would like to participate.

Very Truly Yours

Rob Baum

Rob Baum P.E.

RAB/rab

xc: R Alonso
B.Priesmeyer
J.Bruens
Bill Thomas , DER Tampa
File

PM
12-22-89
Bradenton, FL

File Copy

HRS

STATE OF FLORIDA
DEPARTMENT OF HEALTH AND REHABILITATIVE SERVICES

RECEIVED

December 22, 1989

DEC 26 1989

DER - BAQM

Teresa Heron, Air Permitting Engineer
Department of Environment Regulation
2600 Blair Stone Rd
Tallahassee, Florida 32399-2400

RE: Manatee County Public Health Unit (MCPHU) Review of Royster Phosphates new Sulfuric Acid Plant

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5. Identify any industrial wastewater that the new plant will discharge and submit a water balance for the plant.

6. Provide detail description of the in-plant spill containment measures that the new plant will have?

7. Provide manufacture name and specification of continuous stack monitoring instruments provided on the new plant?

8. Submit an analysis of fuel that will be used to bring the plant up during cold start up ?

9. What will be the gross electric power produced by co-generation process ?

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If there are any question or comments on this letter please don't hesitate to call me at Suncom 542-1408. Please advise if any meeting on this subject as this office would like to participate.

Very Truly Yours

Rob Baum

Rob Baum P.E.

RAB/rab

xc: R Alonso
B.Priesmeyer
J.Bruens
Bill Thomas , DER Tampa
File
BT/JP
Teresa Heron
Barry Andrews
Cleve Holladay

12-26-89 RQ

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

December 6, 1989

Mr. Wayne Aronson, Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: Royster Phosphates, Inc.
Manatee County
PSD-FL-144

Enclosed for your review and comment is the above referenced PSD permit application. If you have any comments or questions, please contact John Reynolds, Barry Andrews, or Cleve Holladay at the above address or at (904)488-1344.

Sincerely,

Patricia G. Adams

Patricia G. Adams
Planner
Bureau of Air Regulation

/pa

Enclosure

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

RECEIVED
DEC 1 1989
DER - BAQM

KA 230-89-01

November 30, 1989

Mr. C.H. Fancy
Assistant Director
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Application for a PSD Construction Permit Review for Royster Phosphates, Inc., Manatee County, Florida

Dear Mr. Fancy:

Enclosed are four (4) copies of an application for a PSD Construction Permit Review, submitted on behalf of Royster Phosphates, Inc., in Manatee County, Florida, for a double absorption sulfuric acid plant.

Also enclosed is Royster's Check No. 82008524 in the amount of $5000.00, the PSD application fee.

If you have any questions concerning the enclosed applications or if you require additional information, please do not hesitate to give me a call.

Very truly yours,

KOOGLER & ASSOCIATES

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

JBK:mab

cc: Mr. Ivan Nance, Royster Phosphates, Inc.

$5000 pd.
12-1-89
Recpt.#11767?

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT
4520 OAK FAIR BLVD.
TAMPA, FLORIDA 33610-7347
813-623-5561
Suncom—552-7612

RECEIVED
DEC 1 1989
DER - BAQM

AC41-173305
PSD-FL-144

BOB MARTINEZ
GOVERNOR
DALE TWACHTMANN
SECRETARY
DR. RICHARD D. GARRITY
DISTRICT MANAGER

APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Double Absorption Sulfuric Acid Plant [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Royster Phosphates, Inc. COUNTY: Manatee

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) New Sulfuric Acid Plant

SOURCE LOCATION: Street U. S. Hwy 41 City Palmetto

UTM: East 17-348.5 North 3057.3

Latitude 27 ° 37 ' 58 "N Longitude 82 ° 32 ' 8 "W

APPLICANT NAME AND TITLE: Gary L. Dahms, Vice President & General Manager

APPLICANT ADDRESS: P.O. Box 1329, Palmetto, Fl 34220

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Royster Phosphates, Inc.

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Gary L Dahms

Gary L. Dahms, Vice President & General Manager
Name and Title (Please Type)

Date: 11/30/89 Telephone No. (813) 722-4555

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been ~~designed~~/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed ______________________________

____
Name (Please Type)

____
Company Name (Please Type)

____
Mailing Address (Please Type)

Florida Registration No.__________ Date:______________ Telephone No.______________

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

____

____

____

____

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction ________________ Completion of Construction ____________

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

____

____

____

____

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

____

____

____

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed ______________________

John B. Koogler, Ph.D., P.E.
Name (Please Type)

Koogler & Associates, Environmental Services
Company Name (Please Type)

4014 N.W. 13th Street, Gainesville, FL 32609
Mailing Address (Please Type)

JOHN B. KOOGLER
CERTIFICATE NO. 12925
STATE OF FLORIDA
REGISTERED

Florida Registration No. 12925 Date: 11/30/89 Telephone No. (904) 377-5822

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

See Section 1.3 of attached report. This plant will operate in full compliance with applicable regulations.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1990 Completion of Construction December 1991

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Absorbing towers for SO2 emissions are considered part of the production process rather than pollution control devices. Acid mist is controlled by Monsanto Enviro-Chem high efficiency mist eliminators which cost a total of $355,000 for both absorbing towers.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Operating permit for existing sulfuric acid plant.

Permit No. A041-121085; Issued: July 31, 1986; Expires: July 15, 1991

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr ____; if seasonal, describe: ____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO

   a. If yes, has "offset" been applied? NA

   b. If yes, has "Lowest Achievable Emission Rate" been applied? NA

   c. If yes, list non-attainment pollutants. NA

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. YES (1)

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. YES (1)

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? YES (1)

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants? NA

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

(1) Additional information is supplied in the attached report.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Sulfur	Ash	0.005	73791	Furnace of Figure 3-1 (See attached report)

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 73791 as sulfur

2. Product Weight (lbs/hr): 228,426 as 98.5% H_2SO_4

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
SO_2	450	1971	17-2.600(2)(b)	450	3380	14800	*
NOx	13.4	58.7	17-2.630	13.4	13.4	58.7	*
Acid Mist	16.9	74	17-2.600(2)(b)	16.9	169	740	*
VE	10%	-	17-2.600(2)(b)	10%	-	-	*

*Discharge to Atmosphere of Figure 3-1 (see attached report).

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3] Calculated from operating rate and applicable standard.

[4] Emission, if source operated without control (See Section V, Item 3).

Potential SO_2 emissions are based on a 97.7% absorption efficiency for single absorption plant and acid mist emissions are based on a 90% overall mist eliminator efficiency.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Dual Absorption Towers	SO_2	99.7%	NA	Design & Test
High Efficiency Mist Eliminators	Acid Mist	95-98%	1 - 3 microns	Design & Test
	Acid Mist	85-95%	0.75 - 1 microns	Desing & Test
	Acid Mist	70-85%	0.5 - 0.75 microns	Desing & Test

E. Fuels NOT APPLICABLE

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: ______ Percent Ash: ______

Density: ______ lbs/gal Typical Percent Nitrogen: ______

Heat Capacity: ______ BTU/lb ______ BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average NA Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

None

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 200 ft. Stack Diameter: 9.25 ft.

Gas Flow Rate: 126949 ACFM 106395 @ 68°F DSCFM Gas Exit Temperature: 170 °F.

Water Vapor Content: 0 % Velocity: 31.5 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Inciner-ated							
Uncon-trolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diamter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

Brief description of operating characteristics of control devices: ______

______

______

______

______

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

______

______

______

______

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
   (SEE SECTION IIIB)
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
   (SEE ATTACHED REPORT)
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   (SEE ATTACHED REPORT)
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.) (SEE ATTACHED REPORT)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency). (SEE SECTION IIID AND ATTACHED REPORT)
6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. (SEE FIGURE 3-1 IN ATTACHED REPORT)
7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
   (SEE FIGURES 2-1 AND 2-2 IN ATTACHED REPORT)
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
   (SEE FIGURES 3-1 AND 3-2 IN ATTACHED REPORT)

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

SEE ATTACHED REPORT

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life: 6. Operating Costs:

7. Energy: 8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Costs:

e. Useful Life: f. Operating Cost:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device: 2. Efficiency:[1]

3. Capital Cost: 4. Useful Life:

5. Operating Cost: 6. Energy:[2]

7. Maintenance Cost: 8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

SEE ATTACHED REPORT

A. Company Monitored Data

1. ________ no. sites ________ TSP ________ ( ) SO^2* ________ Wind spd/dir

Period of Monitoring ___/___/___ to ___/___/___
month day year month day year

Other data recorded ____________________

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)____________________

3. Upper air (mixing height) data obtained from (location)____________________

4. Stability wind rose (STAR) data obtained from (location)____________________

C. Computer Models Used

1. ____________________ Modified? If yes, attach description.

2. ____________________ Modified? If yes, attach description.

3. ____________________ Modified? If yes, attach description.

4. ____________________ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	____________________ grams/sec
SO^2	____________________ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

REPORT IN SUPPORT OF
AN APPLICATION FOR A PSD
CONSTRUCTION PERMIT REVIEW

PREPARED FOR:

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY
PALMETTO, FLORIDA

NOVEMBER 30, 1989

PREPARED BY:

KOOGLER & ASSOCIATES
4014 N.W. 13TH STREET
GAINESVILLE, FLORIDA 32609
(904) 377-5822

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1.1 Applicant

Royster Phosphates, Inc.
U.S. Highway 41
P.O. Box 1329
Palmetto, Florida 34220

1.2 Facility Location

Royster Phosphates, Inc. operates a phosphate chemical fertilizer manufacturing facility approximately nine miles north of Palmetto, Florida on U.S. Highway 41 in Manatee County. The complex occupies 660.7 acres and the UTM coordinates are Zone 17, 348.5 km east and 3057.3 km north.

1.3 Project Description

Royster Phosphates, Inc. is proposing to construct a Monsanto Enviro-Chem double absorption sulfuric acid plant and a cogeneration facility which will use export steam from the new sulfuric acid plant to generate electrical power. The new sulfuric acid plant will have a rated capacity of 2700 short tons per day of 100 percent H_2SO_4. The cogeneration facility will be rated at 20.8 megawatts average annual export of electrical power.

Royster has one existing double absorption sulfuric acid plant which has a permitted capacity of 2000 short tons per day of 100 percent H_2SO_4. This plant will be permanently shutdown when the new sulfuric acid plant is operational. The proposed changes will result in a total increase of sulfuric acid capacity from 2000 tons per day to 2700 tons per day.

Due to the increased production capacity of the new sulfuric acid plant, there will be an increase in the hourly emission rate of sulfuric dioxide, acid mist and nitrogen oxides. In addition, the increase in production capacity along with the expected increase in the operating factor for the new plant will result in significant increases in the total annual emissions of sulfur dioxide and acid mist but a less than significant increase in the total annual emissions of nitrogen oxides.

Royster is submitting the material herein to support an application to the Florida Department of Environmental Regulation for constructing a new sulfuric acid plant. This report includes a description of the existing facility, a description of the proposed new sulfuric acid plant, a review of Best Available Control Technology, an air quality review and an evaluation of the impact of the proposed modifications on soils, vegetation and visibility.

2.0 DESCRIPTION OF EXISTING FACILITY

Royster Phosphates, Inc. operates a phosphate chemical fertilizer manufacturing facility approximately nine miles north of Palmetto, Florida, on U.S. Highway 41 in Manatee County (See Figures 2-1 and 2-2). The complex occupies 660.7 acres and the UTM coordinates are Zone 17, 348.5 km east and 3057.3 km north.

The existing fertilizer complex consists of one sulfuric acid plant, one phosphoric acid plant, one ammonium phosphate plant producing diammonium phosphate (DAP), an auxiliary steam boiler, storage facilities for phosphate rock and fertilizer products, and shipping facilities for fertilizer products. The plot plan of Figure 2-3 shows the location of the existing plants and the proposed new sulfuric acid plant. The proposed new sulfuric acid plant with cogeneration will result in a net increase in sulfuric acid production. This production rate increase will be used to replace current sulfuric acid purchases and will not affect the operation of the other plants. The Royster complex has an overall current permitted production capacity of approximately 302,220 tons per year of P_2O_5.

2.1 Sulfuric Acid Plant

There is one existing sulfuric acid plant at the Royster complex which has a maximum permitted capacity of 2000 tons per day of 100 percent acid.

The plant was originally owned by Borden, Inc. and permitted as a 1400 ton per day, single absorption sulfuric acid plant. On September 1, 1975, Borden was issued construction Permit AC41-2042B to convert the plant from a single absorption plant to a double absorption plant as required by rules promulgated by the Florida Department of Environmental Regulation. This modification was completed in August 1976 and operating Permit A041-2042B was issued for the operation of the plant as a double absorption, 2000 ton per day sulfuric acid plant. On October 20, 1980, Borden transferred the chemical complex to AMAX Chemical Corporation. On July 2, 1987, AMAX transferred the chemical complex to Consolidated Minerals, Inc. who operated the complex until July 8, 1988, when it was transferred to Royster Phosphates, Inc.

The existing sulfuric acid plant is subject to Federal New Source Performance Standards as set forth in 40CFR60, Subpart H (which are identical to standards by the State of Florida as set forth in Rule 17-2.600(2)(b),FAC). The emission limiting standards for this plant are:

Sulfur Dioxide	-	4 pounds per ton of 100 percent acid
Acid Mist	-	0.15 pounds per ton of 100 percent acid
Visible Emissions	-	10 percent opacity.

This plant will be permanently shutdown when the new sulfuric acid plant is operational.

The actual emission rates of sulfur dioxide and acid mist from the existing plant were determined from a review of emission measurements and production data from the past five years. The maximum measured sulfur dioxide emission rate was 3.37 pounds per ton of 100 percent H_2SO_4 produced and the maximum measured acid mist emission rate was 0.089 pounds per ton of 100 percent H_2SO_4 produced. The maximum annual acid production from the plant (used to calculate annual emissions) was 538,046 tons per year (see Appendix 3-B for documentation of these data). These values will be used in evaluating the requested increases (or decreases) in emissions.

Nitrogen oxide emissions from the existing and proposed sulfuric acid plants were estimated from an emission factor of 2.1×10^{-6} pounds of nitrogen oxides per dry standard cubic foot of stack gas (at a reference temperature of 68°F) discharged from a sulfuric acid plant and typical stack gas flow rates for each of the plants.

2.2 Phosphoric Acid Plant

Royster operates one phosphoric acid plant. Wet phosphate rock is ground in a ball mill and fed to a Prayon reactor. The reactor slurry is then filtered to remove phosphoric acid from the gypsum. The plant has a permitted maximum rate of 27.08 tons per hour of P_2O_5. Recent stack test data will allow a rate increase to 34.5 tons per hour of P_2O_5. The production rate of this plant will not be affected by the production rate increase of the new sulfuric acid plant.

2.3 Ammonium Phosphate Plant

Royster operates one granular fertilizer plant. The diammonium phosphate plant (DAP) is permitted to operate at 14.4 tons per hour P_2O_5 or approximately 31.3 tons per hour of DAP with a nominal NPK grade of 18-46-0. Recent stack test data may allow the DAP plant to operate at 36 tons per hour P_2O_5. The DAP plant is also permitted to produce granular triple superphosphate (GTSP) at a rate of 10.1 tons per hour of P_2O_5 or approximately 21 tons per hour GTSP at a nominal NPK grade of 0-48-0. Royster, however, does not plan to product GTSP in the future. The change in sulfuric acid production will not affect these plants.

2.4 Other Operations

The Royster complex also includes an auxiliary boiler to provide steam when there is an insufficient amount of export steam available from the sulfuric acid plant, storage facilities for phosphate rock and fertilizer products, and shipping facilities for fertilizer products. None of these operations will be affected by the production rate increase requested for the sulfuric acid plants.

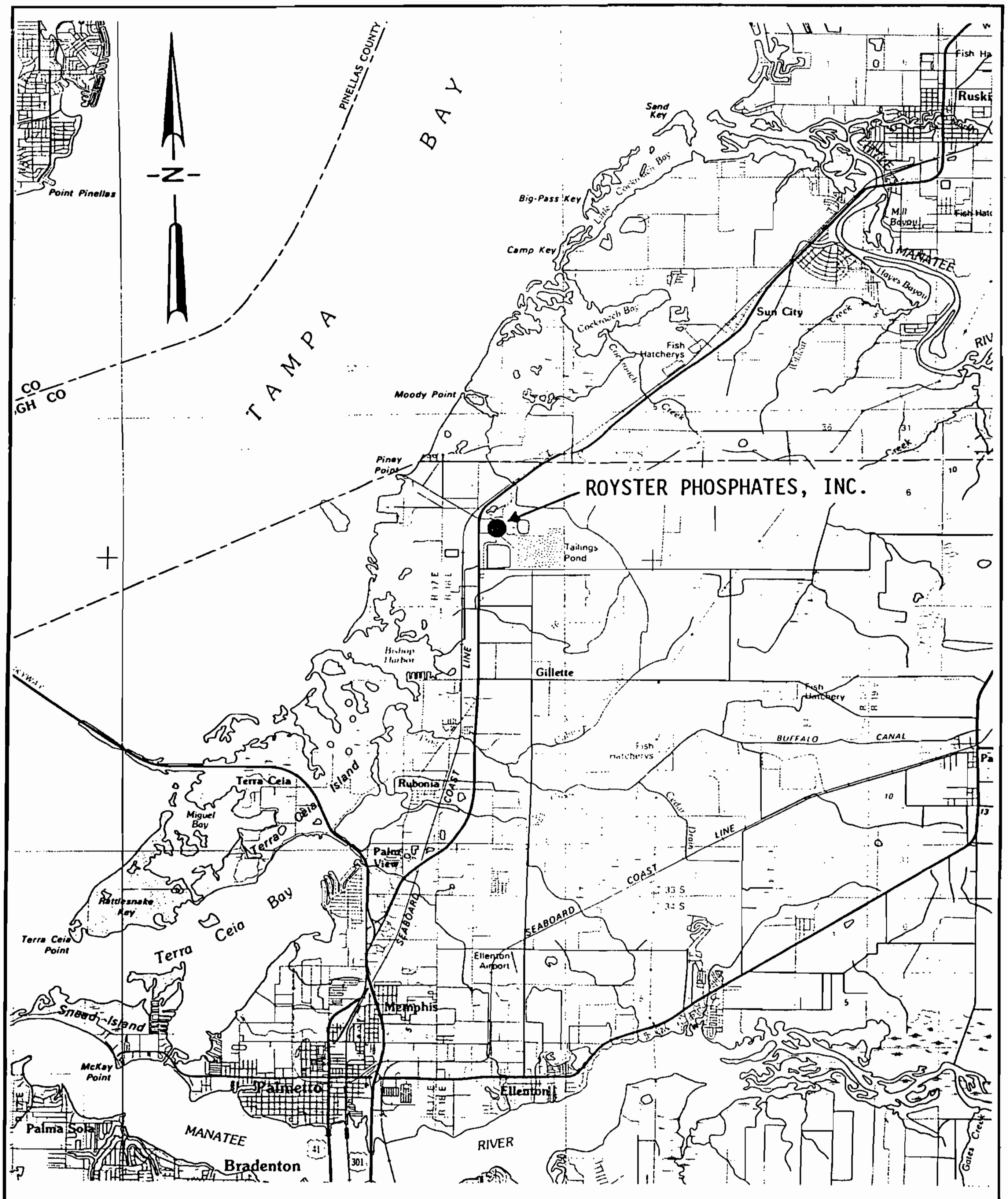
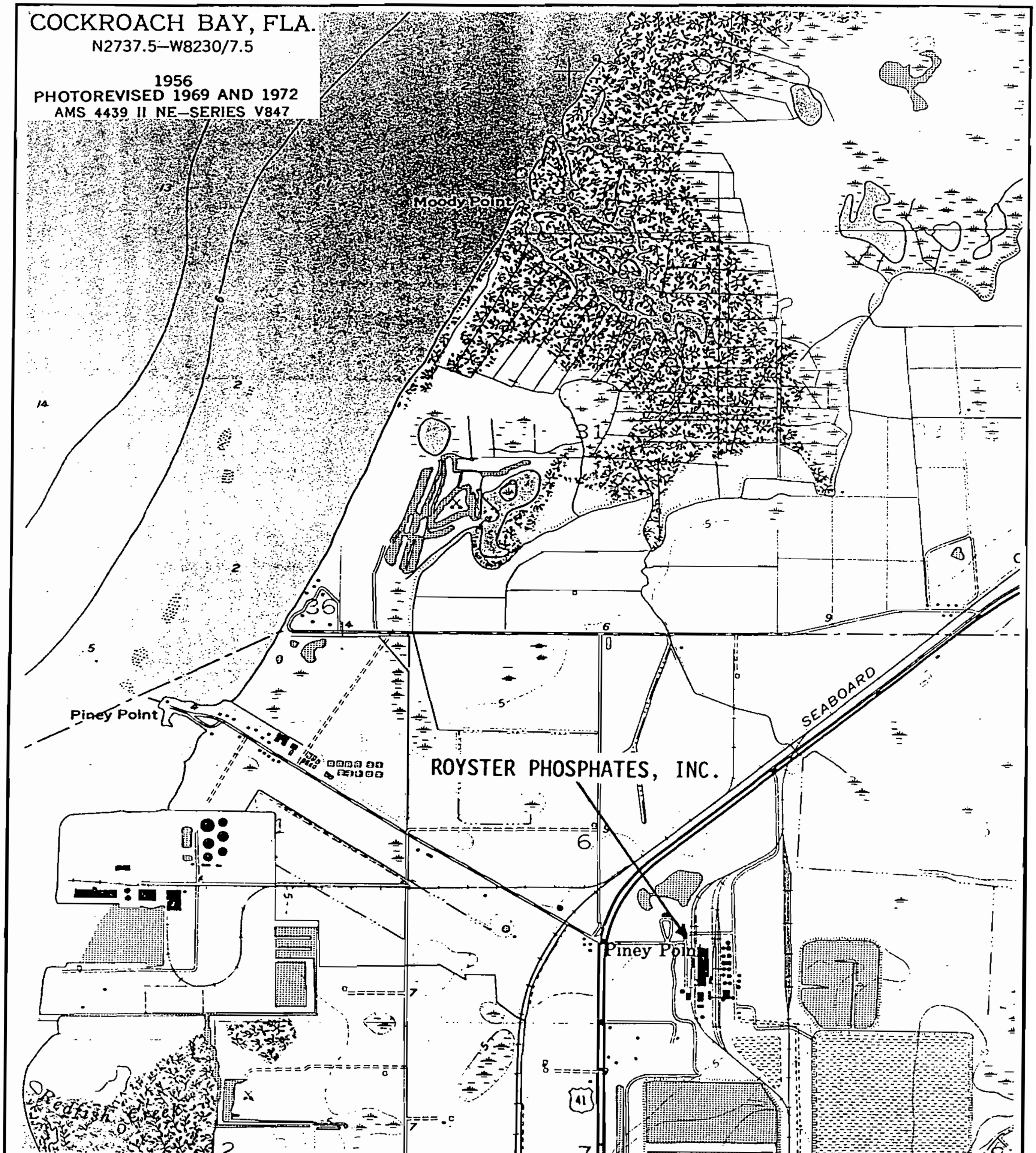


FIGURE 2-1

AREA LOCATION MAP
ROYSTER PHOSPHATES, INC.

KOOGLER & ASSOCIATES

Best Available Copy



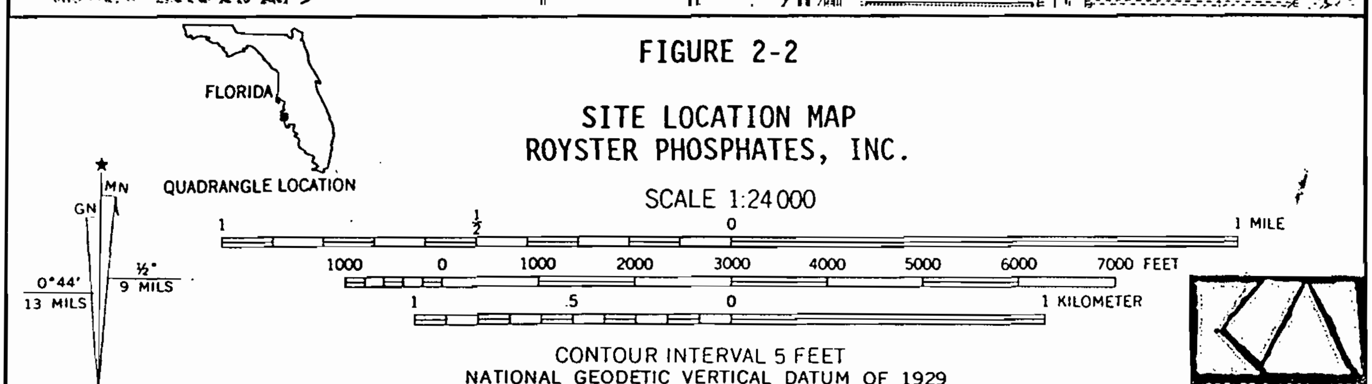


FIGURE 2-2

SITE LOCATION MAP
ROYSTER PHOSPHATES, INC.

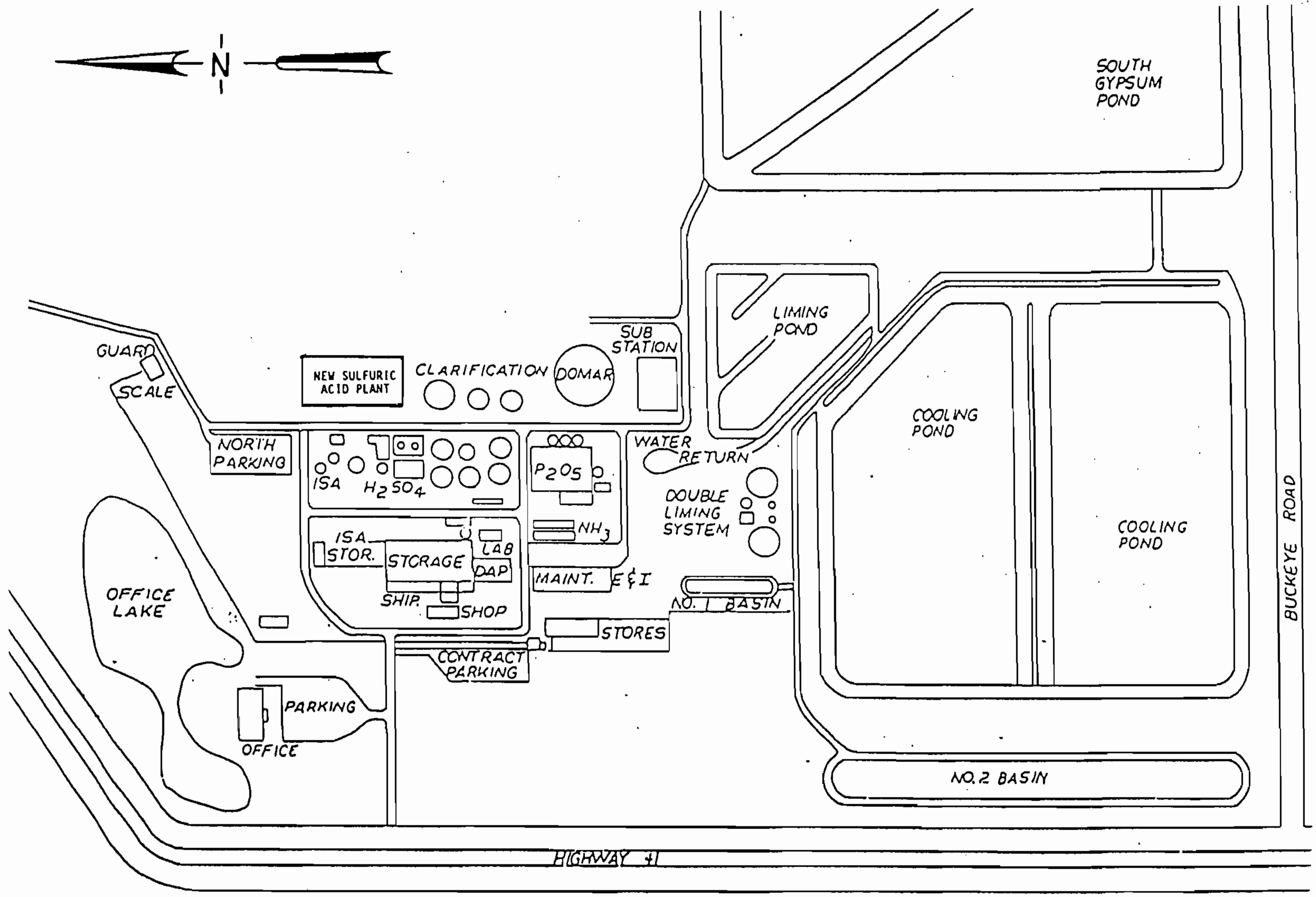


FIGURE 2-3

PLOT PLAN
ROYSTER PHOSPHATES, INC.

KOOGLER & ASSOCIATES

3.0 PROPOSED PROJECT

Royster is proposing to construct a double absorption sulfuric acid plant rated at 2700 tons per day of 100 percent H_2SO_4. This plant will also have cogeneration capabilities to generate 20.8 megawatts of electrical power average annual export with excess steam from the new sulfuric acid plant. A typical process flow diagram for double absorption sulfuric acid plants is presented in Figure 3-1. Figure 3-2 shows the major equipment locations for the new plant.

When the new plant is operational, the existing sulfuric acid plant permitted at 2000 tons per day of 100 percent H_2SO_4, will be permanently shutdown. The emission limits for the new plant will be the Federal New Source Performance Standards as set forth in Rule 17-2.600(2)(b), FAC, i.e., the sulfur dioxide and acid mist emission limits will be 4.0 pounds per ton of 100 percent sulfuric acid and 0.15 pounds per ton of 100 percent sulfuric acid, respectively.

Table 3-1 summarizes the permitted, actual and proposed conditions at which the existing and new sulfuric acid plants presently operate and will operate. In Table 3-2, the annual air pollutant emission rate changes, based on present, actual and proposed operating conditions, are summarized for the two sulfuric acid plants.

The information tabulated in Tables 3-1 and 3-2 for the sulfuric acid plants shows there will be an increase in the hourly sulfur dioxide emission rate and acid mist emission rate. The data also show that there will be a significant increase in the annual sulfur dioxide and acid mist emissions. There will be a less than significant increase in the annual nitrogen oxide emissions.

There are no other air pollution sources associated with the requested changes at Royster Phosphates, Inc. that would have to be considered in this permit application.

3.1 Rule Applicability

The existing sulfuric acid plant is subject to the New Source Performance Standards in Rule 17-2.600(2)(b),FAC. The plant will cease to be regulated, however, when it is permanently shutdown and the permit is surrendered.

The new sulfuric acid plant will be classified as a new major source subject to both State and Federal regulations as set forth in Rule 17-2.600(2)(b). The proposed increases in sulfur dioxide and acid mist emissions are significant as defined by Rule 17-2.500(2)(e)2, FAC. The construction of the new acid plant will therefore be subject to the full review required of a PSD construction permit application. This will include a determination of Best Available Control technology, an air quality review, and an evaluation of impacts on soils, vegetation and visibility.

The following sections of the application address the changes requested for constructing the new sulfuric acid plant and include all information required for the PSD review. The air quality review will look at impacts of sulfur dioxide emissions and acid mist emissions. The review will focus on the changes to be expected from operating the new sulfuric acid plant and ceasing operations of the existing sulfuric acid plant.

TABLE 3-1

EXISTING PRODUCTION RATES AND
EMISSION RATES AFFECTED BY PROPOSED
SULFURIC ACID PLANT CHANGES (1)

ROYSTER INDUSTRIES, INC.
MANATEE COUNTY, FLORIDA

	Existing Plant	Proposed Plant
Date Permitted	1966	NA
<u>Current Permit Conditions</u>		
Rate (TPD)	2000	0
SO2 (lb/ton)	4.0	0
(lb/hr)	333.2	0
(TPY)	1459	0
Mist (lb/ton)	0.15	0
(lb/hr)	12.5	0
(TPY)	54.8	0
Operating Factor	1.0	0
<u>Actual Conditions</u>		
Rate (TPD)	2000	0
SO2 (lb/ton)	3.37	0
(lb/hr)	280.8	0
(TPY)	906.4	0
Mist (lb/ton)	0.089	0
(lb/hr)	7.4	0
(TPY)	23.9	0
Operating Factor	0.737	0
<u>Proposed Conditions</u>		
Rate (TPD)	0	2700
SO2 (lb/ton)	0	4.0
(lb/hr)	0	450
(TPY)	0	1971
Mist (lb/ton)	0	0.15
(lb/hr)	0	16.9
(TPY)	0	74.0
Operating Factor	0	1.0

(1) See Appendix 3-A for calculations of emission rates.

TABLE 3-2

ANNUAL AIR POLLUTANT EMISSION CHANGES RESULTING FROM THE PROPOSED SULFURIC ACID PLANT CHANGES(1)

ROYSTER INDUSTRIES, INC.
MANATEE COUNTY, FLORIDA

Pollutant Tons/year	Existing Plant		Proposed Plant
SO2			
Present (actual)	906.4		0
Proposed	0		1971
Change	(906.4)		1971
Subtotal		1064.6	
Significant Increase (2)		40	
MIST			
Present (actual)	23.9		0
Proposed	0		74.0
Change	(23.9)		74.0
Subtotal		50.1	
Significant Increase (2)		7	
NOX			
Present (actual)	33.6		0
Proposed	0		58.7
Change	(33.6)		58.7
Subtotal		25.1	
Significant Increase (2)		40	

(1) Based on differences between present, actual and proposed operating conditions. See Appendix 3-A for calculation of emission rates.
(2) Defined in 17-2.500(2)(e)2, FAC.

NOTE: Rate changes in ( ) represent decreases in annual emissions.

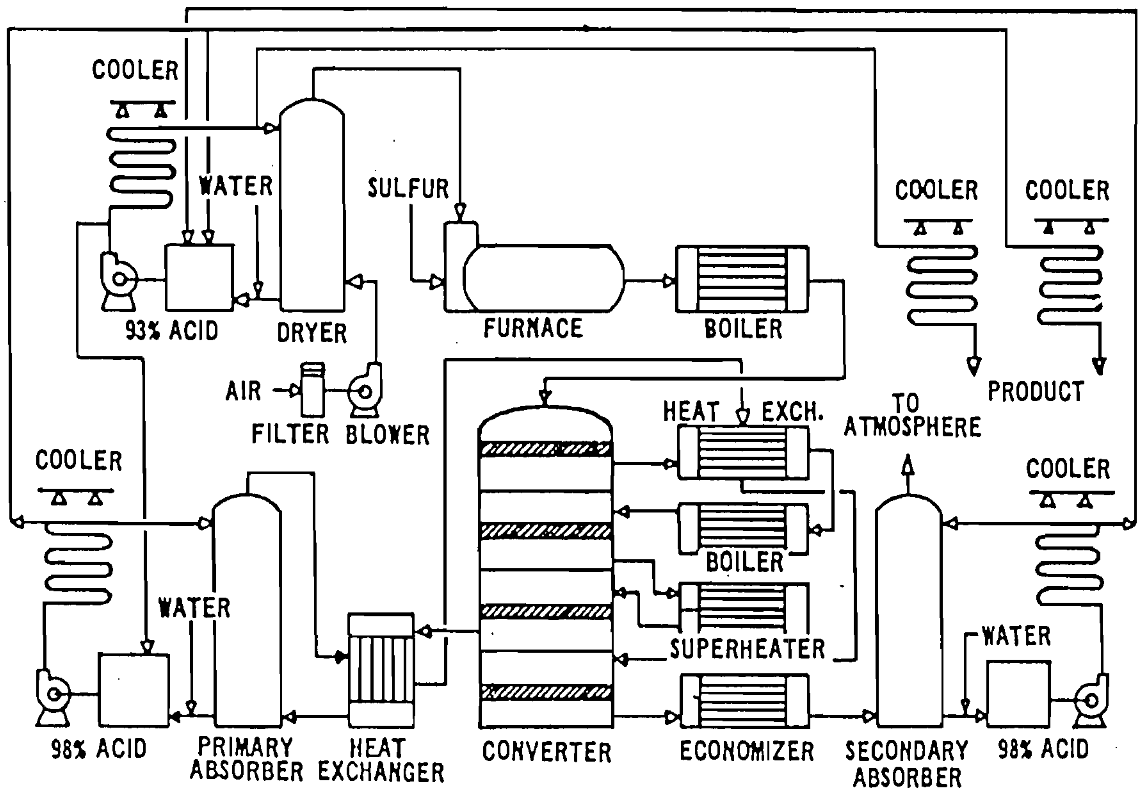


FIGURE 3-1
TYPICAL SULFURIC ACID
DOUBLE ABSORPTION PLANT
PROCESS FLOW DIAGRAM

$S + O_2 \rightarrow SO_2$ (BURNER)

$SO_2 + \frac{1}{2} O_2 \rightleftharpoons SO_3$ (CONVERTER)

$SO_3 + H_2O \rightarrow H_2SO_4$ (ABSORBER)

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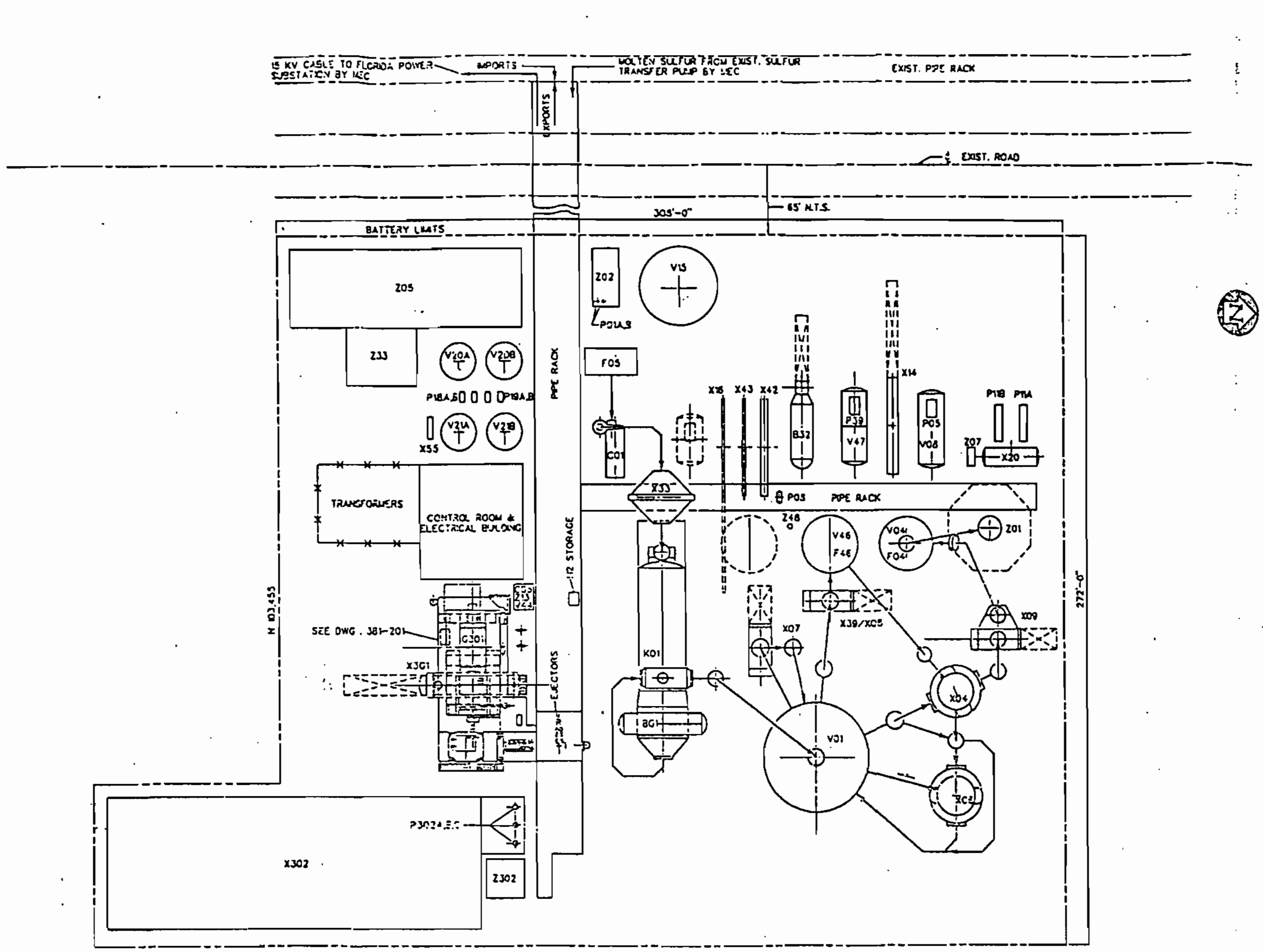

NO.	NAME
B01	WASTE HEAT BOILER
B32	HRS BOILER
C01	MAIN COMPRESSOR
C05	INSTR. AIR COMPRESSOR
F04	FINAL TOWER MIST ELIMIN.
F05	INLET AIR FILTER
F46	HRT MIST ELIMINATOR
G301	TURBINE GENERATOR
K01	SULFUR BURNER
P01A,B	SULFUR FEED PUMPS
P05	FAT CIRCULATION PUMP
P08	ACID DRAIN PUMP
P11A,B	BOILER FEED WATER PUMPS
P18A,B	UNPOLISHED TR. WTR. PUMPS
P19A,B	POLISHED TR. WTR. PUMPS
P39	HRS CIRCULATION PUMP
P301A,B	TG CONDENSATE PUMPS
P302A,B,C	TG COOLING WATER PUMPS
V01	CONVERTER
V04	FINAL TOWER
V08	FAT PUMP TANK
V15	SULFUR STORAGE TANK
V20A,B	UNPOLISHED TR. WTR. TANKS
V21A,B	POLISHED TR. WTR. TANKS
V44	INSTRUMENT AIR RECEIVER
V45	HR TOWER
V47	HR TOWER PUMP TANK
X04	COLD INTERP. HEAT EXCH.
X06	HOT INTERPASS HEAT EXCH.
X07	SUPERHEATER 1B
X09	ECONOMIZER 4A
X14	FAT ACID COOLER
X16	PRODUCT COOLER
X20	DEAERATOR
X33	AIR HEATER
X39/X05	SUPERHEATER 3A/ ECONOMIZER 3B
X42	HRS HEATER
X43	HRS PREHEATER
X55	COND. COOLER
X301	STEAM CONDENSER
X302	COOLING TOWER
Z01	PLANT STACK
Z02	SULFUR PIT
Z05	DEMIN. SYSTEM
Z07	BOILER CHEM. FEED SYSTEM
Z13	INSTRUMENT AIR DRYER
Z33	CONDENSATE POLISHER
Z48	HRS DILUTER
Z302	COOL. TWR. C. F. SYSTEM

CONFIDENTIAL

FIGURE 3-2
PLANT LAYOUT FOR NEW
2700 TPD SULFURIC ACID PLANT

SOURCE: MONSANTO ENVIRO-CHEM SYSTEMS, INC.

KOOGLER & ASSOCIATES

APPENDIX 3-A

EMISSION RATE CALCULATIONS

EMISSION RATE CALCULATIONS

EXISTING SULFURIC ACID PLANT

PERMITTED: 2000 tons per day 100% acid
SO_2 - 4.0 lb/ton, 333.2 lb/hr
Mist - 0.15 lb/ton, 12.5 lb/hr
Operating Factor - 1.0
(Based on Permit No. A041-121085)

ACTUAL: 2000 tons per day 100% acid
SO_2 - 3.37 lb/ton
Mist - 0.089 lb/ton
Operating Factor - 0.737, Annual
(Based on historic production data documented in Appendix 3-B).

PROPOSED: Plant to be permanently shutdown

NOX: 59,394 dscf per ton of 100% acid (See Appendix 3-B)
2.1×10^{-6} lb NOX per dscf at 68°F (See IMC-New Wales PSD application for third train expansion)

EMISSION RATES

Actual

SO_2: Hourly = 3.37 lb/ton x 2000/24 ton/hr
= 280.8 lb/hr

Annual = 280.8 lb/hr x 8760 hr/yr x 1/2000 ton/lb x 0.737
= 906.4 TPY

MIST: Hourly = 0.089 lb/ton x 2000/24 ton/hr
= 7.4 lb/hr

Annual = 7.4 lb/hr x 8760 hr/yr x 1/2000 ton/lb x 0.737
= 23.9 TPY

NOX Hourly = 2000 ton/day x 59394 dscf/ton x 2.1×10^{-6} lb/dscf x 1/24 day/hr
= 10.4 lb/hr

Annual = 10.4 lb/hr x 8760 hr/yr x 1/2000 ton/lb x 0.737
= 33.6 TPY

EMISSION RATE CALCULATIONS

NEW SULFURIC ACID PLANT

PROPOSED: 2700 tons per day 100% acid
SO_2 - 4.0 lb/ton
Mist - 0.15 lb/ton
Operating Factor - 1.0

NOX: 56744 dscf per ton of 100% acid (Based on Monsanto Enviro-Chem Systems, Inc. design adjusted to 68°F).
2.1 x 10(-6) lb NOX per dscf at 68°F (See IMC-New Wales PSD application for third train expansion)

EMISSION RATES

Proposed

S02:	Hourly	=	2700 ton/day x 4.0 lb/ton x 1/24 day/hr
		=	450 lb/hr
	Annual	=	450 lb/hr x 8760 hr/yr x 1/2000 ton/lb x 1.0
		=	1971 TPY
MIST:	Hourly	=	2700 ton/day x 0.15 lb/ton x 1/24 day/hr
		=	16.9 lb/hr
	Annual	=	16.9 lb/hr x 8760 hr/yr x 1/2000 ton/lb x 1.0
		=	74.0 TPY
NOX	Hourly	=	2700 ton/day x 56744 dscf/ton x 2.1 x 10(-6) lb/dscf x 1/24 day/hr
		=	13.4 lb/hr
	Annual	=	13.4 lb/hr x 8760 hr/yr x 1/2000 ton/lb x 1.0
		=	58.7 TPY

APPENDIX 3-B

DOCUMENTATION OF ACTUAL EMISSION RATES AND OPERATING FACTORS FOR THE EXISTING SULFURIC ACID PLANT

SUMMARY OF ANNUAL OPERATING FACTORS FOR
EXISTING SULFURIC ACID PLANT
BASED ON 1984 DATA

Month	Hours of Operation (hours)	Acid Production (Tons)
January	705.83	42,458
February	666.75	45,060
March	734.42	48,292
April	699.50	44,687
May	731.42	42,990
June	701.75	46,802
July	724.25	42,897
August	738.50	43,617
September	720.00	49,651
October	658.17	41,497
November	701.75	42,720
December	733.58	47,375
TOTAL	8515.92 hr/yr	538,046 TPY

Annual Operating Factor
Based on Operating Time = (8515.92 hr/yr)/(8760 hr/yr)
= 0.972

Annual Operating Factor
Based on Production = (538,046 TPY)/(2000 TPD x 365 day/yr)
= 0.737

SUMMARY OF ACTUAL EMISSIONS
BASED ON 12 APRIL 1989 TEST DATA
FOR EXISTING SULFURIC ACID PLANT

Run	Rate (TPH)	Stack Gas Flow Rate (DSCF/Ton)	SO2 (lb/ton)	Acid Mist (lb/ton)
1	71.75	62,588	3.64	0.097
2	71.75	58,954	3.37	0.082
3	71.75	56,639	3.11	0.087
AVERAGE		59,394	3.37	0.089

NOTE: Standard Reference Temperature = 68°F.

ENGINEERING CALCULATING SHEET

AMAX CHEMICAL CORPORATION
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P.O. BOX 908 • PALMETTO, FLORIDA 33561

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JOB NO. Piney Point
DATE 1984
BY ____

SUBJECT Sulfuric Acid Daily
January

	Production-N.T.		Operations			
Date	**Daily**	**Cumulative**	**Hrs. S/D**	**Hrs. Oper.**	**Oper. Factor**	**Remarks**
S 1	1230	1230	0	24	100	
M 2	1503	2733	0	24	100	
T 3	1485	4218	0	24	100	
W 4	1572	5790	0	24	100	
T 5	1591	7381	0	24	100	
F 6	1512	8893	0	24	100	
S 7	1368	10,261	0	24	100	
S 8	1417	11,678	0	24	100	
M 9	1234	12,912	0	24	100	
T 10	1180	14,092	0	24	100	
W 11	1175	15,267	0	24	100	
T 12	1185	16,452	0	24	100	
F 13	1120	17,572	0	24	100	
S 14	1229	18,801	0	24	100	
S 15	1234	20,035	0	24	100	
M 16	1501	21,536	0	24	100	
T 17	496	22,032	12-25	11-35	.483	Gas Leaks & Steam Leaks
W 18	1668	23,700	0	24	100	
T 19	1697	25,397	0	24	100	
F 20	1701	27,098	0	24	100	
S 21	1697	28,795	0	24	100	
S 22	1696	30,491	0	24	100	
M 23	1698	32,189	0	24	100	
T 24	1631	33,820	1-30	22-30	.938	Sch. Maint. Check Tower
W 25	266	34,086	13-40	10-20	.429	Sch. Maint
T 26	1452	35,538	0	24	100	
F 27	1471	37,009	0	24	100	
S 28	781	37,790	10-35	13-25	.558	Cooling coil leak Plugged [illegible]
S 29	1533	39,323	0	24	100	
M 30	1600	40,923	0	24	100	
T 31	1535	42,458	0	24	100	
			38-10	705-50	95 / 94.9	

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SUBJECT Sulfuric Acid DAILY
FEBRUARY

696 HRS

DATE	PRODUCTION-N.T. DAILY	CUMULATIVE	OPERATIONS HRS. S/D	HRS. OPER.	OPER. FACTOR	REMARKS
W 1	1491	1491	0	24	100	
T 2	1599	3090	0	24	100	
F 3	1617	4707	0	24	100	
S 4	1592	6299	0	24	100	
S 5	1103	7402	5-45	18-15	.760	Cooling Coil.
M 6	1673	9075	0	24	100	
T 7	1739	10,814	0	24	100	
W 8	1729	12,543	1-0	23-0	.958	Sch. Maint.
T 9	1004	13,547	8-30	15-30	.646	Sch. Maint.
F 10	1697	15,244	0	24	100	
S 11	1626	16,870	0	24	100	
S 12	1704	18,574	0	24	100	
M 13	1686	20,260	0	24	100	
T 14	1703	21,963	0	24	100	
W 15	1690	23,653	0	24	100	
T 16	1698	25,351	0	24	100	
F 17	1706	27,057	0	24	100	
S 18	1709	28,766	0	24	100	
S 19	1699	30,465	0	24	100	
M 20	1694	32,159	0	24	100	
T 21	1660	33,819	1-30	22-30	.938	Sch. Maint.
W 22	457	34,276	12-0	12-0	.500	" "
T 23	1705	35,981	0	24	100	
F 24	1459	37,440	0	24	100	
S 25	1494	38,934	0	24	100	
S 26	1481	40,415	0	24	100	
M 27	1574	41,989	0-30	23-30	.979	Elliott
T 28	1678	43,667	0	24	100	
W 29	1393	45,060	0	24	100	
			29-15	666-45	95.8	

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SUBJECT Sulfuric Acid DAILY

MARCH

744 Hrs

	PRODUCTION-N.T.		OPERATIONS			
DATE	DAILY	CUMULATIVE	HRS. S/D	HRS. OPER.	OPER. FACTOR	REMARKS
T 1	1621	1621	-0-	24	100	
F 2	1602	3223	-0-	24	100	
S 3	1339	4562	-0-	24	100	
S 4	1383	5945	-0-	24	100	
M 5	1489	7434	-0-	24	100	
T 6	1491	8925	-0-	24	100	
W 7	1487	10,412	-0-	24	100	
T 8	1499	11,911	-0-	24	100	
F 9	1506	13,417	-0-	24	100	
S 10	1495	14,912	-0-	24	100	
S 11	1519	16,431	-0-	24	100	
M 12	1523	17,954	-0-	24	100	
T 13	1508	19,462	-0-	24	100	
W 14	1555	21,017	-0-	24	100	
T 15	1599	22,616	-0-	24	100	
F 16	1593	24,209	-0-	24	100	
S 17	1587	25,796	-0-	24	100	
S 18	1620	27,416	-0-	24	100	
M 19	1690	29,106	-0-	24	100	
T 20	1630	30,736	0.30	23.30	.983	Sch. Maint.
W 21	838	31,584	9.10	14.50	.617	Sch. Maint.
T 22	1687	33,271	-0-	24	100	
F 23	1536	34,807	-0-	24	100	
S 24	1696	36,503	-0-	24	100	
S 25	1672	38,175	-0-	24	100	
M 26	1708	39,883	-0-	24	100	
T 27	1647	41,530	-0-	24	100	
W 28	1677	43,207	-0-	24	100	
T 29	1705	44,912	-0-	24	100	
F 30	1699	46,611	-0-	24	100	
S 31	1681	48,292	-0-	24	100	
			9-35	734-25		9.5833

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SUBJECT: SULFURIC ACID — DAILY
APRIL

720 hrs

	PRODUCTION-N.T.		OPERATIONS			
DATE	DAILY	CUMULATIVE	HRS. S/D	HRS. OPER.	OPER. FACTOR	REMARKS
S 1	1685	1685	-0-	24	100	
M 2	1708	3393	-0-	24	100	
T 3	1629	50[illegible]	-0-	24	100	
W 4	642	5670	7-0	17-0	.708	[illegible]
T 5	913	64[illegible]	7-[illegible]	1[illegible]	.688	[illegible]
F 6	1,699	81[illegible]	-0-	24	[illegible]	
S 7	17[illegible]	99[illegible]	-0-	24	100	
S 8	16[illegible]	11,59[illegible]	[illegible]	24	[illegible]	
M 9	1[illegible]	13,[illegible]	[illegible]	24	[illegible]	
T 10	[illegible]	14,9[illegible]	[illegible]	24	[illegible]	
W 11	16[illegible]	16,5[illegible]	-0-	24	100	
T 12	[illegible]	1[illegible]	[illegible]	[illegible]	[illegible]	
F 13	[illegible]	[illegible]	[illegible]	24	[illegible]	
S 14	1690	[illegible]	[illegible]	[illegible]	[illegible]	
S 15	1695	[illegible]	-0-	24	100	
M 16	170[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
T 17	17[illegible]	[illegible]	[illegible]	24	[illegible]	
W 18	17[illegible]	[illegible]	[illegible]	24	[illegible]	
T 19	15[illegible]	[illegible]	-0-	24	100	
F 20	[illegible]	[illegible]	-0-	[illegible]	[illegible]	
S 21	150[illegible]	32,9[illegible]	[illegible]	24	[illegible]	
S 22	1498	34,[illegible]	[illegible]	[illegible]	[illegible]	
M 23	1055	35,486	6-0	18-0	.750	Drying tower
T 24	1420	36,906	-0-	24	100	
W 25	1336	38,242	-0-	24	100	
T 26	1310	39,552	-0-	24	100	
F 27	1302	40,854	-0-	24	100	
S 28	1248	42,102	-0-	24	100	
S 29	1290	43,392	-0-	24	100	
M 30	1295	44,687	-0-	24	100	
			2[illegible]-35	699-35		

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SUBJECT Sulfuric Acid Daily

May

7/2/4

	Production-N.T.		Operations			
Date	Daily	Cumulative	Hrs. S/D	Hrs. Oper.	Oper. Factor	Remarks
T 1	1280	1280	-0-	24	100	
W 2	1316	2596	-0-	24	100	
T 3	1291	3887	-0-	24	100	
F 4	1301	5188	-0-	24	100	
S 5	1309	6497	-0-	24	100	
S 6	1304	7801	-0-	24	100	
M 7	1443	9244	-0-	24	100	
T 8	1038	10,282	5-30	18-30	.771	Cooling Tower
W 9	1211	11,502	-0-	24	100	
T 10	1228	12,751	-0-	24	100	
F 11	1209	13,960	-0-	24	100	
S 12	1209	15,169	-0-	24	100	
S 13	1217	16,386	-0-	24	100	
M 14	1147	17,533	1-20	22-40	.946	
T 15	1229	18,762	-0-	24	100	
W 16	1234	19,996	-0-	24	100	
T 17	1121	21,117	5-45	18-15	.760	Piping
F 18	1684	22,801	-0-	24	100	
S 19	1681	24,482	-0-	24	100	
S 20	1669	26,151	-0-	24	100	
M 21	1671	27,822	-0-	24	100	
T 22	[illegible]	29,397	-0-	24	100	
W 23	1483	30,880	-0-	24	100	
T 24	1483	32,363	-0-	24	100	
F 25	1508	33,871	-0-	24	100	
S 26	1489	35,360	-0-	24	100	
S 27	1511	36,871	-0-	24	100	
M 28	[illegible]	38,[illegible]	-0-	24	100	
T 29	[illegible]	40,[illegible]	-0-	24	100	
W 30	1513	41,532	-0-	24	100	
T 31	1458	42,990	-0-	24	100	
			12-35	731-25		

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SUBJECT Sulfuric Acid Daily

June

Date	Production-N.T. Daily	Production-N.T. Cumulative	Operations Hrs. S/D	Operations Hrs. Oper.	Operations Oper. Factor	Remarks
F 1	851	851	10-45	13-15	.552	Sch. Maint.
S 2	1580	2431	-0-	24	100	
S 3	1579	4010	-0-	24	100	
M 4	1648	5658	-0-	24	100	
T 5	1665	7323	-0-	24	100	
W 6	1680	9003	-0-	24	100	
T 7	1681	10,684	-0-	24	100	
F 8	1677	12,361	-0-	24	100	
S 9	[illegible]	14,064		24	100	
S 10	1671	15,735	-0-	24	100	
M 11	1689	17,424	-0-	24	100	
T 12	1667	19,091	-0-	24	100	
W 13	1690	20,781	-0-	24	100	
T 14	1683	22,464	-0-	24	100	
F 15	1702	24,166	-0-	24	100	
S 16	1669	25,835	-0-	24	100	
S 17	1670	27,505	-0-	24	100	
M 18	1644	29,149	-0-	24	100	
T 19	1662	30,811	-0-	24	100	
W 20	1465	32,276	-0-	24	100	
T 21	1518	33,794	0-30	23-30	.979	Sch. Maint.
F 22	967	34,761	7-0	17-0	.708	Sch. Maint.
S 23	1476	36,237	-0-	24	100	
S 24	1469	37,706	-0-	24	100	
M 25	1472	39,178	-0-	24	100	
T 26	1487	40,665	-0-	24	100	
W 27	1516	42,181	-0-	24	100	
T 28	1536	43,717	-0-	24	100	
F 29	1540	45,257	-0-	24	100	
S 30	1545	46,802	-0-	24	100	
			18-15	701-45		

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DATE 1984
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SUBJECT: Sulfuric Acid Daily

JULY

744 hrs

DATE	PRODUCTION-N.T. DAILY	PRODUCTION-N.T. CUMULATIVE	OPERATIONS HRS. S/D	OPERATIONS HRS. OPER.	OPERATIONS OPER. FACTOR	REMARKS
S 1	1279	1279	3-40	20-20	.846	Abs. Tower
M 2	1547	2826	-0-	24	100	
T 3	1575	4401	-0-	24	100	
W 4	1591	5992	-0-	24	100	
T 5	1543	7535	-0-	24	100	
F 6	1072	8607	6-45	17-15	.719	Drying Unit
S 7	1478	10,085	-0-	24	100	
S 8	1460	11,545	-0-	24	100	
M 9	1235	12,780	3-30	20-30	.854	Abs. Tower
T 10	1429	14,209	-0-	24	100	
W 11	1489	15,758	-0-	24	100	
T 12	1473	17,231	-0-	24	100	
F 13	1473	18,704	-0-	24	100	
S 14	1483	20,187	-0-	24	100	
S 15	1459	21,646	-0-	24	100	
M 16	960	22,606	5-50	18-10	.757	Duct
T 17	1231	23,837	-0-	24	100	
W 18	1210	25,047	-0-	24	100	
T 19	1228	26,275	-0-	24	100	
F 20	1235	27,510	-0-	24	100	
S 21	1234	28,744	-0-	24	100	
S 22	1230	[illegible]	-0-	24	100	
M 23	[illegible]	[illegible]	-0-	24	100	
T 24	1466	32,667	-0-	24	100	
W 25	1500	34,167	-0-	24	100	
T 26	1535	35,704	-0-	24	100	
F 27	1466	37,170	-0-	24	100	
S 28	1473	38,643	-0-	24	100	
S 29	1477	40,120	-0-	24	100	
M 30	1470	41,590	-0-	24	100	
T 31	1307	42,897	-0-	24	100	
			19-45	724-15		

ENGINEERING CALCULATING SHEET

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AMAX CHEMICAL CORPORATION
A SUBSIDIARY OF AMAX INC.
P.O. BOX 908 • PALMETTO, FLORIDA 33561

PAGE
JOB NO. Piney Point
DATE 1984
BY [illegible]

SUBJECT Sulfuric Acid Daily

August

744 hrs

	Production-N.T.		Operations			
Date	Daily	Cumulative	Hrs. S/D	Hrs. Oper.	Oper. Factor	Remarks
W 1	1301	1301	-0-	24	100	
T 2	1302	2603	-0-	24	100	
F 3	1033	3636	-0-	24	100	
S 4	968	4604	-0-	24	100	
S 5	1195	5799	-0-	24	100	
M 6	1070	6869	-0-	24	100	
T 7	1153	8022	-0-	24	100	
W 8	1153	9175	-0-	24	100	
T 9	1152	10,327	-0-	24	100	
F 10	1301	11,629	-0-	24	100	
S 11	1407	13,036	-0-	24	100	
S 12	1400	14,436	-0-	24	100	
M 13	870	15,306	5-30	18-30	.771	Sch. Maint.
T 14	1493	16,799	-0-	24	100	
W 15	1462	18,261	-0-	24	100	
T 16	1492	19,753	-0-	24	100	
F 17	1496	21,249	-0-	24	100	
S 18	1483	22,732	-0-	24	100	
S 19	1481	24,213	-0-	24	100	
M 20	1493	25,706	-0-	24	100	
T 21	1642	27,348	-0-	24	100	
W 22	1658	29,006	-0-	24	100	
T 23	1369	30,375	-0-	24	100	
F 24	578	30,953	-0-	24	100	
S 25	1662	[illegible]	[illegible]	24	[illegible]	
S 26	[illegible]	[illegible]				
M 27						
T 28	1619	38,624	-0-	24	100	
W 29	1661	40,285	-0-	24	100	
T 30	1675	41,960	-0-	24	100	
F 31	1659	43,619	-0-	24	100	
			5-30	738-30	99.3%	

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P.O. BOX 908 • PALMETTO, FLORIDA 33561

PAGE
JOB NO. Piney Point
DATE 1984
BY RAM/clp

SUBJECT: Sulfuric Acid Daily
SEPTEMBER

720 hrs

DATE	PRODUCTION-N.T. DAILY	PRODUCTION-N.T. CUMULATIVE	OPERATIONS HRS. S/D	OPERATIONS HRS. OPER.	OPERATIONS OPER. FACTOR	REMARKS
S 1	1667	1667	-0-	24	100	
S 2	1666	3333	-0-	24	100	
M 3	1651	4984	-0-	24	100	
T 4	1658	6642	-0-	24	100	
W 5	1628	8270	-0-	24	100	
T 6	1681	9951	-0-	24	100	
F 7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
S 8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
S 9	1646	14,924	-0-	24	100	
M 10	1649	16,573	-0-	24	100	
T 11	1638	18,211	-0-	24	100	
W 12	1669	19,880	-0-	24	100	
T 13	1624	21,504	-0-	24	100	
F 14	1654	23,158	-0-	24	100	
S 15	1650	24,808	-0-	24	100	
S 16	1657	26,465	-0-	24	100	
M 17	1666	28,131	-0-	24	1.00	
T 18	1658	29,789	-0-	24	1.00	
W 19	1665	31,454	-0-	24	1.00	
T 20	1658	33,112	-0-	24	1.00	
F 21	1662	34,774	-0-	24	1.00	
S 22	1662	36,436	-0-	24	1.00	
S 23	1659	38,095	-0-	24	1.00	
M 24	1650	39,745	-0-	24	1.00	
T 25	1650	41,395	-0-	24	1.00	
W 26	1636	43,031	-0-	24	1.00	
T 27	1631	44,662	-0-	24	1.00	
F 28	1661	46,323	-0-	24	1.00	
S 29	1662	47,985	-0-	24	1.00	
S 30	1666	49651	-0-	24	1.00	Net 1655 TPD Rate
			-0-	720	1.000	

ENGINEERING CALCULATING SHEET

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PAGE ____
JOB NO. Piney Point
DATE 1984
BY clp

SUBJECT Sulfuric Acid — Daily

October

	PRODUCTION-N.T.		OPERATIONS			
DATE	DAILY	CUMULATIVE	HRS. S/D	HRS. OPER.	OPER. FACTOR	REMARKS
M 1	1683	1683	-0-	24	10.0	
T 2	1681	3364	-0-	24	100	
W 3	1581	49[illegible]	-0-	24	100	
T 4	15[illegible]7	6510	-0-	24	100	
F 5	1349	7859	-0-	24	100	
S 6	1315	9174	-0-	24	100	
S 7	1309	10,483	-0-	24	100	
M 8	1105	11,588	-0-	24	100	
T 9	1213	12,801	-0-	24	100	
W 10	785	13,586	7-0	17-0	.708	Abs. Tower
T 11	1139	14,725	-0-	24	100	
F 12	[illegible]	14,7[illegible]	20-15	3-45	.150	Boiler
S 13	[illegible]	15,0[illegible]	18-0	6-0	.250	"
S 14	1361	16,438	-0-	24	100	
M 15	1633	18,071	-0-	24	100	
T 16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Sch. Maint.
W 17	0	19,707	24	-0-	0	" "
T 18	1052	20,759	[illegible]	[illegible]	.876	"
F 19	1647	22,606	-0-	24	100	
S 20	1661	24,267	-0-	24	100	
S 21	1645	25,91[illegible]	-0-	24	100	
M 22	1604	27,516	0-45	23-15	.969	Piping
T 23	1667	29,183	-0-	24	100	
W 24	1667	30,8[illegible]	-0-	24	100	
T 25	1657	3[illegible],507	-0-	24	100	
F 26	[illegible]	[illegible]	-0-	24	100	
S 27	[illegible]	[illegible]	1-10	22-50	.950	Abs. Tower
S 28	960	36,489	11-45	12-15	.510	" "
M 29	1673	38,160	-0-	24	100	
T 30	1673	39,833	-0-	24	100	
W 31	1664	41,497	-0-	24	100	
			85-5 11.4%	658-15	88.4%	

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ENGINEERING CALCULATING SHEET

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PAGE
JOB NO. Piney Point
DATE 1984
BY clp

SUBJECT Sulfuric Acid DAILY
November

-120 hrs

	PRODUCTION-N.T.		OPERATIONS			
DATE	DAILY	CUMULATIVE	HRS. S/D	HRS. OPER.	OPER. FACTOR	REMARKS
T 1	1657	1657	-0-	24	100	
F 2	1554	3211	1-30	22-30	.938	Abs. Tower
S 3	1665	4876	-0-	24	100	
S 4	1652	6528	-0-	24	100	
M 5	1418	7946	-0-	24	100	
T 6	1044	8990	-0-	24	100	
W 7	1116	10,106	-0-	24	100	
T 8	1167	11,273	-0-	24	100	
F 9	1361	12,634	-0-	24	100	
S 10	1500	14,134	-0-	24	100	
S 11	1505	15,639	-0-	24	100	
M 12	1453	17,090	-0-	24	100	
T 13	1404	18,494	-0-	24	100	
W 14	1406	19,900	-0-	24	100	
T 15	1046	20,946	5-0	19-0	.792	Sulfur Burner
F 16	1562	22,508	-0-	24	100	
S 17	1556	24,064	-0-	24	100	
S 18	1663	25,727	-0-	24	100	
M 19	1641	27,368	-0-	24	100	
T 20	1571	28,939	-0-	24	100	
W 21	1382	30,322	2-10	21-50	.908	Elliott
T 22	1566	31,888	-0-	24	100	
F 23	1242	33,130	3-0	21-0	.875	Elliott
S 24	[illegible]	[illegible]	[illegible]	23-0	.958	[illegible]
S 25	1349	[illegible]	-0-	24	100	
M 26	1253	37,012	-0-	24	100	
T 27	1146	38,158	[illegible]	20-0	.833	Elliott
W 28	1401	[illegible]	-0-	24	100	
T 29	1517	41,070	[illegible]	22-30	.929	Elliott
F 30	1650	42,720	-0-	24	100	
			12-15	701-45		

ENGINEERING CALCULATING SHEET

AMAX CHEMICAL CORPORATION
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PAGE ____
JOB NO Piney Point
DATE 1984
BY clp

SUBJECT Sulfuric Acid DAILY
December

744 hrs

	PRODUCTION-N.T.		OPERATIONS			
DATE	DAILY	CUMULATIVE	HRS. S/D	HRS. OPER.	OPER. FACTOR	REMARKS
S 1	1661	1661	-0-	24	100	
S 2	1535	3196	1-10	22-50	.950	Abs. Tower
M 3	1660	4856	-0-	24	100	
T 4	1199	6055	4-30	19-30	.813	1-30 0-30 Piping 3-30
W 5	1645	7700	-0-	24	100	
T 6	1675	9375	-0-	24	100	
F 7	1681	11,056	-0-	24	100	
S 8	1679	12,735	-0-	24	100	
S 9	1666	14,401	-0-	24	100	
M 10	1661	16,062	-0-	24	100	
T 11	1644	17,706	-0-	24	100	
W 12	1645	19,351	-0-	24	100	
T 13	1638	20,989	-0-	24	100	
F 14	1534	22,523	-0-	24	100	
S 15	1634	24,157	-0-	24	100	
S 16	1628	25,785	-0-	24	100	
M 17	1319	27,104	-0-	24	100	
T 18	1274	28,378	-0-	24	100	
W 19	1291	29,669	-0-	24	100	
T 20	1061	30,730	-0-	24	100	
F 21	1375	32,305	-0-	24	100	
S 22	1630	33,935	-0-	24	100	
S 23	1629	35,564	-0-	24	100	
M 24	1633	37,197	-0-	24	100	
T 25	1234	38,431	0-45	23-15	.969	Abs. Tower
W 26	1256	39,687	-0-	24	100	
T 27	1266	40,953	3-0	21-0	.875	Elliott
F 28	1498	42,451	1-0	23-0	.958	Abs. Tower
S 29	1648	44,099	-0-	24	100	
S 30	1634	45,733	-0-	24	100	
M 31	1642	47,375	-0-	24	100	
			10-25	733-35		

Royster Phosphates, Inc.

P. O. Box 1329
Palmetto, Florida 34220
(813) 722-4555

April 20, 1989

Mr. C. S. Lee
Florida Department of Environment Regulation
4520 Oak Fair Blvd.
Tampa, Fl 33610-7347

Re: Permit Number A041-121085

Dear Mr. Lee:

Please find attached, the results and data for compliance tests performed per the above referenced permit. The tests were conducted on 12 April 1989.

The stack test and analytical tests were performed by Royster Phosphates, Inc. personnel. The tests results are as follows:

	Acid Mist		SO2	
Run 1	6.96 lb/hr	0.097 lb/ton	261 lb/hr	3.64 lb/ton
Run 2	5.90 lb/hr	0.082 lb/ton	242 lb/hr	3.37 lb/ton
Run 3	6.27 lb/hr	0.087 lb/ton	223 lb/hr	3.11 lb/ton
Average	6.38 lb/hr	0.089 lb/ton	242 lb/hr	3.37 lb/ton

Production rate at the Piney Point Sulfuric Acid Plant was 71.75 tons/hr H2SO4 (100% basis). This is an average rate based on the sulfuric acid production calculated from the change in inventory of the west (product) H2SO4 storage tank.

		Time	Tank Dip	Tons
Beginning inventory	4/12/89	0:600	14'0"	7679
Ending inventory	4/13/89	0:600	3'11"	9436
			10'1"	1757

1757 Tons H2SO4 ÷ 24 hours = 73.21 Tons/hr @ 98%.

73.21 Tons/hr X .98 = 71.75 Tons/hr @ 100%.

To the best of my knowledge the above data is true and correct. Should further information be required, please contact our office.

Very truly yours,

Susanne Neupauer
Environmental Engineer

SN/dam
Attachments: Fourteen (14)
cc: W. L. Priesmeyer, MCPHU

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			10.0		300	286
PREVIOUS READ 0600		2400	10.8		290	280

STORAGE TANK	0600	1400	2200	0600
DRY DIP EAST	5'6"	9'9"	11-6½	19'5"
INST EAST	~~8~~			
DRY DIP WEST	14'0	10½"	6-5	3'11"
~~INST WEST~~ SALT	4'4"	4'2"	4-3	4"3"
PRODUCT TO	WEST	WesT	WEST	East
PRODUCT FROM	EAST	EAST	EAST	west
DRY DIP SULFUR	19'11"	20½	11-4	13'11
INST SULFUR	INST 6-7 FT 40	6-8 / 43"	K-3 / 43	INST 12-7 FT 43

SO2 gas test
(1700) Anal 283 Reich 300
(0100) Anal. 287 Reich 300

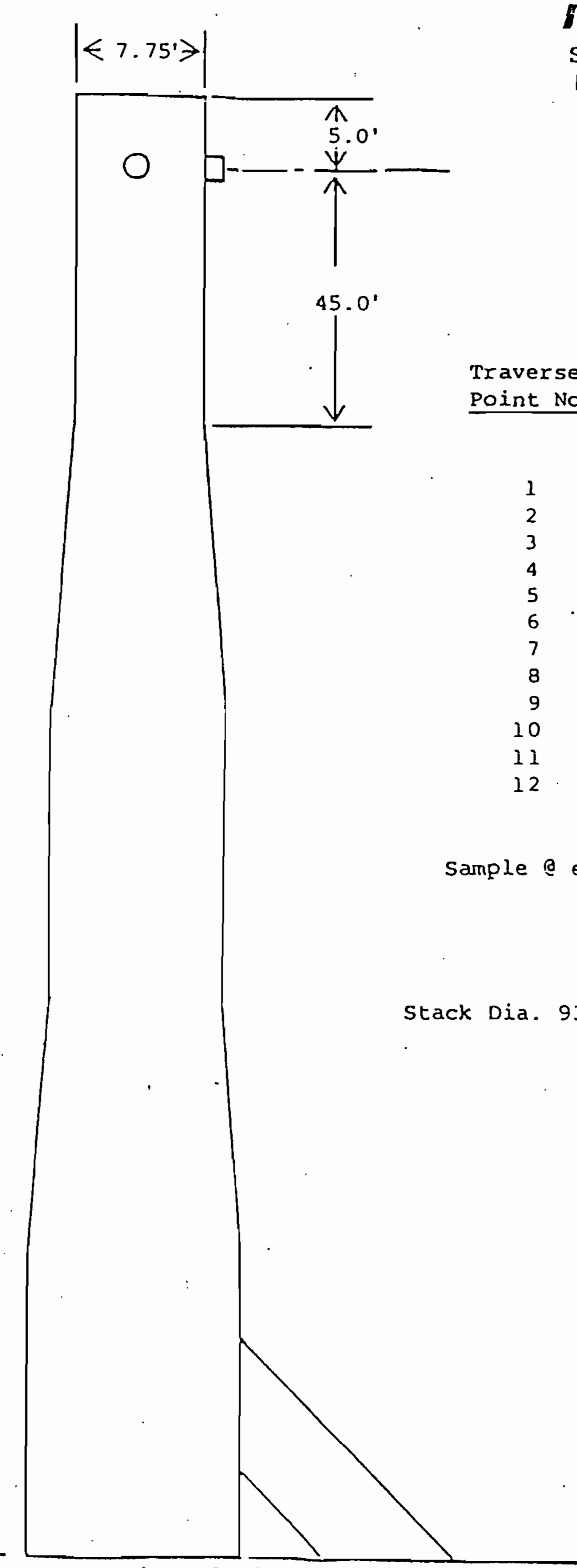
BAUME	0900		1700	
RECORDER IP	9850	98.52	98.50	
LAB SAMPLE IP	9848	98.49	98.22	
RECORDER FT	9844	98.60	98.53	
LAB SAMPLE FT	9739	98.55	98.18	
93%				

Column heading 0100 also printed.

(615) FT Rec 9849 Lab 9775
(1220) FT Rec 9853 Lab 9773
98.53 Lab 98.51
(1605) FT. Rec 98.62 Lab 98.52

INVENTORY	0600	1400	2200	0600
EAST TANK	4528	3854	3095	2323
WEST TANK	3181	3768	4382	4778
TOTAL TONS	7709	7622	7477	7101
SULFUR TONS	270.9	271.2	569	4803
		587	614	396

Royster Phosphates, Inc.
SULFURIC ACID PLANT
Palmetto, Florida



Traverse Point No.	Distance Inside Stack Wall w/5" Port
1	6.98
2	11.23
3	15.99
4	21.48
5	28.25
6	38.08
7	64.92
8	74.75
9	81.51
10	87.02
11	91.77
12	96.02

Sample @ each Point 3 Minutes.

Stack Dia. 93.0"------Area 47.1730 sq. ft.

Stack Height 200'

Meter Orifice Calibration Check

Console Type & No. PM 100 $\Delta H@$ of Orifice 1.84

Metered Volume **Corrected Volume**

Final - 641.50

Initial - 633.90 7.60 $ft^3 \times \left[\frac{528}{535}\right] \left[\frac{30.12}{29.92}\right] =$ 7.551 ft^3 (cv)

Time - 10 min. 45 sec. Total minutes = 10.075

7.551 ft^3 (cv) ÷ 10.075 Total minutes = 0.749 $H@_2$

$\frac{0.75}{\Delta H@_2} \times 100 =$ 100.1 % Orifice Check

Date: April 14, 1989 Signature: J. Heuyauer

Procedure: Allow console to run approximately 10 minutes and leak check @ 15" Hg. Set flow rate of console at the $\Delta H@$ of orifice from the most recent full scale calibration. Stop the dry gas meter at a convenient point. Start the vaccum pump and a stopwatch simultaneously and run for approximately ten minutes.

Tolerance + 5.0% - if orifice check is not within 5% of $\Delta H@$, recalibrate orifice.

POSTTEST DRY GAS METER CALIBRATION DATA FORM (English units)

Test numbers 1, 2, 3 Date April 12, 1988 Meter box number PM-100 Plant Sulfuric Acid Plant

Barometric pressure, P_b = 30.12 in. Hg Dry gas meter number #1 Pretest Y 0.967

Orifice manometer setting, (ΔH), in. H_2O	Gas volume: Wet test meter (V_w), ft^3	Gas volume: Dry gas meter (V_d), ft^3	Temperature: Wet test meter (t_w), °F	Temperature: Dry gas meter: Inlet (t_{d_i}), °F	Temperature: Dry gas meter: Outlet (t_{d_o}), °F	Temperature: Dry gas meter: Average (t_d),[a] °F	Time (Θ), min	Vacuum setting, in. Hg	Y_i	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	$\Delta H@_i$
1.0	10	686.93 / 676.23 10.7	75 / 75 75	98 / 106 102	82 / 84 83	92.5	18.24	5	.963	(10)(30.12)(552.5) / (10.7)(30.19)(535)	1.85
1.0	10	699.90 / 689.32 10.6	75 / 75 75	110 / 112 111	86 / 90 88	99.5	18.32	5	.984	(10)(30.12)(559.5) / (10.6)(30.19)(535)	1.85
1.0	10	710.60 / 700.00 10.6	75 / 75 75	110 / 112 111	88 / 88 88	99.5	18.20	5	.981	(10)(30.12)(559.5) / (10.6)(30.19)(535)	1.81
									Y =	.976	1.84

[a] If there is only one thermometer on the dry gas meter, record the temperature under t_d.

V_w = Gas volume passing through the wet test meter, ft^3.

V_d = Gas volume passing through the dry gas meter, ft^3.

t_w = Temperature of the gas in the wet test meter, °F.

t_{d_i} = Temperature of the inlet gas of the dry gas meter, °F.

t_{d_o} = Temperature of the outlet gas of the dry gas meter, °F.

t_d = Average temperature of the gas in the dry gas meter, obtained by the average of t_{d_i} and t_{d_o}, °F.

ΔH = Pressure differential across orifice, in. H_2O.

Y_i = Ratio of accuracy of wet test meter to dry gas meter for each run.

Y = Average ratio of accuracy of wet test meter to dry gas meter for all three runs; tolerance = pretest Y $\pm$0.05Y

P_b = Barometric pressure, in. Hg.

Θ = Time of calibration run, min.

$$\Delta H@_i = \frac{.0317 \Delta H}{P_b (t_d + 460)} \left[\frac{(T_w + 460)\Theta}{V_w} \right]^2$$

Date: 4-11-89 Thermocouple No: PM-100 Stainless Steel 8'

Room Temperature: 68 °F Barometric Pressure: 30.12 "Hg

Calibrated By: NEUPAUER + JOINER Reference: Mercury-In_Glass:ASTM

Unit Type & No.	Temperature Source	Reference Thermometer Temperature °F	Thermomcouple Potentiometer Temperture °F	Percent Difference
STAINLESS STEEL 8'	STACK	157	159	-.32
STAINLESS STEEL 8'	ICE Water	39	41	-.40
STAINLESS STEEL 8'	AMBIENT	69	70	-.19

$$\text{Percent Difference} = \frac{(\text{Ref. Temp. }^{o}F + 460) - (\text{Test Therm. Temp. }^{o}F + 460)}{\text{Ref. Temp. }^{o}F + 460} \times 100$$

Tolerence $\leq$ 1.5%

PITOT TUBE CALIBRATION DATA

Calibration pitot tube: type STD size (OD) 5/16" ID number 1

Type S pitot tube ID number 8'-009 $C_{p(std)}$ = 0.99

Calibration: date April 12, 1989 performed by Neupauer & Joiner

High A-Side Calibration

Δp_{std}, (in.) H_2O	Δp_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
1. .89	1.35	.8119	
2. .89	1.35	.8119	
3. .89	1.35	.8119	
	Average		

Low B-Side Calibration

Δp_{std}, (in.) H_2O	Δp_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
1. .02	.035	.7559	
2. .02	.035	.7559	
3. .02	.035	.7559	
	Average		

[a] $C_{p(S)} = C_{p(std)} \sqrt{\dfrac{\Delta p_{std}}{\Delta p_s}}$

[b] $DEV = C_{p(S)} - \bar{C}_p$, (must be ≤ 0.01)

$\bar{C}_p(A) - \bar{C}_p(B) =$ ________ (must be ≤ 0.01).

High A $\bar{C}_{p(s)}$ + Low A $\bar{C}_{p(s)}$ = .7839 Avg.

ZZLE I.D. NO. 5 DATE: 4-11-89

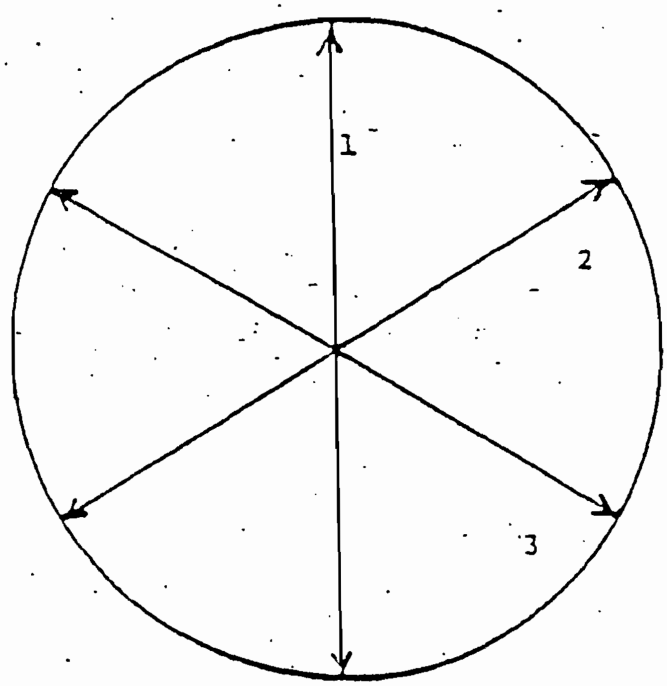
NOZZLE DIA. INCHES: 0.240

MEASUREMENT NO.	INSIDE DIAMETER (INCHES)
1. 0.240	
2. 0.240	
3. 0.239	

AVERAGE: 0.240

AREA OF NOZZLE: 0.0003142 FT.^{2}

CALIBRATED BY: S. VELLA-NEWPAUER



NOZZLE CROSS-SECTION

ource SAP Double Absorption Date 4-12-89 Stack Diam. (in.)= 93.0 Stack Area (ft.²)= 47.17 C_p=0.7839

ate 157 Tons/Day H2SO4 Probe 10 ft. SS liner Nozzle Diam.=0.240in.

Meter ΔH@ 1.84 Method 13B Filter Position - Back Bar. Press. (P_b) 30.18 Assumed Moist.% 0 (M_s 29.0)

tatic Press.(P_s) 0 in. H_2O ÷13.6= 0 in. Hg Stack Press.(P_s)= P_b 30.18 + P_s 0 = 30.18 in. Hg

robe Heater 5 Stack Sensor Check (T_c= 58 °F, T_{amb}= 56 °F (1.5%) (T_{in}= 76 °F, T_{out}= 74 °F, T_{amb}= 75 °F (5 F)

Pitot Leak Check ✓ Dry Gas Corr. Factor (Y) 0.976 Final Leak Rate 0 CFM @ 10 in. Hg

alc. ΔH = 17389 X $\frac{ΔH@}{M_s}$ X $(D_N)^4$ X $(1-B_{ws})^2$ X $\frac{T_M}{T_s}$ X ΔP =

SO₂ Monitor	285	290	295											

otes

Clock Time (min).	V_m Meter Volume (ft.³)	ΔH Orifice Press. (in. H_2O)	Vac. in.Hg	Gas Sample Temp. At Dry Gas Meter T_{IN} (°F)	T_{OUT} (°F)	T_{AVG} (°F)	Temp. Exit Imp. (°F)	Filt. Temp. (°F)	T_s Stack Temp. (°F)	Trav. Point No.	Dist. Into Stack (in.)	ΔP Vel. Head in. H_2O	$\sqrt{ΔP}$
0930										North			
0	5781	.81	2.4	78	76	77	60	60	122	1	6.98	.22	.47
3	5793	.82	2.5	95	77	86	61	57	107	2	11.23	.22	.47
6	5809	.86	2.5	101	77	89	61	57	147	3	15.98	.24	.49
9	5824	.94	2.7	103	77	90	62	57	155	4	21.48	.26	.51
12	5841	1.01	3.0	105	78	91.5	62	57	155	5	28.25	.28	.53
15	5859	1.01	3.0	106	78	92	62	57	155	6	38.08	.28	.53
18	5875	1.01	3.0	107	78	92.5	62	57	157	7	64.92	.28	.53
21	5892	1.09	3.4	108	80	94	62	57	157	8	74.75	.30	.55
24	5909	1.24	3.7	109	80	94.5	62	57	157	9	81.51	.34	.58
27	5927	1.24	3.7	110	80	95	62	57	157	10	87.02	.34	.58
30	5946	1.24	3.7	111	81	96	62	58	157	11	91.77	.34	.58
33	5963	1.17	3.6	111	82	96.5	62	58	157	12	96.02	.32	.57
36	5982												
	201	12.44				[illegible]			[illegible]				
0830										West			
0	5567	.78	2.2	64	62	63	60	58	127	1	6.98	.22	.47
3	5582	.79	2.5	78	62	70	60	55	108	2	11.23	.24	.49
6	5597	.91	2.6	84	62	73	62	55	147	3	15.98	.26	.51
9	5615	1.06	2.8	89	64	76.5	62	56	151	4	21.48	.30	.55
12	5631	.99	2.7	92	65	78.5	62	57	151	5	28.25	.28	.53
15	5649	1.06	2.8	95	67	81	63	57	151	6	38.08	.30	.55
18	5666	1.07	2.8	98	68	83	65	57	151	7	64.92	.30	.55
21	5683	1.14	3.2	100	70	85	65	57	155	8	74.75	.32	.57
24	5701	1.22	3.6	101	71	86	67	58	152	9	81.51	.34	.58
27	5718	1.29	3.7	103	72	87.5	67	58	152	10	87.02	.36	.60
30	5737	1.37	3.9	104	73	88.5	68	57	151	11	91.77	.38	.62
33	5756	1.30	4.1	105	75	90.0	67	58	151	12	96.02	.36	.60
36	5776												
	209												
			4.1	T_M (°F) 86			68	57		Net $\sqrt{ΔP}$ 13.01			
Time	V_m (ft³) 410	Avg. ΔH (in. H_2O) 1.06	Max Vacuum in. Hg	Avg. + 460 = 546 (°R)			Max. Exit Temp.	Filter Temp. Avg.	T_s Avg. 147	Total Number Trav. Points = 24			
										Avg $\sqrt{ΔP}$ .54			

Meter Volume, Dry Cubic Feet @ 68° F, 1 ATM.

V_M (Corr.) = (K= 17.64) X (V_M 410) X (Y .976) X $\left[\dfrac{P_{bar}\ 30.18 \text{ in. Hg} + \Delta H\ 1.06 \text{ in. } H_2O / 13.6}{T_m\ 546\ ° R} \right]$ = 39.12

Average Stream Velocity, Feet/Second

V_s = (K_p = 85.49) X (C_p = 0.7839) (avg $\sqrt{\Delta P}$ .54) X $\sqrt{\dfrac{(T_s(Avg)\ 607\ ° R)}{(P_s\ 30.18\ ) X (M_s\ 29.0\ )}}$ = 30.14 Feet/Second

Average Stack Volume, Dry CFM @ 68° F, 1 ATM:

Q_{sD}=60 X (1- 0 B_{ws}) X (V_s 30.14) X (A 47.17) X $\left[\dfrac{(T(std) - 528° R)}{(T_s(avg)\ 607° R)} X \dfrac{(P_s\ 30.18)}{(P(std)\ 29.92)} \right]$ = 74845 CFM @ 68° F, 1

SO_2 Concentration, ppm by volume @ 68° F, 1 ATM.

C_{SO_2}=(K=7.061 X 10^{-5} lb/meq) X (N=2.0103 meq/ml) X (V_T 94.7) X $\left[\dfrac{V_{SOL}\ 330}{V_A\ 10} \right]$ / V_M(Corr.) 39.12 CF = 5.21 x 10^{-5} lb/CF X $\dfrac{385.1 X 10^6}{64}$ = 350

SO_2 by volume @ 68° F, 1 A

Sulfuric Mist (including SO_3) concentration, mg/M^3

$C_{H_2SO_4}$=(K=1.081 X 10^{-4} lb/meq) X (N=0.1103 meq/ml) X (V_T 21.3) X $\left[\dfrac{V_{SOL}\ 255}{V_A\ 100} \right]$ / V_M(Corr.) 39.12 CF = 1.55 x 10^{-6} lb/CF X 1.062 X 10^7 = 16.5 mg Mis

Percent Isokinetic Sampling

I = $\dfrac{(K=0.09450) X (T_s\ 607\ R) X (V_M(Corr.)\ 39.12 \text{ CF}}{(P_s\ 30.18\ ) X (V_s\ 30.14\ ) X (A_N\ 0.0003142\ ) X (\theta\ 72\ ) X (1- 0\ B_{ws})}$ = 109 X

Analytical Data

SO_2 Monitor Average 295 ppm SO_2

	Mist		SO_2	
Sample Volume	255	ml.	330	ml.
Aliquot V_A	100 ml.		(25/100) X 10 ml.	
Titration #1	21.30	ml.	94.8	ml.
Titration #2	21.31	ml.	94.6	ml.
Avg. Titration V_T	21.31	ml.	94.7	ml.

SO_2

$(5.21 \times 10^{-5})(74845)(60) = 2611$

$= 3.64$ lb/ton

Acid Mist

$(1.55 \times 10^{-6})(74845)(60) = 6$

$= .097$ lb/ton

1c

ource SAP Double Absorption | Date 4-12-89 | Stack Diam. (in.)= 93.0 | Stack Area (ft.²)= 47.17 | C_p=0.7839

ate 1757 Tons/Day H2SO4 | Probe 10 ft. SS liner | Nozzle Diam.=0.240 in.

Meter ΔH@ 1.84 | Method 13B | Filter Position - Back | Bar. Press. (P_b) 30.18 | Assumed Moist.% 0 | (M_d 29.0)

tatic Press.(P_s) 0 in. H_2O ÷13.6= 0 in. Hg | Stack Press.(P_s)= P_b 30.18 + P_s 0 = 30.18 in. Hg

robe Heater 5 | Stack Sensor Check (T_c= 64 °F, T_{amb}= 62 °F (1.5%) | (T_{in}= 82 °F, T_{out}= 80 °F, T_{amb}=79 °F (5 F)

Pitot Leak Check ✓ | Dry Gas Corr. Factor (Y) 0.976 | Final Leak Rate 0 CFM @ 10 in. Hg

lc. $\Delta H = 17389 \times \frac{\Delta H@}{M_s} \times (D_N)^4 \times (1-B_{ws})^2 \times \frac{T_m}{T_s} \times \Delta P$

SO₂ Monitor	290	295	285												

tes

Clock Time (min).	V_m Meter Volume (ft.³)	ΔH Orifice Press. (in. H_2O)	Vac. in.Hg	Gas Sample Temp. At Dry Gas Meter T_{IN} (°F)	T_{OUT} (°F)	T_{ave} (°F)	Temp. Exit Imp. (°F)	Filt. Temp. (°F)	T_s Stack Temp. (°F)	Trav. Point No.	Dist. Into Stack (in.)	ΔP Vel. Head in. H_2O	$\sqrt{\Delta P}$
1030										North			
0	5985	.67	1.3	82	80	81	64	64	117	1	6.98	.18	.42
3	5998	.70	1.4	99	82	90.5	68	60	103	2	11.23	.18	.42
6	6014	.86	2.2	104	82	93	68	60	157	3	15.98	.24	.49
9	6027	.86	2.2	106	82	94	69	61	157	4	21.48	.24	.49
12	6043	.93	2.4	108	82	95	69	62	157	5	28.25	.26	.51
15	6059	1.00	2.5	109	82	95.5	69	63	157	6	38.08	.28	.53
18	6077	1.08	2.5	111	82	96.5	69	63	157	7	64.92	.30	.55
21	6094	1.08	2.5	112	83	97.5	69	63	157	8	74.75	.30	.55
24	6111	1.08	2.5	113	84	98.5	70	64	157	9	81.51	.30	.55
27	6128	1.16	2.6	114	84	99	70	65	157	10	87.02	.32	.57
30	6146	1.16	2.6	114	85	99.5	70	65	157	11	91.77	.32	.57
33	6165	1.01	2.5	115	86	100.5	72	66	156	12	96.02	.28	.53
36	6182							250					
	197	1139											
1130										West			
0	6183	.60	1.3	84	84	84	80	78	122	1	6.98	.16	.40
3	6196	.62	1.3	102	86	94	82	72	108	2	11.23	.16	.40
6	6208	.79	1.4	107	86	96.5	82	70	157	3	15.98	.22	.47
9	6223	.86	2.0	110	86	98	82	72	157	4	21.48	.24	.49
12	6234	.94	2.4	112	86	99	84	72	157	5	28.25	.26	.51
15	6256	.94	2.4	113	86	99.5	84	74	157	6	38.08	.26	.51
18	6273	1.01	2.5	115	87	101	87	73	157	7	64.92	.28	.53
21	6290	1.01	2.5	116	88	102	86	73	157	8	74.75	.28	.53
24	6307	1.04	2.5	117	88	102.5	87	75	157	9	81.51	.30	.55
27	6325	1.16	2.7	118	89	103.5	88	76	157	10	87.02	.32	.57
30	6343	1.16	2.7	119	89	104	90	77	157	11	91.77	.32	.57
33	6361	1.16	2.7	119	90	104.5	92	78	157	12	96.02	.32	.57
36	6380							250					
	197												

Time	V_m (ft³)	Avg. ΔH (in. H_2O)	Max Vacuum in. Hg	Avg. T_m (°F)	Max. Exit Temp.	Filter Temp. Avg.	T_s Avg.	
				97 + 460	92	69	150	Net $\sqrt{\Delta P}$ 12.28
72	394	.96	2.7	557 (°R)				Total Number Trav. Points = 24; Avg $\sqrt{\Delta P}$ .51

Meter Volume, Dry Cubic Feet @ 68° F, 1 ATM.

$$V_m\ (\text{Corr.}) = (K = 17.64) \times (V_m\ 39.4) \times (Y\ .976) \times \left[\frac{P_{bar}\ 30.18\ \text{in. Hg} + \frac{\Delta H\ .96\ \text{in. } H_2O}{13.6}}{T_m\ 557\ ^\circ R} \right] = 36.84\ \text{CF}$$

Average Stream Velocity, Feet/Second

$$V_s = (K_p = 85.49) \times (C_p = 0.7839)\ (\text{avg} \sqrt{\Delta P}\ .51) \times \sqrt{\frac{(T_s(\text{Avg})\ 610\ ^\circ R)}{(P_s\ 30.18) \times (M_s\ 29.0)}} = 28.53\ \text{Feet/Second}$$

Average Stack Volume, Dry CFM @ 68° F, 1 ATM.

$$Q_{sd} = 60 \times (1 - 0\ B_{wo}) \times (V_s\ 28.53) \times (A\ 47.17) \times \left[\frac{(T(\text{std})\ 528^\circ R)}{(T_s(\text{avg})\ 610\ ^\circ R)} \times \frac{(P_s\ 30.18)}{(P(\text{std})\ 29.92)} \right] = 70499\ \text{CFM @ 68° F, 1 ATM}$$

SO_2 Concentration, ppm by volume @ 68° F, 1 ATM.

$$C_{SO_2} = \frac{(K = 7.061 \times 10^{-5}\ \text{lb/meq}) \times (N = 0.0103\ \text{meq/ml}) \times (V_t\ 17.42) \times \left[\frac{V_{soln}\ 415}{V_a\ 10}\right]}{V_m(\text{Corr.})\ 36.84\ \text{CF}} = 5.71 \times 10^{-5}\ \text{lb/CF} \times \frac{385.1 \times 10^6}{64} = 344\ \text{ppm}$$

SO_2 by volume @ 68° F, 1 ATM.

Sulfuric Mist (including SO_3) concentration, mg/M³

$$C_{H_2SO_4} = \frac{(K = 1.081 \times 10^{-4}\ \text{lb/meq}) \times (N = 0.0103\ \text{meq/ml}) \times (V_t\ 13.39) \times \left[\frac{V_{soln}\ 345}{V_a\ 100}\right]}{V_m(\text{Corr.})\ 36.84\ \text{CF}} = 1.40 \times 10^{-6}\ \text{lb/CF} \times 1.062 \times 10^7 = 14.8\ \text{mg Mist/M}^3$$

Percent Isokinetic Sampling

$$I = \frac{(K = 0.09450) \times (T_s\ 610\ ^\circ R) \times (V_m(\text{Corr.})\ 36.84\ \text{CF})}{(P_s\ 30.18) \times (V_s\ 28.53) \times (A_N\ 0.000314) \times (\theta\ 72) \times (1 - 0\ B_{wo})} = 109\ \%$$

Analytical Data

SO_2 Monitor Average 295 ppm SO_2

	Mist		SO_2	
Sample Volume	345	ml.	415	ml.
Aliquot V_A	100	ml.	(25/100) X 10	ml.
Titration #1	13.4	ml.	17.40	ml.
Titration #2	13.37	ml.	17.44	ml.
Avg. Titration V_T	13.39	ml.	17.42	ml.

SO_2

$(5.71 \times 10^{-5})(70499)(60) =$
242 lb/hr.
= 3.37 lb/ton

Acid Mist

$(1.4 \times 10^{-6})(70499)(60) =$
5.90 lb/hr

$\frac{5.91}{70.53} = .082$ lb/ton

Source SAP Double Absorption Date 4-12-89 Stack Diam. (in.)= 93.0 Stack Area (ft.²)= 47.17 C_p=0.7839

Rate 1757 Tons/Day H2SO4 Probe 10 ft. SS liner Nozzle Diam.=0.240in.

Meter ΔH@ 1.84 Method 13B Filter Position - Back Bar. Press. (P_b) 30.18 Assumed Moist.% 0 (M_d 29.0)

Static Press.(P_s) 0 in. H_2O ÷13.6= 0 in. Hg Stack Press.(P_s)= P_b 30.18 + P_s 0 =30.18 in. Hg

Probe Heater 5 Stack Sensor Check (T_c= 69 °F, T_{amb}= 68 °F (1.5%) (T_{in}= 84 °F, T_{out}= 84 °F, T_{amb}= 80 °F (5 F)

Pitot Leak Check ✓ Dry Gas Corr. Factor (Y) 0.9976 Final Leak Rate 0 CFM @ 10 in. Hg

Calc. ΔH = 17389 X ΔH@ X $(D_N)^4$ X $(1-B_{ws})^2$ X $\frac{T_M}{T_S}$ X ΔP = M_S

SO₂ Monitor	295	290	285												

Notes

Clock Time (min).	V_m Meter Volume (ft.³)	ΔH Orifice Press. (in. H_2O)	Vac. in.Hg	Gas Sample Temp. At Dry Gas Meter T_{in} (°F)	T_{out} (°F)	T_{ave} (°F)	Temp. Exit Imp. (°F)	Filt. Temp. (°F)	T_s Stack Temp. (°F)	Trav. Point No.	Dist. Into Stack (in.)	ΔP Vel. Head in. H_2O	$\sqrt{\Delta P}$
1330										North			
0	6591	.31	1.0	96	92	94	80	75	198	1	6.98	.08	.28
3	6601	.33	1.0	110	93	101.5	80	70	78	2	11.23	.08	.28
6	6609	.51	1.0	115	93	104	80	69	147	3	15.98	.14	.37
9	6621	.66	1.3	117	93	105	80	68	157	4	21.48	.18	.42
12	6635	.73	1.4	119	93	106	81	67	154	5	28.25	.20	.45
15	6650	.80	1.4	120	93	106.5	80	67	159	6	38.08	.22	.47
18	6666	.88	1.8	121	93	107	81	66	159	7	64.92	.24	.49
21	6683	1.03	2.4	122	94	108	80	66	159	8	74.75	.28	.53
24	6700	1.03	2.4	123	94	108.5	81	66	159	9	81.51	.28	.53
27	6717	1.10	2.5	124	94	109	83	66	159	10	87.02	.30	.55
30	6735	1.18	2.6	124	95	109.5	84	66	157	11	91.77	.32	.57
33	6753	1.03	2.4	125	95	110	83	66	157	12	96.02	.28	.53
36	6772												
	181												
1230										West			
0	6383	.56	1.2	90	88	89	75	75	137	1	6.98	.16	.40
3	6395	.71	1.3	106	89	97.5	75	68	137	2	11.23	.20	.45
6	6410	.87	1.5	111	89	100	72	68	155	3	15.98	.24	.49
9	6425	.94	2.3	113	89	101	72	68	157	4	21.48	.26	.51
12	6442	1.02	2.4	116	90	103	72	68	157	5	28.25	.28	.53
15	6459	1.02	2.4	117	90	103.5	72	68	157	6	38.08	.28	.53
18	6477	1.02	2.4	118	90	104	72	68	157	7	64.92	.28	.53
21	6494	1.02	2.4	119	91	105	72	69	159	8	74.75	.28	.53
24	6512	1.09	2.5	120	91	105.5	72	68	159	9	81.51	.30	.55
27	6531	1.17	2.6	121	91	106	72	69	157	10	87.02	.32	.57
30	6548	1.24	2.7	121	92	106.5	74	70	157	11	91.77	.34	.58
33	6567	1.24	2.7	122	92	107	74	69	157	12	96.02	.34	.58
36	6586												
	203												
	384	.90	2.7	T_M (°F) 104			84	68	150			Net $\sqrt{\Delta P}$	11.72
Time	V_m (ft³)	Avg. ΔH (in. H_2O)	Max Vacuum in. Hg	Avg. + 460 = 564 (°R)			Max. Exit Temp.	Filter Temp. Avg.	T_s Avg.	Total Number Trav. Points = 24		Avg $\sqrt{\Delta P}$	.49

Meter Volume, Dry Cubic Feet @ 68° F, 1 ATM.

V_m (Corr.) = (K= 17.64) X (V_m 38.4) X (Y 976) X $\left[\frac{P_{bar}\ 30.18 \text{ in. Hg} + \frac{\Delta H\ .90 \text{ in. } H_2O}{13.6}}{T_m\ 564\ °R} \right]$ = 35.45 CF

Average Stream Velocity, Feet/Second

V_s = (K_p = 85.49) X (C_p = 0.7839) (avg $\sqrt{\Delta P}$ .49) X $\sqrt{\frac{(T_s(Avg)\ 610\ °R)}{(P_s\ 30.18) X (M_s\ 29.0)}}$ = 27.41 Feet/Second

Average Stack Volume, Dry CFM @ 68° F, 1 ATM.

Q_{sd}=60 X (1- 0 B_{wo}) X (V_s 27.41) X (A 47.17) X $\left[\frac{(T(std)\ 528°\ R)}{(T_s(avg)\ 610\ °R)} X \frac{(P_s\ 30.18)}{(P(std)\ 29.92)} \right]$ = 67731 CFM @ 68° F, 1 ATM

SO_2 Concentration, ppm by volume @ 68° F, 1 ATM.

C_{SO2}=(K=7.061 X 10^{-5} lb/meq) X (N= 0103 meq/ml) X (V_T 55.2) X $\left[\frac{V_{SOL}\ 485}{V_A\ 10} \right]$ / V_m(Corr.) 35.45 CF = 5.49×10^{-5} lb/CF X $\frac{385.1 \text{ X } 10^6}{64}$ = 330 ppm SO_2 by volume @ 68° F, 1 ATM.

Sulfuric Mist (including SO_3) concentration, mg/M^3

C_{H2SO4}=(K=1.081 X 10^{-4} lb/meq) X (N= 0.0103 meq/ml) X (V_T 13.1) X $\left[\frac{V_{SOL}\ 375}{V_A\ 100} \right]$ / V_m(Corr.) 35.45 CF = 1.54×10^{-6} lb/CF X 1.062 X 10^7 = 16.4 mg Mist/M^3

Percent Isokinetic Sampling

$I = \frac{(K=0.09450) X (T_s\ 610\ °R) X (V_m(Corr.)\ 35.45\ CF}{(P_s\ 30.18) X (V_s\ 27.41) X (A_N\ 0.0003142) X (\theta\ 72) X (1-\ 0\ B_{ws})}$ = 109 %

Analytical Data

SO_2 Monitor Average 295 ppm SO_2

	Mist		SO_2	
Sample Volume	375	ml.	485	ml.
Aliquot V_A	100	ml.	(25/100) X 10	ml.
Titration #1	13.0	ml.	13.8	ml.
Titration #2	13.15	ml.	13.7	ml.
Avg. Titration V_T	13.1	ml.	(13.8)4	ml.

$SO_2 = (5.49 \times 10^{-5})(67731)(60) =$
223 lb/hr.
3.11 lb/ton

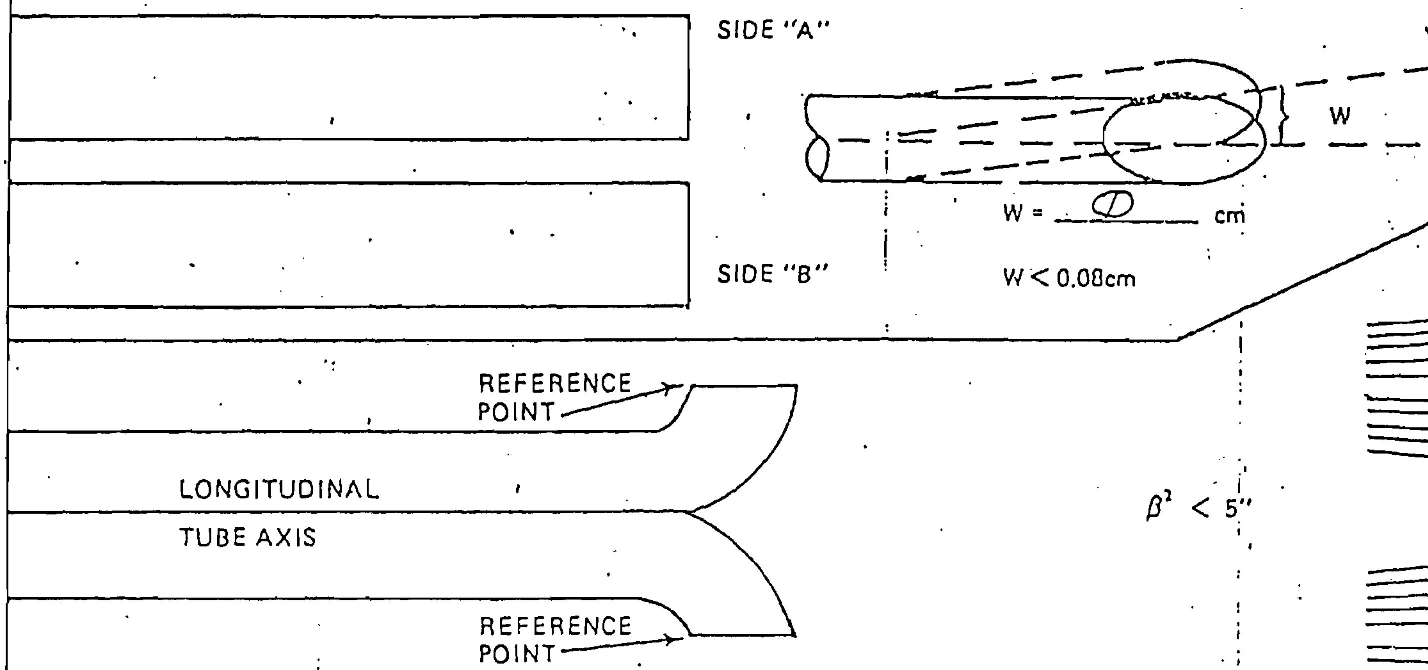
Acid Mist
$= (1.54 \times 10^{-6})(67731)(60)$
= 6.27 lb/hr
= .087 lb/ton

0.01 N Barium Cloride Standardization
using 0.01 N H_2SO_4
Made From 1.00 N H_2SO_4 Solution Prepared From
J.T. Baker Diluted Concentration

① 25.00 ml 0.01 N H_2SO_4
24.27 mL $BaCl_2$ Soln Titrate

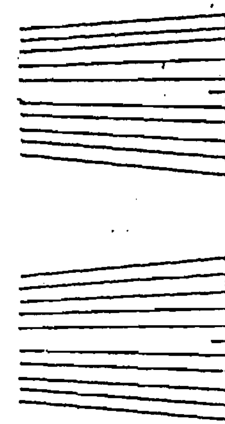
② $\frac{25.00}{24.27} = 0.0103$ N

SOURCE SAMPLING PITOT TUBE CALIBRATION
ALIGNMENT MEASUREMENT OF FACE-OPENINGS



W = $\underline{0}$ cm

W < 0.08cm

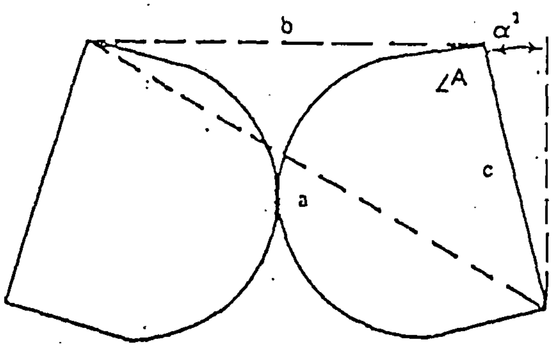


β^2 $\underline{0}$ °

$\beta^2 < 5"$

β^1 $\underline{3}$ °

SIDE "A"



a = $\underline{2.86}$ cm

b = $\underline{2.70}$ cm

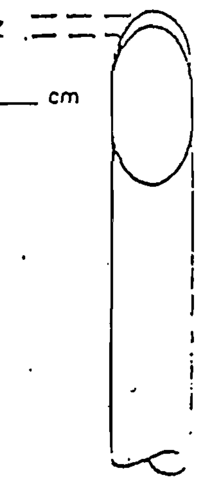
c = $\underline{.94}$ cm

∠A = $\underline{90.0}$ °

α^2 = 180° – (180° – ∠A) + 90°

α^2 = $\underline{0}$ °

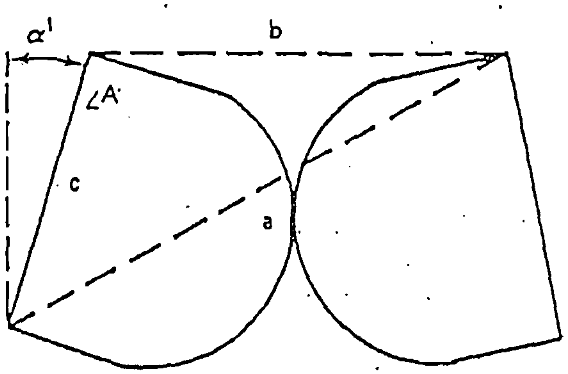
$\alpha^2 < 10°$



Z = $\underline{.25}$ cm

Z < 0.32cm

SIDE "B"



a = $\underline{3.02}$ cm

b = $\underline{2.70}$ cm

c = $\underline{1.54}$ cm

∠A = $\underline{86}$ °

α^1 = 180° – (180° – ∠A) + 90°

α^1 = $\underline{4.0}$ °

$\alpha^1 < 10°$

DATE: 4-12-89

S/N: [illegible]

N/C

MM/EMISSIONS

State of Florida

Visible Emissions Observation Form

STATUS

Source/Process Information

Field	Entry
FACILITY NAME	Royster Phosphates Inc
SOURCE NAME	Sulfuric Acid Plant
PERMIT NO.	A041-121085
LOCATION/ADDRESS	US 41S Piney Point FL 34220
CONTACT	S. Neupauer
PHONE NO.	813 722 4555
PROCESS/PRODUCTION RATE	Contact Sulfuric Acid Plant
CONTROL EQUIPMENT	Operator
OPERATING MODE	Continuous
FUEL TYPE/RATE	
MATERIAL TYPE/RATE	1710 ton/day
PERMITTED RATE	2000 ton/day
DESCRIBE EMISSION POINT	STACK
HEIGHT ABOVE GROUND LEVEL	200 FT.
HEIGHT RELATIVE TO OBSERVER	200 FT.

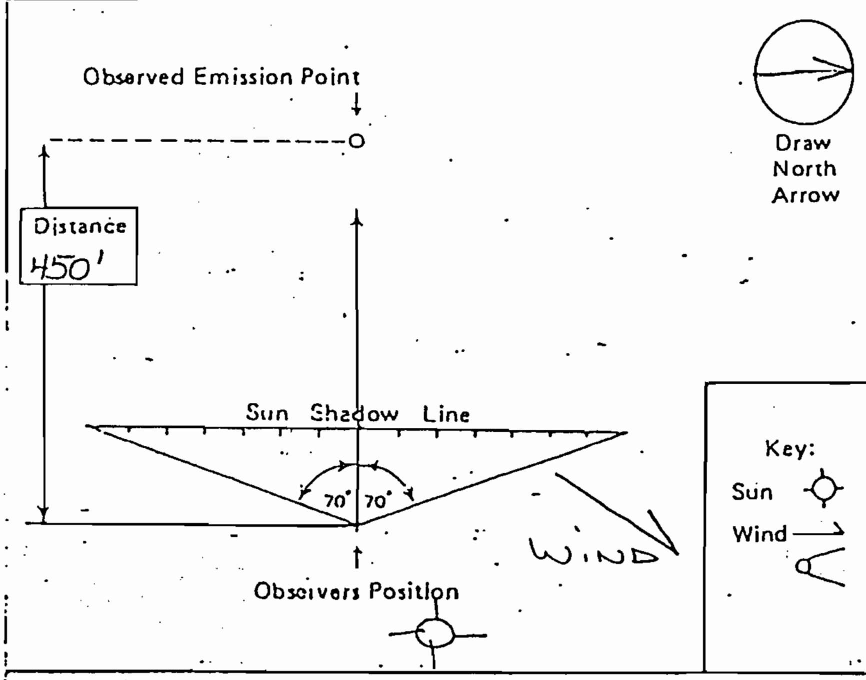
Emissions Description

Field	Entry
DESCRIBE EMISSIONS	NONE
PLUME COLOR	NONE
PLUME TYPE	NONE
WATER DROPLETS PRESENT?	YES ☐ NO ☒
IF YES, IS PLUME:	ATTACHED ☐ DETACHED ☐

Meteorological Information

Field	Entry
BACKGROUND	Sky
BACKGROUND COLOR	Gray
SKY CONDITIONS/% CLOUD COVER	75% Cloud Cover
AMBIENT TEMP.	108 °F
WIND SPEED	5 MPH
WIND DIRECTION	NE

Observation Data, Site Diagram



Opacity Readings

OBSERVATION DATE: 4-12-89 START TIME: 12:00 PM STOP TIME: 12:30 PM

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
3	0	0	0	0	33				
4	0	0	0	0	34				
5	0	0	0	0	35				
6	0	0	0	0	36				
7	0	0	0	0	37				
8	0	0	0	0	38				
9	0	0	0	0	39				
10	0	0	0	0	40				
11	0	0	0	0	41				
12	0	0	0	0	42				
13	0	0	0	0	43				
14	0	0	0	0	44				
15	0	0	0	0	45				
16	0	0	0	0	46				
17	0	0	0	0	47				
18	0	0	0	0	48				
19	0	0	0	0	49				
20	0	0	0	0	50				
21	0	[illegible]	[illegible]	0	51				
22	0	0	0	0	52				
23	0	0	0	0	53				
24	0	0	0	0	54				
25	0	0	0	0	55				
26	0	0	0	0	56				
27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

Compliance Information

RANGE OF OPACITY READINGS: MIN: 0 MAX: 0

AVERAGE OF HIGHEST 24 CONSECUTIVE READINGS: -0-

SHORT TERM AVERAGE DATA: AVERAGING PERIOD 30 MINUTES ACTUAL AVERAGE 0

COMMENTS:

Certification Data, Signatures

Field	Entry
OBSERVERS NAME	Suzanne Vella-Neupauer
OBSERVERS SIGNATURE	Suzanne Vella-Neupauer
DATE	4-12-89
ORGANIZATION	Royster Phosphates, Inc
CERTIFIED BY	ETA
DATE	3-89
I HAVE RECEIVED A COPY OF THESE OBSERVATIONS: SIGNATURE	
DATE	

VISIBLE EMISSIONS EVALUATOR

This is to certify that

Suzanne [illegible] Vella-Neupauer

met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.

Thomas Rose
President

Willie [illegible]
Vice President

David Savage
Program Manager

223403
Certificate Number

Tampa
Location

March 10, 1989
Date of Issue

4.0 BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is required to control air pollutants emitted from newly constructed major sources or from modification to the major emitting facilities if the modification results in significant increase in the emission rate of regulated pollutants. The significance of an emission rate increase is defined by Rule 17-2.500(2)(e)(2), FAC.

The emission rate increases and decreases resulting from the activities proposed by Royster have been summarized in Table 3-2. The activities include the construction of a new 2,700 ton per day double absorption sulfuric acid plant and the retirement of the existing 2,000 ton per day double absorption sulfuric acid plant. From Table 3-2 it will be noted that sulfuric dioxide and sulfuric acid mist emissions from the new sulfuric acid plant will represent a significant increase over emissions from the existing 2,000 ton per day plant.

Sulfur dioxide and acid mist are present in the tail gas from all contact processed sulfuric acid plants. In a typical plant with the single absorption system, the sulfur dioxide in the tail gas is approximately 30 pounds per ton of acid produced and the acid mist is approximately four pounds per ton of acid produced.

4.1 Emission Standards for Sulfuric Acid Plants

Federal New Source Performance Standards (NSPS) for sulfuric acid plants became effective on August 17, 1971. These 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.

When EPA reviewed the New Source Performance Standards for sulfuric acid plants in 1985 (EPA-450/3-85-012), it was concluded that because of variations in sulfur dioxide emissions as a function of catalyst age, "... the level of SO_2 emissions as specified in the current NSPS (should) not be changed at this time." Regarding the NSPS for sulfuric acid mist, EPA concluded, "Making the acid mist standard more stringent is not believed to be practical at this time because of the need to provide a margin of safety due to in-plant operating fluctuations, which introduce variable quantities of moisture into the sulfuric acid production line."

A review of BACT/LAER determinations published in the EPA Clearinghouse indicates that no new control alternatives have been applied to sulfuric acid plants since 1985 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.

4.2 Control Technologies

The control of sulfur dioxide and sulfuric acid mist emissions from sulfuric acid plants can be achieved by various processes. The process of choice for sulfur dioxide control has been dual absorption and the process of choice for controlling sulfuric acid mist emission has been one of the various types of fiber mist eliminators. These processes have been selected based on cost, product recovery, the formation of no undesirable by-products and the fact that neither introduces operating processes that are foreign to plant personnel.

EPA published a review of NSPS for sulfuric acid plants in March 1985 (EPA-450/3-85-012). Another review of NSPS by EPA is currently due but probably will not be published before the early 1990's. In the 1985 report, EPA reviewed 46 sulfuric acid plants built between 1971 and 1985. Of these 46 plants, 40 used the dual absorption process for sulfur dioxide control with the remaining six using some type of acid gas scrubbing. All 46 plants used the high efficiency mist eliminators for acid mist control.

In the March 1985 review (EPA-450/3-85-012), EPA reviewed the control technologies that had been used to control sulfur dioxide and sulfuric acid mist emissions from sulfuric acid plants. The alternatives included the dual absorption process, ammonia scrubbing, sodium sulfite-bisulfite scrubbing, and molecular sieves for sulfur dioxide control and filter type mist eliminators and electrostatic precipitators for sulfuric acid mist control. A review of the EPA BACT/LAER Clearinghouse information indicated that no other control alternatives have been considered for sulfuric acid plants.

4.2.1 Sulfur Dioxide Control

The control alternatives for sulfur dioxide have been summarized based upon information compiled by EPA in the 1985 NSPS review for sulfuric acid plants. As stated earlier, EPA is due to review these standards again but will probably not publish the results of their review until sometime in the early 1990's.

4.2.1.1 Dual Absorption Process

The dual absorption process has become the SO_2 control system of choice within the sulfuric acid industry since the promulgation of NSPS in 1971. Of the 46 new sulfuric acid plants constructed between 1971 and 1985, 40 employed this process for sulfur dioxide control. The process offers the following advantages over other SO_2 control technologies:

1. 99.4 percent of the sulfur is converted to sulfuric acid compared with 97.7 percent conversion with a single absorption plant followed by scrubbing;

2. there are no by-products produced;

3. there are no new operating processes that plant personnel must become familiar with;

4. the process permits higher inlet sulfur dioxide concentrations resulting in a reduction in equipment size;

5. there is no reduction in overall plant operating time efficiency; and

6. there is no increase in manpower requirements.

The dual absorption process is capable of reducing sulfur dioxide emission rates to less than 4.0 pounds per ton of acid as required by New Source Performance Standards. The information reviewed by EPA indicates that even lower sulfur dioxide emission levels occur with new catalyst but as the catalyst ages, the conversion efficiency drops and sulfur dioxide emission rates begin to approach the 4.0 pound per ton limit.

4.2.1.2 Sodium Sulfite-Bisulfite Scrubbing

Between 1971 and 1985, two sulfuric acid plants were constructed employing sodium sulfite-bisulfite scrubbing to control sulfur dioxide emissions. One of the plants was subsequently converted to ammonia scrubbing and the second plant has never been used. As a result, sodium sulfite-bisulfite scrubbing is not considered a demonstrated sulfur dioxide control alternative.

4.2.1.3 Ammonia Scrubbing

Ammonia scrubbing uses anhydrous ammonia and water in a scrubbing system to convert sulfur dioxide to ammonium sulfate. Depending upon the market, the ammonium sulfate can be converted to a fertilizer grade product.

Five sulfuric acid plants constructed between 1971 and 1985 use ammonia scrubbing for sulfur dioxide control. The process has proved effective for reducing sulfur dioxide emissions to below 4.0 pounds per ton and also for controlling sulfuric acid mist emissions.

The major disadvantages of the ammonia scrubbing system, when compared with the dual absorption process are:

1. a waste by-product is produced unless there is a market for fertilizer grade ammonium sulfate;

2. the scrubbing system introduces a process that is foreign to sulfuric acid plant operators;

3. the scrubbing system is a high maintenance item and requires additional manpower for operation; and

4. no sulfuric acid plant size reduction benefits are achieved with the scrubbing system.

4.2.1.4 Molecular Sieves

A molecular sieve was installed at one sulfuric acid plant in Florida for sulfur dioxide control. Extensive operating problems were experienced as the molecular sieve absorbed nitrogen oxides as well as sulfur dioxide. The regeneration of these gases resulted in the formation of nitric acid within the sulfuric acid plant. The nitric acid/sulfuric acid mixture resulted in severe corrosion problems which caused the molecular sieve system to be scrapped. As a result, molecular sieves are not considered a viable alternative for sulfur dioxide control in the sulfuric acid industry.

4.2.2 Sulfuric Acid Mist Control

Control alternatives that were reviewed by EPA in the 1985 New Source Performance Standards review are summarized in the following sections.

4.2.2.1 Fiber Mist Eliminators

The 46 new sulfuric acid plants constructed between 1971 and 1985, all used the fiber type mist eliminators for sulfuric acid mist control. Operations demonstrated that these types of mist eliminators can control sulfuric acid mist emissions to less than 0.15 pounds per ton of sulfuric acid.

The mist eliminators are the choice of control for sulfuric acid mist within the sulfuric acid industry because they require very little operation and maintenance attention and because of the small space requirement associated with these devices. The disadvantage of this type of mist eliminator is that the pressure drop across the elements varies from five to 15 inches of water; resulting in an increase in operating utility costs.

4.2.2.2 Electrostatic Precipitators

The electrostatic precipitators have the potential for controlling sulfuric acid mist emissions from sulfuric acid plants; however, there is no demonstrated application of precipitators. The disadvantages associated with precipitators, and hence, the reason they have not been used, include the initial cost, size requirements, operating and maintenance requirements and the potential for corrosion. The advantage of the precipitator is that it would operate at a low pressure drop; approximately 0.5 inches of water.

4.3 Cost Analysis

In reviewing the cost analyses presented in this section, it should be recognized that the two control alternatives that have been analyzed for sulfur dioxide achieved about the same degree of efficiency; i.e, there is no advantage of one system over the other from the standpoint of the level of sulfur dioxide control that can be achieved. The same holds true for the control alternatives evaluated for sulfuric acid mist; both alternatives (fiber mist eliminators and electrostatic precipitators) are capable of achieving approximately the same degree of acid mist control.

Hence, the choice of the control alternative for sulfur dioxide and the control alternative for sulfuric acid mist can be made on the basis of cost, operating familiarity and operating convenience.

In Tables 4-1 and 4-2, the capital costs and annual costs of controlling sulfur dioxide emissions by dual absorption and by ammonia scrubbing are presented. In Table 4-3 and 4-4, similar costs are presented for controlling sulfuric acid mist emissions by fiber mist eliminators and electrostatic precipitators. The cost data are based upon analyses presented in EPA-450/3-85-012 and in EPA-450/3-76-014 (Capital and Operating Costs of Selected Air Pollution Control Systems); both updated to 1989 costs. The capital recovery in the annual cost calculation is based upon a 10 percent rate of return and a 10 year equipment life.

The cost analyses demonstrate that the annual cost of the dual absorption process for sulfur dioxide is less than half the annual cost for ammonia scrubbing. Similarly the annual cost for sulfuric acid mist with the fiber type mist eliminators is approximately one-fourth the annual cost of controlling acid mist with electrostatic precipitators. As the two control alternatives for sulfur dioxide and the two control alternatives for sulfuric acid mist are capable of the same level of control, it is evident why the dual absorption and the fiber type mist eliminators have been the control alternatives of choice for sulfur dioxide and sulfuric acid mist, respectively.

4.4 Conclusion

Based upon the analysis presented in previous sections, the dual absorption process had been selected by Royster as the control alternative for sulfur dioxide control and the fiber type high efficiency mist eliminator has been selected for sulfuric acid mist control. The dual absorption system will be operated with catalyst screening and make up every three to five years as is typical in the industry.

TABLE 4-1

COST ANALYSIS FOR SO2 CONTROL BY DUAL ABSORPTION
2700 TPD CONTACT SULFURIC ACID PLANT

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

CAPITAL COST		
Direct		
Absorber	$ 1,402,650	
Pumps	280,800	
Piping	421,200	
Heat Exchanger	702,000	
		$2,806,650
Indirect		
Engineering and Supervision	280,800	
Construction	156,600	
Contractor	168,750	
Contingency	336,150	
		942,300
TOTAL CAPITAL COST		$3,748,950
ANNUAL COST		
Direct		
Operating Labor and Supervision	10,800	
Maintenance Labor	8,775	
Maintenance Materials	8,775	
Utilities	2,991,600	
Catalyst	40,500	
		$3,060,450
Indirect		
OH	10,800	
Payroll	5,400	
		16,200
Capital Recovery		611,550
Insurance and Taxes		149,850
Credit for Acid Recovery		(1,147,500)
TOTAL ANNUAL COST		$2,690,550

TABLE 4-2

COST ANALYSIS FOR SO2 CONTROL BY AMMONIA SCRUBBING
2700 TPD CONTACT SULFURIC ACID PLANT

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

CAPITAL COST		
Direct		
Scrubber and Auxiliaries		$4,276,800
Indirect		
Engineering and Supervision	427,950	
Construction	341,550	
Contractor	256,500	
Contingency	513,000	
		1,539,000
TOTAL CAPITAL COST		$5,815,800
ANNUAL COST		
Direct		
Operating Labor and Supervision	729,000	
Maintenance Labor	108,000	
Maintenance Materials	108,000	
Utilities	310,500	
Chemicals	2,624,400	
		$3,879,900
Indirect		
OH	418,500	
Payroll	167,400	
		585,900
Capital Recovery		947,700
Insurance and Taxes		232,200
TOTAL ANNUAL COST		$5,645,700

TABLE 4-3

COST ANALYSIS FOR ACID MIST CONTROL BY FIBER TYPE MIST ELIMINATORS
2700 TPD CONTACT SULFURIC ACID PLANT

ROYSTER PHOSPHATE, INC.
MANATEE COUNTY, FLORIDA

CAPITAL COST		
Direct		$ 86,400
Indirect		40,500
TOTAL CAPITAL COST		$ 126,900
ANNUAL COST		
Direct		
Utilities		$ 197,100
Indirect		
Capital Recovery	20,250	
Insurance and Taxes	5,400	
		25,650
Credit for Acid Recovery		(128,250)
TOTAL ANNUAL COST		$ 94,500

TABLE 4-4

COST ANALYSIS FOR ACID MIST CONTROL BY ELECTROSTATIC PRECIPITATOR
2700 TPD CONTACT SULFURIC ACID PLANT

ROYSTER PHOSPHATES, INC.
MANATEE COUNTY, FLORIDA

CAPITAL COST		
Direct		
Collector	429,300	
Auxiliaries	148,500	
		$ 577,800
Indirect		
Engineering and Supervision	58,050	
Construction	45,900	
Contractor	35,100	
Contingency	68,850	
		207,900
TOTAL CAPITAL COST		$ 785,700
ANNUAL COST		
Direct		
Operating Labor and Supervision	31,050	
Maintenance Labor	27,000	
Maintenance Materials	40,500	
Utilities	67,500	
		$ 166,050
Indirect		
OH	28,350	
Payroll	12,150	
		40,500
Capital Recovery		128,250
Insurance and Taxes		31,050
TOTAL ANNUAL COST		$ 365,850

5.0 IMPACTS ON SOILS, VEGETATION AND VISIBILITY

The land-use in the vicinity of Royster Phosphates, Inc. is a mixture of unimproved land, pasture land and land used for small industries. The town of Palmetto is located about nine miles south of the site and Sun City is located about five miles northeast of the site. Additionally, there are scattered residences between Royster and the two population centers. The proposed new sulfuric acid plant is not expected to have any significant impact on activities in the area. Air quality modeling has demonstrated that sulfur dioxide levels which will exist after the proposed modifications will not be a significant impact. Also, modeling has indicated that there will not be a significant impact from sulfuric acid mist emissions. Thus it is expected that the proposed expansion will not adversely impact soils, vegetation and visibility in the area.

The proposed modification will require a minimal increase in personnel to operate the cogeneration facility. Also, the proposed 35 percent increase in sulfuric acid production may cause a slight increase in truck deliveries of molten sulfur. However, current deliveries of needed sulfuric acid of up to 12 trucks per day will cease. These changes will have a slight impact on traffic in the area but when compared with traffic levels that presently exist, the increases will not be significant.

6.0 GOOD ENGINEERING PRACTICE STACK HEIGHT

The criteria for good engineering practice stack height in Rule 17-2.270 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 the new sulfuric acid plant stack is 213 feet. Royster intends to construct a stack which will be 200 feet in height above-grade. This stack will satisfy the good engineering practice stack height criteria and will not result in excessive concentrations of air pollutants as a result of plume downwash as the stack will be at least 2.5 times the height of nearby structures.

7.0 AIR QUALITY REVIEW

The project proposed by Royster will result in significant emission rate increases of sulfur dioxide and sulfuric acid mist but a less than significant increase in nitrogen oxides emissions. Hence, the air quality review required for the project permit application will address only sulfur dioxide and sulfuric acid mist emissions.

The air quality review required of a PSD construction permit application potentially requires both air quality modeling and air quality monitoring. The air quality monitoring is required when the impact of air pollutant emission increases and decreases associated with a proposed project exceed the de minimis impact levels defined by Rule 17-2.500(3)(e)1, FAC or in cases where an applicant wishes to define existing ambient air quality by monitoring rather than by air quality modeling. The air quality modeling is required to provide assurance that the increases and decreases in air pollutant emissions associated with the project, combined with all other applicable air pollutant emission rate increases and decreases associated with new sources affecting the project area, will not cause or contribute to an exceedance of the applicable PSD increments (defined by Rule 17-2.310, FAC). Additionally, the air quality modeling is required to provide assurance that the emissions from the proposed project, together with the emissions of all other air pollutants in the project area, will not cause or contribute to a violation of any ambient air quality standard (AAQS).

The de minimis impact levels of the air pollutants associated with the proposed project are:

Sulfur Dioxide	-	13.0 micrograms per cubic meter, 24-hour average
Sulfuric Acid Mist	-	NA

The modeling that has been conducted demonstrates that the net impact of the sulfur dioxide emissions increases and decreases addressed in this application are less than the de minimis impact levels defined by Rule 17-2.500(3)(e)1, FAC and summarized above. Furthermore, the applicant does not intend to define existing ambient sulfur dioxide levels by air quality monitoring. Hence, air quality monitoring is not a requirement of this application.

The air quality modeling that has been conducted demonstrates that the net impact sulfur dioxide emissions from the sulfuric acid plants (increased emissions from proposed plant and the decrease in emissions resulting from the shut-down of the existing plant) is significant for the three-hour and 24-hour periods but is not significant for the annual period. The distance to which the impacts are significant is less than 3.0 kilometers. Significant, as used in this instance, is defined by Rule 17-2.100(171)(a), FAC. The modeling of sulfur dioxide emissions shows, however, that the impacts of the emissions are well below the incremental increases allowed by the PSD Rule (17-2.310, FAC). Additional sulfur dioxide modeling is necessary to evaluate the impact of other sources on the project area to assure that AAQS and PSD increments are not exceeded. The modeling of sulfuric acid mist emissions associated with the proposed project shows a maximum net impact that is approximately one-tenth of the Acceptable Ambient Level (AAL) where the AAL is defined as a multiple of the Threshold Limit Value for sulfuric acid mist.

In the following sections, the air quality modeling for sulfur dioxide and sulfuric acid mist is described.

7.1 Air Quality Modeling for Sulfur Dioxide

The net change in the emissions rate of sulfur dioxide associated with the proposed project is defined as the emission rate increase associated with the new sulfuric acid plant minus the actual sulfur dioxide emissions associated with the shut-down of the existing sulfuric acid plant. These emission rates are addressed in Section 3.0 of this application.

The impact of the net change in sulfur dioxide emissions was assessed with the Industrial Source Complex - Short Term (ISC-ST) air quality model. The modeling was conducted in accordance with guidelines established by EPA and published in the document, Guideline for Air Quality Modeling, (Revised), July 1986. The meteorological data used with the model were for Tampa, Florida and represented the period 1973, 1974, 1975, 1978 and 1979.

The sulfur dioxide emissions associated with the project included the increase in emissions associated with the new sulfuric acid plant and the decrease in emissions associated with the shut-down of the existing plant. The sulfur dioxide emissions from the new plant were based upon a sulfur dioxide emission limit of 4.0 pounds per ton of 100 percent sulfuric acid and a production rate of 2,700 tons of 100 percent acid per day. This resulted in an hourly sulfur dioxide emission rate of 450.0 pounds per hour. For modeling purposes, it was assumed that the plant would operate 8,760 hours a year.

The decreases in sulfur dioxide emissions were defined as the decrease in actual sulfur dioxide emissions from the existing sulfuric acid plant. This emission rate (see Section 3.0) was based on a sulfuric acid production rate of 2000 tons of 100 percent sulfuric acid per day, a sulfur dioxide emission rate of 3.37 pounds per ton of 100 percent acid produced and an annual production-based operating factor of 0.737. These conditions result in a decrease in actual sulfur dioxide emissions of 280.8 pounds per hour and 906.4 tons per year. Plant characteristics used for the modeling are summarized in Table 7-1.

The modeling conducted with the ISC-ST air quality model was conducted in accordance with EPA guidelines and included receptors established by the polar grid system extending to 7.5 kilometers from the plant. Seven sets of receptor rings were placed at distances ranging from 0.3 to 7.5 kilometers from the plant with receptors placed at 10 degree intervals on each receptor ring.

The results of the air quality modeling, summarized in Table 7-2, demonstrate that the impact of the proposed project is significant for the three-hour and 24-hour periods but is not significant for the annual period. As the net impacts of the sulfur dioxide emission rate changes resulting from the proposed project are significant for the 3-hour and 24-hour time periods, additional air quality modeling is required to demonstrate that AAQS and PSD increments are not exceeded.

7.2 Air Quality Modeling for Nitrogen Oxides

The net change in nitrogen oxides emissions associated with the project is not significant (i.e., is less than 40 tons per year). Hence, no air quality modeling is required for nitrogen oxides.

7.3 Air Quality Modeling for Sulfuric Acid Mist

No ambient air quality standards, PSD increments or significant impact levels have been established for sulfuric acid mist. For purposes of this permit application, an Acceptable Ambient Level (AAL) was developed by dividing the Threshold Limit Value of 1,000 micrograms per cubic meter by 210. The factor of 210 consists of a factor of 4.2 to convert the eight-hour per day, five day per week exposure allowed by the Threshold Limit Value to a 24-hour per day, seven day per week exposure; that is, (24 x 7)/(8 x 5). In addition to this factor, a safety factor of 50 was applied to reduce the exposure established for the working population to an exposure that is applicable to the general population. The factor of 50 was selected as sulfuric acid mist is not considered a highly toxic material. The 24-hour AAL that has been established based upon these factors is 4.8 micrograms per cubic meter.

The air quality modeling that was conducted to evaluate the impact of sulfuric acid mist emissions from the Royster facility on was conducted with ISC-ST air quality model using the guidelines used for sulfur dioxide modeling and described in Section 7.1 of this application. The receptor grid used was identical to the polar coordinate system used in the sulfur dioxide modeling. The modeling was conducted to determine the net impact of the emission increases and decreases associated with the proposed project.

The results of the air quality modeling are summarized in Table 7-3. The result of the modeling demonstrate that the maximum expected increase in ambient sulfuric acid mist levels associated with the proposed project will be approximately 0.4 micrograms per cubic meter over a 24-hour period. The modeling results also show that the maximum expected sulfuric acid mist impact resulting from the operations of the proposed new plant will be approximately 1.4 microgram per cubic meter, 24-hour average, at a distance of 1.0 kilometers from the plants. These impacts compare with the AAL for sulfuric acid mist of 4.8 micrograms per cubic meter, 24-hour average.

The impact of sulfuric acid mist emissions from sources outside the Royster chemical complex were not included in the air quality review based upon an engineering judgment. It was estimated that because of the expected magnitude of the sulfuric acid mist emissions from other sources and the distances of these sources from Royster it would be very unlikely that any of the sources, individually or collectively, will result in a significant contribution to ambient acid mist levels in the project area.

TABLE 7-1

PLANT CHARACTERISTICS USED FOR AIR QUALITY MODELING

ROYSTER, INC.
MANATEE COUNTY, FLORIDA

PLANT	STACK Ht (ft)	STACK Dia (ft)	STACK GAS Vel (FPS)	STACK GAS Temp (°F)	EMISSION RATES (1) SO2 (lb/hr)	EMISSION RATES (1) SO2 (TPY)	EMISSION RATES (1) Acid Mist (lb/hr)	EMISSION RATES (1) Acid Mist (TPY)
Existing H2SO4 #1	200	7.75	28.7	150	280.8	906	7.4	23.9
New H2SO4 #2	200	9.25	31.5	170	450.0	1971	16.9	74.0

(1) Annual emission rates are based on the following assumptions:

(a) Existing H2SO4 - An annual operating factor, based on production, of 0.737.
(b) New H2SO4 - Operating time will be 8760 hours/year.

TABLE 7-2

SUMMARY OF SULFUR DIOXIDE IMPACT ANALYSIS

ROYSTER, INC.
MANATEE, FLORIDA

METEOROLOGICAL DATA	SULFUR DIOXIDE IMPACT (ug/m^3)		
	ANNUAL	3-HOUR	24-HOUR
1973	0.4	23.8	4.8
1974	0.5	24.2	5.8*
1975	0.5	24.7	4.6
1978	0.5	32.5*	5.0*
1979	0.6	28.0*	6.1*
Significant Impact (17-2.100(171)(a),FAC	1.0	25.0	5.0
De minimis Impact 17-2.500(3)(e)1,FAC	NA	NA	13.0
PSD Increment 17-2.310, FAC	20.0	512	91

*Significant Impact

TABLE 7-3

SUMMARY OF ACID MIST IMPACT ANALYSIS

ROYSTER, INC.
MANATEE COUNTY, FLORIDA

METEOROLOGICAL DATA	24-HR ACID MIST IMPACT ($\mu g/m^3$)	
	CHANGE	NEW PLANT
1973	0.40	0.9
1974	0.42	1.1
1975	0.44	1.1
1978	0.42	1.1
1979	0.52	1.4
AAL (1)	4.8	4.8

(1) AAL = TLV/210, 24-Hour Average