UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

AUG 14 1985

REF: 4APT-AP

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: PSD-FL-106 - Royster Company

Dear Mr. Fancy:

This is to acknowledge receipt of your July 12, 1985, PSD final determination for the above referenced company's sulfuric acid plant modification. By letter dated June 18, 1985, we notified you that this source would not be subject to review under the Region IV Overview of State Programs policy.

We will retain copies of the final determination and permit for our files.

Sincerely yours,

Bruce P. Miller

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

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. T. R. Schmalz, Manager
Engineering & Environmental Services
Royster Company
Post Office Drawer 797
Mulberry, Florida 33860

July 12, 1985

Enclosed is Permit Number AC 53-085261 which authorizes the proposed modifications to Royster Company's sulfuric acid plant that is located near Mulberry, Polk County, Florida. This permit is being issued pursuant to Section 403, Florida Statutes.

Any Party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the clerk of the Department.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

Enclosure

cc: James T. Wilburn, EPA, Region IV
Kathy Campbell, Bartow Public Library
Bill Thomas, DER Southwest District

CERTIFICATION

This is to certify that the foregoing Notice of Permit and all copies requested were mailed before the close of business on 15 July, 1985.

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management
2600 Blair Stone Road
Tallahassee, Florida 32301

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Patricia G. Adams
Clerk

July 15, 1985
Date

PS Form 3811, July 1983

SENDER: Complete items 1, 2, 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 service(s) requested.

1. ☐ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:

Mr. T. R. Schmalz
Royster Company
P. O. Drawer 797
Mulberry, Florida 33860

4. Type of Service:

☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number: P16 7682436

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee

X

6. Signature – Agent

X

7. Date of Delivery

7-17-85

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

DOMESTIC RETURN RECEIPT

P16 7682436

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Mr. T. R. Schmalz

STREET AND NO.

P.O., STATE AND ZIP CODE

POSTAGE		$
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢
OPTIONAL SERVICES	SPECIAL DELIVERY	¢
OPTIONAL SERVICES	RESTRICTED DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
OPTIONAL SERVICES / RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES		$

POSTMARK OR DATE

7/15/85

PS Form 3800, Apr. 1976

Final Determination

Royster Company
Mulberry, Florida
Polk County

Sulfuric Acid Plant
Permit Number
AC 53-85261

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

July 2, 1985

Final Determination

Royster Company's application for a permit to modify a sulfuric acid plant at their existing phosphate fertilizer facility near Mulberry, Polk County, Florida has been reviewed by the Bureau of Air Quality Management. Public Notice of the department's Intent to Issue the permit was published in The Ledger, Lakeland, Florida, on May 31, 1985.

No comments were received on the department's Intent to Issue the permit. The final action of the department will be to issue the permit as proposed in the May 21, 1985, Technical Evaluation and Preliminary Determination.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Royster Company
P. O. Drawer 797
Mulberry, Florida 33860

Permit Number:AC 53-85261
Expiration Date: April 1, 1986
County: Polk
Latitude/Longitude: 27° 53' 15"N/
82° 56' 50"W
Project: Sulfuric Acid Plant
Modifications

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

Modifications to an existing sulfuric acid plant to increase production from 1,400 to 1,700 TPD 100% H_2SO_4 and to cogenerate electrical power. Modifications include installing a waste heat boiler, steam superheater, economizers, boiler feedwater treatment equipment, a new electric motor drive for the air blower, a shell and tube heat exchanger for the acid, a new cooling tower to replace two existing ones, a turbo-generator, and additional catalyst in the converter.

The sulfuric acid plant is located in Polk County at Royster Company's existing phosphate fertilizer facility on State Road 60, about 1.5 miles east of Mulberry, Florida. The UTM coordinates of this site are 17, 406.8 km E and 3085.1 km N.

The modifications shall be in accordance with the applications for permit to construct that were signed by R. W. Heinz on March 29, 1984, and April 9, 1985, and the additional information supplied in Royster Company's letter dated May 9, 1984, and Sholtes & Koogler's letter dated April 3, 1985 except for any changes listed as Specific Conditions in this permit.

Attachments:
1. Application (March 29, 1984)
2. DER's letter dated May 2, 1984
3. Royster Company's letter dated May 9, 1984
4. DER's letter dated May 24, 1984
5. Sholtes & Koogler's letter dated April 3, 1985
6. Application (April 9, 1985)

PERMITTEE:
Royster Company

Permit Number:AC 53-85261
Expiration Date: April 1, 1986

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

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. Nor 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 does not constitute 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, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, 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.

GENERAL CONDITIONS:

6. The permittee shall at all times 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 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, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

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

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

c. Sampling or monitoring 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 notify and provide the department with the following information:

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

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

GENERAL CONDITIONS:

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 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 arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

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 Florida Administrative Code Rules 17-4.12 and 17-30.30, 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 is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

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.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain 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), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be 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 date(s) 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 submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. The modified sulfuric acid plant shall comply with all requirements of 40 CFR 60.80, Subpart H - Standards of Performance for Sulfuric Acid Plants.

2. Sulfuric acid production, measured as 100 percent H_2SO_4, shall not exceed 1,700 TPD.

3. Sulfur dioxide emissions shall not exceed 4.0 lb/ton acid and 6,800 lb/day.

PERMITTEE:
Royster Company

Permit Number: AC 53-85261
Expiration Date: April 1, 1986

SPECIFIC CONDITIONS:

4. Acid mist emissions shall not exceed 0.15 lb/ton acid and 255 lb/day.

5. Visible emissions shall not exceed 10 percent opacity, average for any consecutive 6 minute period.

6. The test methods and procedures described in 40 CFR 60.85 shall be used to determine the compliance status of the source with the sulfur dioxide and acid mist standards. Method 9, as described in 40 CFR 60, Appendix A, shall be used to determine the compliance status of the source with the visible emissions standard. Compliance tests shall be conducted while the plant is operating at its maximum permitted capacity ($\pm$ 10%).

7. A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated on this plant as specified in 40 CFR 60.84. Excess emissions shall be reported to the Southwest District and the Bureau of Air Quality Management.

8. This plant shall not be operated more than 8,400 hours per year without prior approval of the Southwest District.

9. This construction permit replaces the current operation permit (AO 53-78016) for this sulfuric acid plant. While the plant is being modified, the emissions shall not exceed 8.64 lb SO_2 and 0.15 lb acid mist per ton of acid produced when the plant is being operated commerically.

10. Construction shall reasonably conform to the plan and schedule in the application. Any changes in the plan or schedule shall be reported to the Southwest District.

11. Royster Company shall take precautionary measures to prevent gas leaks and promptly repair any gas leaks that occur at this plant. A portable industrial vacuum unit equipped with classification and air filtering equipment shall be used to rejuvenate the existing catalyst. Spent catalyst shall be disposed of in an environmentally sound manner.

12. Royster Company shall submit a complete application for permit to operate the sulfuric acid plant, which must include an emissions test report, to the Southwest District at least 90 days prior to the expiration date of this construction permit. If the compliance tests are conducted at a plant operating rate of less than 90

SPECIFIC CONDITIONS:

percent of the permitted capacity (1,700 TPD), then any permit to operate issued for the plant shall restrict maximum production to not more than 10 percent above the production rate that existed during the compliance tests. Royster Company may continue to operate this sulfuric acid plant, if it is in compliance with all conditions of this construction permit, until its expiration date or until the expiration date of any permit to operate that is issued for this source.

13. Upon obtaining a permit to operate, Royster Company will be required to submit quarterly excess emissions reports (40 CFR 60.7) and annual operation reports which shall include, as a minimum, the annual production and a recent emissions test report, to the Southwest District. A copy of the excess emissions report shall be sent to the Bureau of Air Quality Management.

Issued this 2nd day of July, 1985

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

VICTORIA J. TSCHINKEL, Secretary

Best Available Control Technology (BACT) Determination
Royster Company
Polk County

The applicant plans to increase the output capacity of an existing sulfuric acid plant located at their facility in Mulberry, Florida. The production of 100 percent sulfuric acid will be increased from 1400 to 1700 tons per day. The higher sulfuric acid plant throughput will result in the increase of sulfur dioxide and sulfuric acid mist air emissions by 386 and 31 tons per year respectively.

The increase of sulfur dioxide and sulfuric acid mist emission are greater than the significant emission rates listed in Table 500-2 Regulated Air Pollutants. The emission limits for these two air pollutants will be subject to a best available control technology determination as set forth in Florida Administrative Code Rule 17-2.630.

BACT Determination Requested by the Applicant:

Sulfur dioxide emissions will not exceed 4.0 pounds per ton of 100% sulfuric acid produced. The air emission control system will be double absorption with catalyst screening and make-up every 3-5 years.

Sulfuric acid mist emissions will not exceed 0.15 pounds per ton of 100% sulfuric acid produced. The air emission control system will be high efficiency mist eliminators.

Date of Receipt of a BACT Application:

April 4, 1985

Date of Publication in the Florida Administrative Weekly:

April 19, 1985

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section and the Southwest District.

BACT Determined by DER:

The emissions of sulfur dioxide and sulfuric acid mist, including visible emissions, shall not exceed the standards as contained in 40 CFR 60.80, Subpart H, of the new source performance standards (NSPS).

The test methods and procedures as set forth in Subsection 60.85 of NSPS Subpart H shall be used to determine compliance with the emission limits determined as BACT.

BACT Determination Rationale:

Sulfur dioxide emissions from a sulfuric acid plant are an inverse function of the sulfur conversion efficiency. This conversion is always incomplete, and is affected by the number of stages in the catalytic converter, the amount of catalyst used, temperature and pressure, and the concentrations of the reactants. The dual absorption scrubbing process is one of the two processes that will increase acid production without yielding unwanted byproducts.

Sulfuric acid mist is created when sulfur trioxide combines with water vapor at a temperature below the dew point of sulfur trioxide. Fiber mist eliminators effectively reduce the acid mist emissions.

New source performance standards (NSPS) for sulfuric acid plants, Subpart H, was promulgated in 1971, and addressed sulfur dioxide, acid mist, and visible emissions. EPA reviewed these standards in 1979 and did not recommend that the standards be made more stringent.

The department agrees that the NSPS, Subpart H, is BACT for the applicant's proposed increase in the production of sulfuric acid.

Details of the Analysis May be Obtained by Contacting:

Edward Palagyi, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Recommended by:

C. H. Fancy, Deputy Bureau Chief

Date: 7/2/85

Approved by:

for Victoria J. Tschinkel, Secretary

Date: 2 Jul 85

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE

To: _____ Loctn: _____
To: _____ Loctn: _____
To: _____ Loctn: _____
From: _____ Date: _____

DER
JUL 3 1985
RECEIVED DAQM
JUL 2 1985
Office of the Secretary

TO: Victoria J. Tschinkel

FROM: Clair Fancy

DATE: July 2, 1985

SUBJ: Royster Company

Attached is the Final Determination and Permit to Construct No. AC 53-85261 which approves the sulfuric acid plant modifications at Royster Company's Mulberry, Polk County, Florida, facility. Public Notice of the department's intent to issue the permit was published in The Ledger of Lakeland, Florida, on May 31, 1985. No comments were received on the proposed permit.

The bureau recommends your approval and signature on the construction permit and best available control technology determination. Day 90, after the permit would be issued by default is August 2, 1985.

CHF/WH/s

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JUN 18 1985

DER
JUN 21 1985
BAQM

REF: 4APT-AM

Mr. C. H. Fancy, P.E.,
Deputy Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: PSD-FL-106 - Royster Company

This is to acknowledge receipt of your May 24, 1985, PSD preliminary determination for the sulfuric acid plant production increase at the above referenced facility in Mulberry, Florida. We have decided that this determination will not be subject to the Region IV Overview of State Programs policy.

Please submit a copy of the final determination and permits when they are issued.

Sincerely yours,

Richard A. DuBose/acting for

James T. Wilburn, Chief
Air Management Branch
Air, Pesticides, & Toxics Management
Division

(1) ~~Bill~~ B, Fyi
(2) Patty File

Robert W. Heinz
Vice President, Florida Operations

DER

JUN 10 1985

BAQM

Royster Company
P. O. Drawer 797
Mulberry, Florida 33860
(813) 425-1176

A **Superfos** Denmark Company

Royster

CERTIFIED MAIL

June 7, 1985

Mr. C. H. Fancy, P.E., Deputy Chief
Bureau of Air Quality Management
Flroida Department of Environmental Regulations
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

RE: Sulfuric Acid Plant
Proposed Permit Number AC53-85261

Dear Mr. Fancy:

Enclosed is Affidavit of Publication supplied to us by the Lakeland Ledger for proof of publication of the Notice of Proposed Agency Action on Permit Application as stipulated in your letter of May 23, 1985.

Very truly yours,

T. R. Schmalz, P.E.
Manager, Engineering and
Environmental Services

TRS:sk

cc: R. T. Van Arsdall, Plant Manager

AFFIDAVIT OF PUBLICATION

THE LEDGER

Lakeland, Polk County, Florida

Case No .....

STATE OF FLORIDA)
COUNTY OF POLK)
ss.

Before the undersigned authority personally appeared Walter Garris, who on oath says that he is Controller of The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being a.....

Notice

.....

in the matter of .....

Proposed Agency Action

.....

in the .....

.....

Court, was published in said newspaper in the issues of .....

May 31; 1985

.....

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the postoffice in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he 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.

Signed Walter Garris
Controller

Sworn-to-and-subscribed before me this 31st day of May A.D. 19 85

(Seal)

Notary Public

Notary Public, State of Florida at Large
My Commission Expires June 1, 1987

My Commission Expires .....

Attach Notice Here

State of Florida
Department of Environmental Regulation
Notice of Proposed Agency Action
on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue a permit to Royster Company to modify their existing sulfuric acid plant located in Polk County on State Road 60, one mile east of Mulberry, Florida. A determination of best available control technology (BACT) was required.

The increased sulfur dioxide emissions from the modified plant will not result in a significant impact on the ambient air quality.

Persons 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. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida, 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing 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.

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 preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Dpeartment's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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:

Dept. of Environmental Regulation
Southwest District
7601 Highway 301 North
Tampa, Florida 33610

Bartow Public Library
315 Parker Street
Bartow, Florida 33830

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Any person may send written comments on the proposed action to Mr. Bill Thomas at the department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the department's final determination.

B331 — 5-31; 1985

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 30, 1985

Mr. James Duane
Central Florida Regional
Planning Council
Post Office Drawer 208
Bartow, Florida 33830

Dear Mr. James:

RE: Preliminary Determination - Royster Company
Sulfuric Acid Plant Modification

I wish to bring to your attention that Royster Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

Please also be aware that the attached Public Notice announcing the preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in the near future in a newspaper of general circulation in Hillsborough County. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction. If you have any questions, please feel free to call Mr. Bill Thomas or myself at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa
Enclosure

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 23, 1985

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. T. R. Schmalz, Manager
Engineering and Environmental Services
Royster Company
P. O. Drawer 797
Mulberry, Florida 33860

Dear Mr. Schmalz:

Attached is one copy of the Technical Evaluation and Preliminary Determination, and proposed permit to modify your existing sulfuric acid plant that is located in Polk County, Florida.

Before final action can be taken on your draft permit, you are required by Florida Administrative Code Rule 17-103.150 to publish the attached Notice of Proposed Agency Action in the legal advertising section of a newspaper of general circulation in Polk County no later than fourteen days after receipt of this letter. The department must be provided with proof of publication within seven days of the date the notice is published. Failure to publish the notice may be grounds for denial of the permit.

Please submit, in writing, any comments which you wish to have considered concerning the department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

for C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

Attachments

cc: Bill Thomas

State of Florida
Department of Environmental Regulation
Notice of Proposed Agency Action
on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue a permit to Royster Company to modify their existing sulfuric acid plant located in Polk County on State Road 60, one mile east of Mulberry, Florida. A determination of best available control technology (BACT) was required.

The increased sulfur dioxide emissions from the modified plant will not result in a significant impact on the ambient air quality.

Persons 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. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period constitutes a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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:

Dept. of Environmental Regulation
Southwest District
7601 Highway 301 North
Tampa, Florida 33610

Bartow Public Library
315 Parker Street
Bartow, Florida 33830

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Any person may send written comments on the proposed action to Mr. Bill Thomas at the department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the department's final determination.

No. 0155562

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Mr. T. R. Schmalz

STREET AND NO.

P.O., STATE AND ZIP CODE

POSTAGE			$
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE		¢
	OPTIONAL SERVICES: SPECIAL DELIVERY		¢
	OPTIONAL SERVICES: RESTRICTED DELIVERY		¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES			$

POSTMARK OR DATE

5/24/85

PS Form 3800, Apr. 1976

PS Form 3811, July 1983

DOMESTIC RETURN RECEIPT

SENDER: Complete items 1, 2, 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 service(s) requested.

1. ☐ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:
Mr. T. R. Schmalz
Royster Company
P. O. Drawer 797
Mulberry, FL 33860

4. Type of Service:
☐ Registered ☐ Insured
XX Certified ☐ COD
☐ Express Mail

Article Number
0155562

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
5-28-85

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

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of an Application for Permit by:	)	
Royster Company Post Office Box 797 Mulberry, Florida 33860	)	DER File No. AC 53-85261

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its Intent to Issue, and proposed order of issuance for, a permit pursuant to Chapter 403, Florida Statutes, for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Royster Company, applied on March 29, 1984, to the Department of Environmental Regulation for a permit to modify their existing sulfuric acid plant located in Polk County on State Road 60, one mile east of Mulberry, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The applicant was officially notified by the Department that an air construction permit was required for the proposed work.

This intent to issue shall be placed before the Secretary for final action unless an appropriate petition for a hearing pursuant to the provisions of Section 120.57, Florida Statutes, is filed within fourteen (14) days from receipt of this letter or

publication of the public notice (copy attached) required pursuant to Rule 17-103.150, Florida Administrative Code, whichever occurs first. The petition must comply with the requirements of Section 17-103.155 and Rule 28-5.201, Florida Administrative Code (copy attached) and be filed pursuant to Rule 17-103.155(1) in the Office of General Counsel of the Department of Environmental Regulation at 2600 Blair Stone Road, Tallahassee, Florida 32301.

Petitions which are not filed in accordance with the above provisions are subject to dismissal by the Department. In the event a formal hearing is conducted pursuant to Section 120.57(1), all parties shall have an opportunity to respond, to present evidence and argument on all issues involved, to conduct cross-examination of witnesses and submit rebuttal evidence, to submit proposed findings of facts and orders, to file exceptions to any order or hearing officer's recommended order, and to be represented by counsel. If an informal hearing is requested, the agency, in accordance with its rules of procedure, will provide affected persons or parties or their counsel an opportunity, at a convenient time and place, to present to the agency or hearing officer, written or oral evidence in opposition to the agency's action or refusal to act, or a written statement challenging the grounds upon which the agency has chosen to justify its action or inaction, pursuant to Section 120.57(2), Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition, may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of

Administrative Hearings, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

Executed the 24 day of May, 1985, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Willard Hawkes for

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

Copies furnished to:

Mr. T. R. Schmalz
Royster Company
P. O. Drawer 797
Mulberry, Florida 33860

Bill Thomas
Department of Environmental Regulation
Southwest District
7601 Highway 301 North
Tampa, Florida 33610

CERTIFICATION

This is to certify that the foregoing Intent to Issue and all copies were mailed before the close of business on May 24, 1985.

Willard Hanks for
C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management
2600 Blair Stone Road
Tallahassee, Florida 32301

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Patricia G. Adams 5/24/85
Clerk Date

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION,	:	IN THE OFFICE OF THE SOUTHWEST DISTRICT
Complainant,	:	
vs.	:	OGC CASE NO. 86-1336
ROYSTER COMPANY,	:	
Respondent.	:	

CONSENT ORDER

This Consent Order is entered into between the State of Florida Department of Environmental Regulation ("Department") and Royster Company ("Respondent").

The Department finds and the Respondent neither admits nor denies the following:

1. The Department is the administrative agency of the State of Florida charged with the responsibility to protect Florida's air and water resources and to administer and enforce the Florida Air and Water Pollution Control Act, Chapter 403, Florida Statutes, and the rules and regulations promulgated thereunder in Florida Administrative Code Chapter 17.

2. Respondent is a corporation registered to conduct business in the State of Florida. Respondent owns and operates a phosphate chemical fertilizer plant on property ("property") located 1/2 mile east of Mulberry, Polk County, in the southwest 1/4 of the northeast 1/4 of Section 7, Township 20 South, Range 24 East.

3. Respondent operates an 850 TPD diammonium phosphate plant ("plant") at the property under Department permit #AO53-63743. On July 18, 1986 the Department received notification from Respondent that the plant had failed a compliance stack test on July 7, 1986. On that date particulate emissions from the plant were measured at 16.0 lb/hr. Specific Condition #4 of permit #AO53-63743 limits the plant's particulate emissions to 13.5 lb/hr. at 50 TPH. Failure to comply with a permit issued by the

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	Initial / Date
Air Bureau	
2. Willard DER NOV 3 1986	Initial / Date
3.	Initial / Date
4. BAQM	Initial / Date

REMARKS:

INFORMATION

- [ ] Review & Return
- [ ] Review & File
- [ ] Initial & Forward
- [ ]

DISPOSITION

- [ ] Review & Respond
- [ ] Prepare Response
- [ ] For My Signature
- [ ] For Your Signature
- [ ] Let's Discuss
- [ ] Set Up Meeting
- [ ] Investigate & Report
- [ ] Initial & Forward
- [ ] Distribute
- [ ] Concurrence
- [ ] For Processing
- [ ] Initial & Return

FROM: David K. Thulman

DATE 11-3-86

PHONE 8-9730

Department is a violation of Section 403.161(1)(b), Florida Statutes.

4. On August 11, 1986 the Department issued Warning Notice #53-86-08-288 regarding the above-referenced violation.

5. On September 3, 1986, the Department and the parties concerned held an informal discussion to address and resolve this issue. On that date, Respondent submitted the results of a stack test conducted on August 27 and 28, 1986. Emissions averaged 4.0 lb/hr of particulate matter, demonstrating compliance. Respondent stated that the problem was caused by a combination of low pH in the scrubber solution and a leak within the cyclone of the primary scrubber. Respondent acknowledged the delay between the original test and the test demonstrating compliance. Respondent stated that the plant was not operating during much of this period due to repairs and to an unrelated malfunction of the facility's sulfuric acid plant. During this discussion, the issue was resolved.

Therefore, having reached a resolution of the matter, pursuant to Florida Administrative Code Rule 17-103.110, Respondent and the Department mutually agree and it is

ORDERED:

7. Respondent agrees to pay to the Department the sum of $5,000 in settlement of the afore-mentioned violation. Payment shall be made by certified check, cashier's check, or money order within 14 days of the effective date of this Order, made payable and sent to the Department of Environmental Regulation "Pollution Recovery Fund", Southwest District, 7601 Highway 301 North, Tampa, Florida 33637-9544.

8. Respondent shall allow authorized representatives of the Department access to the property at reasonable times for purposes of determining compliance with this Order and the rules and regulations of the Department.

9. The Department hereby expressly reserves the right to initiate appropriate legal action to prevent or prohibit the future violation of applicable statutes, or the rules promulgated thereunder.

10. The Department, for and in consideration of the complete and timely performance by Respondent of the obligations agreed to

in this Consent Order, hereby waives its right to seek judicial imposition of damages, or civil or criminal penalties for alleged violations outlined in this Consent Order. Respondent waives its right to an administrative hearing pursuant to Section 120.57, Florida Statutes of the terms of this Consent Order. Respondent acknowledges its right to appeal the terms of this Consent Order pursuant to Section 120.68, Florida Statutes but waives that right upon signing this Consent Order.

11. Entry of this Consent Order does not relieve Respondent of the need to comply with applicable federal, state or local laws, regulations, or ordinances.

12. The terms and conditions set forth in the Consent Order may be enforced in a court of competent jurisdiction pursuant to Sections 120.69 and 403.121, Florida Statutes. Failure to comply with terms of this Consent Order shall constitute a violation of Section 403.161(1)(b), Florida Statutes.

13. Respondent is fully aware a violation of the terms of this Consent Order may subject Respondent to judicial imposition of damages, civil penalties of up to $10,000 per offense, and criminal penalties.

14. Persons not parties whose substantial interests are affected by this Consent Order have a right, pursuant to Section 120.57, Florida Statutes, to petition for an administrative determination (hearing) on it. The petition must conform to the requirements of Chapter 17-103 and 28-5, Florida Administrative Code and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399, within 14 days of receipt of this Notice. Failure to file a petition within the 14 days constitutes a waiver of any right such person has t an administrative determination (hearing) pursuant to Section 120.57, Florida Statutes.

15. This Consent Order is final agency action of the Department pursuant to Section 120.69, Florida Statutes, and Florida Administrative Code Rule 17-103.110(3), and it is final and effective on the date filed with the clerk of the Department unless a petition is filed in accordance with the preceding paragraph. Upon the timely filing of a petition this Consent Order will not be effective until further order of the Department.

FOR THE RESPONDENT:

10/13/86
DATE

R. T. Van Arsdall
Mr. R. T. Van Arsdall
Vice President
Royster Company
P.O. Drawer 797
Mulberry, Florida 33860

DATED AND ORDERED THIS 17 day of Oct., 1986, in Tampa, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52 (9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Anna Blank — Clerk
10/20/86 — Date

Richard D. Garrity, Ph.D.
District Manager
Southwest District
7601 Highway 301 North
Tampa, Florida 33637-9544

Copies furnished to:

Office of General Counsel
David Thulman, Esquire
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399

Bill Thomas, Air Permitting

Rick Vail, BAQM

PSD-FL-106

Technical Evaluation and Preliminary Determination

Royster Company
Mulberry, Florida
Polk County

Sulfuric Acid Plant Modification
Proposed Permit Number
AC 53-85261

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

May 21, 1985

State of Florida
Department of Environmental Regulation
Notice of Proposed Agency Action
on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue a permit to Royster Company to modify their existing sulfuric acid plant located in Polk County on State Road 60, one mile east of Mulberry, Florida. A determination of best available control technology (BACT) was required.

The increased sulfur dioxide emissions from the modified plant will not result in a significant impact on the ambient air quality.

Persons 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. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing 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.

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 preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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:

Dept. of Environmental Regulation
Southwest District
7601 Highway 301 North
Tampa, Florida 33610

Bartow Public Library
315 Parker Street
Bartow, Florida 33830

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Any person may send written comments on the proposed action to Mr. Bill Thomas at the department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the department's final determination.

RULES OF THE ADMINISTRATIVE COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

I. Application

A. Applicant

Royster Company
P. O. Drawer 797
Mulberry, Florida 33860

B. Request

Mr. T. R. Schmalz, Manager of Engineering and Environmental Services, submitted an application for permit to modify an existing sulfuric acid plant (SCC Major Group 20, Chemical and Allied Products, Industry No. 2819, Sulfuric Acid, Contact Process) that was dated March 29, 1984, to the department on April 3, 1984. The additional information requested by the department in letters dated May 2, 1984, and May 24, 1984, was furnished by Royster Company in a letter dated May 9, 1984, and by Sholtes & Koogler in a letter dated April 3, 1985. The application was updated on April 9, 1985. The application was considered complete on April 11, 1985 when the updated application was received.

C. Project and Location

Royster Company proposes to modify an existing sulfuric acid plant by installing: a 900 PSIG waste heat boiler, steam superheater, economizers, and boiler feedwater treatment equipment; a new electric motor drive for the air blower; shell and tube heat exchanger for the acid; a new cooling tower to replace two existing ones; a turbo-generator; and additional catalyst in the converter towers to increase permitted production from 1,400 to 1,700 TPD 100% sulfuric acid. The increased production will increase emissions of air pollutants. The modifications will also allow the sulfuric acid plant to cogenerate electrical power.

The plant site is on State Road 60 in Polk County, approximately 1.5 miles east of Mulberry, Florida. The UTM coordinates of this site are zone 17, 406.8 km E and 3085.1 km N.

D. Air Pollutant Emission

The following table summarizes the emissions from this plant.

	Production (TPD)	Emission Std. (lb/T) SO_2	MIST	NOx	Emissions (TPY) SO_2	MIST	NOx
Proposed	1,700	4.0	0.15	None	1,190	44.6	48.9
Actual*	1,400	8.64	0.3	None	803.9	13.7	37.5
Change	300	(4.64)	(0.15)	N/C	386.1	30.9	11.4

* Average of 1982 - 1984 operation

II. Rule Applicability

The proposed project, modifications to an existing sulfuric acid plant, is subject to preconstruction review under the provisions of Chapter 403, FS, and Chapters 17-2 and 17-4, FAC.

The proposed facility is located in an area designated "Unclassifiable" for the criteria pollutant particulate matter (17-2.430), but in the area of influence of the Hillsborough County particulate matter nonattainment area (17-2.410). The area is designated attainment for the other criteria pollutants (17-2.420).

The modifications are not subject to New Source Review for Nonattainment Areas because sulfuric acid plants are not a source of particulate matter emissions.

Sulfuric acid plants are listed in Table 500-1, Major Facility Categories. This plant is a major facility because sulfur dioxide emissions exceed 100 TPY. The increase in sulfur dioxide and acid mist emissions will exceed the significant emission rates listed in Table 500-2.

The modifications are subject to Prevention of Significant Deterioration regulations, 17-2.500, because of the increase in sulfur dioxide and acid mist emissions. Allowable emissions of these pollutants shall be established by a best available control technology (BACT) determination as required by 17-2.500(5)(c), FAC.

The modified plant will also be subject to 40 CFR 60.80, Subpart H, new source performance standards (NSPS) for sulfuric acid plants.

III. Technical Evaluation

New source performance standards of 4.0 lb SO_2 and 0.15 lb mist per ton 100 percent sulfuric acid produced, and 10 percent opacity, have been determined to be BACT for the modified plant. The double-absorption process used by Royster Company can meet NSPS for sulfur dioxide. The high efficiency mist eliminators used by Royster can meet NSPS for acid mist.

Test data furnished by the company in the application for permit to construct shows the measured sulfur dioxide and acid mist emissions are below NSPS. The additional catalyst the company will install in the converter will improve conversion of SO_2 to SO_3. The new heat exchanger will improve the recovery of SO_3. The electric motor drive for the blower, waste heat boiler,

waste heat recovery equipment, and turbo-generator will have little effect on the emissions from the modified plant. They will allow the plant to cogenerate electrical power.

Therefore, the department has reasonable assurance that the modified plant will be able to meet the emission standards established as BACT.

IV. Air Quality Impact

A. Introduction

The Royster Company is proposing to increase sulfuric acid production at their Polk County facility. This facility is classified as major according to Rule 17-2.100(99). Four pollutants have been identified by the department as having increasing emissions associated with the production increase: sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and sulfuric acid mist. Of these four pollutants the criteria pollutant SO_2 and the non-criteria pollutant sulfuric acid mist are the only two which will result in a significant emission increase. As such, an air quality impact analysis is required to satisfy the prevention of significant deterioration (PSD) regulations. This analysis includes:

- 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, and;
- 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 depend on air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on these required analyses, the department has reasonable assurance that the proposed sulfuric acid production increase at the Royster facility, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or ambient air quality standard. A discussion of the modeling methodology and required analyses follows.

B. Modeling Methodology

Two EPA-approved dispersion models, the Single-Source (CRSTER) model and the Industrial Source Complex Short-Term (ISCST) model, were used in the air quality impact analysis.

These models both predict maximum ground-level concentration of inert gases and small particles emitted into the atmosphere by point sources. The CRSTER model is limited to using only colocated sources and was used initially to model Royster's sulfuric acid plant. The results of these runs were used to predict sulfuric acid mist concentrations for existing and proposed conditions. The ISCST model was used to predict ambient concentrations of SO_2. The maximum increase in concentration associated with the net emission increase was first calculated and the total impact of the Royster facility along with all other significant sources within 50 kilometers was finally calculated. In all ISCST model runs, calm winds were deleted from the meteorological data set in accordance with EPA policy.

The modeling analyses for both CRSTER and ISCST used five years of sequential hourly meteorological data. Orlando surface data and Tampa upper air data collected by the National Weather Service during the period 1974-1978 were used in the analyses. Since five years of data were used, the highest, second-high short-term predicted concentrations were compared with the appropriate ambient standards.

The stack parameters and emission rates used in evaluating the ambient impact are contained in Table IV-1 and Table IV-2 respectively.

C. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring data is generally required for PSD review. One year of quality assured data using an EPA reference, or the equivalent, monitor must be submitted. Sometimes less than one year of data, but no less than four months, may be accepted when department approval is given.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined through air quality modeling, is less than a pollutant-specific de minimus concentration. In addition, if current monitoring data already exist and these data are representative of the proposed source area, then at the discretion of the department these data may be used.

The predicted ambient impact of the net emission increase of SO_2 is less than the monitoring de minimus level for this pollutant. As such no additional monitoring was required. There is no de minimus level specified for sulfuric acid mist. However, given the small predicted impacts no monitoring was requested by the department.

D. PSD Increment Analysis

The Royster facility is located in an area designated as a Class II attainment area for the pollutant SO_2. A maximum allowable increase (increment) analysis is required for this pollutant. The net emissions increase associated with the production increase was modeled and the results predict that ambient concentrations will increase by less than the significant impact levels. That is, the annual, 24-hour, and 3-hour average increased impacts are predicted to be less than 1.0, 5.0, and 25.0 ug/m^3, respectively. No other sources at the Royster facility consume PSD increment. Therefore, no further analysis was required.

E. AAQS Analysis

Given existing air quality in the area of the Royster facility, emissions from the proposed production increase are not expected to cause or contribute to a violation of an AAQS. The results of the AAQS analysis are contained in Table IV-3.

Of the two pollutants subject to PSD review only SO_2 has an AAQS. The total impact on ambient air is generally obtained by adding a "background" concentration to the maximum modeled concentration. In the current modeling analysis, however, the applicant has included all major SO_2 sources having a significant impact in the area of the Royster facility. As such, a zero background is assumed. Predicted maximum ambient concentrations are less than the AAQS.

Although sulfuric acid mist does not have an AAQS to compare with, a suggested de minimus impact level has been published by EPA: Health Impacts, Emissions, and Emission Factors for Noncriteria Pollutants Subject to De Minimus Guidelines and Emitted from Stationary Conventional Combustion Processes, U.S. EPA, June 1980. The modeling analysis completed by the applicant predicts that the ambient impact of both the production increase and the full production level are less than this suggested de minimus level of 1.0 ug/m^3.

F. Additional Impacts Analysis

1. Impacts on Soils, Vegetation, and Visibility

The maximum ground-level SO_2 concentrations predicted to occur are less than the secondary AAQS which are designed to protect public welfare-related values. In addition, the increased ambient concentrations are less than significant. As such these pollutants are not expected to have a harmful impact on soils and vegetation.

The nearest Class I area is located more than 100 kilometers from the Royster facility. No impact on visibility or any other feature of these areas is expected.

2. Growth-Related Air Quality Impacts

There will be no additional manpower requirements needed as a result of the production increase. Therefore, no growth-related impact is expected.

3. GEP Stack Height Determination

Good Engineering Practice (GEP) stack height means the greater of: (1) 65 meters; or (2) the maximum nearby building height plus 1.5 times the building height or width, whichever is less. In the Royster facility the closest nearby structure to the modified sulfuric acid plant is an 80 foot high ROP storage building. The calculated GEP stack height is thus 200 feet. The stack height is 200 feet. Excessive concentration due to aerodynamic downwash is not expected.

V. Conclusion

Based on the information submitted by Royster Company in their application dated March 29, 1984, and the letters dated May 9, 1984, and April 3, 1985, the department has concluded that the existing sulfuric acid plant can be modified to increase production from 1,400 to 1,700 TPD and cogenerate electric power without violating any state or federal air pollution control regulation. The department proposes to issue a construction permit that will authorize the plant modifications and increase in sulfur dioxide and acid mist emissions. The General and Specific Conditions listed in the proposed permit (attached) will assure compliance of the modified source with the air pollution control regulations.

Table IV-1

Royster Company -- Stack Parameters

Source	UTM-E (km)	UTM-N (km)	Stack Height	Exit Gas Temp.(K)	Exit Gas Velocity(m/s)	Stack Diameter(m)
H_2SO_4 Plant	406.8	3085.1	61.0	360.	12.20	2.13
DAP/GTSP	406.8	3085.2	31.1	322.	8.26	2.67

Table IV-2

Royster Company -- Emission Rates

Source	Pollutant	Existing Maximum Emission Rate (g/s)	Proposed Maximum Emission Rate (g/s)
H_2SO_4	SO_2	25.87 (1)	35.70 (2)
	H_2SO_4 Mist	0.44 (3)	1.34 (4)
DAP/GTSP	SO_2	1.88	1.88

(1) 3.52 lb/ton (based on stack test)
(2) 4.0 lb/ton NSPS
(3) 0.06 lb/ton (based on stack test)
(4) 0.15 lb/ton NSPS

Table IV-3

Royster Company -- Ambient Air Quality Impact

Pollutant and Averaging Time	Maximum Impact of Modification (ug/m^3)	Maximum Impact Royster Facility (ug/m^3)	Maximum Impact All Source (ug/m^3)	Florida AAQS (ug/m^3)
SO_2				
3-hour	17.6 (1)	123	757	1300
24-hour	3.9 (2)	20	221	260
Annual	0.3 (3)	1.9	42	60
H_2SO_4				
24-hour	0.48 (4)	0.75	--	--

(1) less than significant impact 25.0 ug/m^3
(2) less than significant impact 5.0 ug/m^3
(3) less than significant impact 1.0 ug/m^3
(4) less than suggested de minimus value 1.0 ug/m^3

Best Available Control Technology (BACT) Determination
Royster Company
Polk County

The applicant plans to increase the output capacity of an existing sulfuric acid plant located at their facility in Mulberry, Florida. The production of 100 percent sulfuric acid will be increased from 1400 to 1700 tons per day. The higher sulfuric acid plant throughput will result in the increase of sulfur dioxide and sulfuric acid mist air emissions by 386 and 31 tons per year respectively.

The increase of sulfur dioxide and sulfuric acid mist emission are greater than the significant emission rates listed in Table 500-2 Regulated Air Pollutants. The emission limits for these two air pollutants will be subject to a best available control technology determination as set forth in Florida Administrative Code Rule 17-2.630.

BACT Determination Requested by the Applicant:

Sulfur dioxide emissions will not exceed 4.0 pounds per ton of 100% sulfuric acid produced. The air emission control system will be double absorption with catalyst screening and make-up every 3-5 years.

Sulfuric acid mist emissions will not exceed 0.15 pounds per ton of 100% sulfuric acid produced. The air emission control system will be high efficiency mist eliminators.

Date of Receipt of a BACT Application:

April 4, 1985

Date of Publication in the Florida Administrative Weekly:

April 19, 1985

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section and the Southwest District.

BACT Determined by DER:

The emissions of sulfur dioxide and sulfuric acid mist, including visible emissions, shall not exceed the standards as contained in 40 CFR 60.80, Subpart H, of the new source performance standards (NSPS).

The test methods and procedures as set forth in Subsection 60.85 of NSPS Subpart H shall be used to determine compliance with the emission limits determined as BACT.

BACT Determination Rationale:

Sulfur dioxide emissions from a sulfuric acid plant are an inverse function of the sulfur conversion efficiency. This conversion is always incomplete, and is affected by the number of stages in the catalytic converter, the amount of catalyst used, temperature and pressure, and the concentrations of the reactants. The dual absorption scrubbing process is one of the two processes that will increase acid production without yielding unwanted byproducts.

Sulfuric acid mist is created when sulfur trioxide combines with water vapor at a temperature below the dew point of sulfur trioxide. Fiber mist eliminators effectively reduce the acid mist emissions.

New source performance standards (NSPS) for sulfuric acid plants, Subpart H, was promulgated in 1971, and addressed sulfur dioxide, acid mist, and visible emissions. EPA reviewed these standards in 1979 and did not recommend that the standards be made more stringent.

The department agrees that the NSPS, Subpart H, is BACT for the applicant's proposed increase in the production of sulfuric acid.

Details of the Analysis May be Obtained by Contacting:

Edward Palagyi, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Recommended by:

_____

C. H. Fancy, Deputy Bureau Chief

Date:_____

Approved by:

_____

Victoria J. Tschinkel, Secretary

Date:_____

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Royster Company
P. O. Drawer 797
Mulberry, Florida 33860

Permit Number:AC 53-85261
Expiration Date: April 1, 1986
County: Polk
Latitude/Longitude: 27° 53' 15"N/ 82° 56' 50"W
Project: Sulfuric Acid Plant Modifications

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

Modifications to an existing sulfuric acid plant to increase production from 1,400 to 1,700 TPD 100% H_2SO_4 and to cogenerate electrical power. Modifications include installing a waste heat boiler, steam superheater, economizers, boiler feedwater treatment equipment, a new electric motor drive for the air blower, a shell and tube heat exchanger for the acid, a new cooling tower to replace two existing ones, a turbo-generator, and additional catalyst in the converter.

The sulfuric acid plant is located in Polk County at Royster Company's existing phosphate fertilizer facility on State Road 60, about 1.5 miles east of Mulberry, Florida. The UTM coordinates of this site are 17, 406.8 km E and 3085.1 km N.

The modifications shall be in accordance with the applications for permit to construct that were signed by R. W. Heinz on March 29, 1984, and April 9, 1985, and the additional information supplied in Royster Company's letter dated May 9, 1984, and Sholtes & Koogler's letter dated April 3, 1985 except for any changes listed as Specific Conditions in this permit.

Attachments:
1. Application (March 29, 1984)
2. DER's letter dated May 2, 1984
3. Royster Company's letter dated May 9, 1984
4. DER's letter dated May 24, 1984
5. Sholtes & Koogler's letter dated April 3, 1985
6. Application (April 9, 1985)

PERMITTEE:
Royster Company

Permit Number:AC 53-85261
Expiration Date: April 1, 1986

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

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. Nor 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 does not constitute 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, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, 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.

GENERAL CONDITIONS:

6. The permittee shall at all times 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 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, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

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

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

c. Sampling or monitoring 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 notify and provide the department with the following information:

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

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

GENERAL CONDITIONS:

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 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 arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

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 Florida Administrative Code Rules 17-4.12 and 17-30.30, 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 is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

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.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain 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), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be 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 date(s) 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 submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. The modified sulfuric acid plant shall comply with all requirements of 40 CFR 60.80, Subpart H - Standards of Performance for Sulfuric Acid Plants.

2. Sulfuric acid production, measured as 100 percent H_2SO_4, shall not exceed 1,700 TPD.

3. Sulfur dioxide emissions shall not exceed 4.0 lb/ton acid and 6,800 lb/day.

PERMITTEE:
Royster Company

Permit Number: AC 53-85261
Expiration Date: April 1, 1986

SPECIFIC CONDITIONS:

4. Acid mist emissions shall not exceed 0.15 lb/ton acid and 255 lb/day.

5. Visible emissions shall not exceed 10 percent opacity, average for any consecutive 6 minute period.

6. The test methods and procedures described in 40 CFR 60.85 shall be used to determine the compliance status of the source with the sulfur dioxide and acid mist standards. Method 9, as described in 40 CFR 60, Appendix A, shall be used to determine the compliance status of the source with the visible emissions standard. Compliance tests shall be conducted while the plant is operating at its maximum permitted capacity ($\pm$ 10%).

7. A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated on this plant as specified in 40 CFR 60.84. Excess emissions shall be reported to the Southwest District and the Bureau of Air Quality Management.

8. This plant shall not be operated more than 8,400 hours per year without prior approval of the Southwest District.

9. This construction permit replaces the current operation permit (AO 53-78016) for this sulfuric acid plant. While the plant is being modified, the emissions shall not exceed 8.64 lb SO_2 and 0.15 lb acid mist per ton of acid produced when the plant is being operated commerically.

10. Construction shall reasonably conform to the plan and schedule in the application. Any changes in the plan or schedule shall be reported to the Southwest District.

11. Royster Company shall take precautionary measures to prevent gas leaks and promptly repair any gas leaks that occur at this plant. A portable industrial vacuum unit equipped with classification and air filtering equipment shall be used to rejuvenate the existing catalyst. Spent catalyst shall be disposed of in an environmentally sound manner.

12. Royster Company shall submit a complete application for permit to operate the sulfuric acid plant, which must include an emissions test report, to the Southwest District at least 90 days prior to the expiration date of this construction permit. If the compliance tests are conducted at a plant operating rate of less than 90

SPECIFIC CONDITIONS:

percent of the permitted capacity (1,700 TPD), then any permit to operate issued for the plant shall restrict maximum production to not more than 10 percent above the production rate that existed during the compliance tests. Royster Company may continue to operate this sulfuric acid plant, if it is in compliance with all conditions of this construction permit, until its expiration date or until the expiration date of any permit to operate that is issued for this source.

13. Upon obtaining a permit to operate, Royster Company will be required to submit quarterly excess emissions reports (40 CFR 60.7) and annual operation reports which shall include, as a minimum, the annual production and a recent emissions test report, to the Southwest District. A copy of the excess emissions report shall be sent to the Bureau of Air Quality Management.

Issued this____day of _____, 1985

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

_____
VICTORIA J. TSCHINKEL, Secretary

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due: _____	Date Due: _____	

TO: *Clair Fancy*

FROM: *Bill Thomas*

DATE: *January 6, 1986*

SUBJECT: *Royster Company, Permit Nos. AC53-085261 & 101283*
Request for a 90 Day Extension

We have no problem with granting a 90 day extention on the above referenced construction permits.

WCT/js

DER

JAN 10 1986

BAQM

Robert W. Heinz
Vice President, Florida Operations

Royster Company
P. O. Drawer 797
Mulberry, Florida 33860
(813) 425-1176

A **Superfos** Denmark Company

December 16, 1985

Mr. C. H. Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

RE: Permit To Construct
#AC53-085261 - Expiration Date: April 1, 1986
#AC53-101283 - Expiration Date: March 1, 1986

Dear Mr. Fancy:

It is respectfully requested that an extension of 90 days be granted for each of the above subject permits.

This request is prompted by construction and start-up dalays, not the least of which was a catastrophic failure of one of our transformers and the 4160 V switchgear for the Sulfuric Acid Plant which all had to be replaced. In addition to construction delays, we have had start-up problems also related to process equipment failures and performance in the Phosphoric Acid Plant which may or may not be rectified at this time, which have prevented reaching full operating rates.

It is not known at this time how long it will take to obtain full stable operating rates. We of course will observe the terms of Specific Condition 6. under any circumstances.

Very truly yours,

T. R. Schmalz, P.E.
Manager - Engineering &
Environmental Services

cc: R. T. Van Arsdall, Plant Manager
Bill Thomas, Tampa DER

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 30, 1985

Honorable Carl M. Ellis, Mayor
City of Mulberry
Post Office Box 707
Mulberry, Florida 33860

Dear Mayor Ellis:

RE: Preliminary Determination - Royster Company
Sulfuric Acid Plant Modification

I wish to bring to your attention that Royster Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

Please also be aware that the attached Public Notice announcing the preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in the near future in a newspaper of general circulation in Hillsborough County. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction. If you have any questions, please feel free to call Mr. Bill Thomas or myself at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa
Enclosure

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 30, 1985

Chairman, Polk County Board of
County Commissioners
Post Office Box 60
Bartow, Florida 33830

Dear Commissioners:

RE: Preliminary Determination - Royster Company
Sulfuric Acid Plant Modification

I wish to bring to your attention that Royster Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

Please also be aware that the attached Public Notice announcing the preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in the near future in a newspaper of general circulation in Hillsborough County. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction. If you have any questions, please feel free to call Mr. Bill Thomas or myself at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa
Enclosure

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 30, 1985

Mr. Ron Fahs
State A-95 Coordinator
Florida State Planning and
Development Clearinghouse
Office of Planning and Budget
The Capitol
Tallahassee, Florida 32301

Dear Mr. Fahs:

RE: Preliminary Determination - Royster Company
Sulfuric Acid Plant Modification

I wish to bring to your attention that Royster Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

Please also be aware that the attached Public Notice announcing the preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in the near future in a newspaper of general circulation in Hillsborough County. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction. If you have any questions, please feel free to call Mr. Bill Thomas or myself at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa
Enclosure

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 24, 1985

Kathy Campbell
Librarian
Bartow Public Library
315 Parker Street
Bartow, Florida 33830

Dear Ms. Campbell:

RE: Preliminary Determination - Royster Company
Sulfuric Acid Plant Modification

The Bureau of Air Quality Management needs to make the enclosed information available for public inspection pursuant to Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21, Paragraph (q)). A notice directing people to the library will be published in a local newspaper in the near future.

The information must be available upon request for a period of at least 30 days from the notice date. At the end of the period, we will forward to you a Final Determination on the permit application which must be available for an additional 30 days.

We appreciate your help in providing this valuable public service. Should you have any questions, please call me at (904)488-1344.

Sincerely,

Willard Hanks
for
C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

Enclosure

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 24, 1985

Mr. James T. Wilburn, Chief
Air Management Branch
Air & Waste Management Division
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Wilburn:

RE: Preliminary Determination - Royster Company
Sulfuric Acid Plant Modification, PSD-FL-106

Enclosed for your review and comment are the Public Notice and Preliminary Determination for the modification of the above referenced Prevention of Significant Deterioration permit for Royster Company.

Please inform my office at (904)488-1344 if you have comments or questions regarding this determination.

Sincerely,

Willard Hanks
for

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

Enclosure

Robert W. Heinz
Vice President, Florida Operations

Royster Company
P. O. Drawer 797
Mulberry, Florida 33860
(813) 425-1176

A **Superfos** Denmark Company

Royster

April 9, 1985

Mr. C. H. Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

Subject: Royster Company Application For Permit To Construct To Modify An Existing Sulfuric Acid Plant

Dear Mr. Fancy:

Enclosed are three copies of Application to Construct Air Pollution Sources which are being sent to replace those sent on March 29, 1984. A fourth copy is being forwarded to Mr. Bill Thomas of the Southwest District office.

With the information sent to you on April 3, by John Koogler, which included the Air Quality Review, Best Available Control Technology Recommendations, and the modeling results the requirements for the application should be complete.

Your attention to this application has been much appreciated and hopefully the permit will be issued with no further requirements for information submittal.

Very truly yours,

T. R. Schmalz, P.E.
Manager, Engineering & Environmental Services

TRS:sk

cc: Bill Thomas, w/encl.
R. W. Heinz, Vice President
R. T. Van Arsdall, Plant Mgr.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHEAST DISTRICT
BRANCH OFFICE
825 NORTHWEST 23rd AVENUE
SUITE G
GAINESVILLE, FLORIDA 32601

DER
APR 11 1985
BAQM

BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sulfuric Acid Plant [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: Royster Company COUNTY: Polk

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) Sulfuric Acid Plant

SOURCE LOCATION: Street SR 60, 1.5 miles east of Mulberry City Not Applicable

UTM: East 17-406.7 km North 3085.2 km

Latitude 27 ° 53 ' 16 "N Longitude 81 ° 56 ' 54 "W

APPLICANT NAME AND TITLE: R. W. Heinz, Vice President Florida Operations

APPLICANT ADDRESS: Post Office Drawer 797, Mulberry, Florida 33860

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Royster Company

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: R. W. Heinz

R. W. Heinz, Vice President Florida Operations
Name and Title (Please Type)

Date: 4/9/85 Telephone No. (813)425-1176

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 _____

T. R. Schmalz

Name (Please Type)

Royster Company

Company Name (Please Type)

P. O. Drawer 797, Mulberry, Florida 33860

Mailing Address (Please Type)

Florida Registration No. 13656 Date: _____ Telephone No. (813)425-1176

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.

Modification of an existing double absorption, contact sulfuric acid plant to implement the addition of electric co-generation equipment. Refer to attached addendum for complete details.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction July 1, 1984 Completion of Construction October 31, 1985

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.)

Total project cost of acid plant modifications exclusive of co-generation equipment is projected at approximately $8,000,000

None of this cost is directly related to pollution control purposes.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

AC53-2584 Issued 12/16/74; Expired 9/16/75 Consent Order #74 dated 9/27/78
Consent Order, Case #75-1600 Leon County Dated 10/27/75
AO53-17115 Issued 3/1/79; Expired 2/1/84 AO53-6050 Issued 3/14/78; Expired 1/31/83
AO53-78016 Issued 1/31/84; Expires 1/15/89. AO53-6458A Issued 8/28/78; Expired 8/30/79

DETAILED DESCRIPTION OF SOURCE

ADDENDUM TO PAGE 2, ITEM A

The modifications to the existing sulfuric acid plant will consist of installation of a new 900 PSIG waste heat boiler with an attendant steam superheater, economizers for boiler feedwater pre-heating, and deaeration, and demineralization of boiler feedwater. A new electric motor driven main air blower will also be installed. Acid cooling will be accomplished by newly installed shell and tube heat exchangers and a new cooling tower will be provided to replace two existing towers and provide additional cooling required for the 100 percent condensation of the turbo-generator supplied steam. In addition new ring type improved catalyst will be installed in the third pass of the converter.

These modifications will in no way effect the process nor the emission rates from the plant. It is anticipated however that a higher rate of operation will be achievable due to the modifications. A process guarantee by Lurgi Corporation, the engineering/construct firm supplying the new equipment, stipulates an operating rate of 1,500 STPD 100% basis sulfuric acid is achievable at recovery efficiency of 99.7%, which is the same as our present operation. An additional stipulation is that all new equipment shall perform within design conditions at 1600 STPD.

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 50 ;

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? --

   b. If yes, has "Lowest Achievable Emission Rate" been applied? --

   c. If yes, list non-attainment pollutants. --

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

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?_____

   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.

Air Qualtiy Review and BACT recommendations are submitted as a separate package.

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	None	--	46,400	1
Air	None	--	365,654	2
Water	None	--	26,100	3

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 438154

2. Product Weight (lbs/hr): 141,667 as 100% 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/yr	T/yr	
SO_2	283.3	1189.9	17-2.630	283.3	283.3	1189.9	4
Acid Mist	10.6	44.6	17-2.630	10.6	10.6	44.6	4
NOx	11.6	48.9	NA	NA	11.6	48.9	4

[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).

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)
DC/DA Contact				
Sulfuric Acid	SO_2	99.7	NA	Test data
Process				
Brink HE & HV	Acid Mist	99.99	See Supplement 6	Test data
Demisters				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
NA			

*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 apace heating.

Annual Average NA Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

Waste heat boiler and cooling tower blowdown to impoundment area.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 200 ft. Stack Diameter: 7.0 ft.

Gas Flow Rate: 92380 ACFM 75272 DSCFM Gas Exit Temperature: 188 °F.

Water Vapor Content: 0 % Velocity: 40.0 FPS

SECTION IV: INCINERATOR INFORMATION

(NOT APPLICABLE)

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (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:

Double catalyst, double absorption contact sulfuric acid plant with Brink HE and HV demisters.

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

Waste heat boiler blowdown and cooling tower blowdown to impoundment area.

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

(SEE ATTACHED SUPPLEMENTS)

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)]

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.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

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.)

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).

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.

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).

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.

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

(BACT Recommendation under separate cover)

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 Coat:

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

(Air Quality Review Under Separate Cover)

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 inctrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Uaed 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 deacription.

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 Emisaion 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 emisaions, 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.

CONTACT SULFURIC ACID PLANT
MATERIAL BALANCE FOR
1700 STPD H_2SO_4 - 100% Basis

Stochiometry

(1) $S + O_2 \longrightarrow SO_2$

(2) $SO_2 + 1/2\ O_2 \longrightarrow SO_3$

(3) $SO_3 + H_2O \longrightarrow H_2SO_4$

(4) $S + 1\ 1/2\ O_2 + H_2O \longrightarrow H_2SSO_4$

Mole. Wts

$S = 32$

$O_2 = 32$

$H_2O = 18$

$H_2SO_4 = 98$

Air = 29

Material Balance

Parameters:

Furnace Exit Gas at 11.5% SO_2 by volume (molar)

Stack Gas at 4.0 #SO_2/T H_2SO_4 - 100% Basis

No dilution air

a. Sulfur

1700/24 x 32/98 x 2000 = 46,258 #/Hr S in Prod.

1700/24 x 32/64 x 4.00 = 142 #/Hr S in Stack

46,400 #/Hr S Input

b. Air

46,400/32 = 1450 mols S/Hr Input

From equation (1) 1450 mols S/Hr = 1450 mols SO_2/Hr.

At 11.5% SO_2 by volume (molar)

1450/0.115 = 12,609 mols gas (also air)

12,609 x 29 = <u>365,654 #/Hr air input</u>

c. Water

46,400/32 = 1450 mols S

1450 mols (H_2O) x 18 = <u>26,100 #/Hr H_2O</u>

CALCULATION OF EFFICIENCY
AND EMISSION

Emission Limits

SO_2 - 4.0 lb/ton

Mist - 0.15 lb/ton

Daily Emission

1700 TPD x 4.00 #/T = 6800 #/D SO_2

1700 TPD x 0.15 #/T = 255 #/D Acid Mist

Hourly Emission

6800/24 = 283 #/Hr SO_2

255/24 = 10.6 #/Hr Acid Mist

Annual Emission

350 day/year operating time

6800 x 350/2000 = 1190 TPY SO_2

255 x 350/2000 = 44.6 TPY Acid Mist

Sulfur Recovery Efficiency

From Supplement #1, Page 1

Sulfur Input 46,400 #/Hr

Sulfur In Product 46,258 #/Hr

$\frac{46,258}{46,400} \times 100 = 99.7\ \%$ S Recovery

Acid Recovery Efficiency

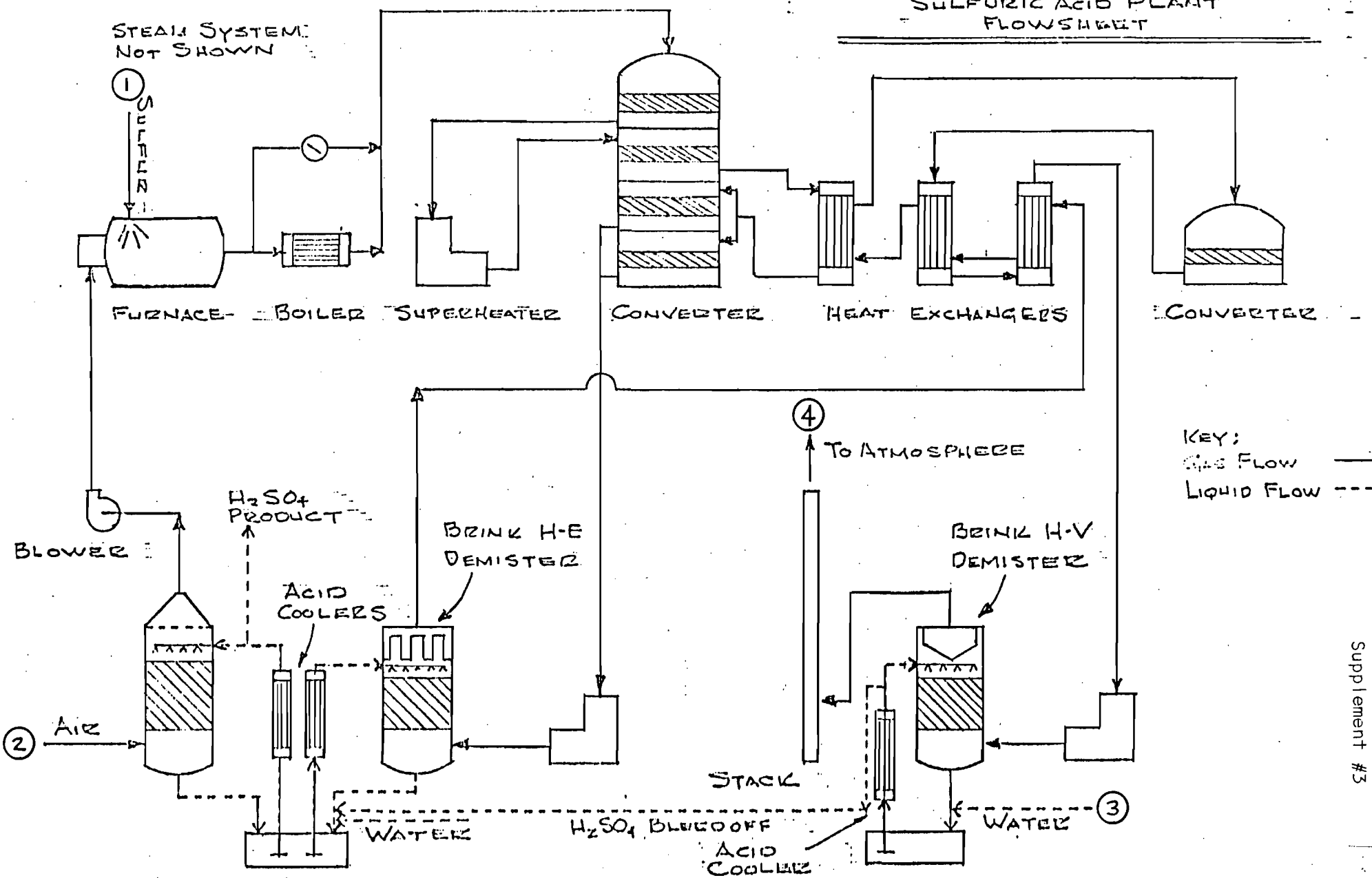
Acid Mist = 0.15 #/T H_2SO_4

$\frac{2000 - 0.15}{2000} = 99.99\%$ H_2SO_4 Recovery

Overall Plant Efficiency

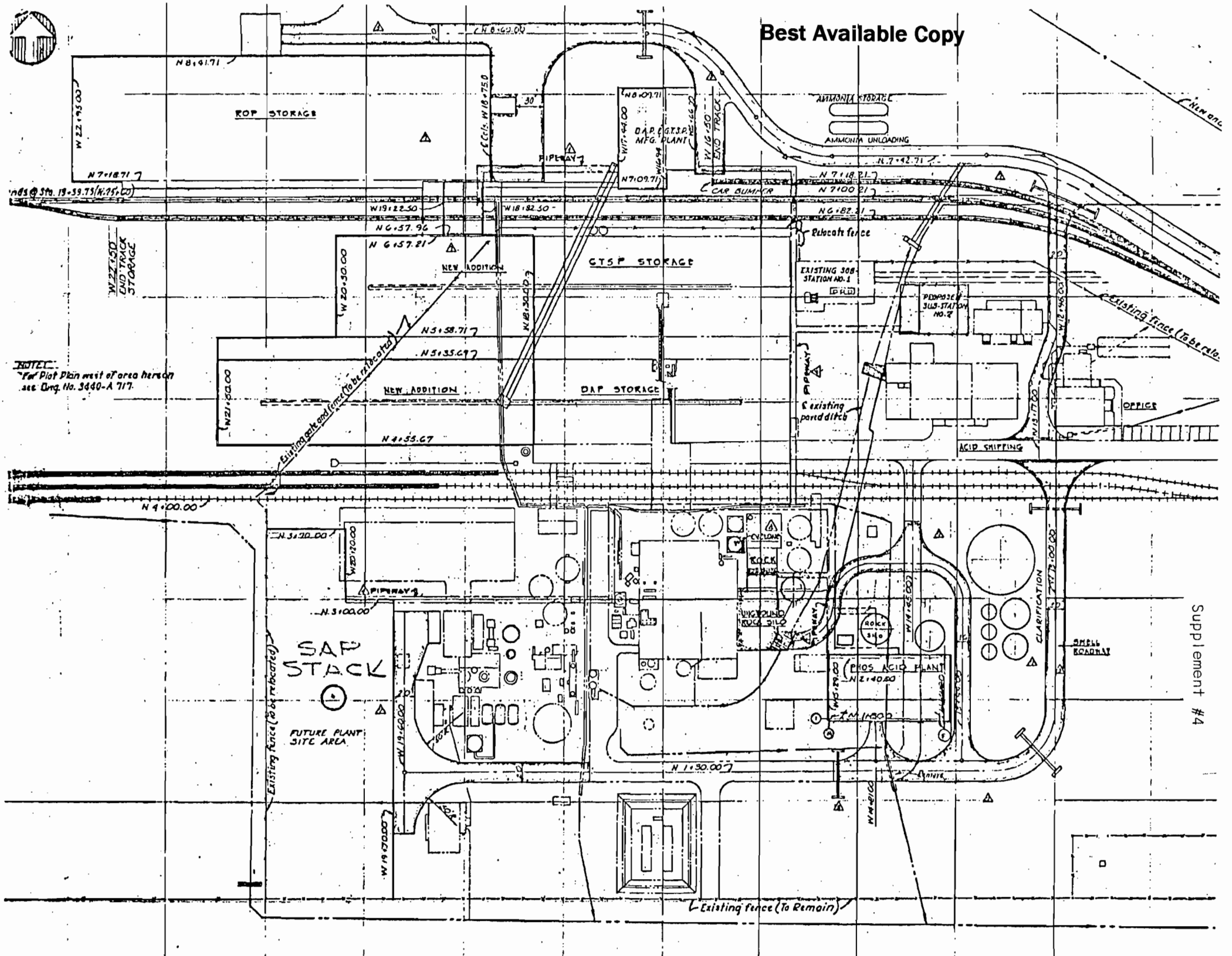
$0.997 \times 0.9999 \times 100 = 99.7\%$ Overall Recovery Efficiency

Royster Company
Double Contact/Double Absorption Sulfuric Acid Plant Flowsheet

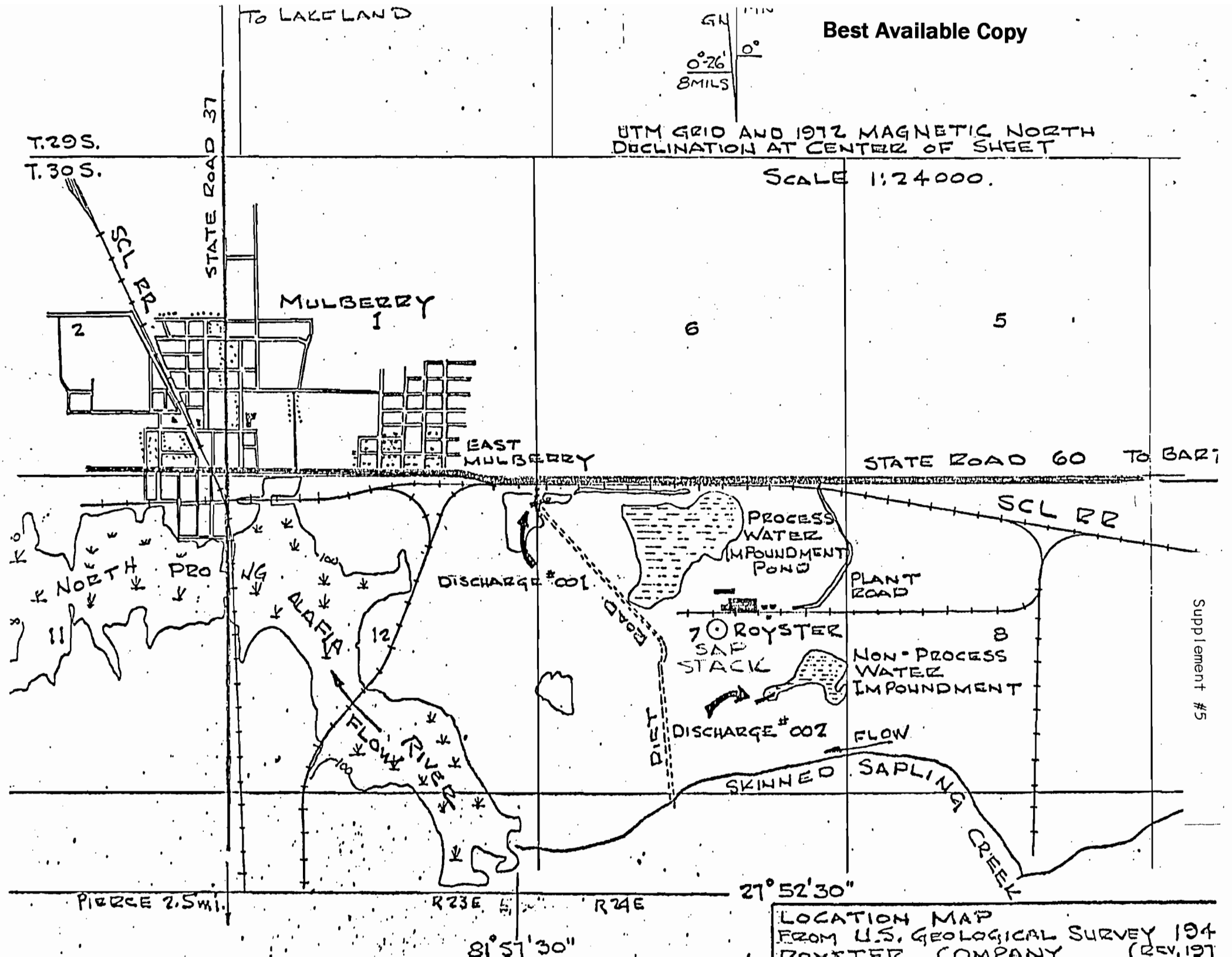


Supplement #3

TRS
3-84



Supplement #4



Supplement #5

Supplement #6

DESCRIPTION OF ACID MIST ELIMINATOR ON 2nd ABSORPTION TOWER:

Manufacturer: Monsanto Company

Model: Brink H-V

Size: 38 elements - 18.5" x 53" to handle 73,000 ACFM @ 8" W.C. P, 190°F

Separation Specification:
Will remove acid mist at 100% larger than 3 micron particles, 85% of particles 1-3 microns, 70% of particles 1/2 to 1 micron, less than 70% of particles smaller than 1/2 micron.

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 6th Street Gainesville, Florida 32601 (904) 377-5822

SKEC 230-84-01

April 3, 1985

Mr. C. H. Fancy
Deputy Chief, Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Subject: Royster company
Polk County, Florida
Application for Construction Permit
to Increase Production Capacity of
an Existing Sulfuric Acid Plant

Dear Mr. Fancy:

Enclosed are three copies of the Air Quality Review and Best Available Control Technology Recommendations, Volume I, and one copy of Volume II which includes the modeling results, for Royster Company.

These documents are being submitted to supplement information previously submitted to your office by Royster Company.

If you have any questions or comments concerning the enclosed materials, please don't hesitate to contact me.

Very truly yours,

SHOLTES & KOOGLER,
ENVIRONMENTAL CONSULTANTS

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

JBK:ssc
Enclosures

AIR QUALITY REVIEW
AND
BEST AVAILABLE CONTROL TECHNOLOGY
RECOMMENDATIONS

ROYSTER COMPANY
VOLUME I

APRIL 1985

SHOLTES & KOOGLER,
ENVIRONMENTAL CONSULTANTS
1213 N.W. 6TH STREET
GAINESVILLE, FLORIDA 32601
(904) 377-5822

SHOLTES & KOOGLER

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 6th Street Gainesville, Florida 32601 (904) 377-5822

SKEC 230-84-01

April 3, 1985

Mr. C. H. Fancy
Deputy Chief, Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

Subject: Royster Company
Polk County, Florida
Application for Construction Permit
to Increase Production Capacity of
an Existing Sulfuric Acid Plant

Dear Mr. Fancy:

The enclosed information is submitted to satisfy the requirements for an Air Quality Review necessitated by the proposed increase in the sulfuric acid production rate of an existing sulfuric acid plant at the Royster Company in Polk County, Florida. The proposed action will result in a 300 tons per day increase in the sulfuric acid production capacity of the facility; from 1400 tons per day to 1700 tons per day of 100 percent sulfuric acid.

300 TPD increase
1400 → 1700 TPD Acid

PROPOSED AND EXISTING OPERATING PARAMETERS

Royster has submitted to your office several documents defining construction and operating permits that have been issued for the subject sulfuric acid plant, the conditions imposed by these permits, actual plant production rates and actual plant sulfur dioxide and sulfuric acid mist emission rates. These data and information are summarized in Table 1. The information presented in Table 1 was used to calculate actual annual sulfur dioxide and sulfuric acid mist emission rates under existing operating conditions; that is, operating conditions that existed between December 1978 and the present. The data presented in Table 1 were also used with an appropriate emission factor to calculate the annual nitrogen oxides emission rate under existing operating conditions.

The proposed production rate, both daily and annual, the proposed sulfur dioxide and sulfuric acid mist emission rates (based on federal

New Source Performance Standards), stack parameters and annual air pollutant emission rates for proposed operating conditions are summarized in Table 2. The proposed maximum daily production rate for the plant will be 1700 tons of 100 percent sulfuric acid per day and the annual production rate, based on 350 days per year continuous operation, will be 595,000 tons per year of 100 percent sulfuric acid. The proposed sulfur dioxide and sulfuric acid mist emission limits are 4.0 pounds per ton and 0.15 pounds per ton, respectively.

The annual pollutant emission rate increases, based on the proposed increase in sulfuric acid production, are summarized in Table 3. The emission rate increases were determined to be 386 tons per year for sulfur dioxide, 30.9 tons per year for sulfuric acid mist and 11.4 tons per year for nitrogen oxides. The emission rate increases which have been determined to be significant for these pollutants (17-2.500, FAC) are 40 tons per year for sulfur dioxide, 7 tons per year for sulfuric acid mist and 40 tons per year for nitrogen oxides. The emission rate of carbon monoxide from the sulfuric acid plant may increase slightly (less than one ton per year) but the emission rate increase will be well below the 100 tons per year de minimus emission rate increase for this pollutant. From these data it is apparent that the proposed action will result in significant emission rate increases for sulfur dioxide and sulfuric acid mist; thus requiring an Air Quality Review and a Best Available Control Technology (BACT) determination for these pollutants.

AIR QUALITY REVIEW

The air quality review for sulfur dioxide and sulfuric acid mist was conducted in three steps. First the CRSTER air quality model was run with emission data from the Royster sulfuric acid plant representing both existing operating conditions (1400 tons per day of 100 percent sulfuric acid) and proposed operating conditions (1700 tons per day of 100 percent sulfuric acid). From these model runs, the distance to the point of maximum impact was determined and the impact of the net increase in sulfuric acid mist emissions was estimated.

The second and third steps of the air quality review were conducted with the ISC-ST air quality model with a calm processor. The calm processor functions to remove the impacts resulting from hours with reported calm wind speeds in a manner consistent with EPA guidelines. The ISC-ST model was first run with sulfur dioxide emissions from the Royster sulfuric acid plant only; the emissions for plant operation at 1400 tons per day being input as a negative emissions and emissions at the proposed 1700 tons per day operating conditions being input as positive emissions. This convention results in the ISC-ST model

calculating the impact of the net sulfur dioxide emission rate increase resulting from the proposed production rate increase.

The third step of the air quality review was a set of runs with the ISC-ST air quality model, again using the calm processor. For these model runs, sulfur dioxide emission data from all significant sources within 50 kilometers of the Royster site were input into the model. The purpose of this set of model runs was to demonstrate that sulfur dioxide impacts, resulting from all sources within the area where Royster has a significant impact, are below ambient air quality standards.

The meteorological data used for all air quality modeling were data from Orlando, Florida representing the period 1974-1978. The Orlando meteorological data were used since they were determined to be more representative of a source in inland west-central Florida than meteorological data from Tampa; a coastal site.

The Royster source data input to the air quality model were derived from the information presented in Tables 1 and 2. The model input data for Royster under existing operating conditions (1400 tons per day) and proposed operating conditions (1700 tons per day) are summarized in Table 4.

CRSTER Modeling

The output of the CRSTER air quality model is attached as Appendix A. From these data it was determined that the maximum impact of emissions from the Royster sulfuric acid plant will generally be within one kilometer of the plant for the 3-hour and 24-hour time periods and within two kilometers for the annual period. From these same data it was determined that the maximum sulfuric acid mist impact under existing operating conditions will be 0.27 micrograms per cubic meter, 24-hour average, and under proposed operating conditions, 0.75 micrograms per cubic meter, 24-hour average. The net increase in the ground-level impact of sulfuric acid mist emissions for the 24-hour period was estimated to be 0.48 micrograms per cubic meter. This compares with a suggested de minimus impact of 1.0 micrograms per cubic meter, 24-hour average, (Health Impacts, Emissions, and Emission Factors for Non-Criteria Pollutants Subject to De Minimus Guidelines and Emitted from Stationary Conventional Combustion Processes, U.S. EPA, June 1980); an impact that even total sulfuric acid mist emissions with the plant operating at 1700 tons per day does not create.

Since the impact of the net increase in sulfuric acid mist emissions (and the impact of total sulfuric acid mist emissions) is below the suggested de minimus impact level, further air quality modeling and impact analyses are not required for this pollutant. The results of the air quality modeling for sulfuric acid mist are summarized in Table 5.

ISC-ST Modeling

The ISC-ST model runs used to evaluate the impact on air quality of the increase in sulfur dioxide emissions from the Royster sulfuric acid plant are attached as Appendix B. The results of these model runs are summarized in Table 6.

These data show that the increase in sulfur dioxide emissions (resulting from a production rate increase from 1400 to 1700 tons per day) will result in a maximum annual impact on air quality of 0.3 micrograms per cubic meter, a maximum 24-hour impact of 3.9 micrograms per cubic meter and a maximum 3-hour impact of 17.6 micrograms per cubic meter. These impacts compare with significant impact levels of 1.0, 5.0 and 25.0 micrograms per cubic meter for the annual, 24-hour and 3-hour periods, respectively.

Based on the results of these model runs, it can be concluded that the production rate increase proposed by Royster will not result in a significant impact on ambient air quality. As a result of this, further air quality modeling to evaluate PSD increments consumption is not required.

A second comparison that can be made with data summarized in Table 6 is a comparison between the maximum 24-hour sulfur dioxide impact and the de minimus impact for sulfur dioxide. The de minimus impact for sulfur dioxide is defined as 13 micrograms per cubic meter, 24-hour average (17-2.500 FAC). This compares with a calculated 3.9 microgram per cubic meter impact resulting from the production rate increase proposed by Royster. The fact that the calculated emission rate increase is less than the de minimus impact for sulfur dioxide means that air quality monitoring for sulfur dioxide is not required for the proposed project.

The final set of ISC-ST model runs, those used to demonstrate compliance with air quality standards, are attached as Appendix C. The input for these model runs included the actual sulfur dioxide emission rates from 80 sources that could have a significant impact at the Royster site. The sources included in the emission inventory are

listed in Table 7. Again, the meteorological data used for the modeling are Orlando data representing the period 1974-1978.

Receptors were located using a polar coordinate system centered at Royster. Receptors were located on 10 concentric circles at distances ranging from 0.5 to 10.0 kilometers from Royster and were spaced radially at 20 degree intervals. The area covered by the receptor grid is shown in Figure 1.

The results of the air quality modeling to demonstrate compliance with ambient air quality standards are summarized in Table 8. The results of this modeling show a maximum annual average impact of the two Royster sources (the sulfuric acid plant and a DAP plant) of 1.9 micrograms per cubic meter and a maximum annual impact of all sources of 42 micrograms per cubic meter. These impacts compare with an annual ambient air quality standard for sulfur dioxide of 60 micrograms per cubic meter.

(It should be noted that Royster also has a 132 million BTU per hour auxiliary boiler fired with number 6 fuel oil. Since this boiler is not operated concurrently with the sulfuric acid plant, and since only the sulfuric acid plant is the sibject of this application, the boiler has been excluded from the air quality review.)

The maximum 3-hour impact of the Royster sources was determined to be 123 micrograms per cubic meter and the maximum 3-hour impact of all sources was determined to be 757 micrograms per cubic meter; compared with a 3-hour ambient air quality standard for sulfur dioxide of 1300 micrograms per cubic meter. The maximum 24-hour impact of Royster sources was calculated to be 20 micrograms per cubic meter compared with a 24-hour air quality standard of 260 micrograms per cubic meter and a maximum 24-hour impact of all sources of 221 micrograms per cubic meter. The areas where the high sulfur dioxide impacts occur for the various time periods are designated in Figure 2.

The air quality modeling presented in Appendix C and summarized in Table 8 also shows that the distance to the boundary of the area of influence (the area in which a source has a significant impact on air quality) for Royster for the 3-hour and annual periods is less than 10.0 kilometers; the distance to the outermost receptors. The air quality modeling for these two periods of time demonstrates, therefore, that the sulfur dioxide air quality standards for the 3-hour and annual periods are achieved in all areas where Royster has a significant impact.

For the 24-hour period, an extrapolation of data presented in Appendix C and summarized in Table 8 indicates that the area of influence of Royster sulfur dioxide emissions for the 24-hour period extends to approximately 13 kilometers; a distance slightly beyond the 10 kilometer receptor boundary. The air quality modeling summarized in Table 8 for the 24-hour period shows compliance with the 24-hour sulfur dioxide air quality standard within 10 kilometers of Royster. From a review of the source distribution between 10 and 13 kilometers from Royster (Figure 1) and a review of past air quality modeling conducted for many of the sources just beyond 10 kilometers from Royster, it is apparent that the sulfur dioxide air quality standard within the 24-hour area of influence of Royster will also be complied with. Previous air quality modeling for permitting purposes has been conducted for Lakeland Utilities (Source 12, Figure 1), IMC/New Wales (Source 14, Figure 1), AMAX Big Four Mine (Source 5, Figure 1), Agrico South Pierce (Source 4, Figure 1) and USS Agri-Chemicals Ft. Meade (Source 3, Figure 1). All of this modeling demonstrated compliance with all sulfur dioxide air quality standards within the area of influence of these sources.

Air Quality Review Summary

The air quality review for the sulfuric acid plant production rate increase proposed by Royster has demonstrated:

1. The impact of the increased sulfur dioxide emissions will be less than de minimus (13 micrograms per cubic meter, 24-hour average) therefore air quality monitoring will not be required,

2. The impact of the increased sulfur dioxide emissions will be less than significant (1.0 micrograms per cubic meter, annual average; 5.0 micrograms per cubic meter, 24-hour average; and 25.0 micrograms per cubic meter, 3-hour average), thus a PSD increment analysis is not required,

3. The sulfur dioxide air quality standards for all time periods are complied with within the area of influence of Royster, and

4. The impact of the increased sulfuric acid mist emissions will be less than the suggested de minimus impact for sulfuric acid mist (1.0 microgram per cubic meter, 24-hour average).

BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is required to control air pollutants emitted from major sources or from major modifications to existing air pollution sources if the increase in the emission rate of the air pollutant exceeds de minimum emission rate increases defined in state (17-2.500, FAC) and federal PSD regulations. The de minimum emission rates for pollutants that are potentially emitted from sulfur acid plants are: sulfur dioxide - 40 tons per year; sulfuric acid - 7 tons per year; and, nitrogen oxides - 40 tons per year.

The proposed increase in sulfuric acid plant production capacity at Royster (from 1,400 tons per day to 1,700 tons per day) will result in increases in the sulfur dioxide and sulfuric acid mist emission rates that exceed the de minimum emission rate increases for these two pollutants. Sulfur dioxide emissions will increase by 386 tons per year and sulfuric acid mist emissions will increase by 31 tons per year (see Table 3). Thus, BACT will be required for these pollutants.

EPA has established new source performance standards for sulfuric acid plants. These standards limit sulfur dioxide emissions to 4.0 pounds of sulfur dioxide and 0.15 pounds of sulfuric acid mist per ton of 100 percent sulfuric acid produced. EPA reviewed these standards in 1979 and concluded that the new source performance standards for the sulfuric acid plants should not be made more stringent. (Drabkin, M. and Brooks, J.J., A Review of Standards of Performance for New Stationary Sources - Sulfuric Acid Plants, U.S. EPA, EPA-450/3-79-003, January 1979.)

The sulfur dioxide emissions at Royster are, and will continue to be controlled by double absorption and acid mist emissions are, and will continue to be controlled with high efficiency mist eliminators. In the following sections, the alternative control technologies for both sulfur dioxide and sulfuric acid mist are discussed.

Sulfur Dioxide

In the review performed by EPA, it was concluded that double absorption is the best demonstrated technology available for sulfur dioxide control. This control has the advantage of reducing sulfur dioxide emissions, producing no by-products and introducing no unfamiliar operating factors to plant operators. EPA reviewed potential improvements to the double absorption system such as reducing catalyst life from 3-5 years to 2 years. EPA rejected this alternative, however, since it reduced pre-tax profits by approximately 20 percent.

Bisulfite and ammonia scrubbing systems were also evaluated and described as feasible by EPA. These systems, however, would not be expected to result in significantly lower sulfur dioxide emission rates and, in addition, the systems would generate by-products and they would introduce a system that requires completely different operating technology. Molecular sieves have also been tried and found unacceptable because of operating difficulties.

It is recommended, for purposes of this permit application, that double absorption with catalyst screening and make-up every 3-5 years represents BACT for sulfur dioxide. This technology will also assure compliance with New Source Performance Standards.

Sulfuric Acid Mist

Sulfuric acid mist emissions and the resulting opacity, can be controlled by high efficiency mist eliminators and, theoretically, by electrostatic precipitators. Practically, precipitators are not considered as an alternative because of operating problems that would develop in the acid environment.

It has been the experience of Royster and the phosphate fertilizer industry as a whole, that the high efficiency mist eliminators are the most effective means of controlling sulfuric acid mist emissions from sulfuric acid plants.

For purposes of this permit application, the high efficiency mist eliminators are proposed by Royster as BACT for sulfuric acid mist. This control system will assure compliance with both the mass emission standard for sulfuric acid mist and the visible emission standards imposed by the New Source Performance Standards.

GOOD ENGINEERING PRACTICE STACK HEIGHT

Good Engineering Practice (GEP) stack height is defined as the "height necessary to insure that emissions from the stack do not result in excessive concentrations of any pollutant in the immediate vicinity of the source as a result of aerodynamic, downwash, eddies and wakes which may be created by the source itself, nearby structures, or nearby terrain obstacles."

For regulatory purposes, GEP stack height is defined by the equation:

$$H_g = H + 1.5L$$

where: H_g = Good Engineering Practice Stack Height,
H^g = Height of the structure or nearby structure, and
L = Lesser dimension (height or projected width) of the structure or nearby structure.

For purposes of applying this equation, the downwind area in which a nearby structure is presumed to have a significant influence is limited to 5 times the height or width of the structure, whichever is less. Furthermore, to avoid natural atmospheric effects which may cause excessive concentrations around very low level sources, a stack height of 65 meters (213 feet) is defined as Good Engineering Practice, without the demonstration of necessity.

An analysis of the existing structures on the Royster site (Figure 3) demonstrates that neither the DAP plant nor the phosphoric plant can be considered nearby sources because of the distance of these plants from the sulfuric acid plant stack. The controlling structure is the ROP storage building; a structure 80 feet in height. The GEP stack height, based on the dimensions of the ROP storage building, would be 200 feet; the height of the existing sulfuric acid plant stack. Therefore, the existing 200 foot stack height qualifies as a Good Engineering Practice stack height and, since the physical stack height is equal to the height of nearby structures plus 1.5 times the height or projected width of the structures, the potential for downwash is essentially eliminated.

IMPACT ON SOILS, VEGETATION AND VISIBILITY

Since the impact of increased sulfur dioxide and sulfuric acid mist emissions on ambient air quality are less than the significant impact levels and less than the de minimus impact levels for these pollutants, no adverse impacts on soils, vegetation and visibility will occur. Furthermore, the increase in sulfuric acid production from 1400 tons per day to 1700 tons per day will result in no additional manpower requirements at Royster and hence, there will be no growth-related air quality impacts resulting from the proposed action.

If there are any comments or questions regarding the information contained herein, please feel free to contact me.

Very truly yours,

SHOLTES & KOOGLER,
ENVIRONMENTAL CONSULTANTS

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

JBK:net

TABLE 1

ROYSTER COMPANY
EXISTING SULFURIC ACID PLANT OPERATING CONDITIONS AT 1400 TPD

Permits: AC53-6458A; Issued 8/28/78 and expired 8/30/79
A053-78016; current operating permit

Permit Conditions: (See Royster letter dated 5/9/84)

1978 → 1971
1400 TPD
504 # SO2/hr
8.64 # / T
0.3 # / T Mist

Production rate - 1400 tpd 100% sulfuric acid
Hours of Operation - Unrestricted (8760 hours/year)
Emission Rates -

Sulfur dioxide - 504 lbs/hr (8.64 lb/ton of acid)
Mist - Not stated (0.3 lbs/ton of acid from 17-2.600(2)(a)2.C.)

Operating Conditions:

Production Rate - 1400 tpd 100% sulfuric acid.
456,760 tpy (Average 1982-1984; See Royster letter dated 6/19/84)

Emission Rates -

ACTUAL EMISSIONS
3.52 # / T SO2

.06 # mist / T

Sulfur dioxide	- 3.52 lbs/ton of acid (See FDER test results attached to Royster permit application and data submitted by Royster in letter dated 5/9/84)
Mist	- 0.06 lbs/ton of acid (same ref.)
Stack Height	- 200 feet
Stack Diameter	- 7.0 feet
Stack Gas Temp.	- 180°F
Stack Gas Flow	- 76,076 Acfm

ACTUAL EMISSIONS
803.9 TPY SO2
13.7 TPY MIST
37.5 TPY NOx

Annual Emissions -

Sulfur dioxide	- 456,760 ton/yr x 3.52 lb/ton x 1/2000 = 803.9 tpy.
Mist	- 456,760 ton/yr x 0.06 lb/ton x 1/2000 = 13.7 tpy.
NOx	- 456,760 ton/yr x 78,250 ft^3/ton of acid x 2.1 x 10^{-6} lb NOx/ft^3* x 1/2000 = 37.5 tpy.

* From PSD-FL-034

TABLE 2

ROYSTER COMPANY
PROPOSED SULFURIC ACID PLANT OPERATING CONDITIONS AT 1700 TPD

Operating Conditions:

Production rate - 1700 tpd 100% sulfuric acid
- 595,000 tpy (based on 350 days per year operation)

Proposed 1700 TPD H2SO4 4#/T SO2 0.15#/T MIST

Emission rates -

Sulfur dioxide	- 4.0 lbs/ton (NSPS)
Mist	- 0.15 lbs/ton (NSPS)
Stack Height	- 200 feet
Stack Diameter	- 7.0 feet
Stack Gas Temp.	- 188°F
Stack Gas Flow	- 92,380 Acfm

Annual Emissions -

Sulfur dioxide	- 595,000 tons/yr x 4.0 lb/ton x 1/2000 = 1190.0 tpy.
Mist	- 595,000 ton/yr x 0.15 lb/ton x 1/2000 = 44.6 tpy.
NOx	- 595,000 tons/yr x 78,250 ft^3/ton of acid x 2.1 x 10^{-6} lb NOx/ft^3 x 1/2000 = 48.9 tpy.

Proposed
1190 TPY SO_2
44.6 TPY MIST

48.9 TPY NO_x

TABLE 3

ROYSTER COMPANY
EMISSION RATE INCREASES RESULTING FROM PROPOSED
PRODUCTION RATE INCREASE
(FROM 1400 TPD TO 1700 TPD)

POLLUTANT	EMISSION RATE INCREASE (TPY)	SIGNIFICANT EMISSION RATE INCREASE (TPY)
Sulfur Dioxide	386.1	40
Acid Mist	30.9	7
NOx	11.4	40

TABLE 4

ROYSTER COMPANY
SOURCE INPUT DATA FOR AIR QUALITY REVIEW

Existing Conditions (1400 tons/day)

Emission rates:

Sulfur dioxide	- (1400 tpd/24 hr/day) x 3.52 lb/ton x 0.126 g/sec/lb/hr
	= 25.87 g/sec.
Mist	- (1400/24) x 0.06 lb/ton x 0.126
	= 0.44 g/sec.
Stack Height	= 200 feet = 61.0 meters
Stack Diameter	= 7.0 feet = 2.13 meters
Stack Temp.	= 180°F = 355°K
Stack Velocity	= (76,076 Acfm)/[(7.0 x 7.0 x π /4)(60)(3.28)]
	= 10.0 m/sec.

Proposed Conditions (1700 tons/day)

Emission Rates:

Sulfur Dioxide	- (1700 tpd/24 hr/day) x 4.0 lb/ton x 0.126
	= 35.70 g/sec.
Mist	- (1700/24) x 0.15 lb/ton x 0.126
	= 1.34 g/sec.
Stack Height	= 200 feet = 61.0 meters
Stack Diameter	= 7.0 feet = 2.13 meters
Stack Temp.	= 188°F = 360°K
Stack Velocity	= 92,380/[(7.0 x 7.0 x π/4)(60)(3.28)]
	= 12.20 m/sec.

TABLE 5

AMBIENT IMPACTS RESULTING FROM THE NET INCREASE IN SULFURIC ACID MIST EMISSIONS CAUSED BY PRODUCTION RATE INCREASE (FROM 1400 TPD TO 1700 TPD)

Acid Mist

Model - CRSTER
Meteorological Data - 1974-1978 Orlando, Florida

YEAR	24-HOUR ACID MIST IMPACT (ug/m^3) EXISTING	PROPOSED	NET INCREASE(1)
1974	0.24	0.66	0.42
1975	0.23	0.64	0.41
1976	0.23	0.63	0.40
1977	0.24	0.64	0.40
1978	0.27	0.75	0.48
De Minimus Impact(2)	1.0	1.0	1.0

(1) Approximate net increase; based on difference between the maximum impacts under existing and proposed conditions.

(2) Suggested de minimus impact; Health Impacts, Emissions, and Emission Factors for Noncriteria Pollutants Subject to De Minimus Guidelines and Emitted from Stationary Conventional Combustion Processes, U.S. EPA, June, 1980.

TABLE 6

ROYSTER COMPANY
AMBIENT IMPACTS RESULTING FROM THE NET INCREASE IN
SULFUR DIOXIDE EMISSIONS CAUSED BY PROPOSED PRODUCTION RATE INCREASE
(FROM 1400 TPD TO 1700 TPD)

Sulfur Dioxide

Model - ISC-ST with calm processor
Meteorological Data - 1974-1978 Orlando, Florida

YEAR	SULFUR DIOXIDE IMPACT (ug/m^3)(1) ANNUAL(2)	24-HOUR	3-HOUR
1974	0.2	2.7	17.6
1975	0.2	2.6	13.3
1976	0.2	2.7	15.4
1977	0.2	2.8	12.9
1978	0.3	3.9	15.0
De Minimus Impact	---	13.0	----
Significant Impact	1.0	5.0	25.0

(1) Impact of the plant as proposed, minus the impact of the plant as actually operated.

(2) Annual impact with source operating 100% of time. The inpact, incorporating annual operating factors, will be slightly different.

TABLE 7

SOURCES USED IN AIR QUALITY MODELING

Location	ID	Type	Description	SO2 (gm/sec)	Height (meters)	Diameter (meters)	Velocity (m/sec)	Temp. (deg K)	X-Coord (km)	Y-Coord (km)
ROY	101	New	H2SO4 (1700)	35.70	61.00	2.13	12.20	360.0	406.800	3085.100
ROY	10102		DAP/GTSP	1.88	31.10	2.67	8.26	322.0	406.800	3085.200
USSAC	201	New	Ft.Meade - H2SO4 1	63.00	53.40	2.59	15.91	355.0	416.120	3068.620
USSAC	202	New	Ft.Meade - H2SO4 2	63.00	53.40	2.59	15.91	355.0	416.120	3068.670
USSAC	10206		Ft.Meade - GTSP Dryer	9.60	28.40	1.45	9.33	314.0	415.920	3068.890
USSAC	10207		Ft.Meade - Rock Dryer	34.80	15.90	1.83	11.04	336.0	415.860	3068.550
USSAC	10201		Bartow - H2SO4	42.00	29.00	2.13	8.30	314.0	413.200	3086.300
USSAC	10202		Bartow - Rock Dryer	34.10	15.80	1.83	11.00	326.0	413.200	3086.300
USSAC	10203		Bartow - DAP Dryer	0.80	40.40	2.13	14.50	314.0	413.200	3086.300
AGRICO	301	New	DAP	7.36	38.10	3.10	14.60	328.0	407.380	3071.700
AGRICO	302	New	#12 H2SO4	42.00	45.70	2.90	9.50	350.0	407.580	3071.340
AGRICO	10304		#11 H2SO4	28.35	45.70	2.70	9.90	350.0	407.570	3071.240
AGRICO	10305		#10 H2SO4	32.13	45.70	2.70	9.90	350.0	407.520	3071.240
AGRICO	10306		GTSP	19.35	42.70	2.70	12.90	319.0	407.520	3071.520
AMAX	401	New	Big 4 - Boiler	0.60	8.20	0.41	7.57	505.0	394.800	3069.720
AMAX	402	New	Big 4 - Rock Dryer	16.35	30.50	1.82	7.26	334.0	394.850	3069.770
AMAX	10403		Piney Point	37.80	61.00	1.90	13.40	322.0	348.500	3057.300
BPI	501	New	Brewster (Composite)	13.40	38.10	2.44	15.20	339.0	389.500	3068.000
BPI	10502		Brewster (Composite)	35.70	38.10	2.44	15.20	339.0	389.500	3068.000
CF	602	New	DAP	5.26	42.70	2.84	18.87	336.0	408.200	3082.000
CF	603	New	#7 H2SO4	26.29	61.60	2.44	9.79	351.0	408.200	3081.800
CF	10604		#3 H2SO4	25.20	34.50	1.30	15.00	316.0	408.200	3081.700
CF	10605		#6 H2SO4	18.14	63.40	2.13	6.87	351.0	408.100	3081.800
CF	10606		#4 H2SO4	21.87	34.50	1.30	15.00	316.0	408.300	3081.700
CF	10607		#5 H2SO4	23.18	63.40	2.13	6.87	347.0	408.200	3081.800
CF	10608		3-DAP	3.65	38.60	2.19	11.00	341.0	408.100	3082.100
CLM	701		Chloride Metals	21.02	30.00	0.61	20.00	375.0	361.800	3088.300
CSERVE	802	New	Conserve	42.00	45.70	2.30	10.30	352.0	398.400	3084.200
CSERVE	10803		Conserve	18.20	10.00	0.80	11.00	533.0	398.400	3084.200
CSERVE	10804		Conserve	17.20	24.40	1.70	5.00	330.0	398.400	3084.200
ELECT	10901		Electrophos	6.20	25.60	2.10	8.00	322.0	405.600	3079.400
ESTECH	11001		Estech SAP	32.20	30.80	2.10	3.90	358.0	411.500	3074.200
ESTECH	11002		Estech Dryer	51.50	18.50	3.00	7.00	340.0	411.500	3074.200
EVANS	1101	New	Dryer	9.37	25.90	1.00	17.30	346.0	383.300	3135.800
EVANS	11102		Dryer	24.60	25.90	1.00	17.30	346.0	383.300	3135.800
EVANS	11103		Boilers	28.70	12.20	1.10	11.90	505.0	383.300	3135.800
FARM	11202		1-2 H2SO4	56.42	30.50	1.40	20.73	316.0	409.500	3079.500
FARM	11203		3-4 H2SO4	20.75	30.50	2.29	11.04	347.0	409.500	3079.500
FARM	11204		DAP	1.52	39.30	2.29	10.56	330.0	409.500	3079.500
FCS	1301	New	Kiln and Power Plant	157.50	91.50	4.88	14.66	389.0	360.008	3162.392
FPC	1401	New	Crystal River	2017.60	182.90	6.90	27.40	398.0	334.400	3204.510
FPC	1402	New	Crystal River	-2173.00	152.40	4.60	45.60	420.0	334.400	3204.510
FPC	11403		Crystal River	4803.00	152.40	4.60	45.60	420.0	334.400	3204.510
FPC	11404		Higgins 1-3	523.80	52.90	3.80	7.70	424.0	336.500	3098.200
FPC	11405		#1 Anclote	1680.50	152.40	7.60	6.50	416.0	324.500	3118.600
FPC	11406		#2 Anclote	1680.50	152.40	7.30	15.60	416.0	324.500	3187.500
FPC	11407		Bartow 2	448.40	91.50	2.70	31.10	422.0	342.400	3082.700
FPC	11408		Bartow 3	710.00	91.50	3.40	29.10	430.0	342.400	3082.700
FPL	11501		FPL Manatee (Composite)	1465.80	152.10	7.90	20.70	425.0	367.100	3053.800

TABLE 7

SOURCES USED IN AIR QUALITY MODELING
(Continued)

Location	ID	Type	Description	SO2 (gm/sec)	Height (meters)	Diameter (meters)	Velocity (m/sec)	Temp. (deg K)	X-Coord (km)	Y-Coord (km)
GARD	1601	New	Gardinier (Composite)	-210.26	36.50	2.00	11.80	344.0	363.400	3082.400
GARD	11602		Gardinier (Composite)	413.60	29.40	2.10	9.10	333.0	363.400	3082.400
GCL	11701		Gulf Coast Lead	25.90	30.50	0.61	22.40	350.0	363.900	3093.850
GPI	11801		Gen'l Portland (Composite)	101.00	44.30	4.72	6.60	473.0	358.000	3090.600
IMC	1901	New	IMC Noralyn	30.64	13.70	1.22	40.40	330.0	414.700	3080.300
IMC	11902		IMC Noralyn	9.00	17.00	1.30	36.70	343.0	414.700	3080.300
IMC	11903		IMC Kingsford	11.60	21.30	2.10	12.90	344.0	398.200	3075.700
LKU	2001	New	Lakeland Utilities #1	393.60	76.20	4.90	19.70	354.0	408.500	3105.800
LKU	2002	New	Lakeland Utilities #2	21.20	47.70	3.10	11.70	389.0	408.500	3105.800
LKU	12003		Larsen 7	7.52	50.30	3.10	3.40	422.0	409.200	3102.800
LKU	12004		McIntosh 1	139.00	47.70	2.70	15.10	405.0	408.500	3105.800
LYKES	12101		Boilers (3)	152.60	22.90	1.40	18.20	441.0	383.500	3139.200
LYKES	12102		D1 & D2	57.60	22.90	0.90	27.80	345.0	383.500	3139.200
MOBIL	2201	New	Mobil	2.40	25.90	2.30	16.00	339.0	398.000	3085.300
MOBIL	12202		Mobil	56.50	30.50	2.00	11.00	350.0	398.000	3085.300
NWALES	2301	New	1 59 95 New Wales	57.75	60.70	2.60	13.40	349.7	396.560	3078.640
NWALES	2302	New	1 59 27 New Wales	3.78	52.40	2.40	13.00	321.9	396.750	3079.350
NWALES	2303	New	1 59 33 New Wales	5.36	52.40	2.40	7.10	319.1	396.830	3079.430
NWALES	2304	New	1 59 96 New Wales	5.54	36.60	1.80	20.80	319.1	396.450	3079.150
NWALES	2305	New	1 59 94 New Wales	57.75	60.70	2.60	13.40	349.7	396.490	3078.640
NWALES	12306		3 59 02 New Wales	42.00	61.00	2.50	10.00	350.2	396.600	3078.750
NWALES	12307		3 59 09 New Wales	0.82	36.60	2.10	15.60	319.1	396.540	3079.030
NWALES	12308		3 59 03 New Wales	42.00	61.00	2.50	10.00	350.2	396.530	3078.750
NWALES	12309		3 59 04 New Wales	42.00	61.00	2.50	10.00	350.2	396.450	3078.750
NWALES	12310		3 59 13 New Wales	4.88	29.00	1.70	17.20	564.1	396.560	3078.810
NWALES	12311		3 59 10 New Wales	1.89	36.60	1.80	20.40	325.2	396.550	3079.150
PTI	2401	New	Phostech	2.84	27.40	1.00	29.00	322.0	405.200	3078.500
TECo	2601	New	Big Bend 1-3 RED.	-1764.00	149.40	7.30	12.90	415.0	361.500	3075.000
TECo	2602	New	Big Bend 4	436.50	149.40	7.32	20.00	342.0	361.600	3075.000
TECo	12603		Big Bend 1-3 B.L.	8064.00	149.40	7.30	12.90	415.0	361.500	3075.000
TECo	12604		Gannon (Composite)	1649.60	93.30	3.90	26.50	430.0	360.000	3087.500
TECo	12605		Hookers Pt. (Composite)	388.90	85.40	3.40	15.90	402.0	358.000	3091.000
WRG	2702	New	5-6 H2SO4	39.69	61.00	2.80	8.46	350.0	409.900	3086.800
WRG	12702		DAP	3.51	40.40	3.35	13.37	329.0	409.800	3068.800
WRG	12703		300X	6.27	30.50	2.03	14.54	329.0	409.900	3086.900
WRG	12704		Dryer	24.40	15.30	2.10	41.73	333.0	409.600	3085.900
WRG	12705		#4 H2SO4	22.28	61.00	2.80	8.46	350.0	409.900	3086.900

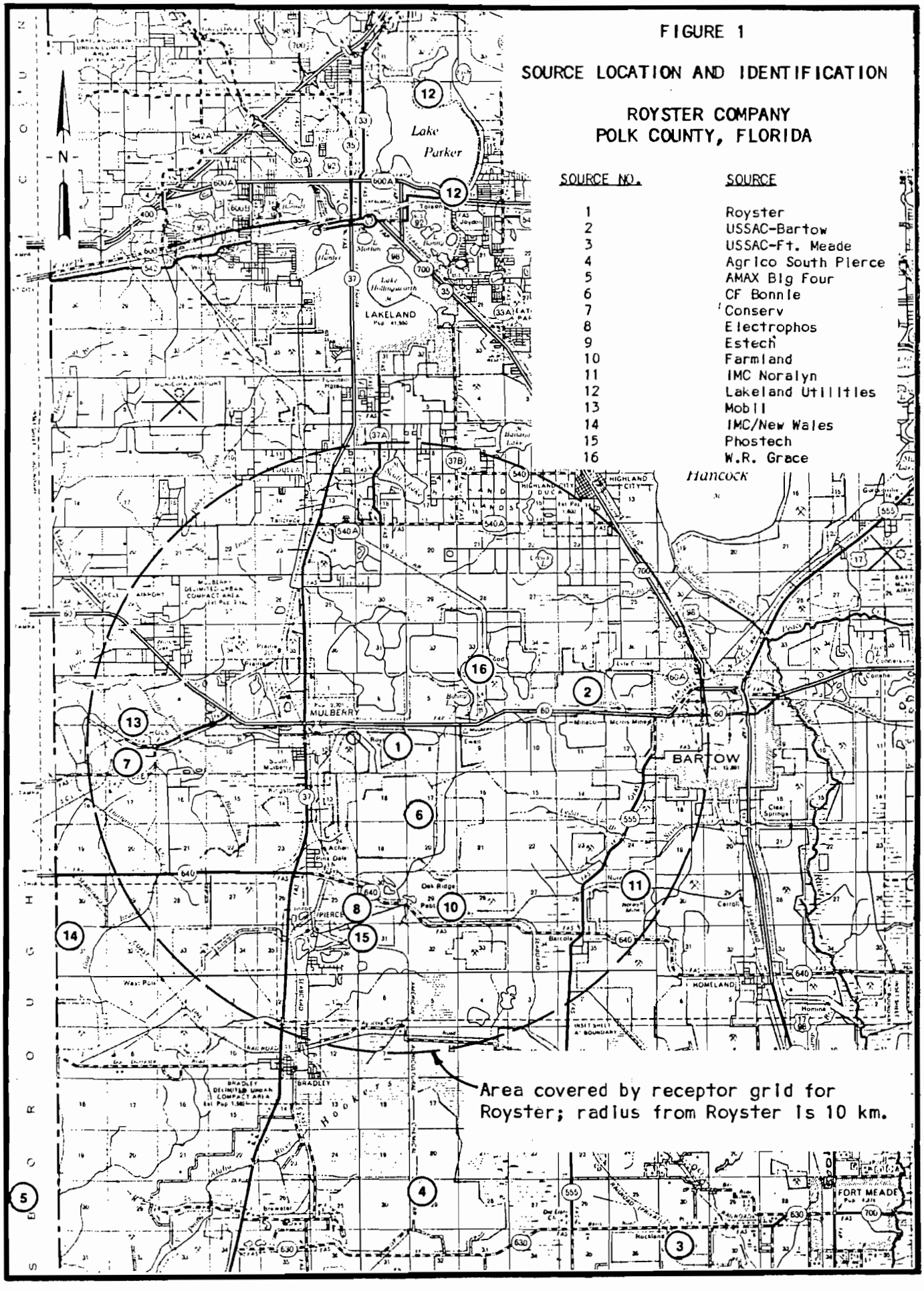
TABLE 8

SUMMARY OF SULFUR DIOXIDE IMPACTS FROM ALL SOURCES WITHIN 50 KM OF ROYSTER

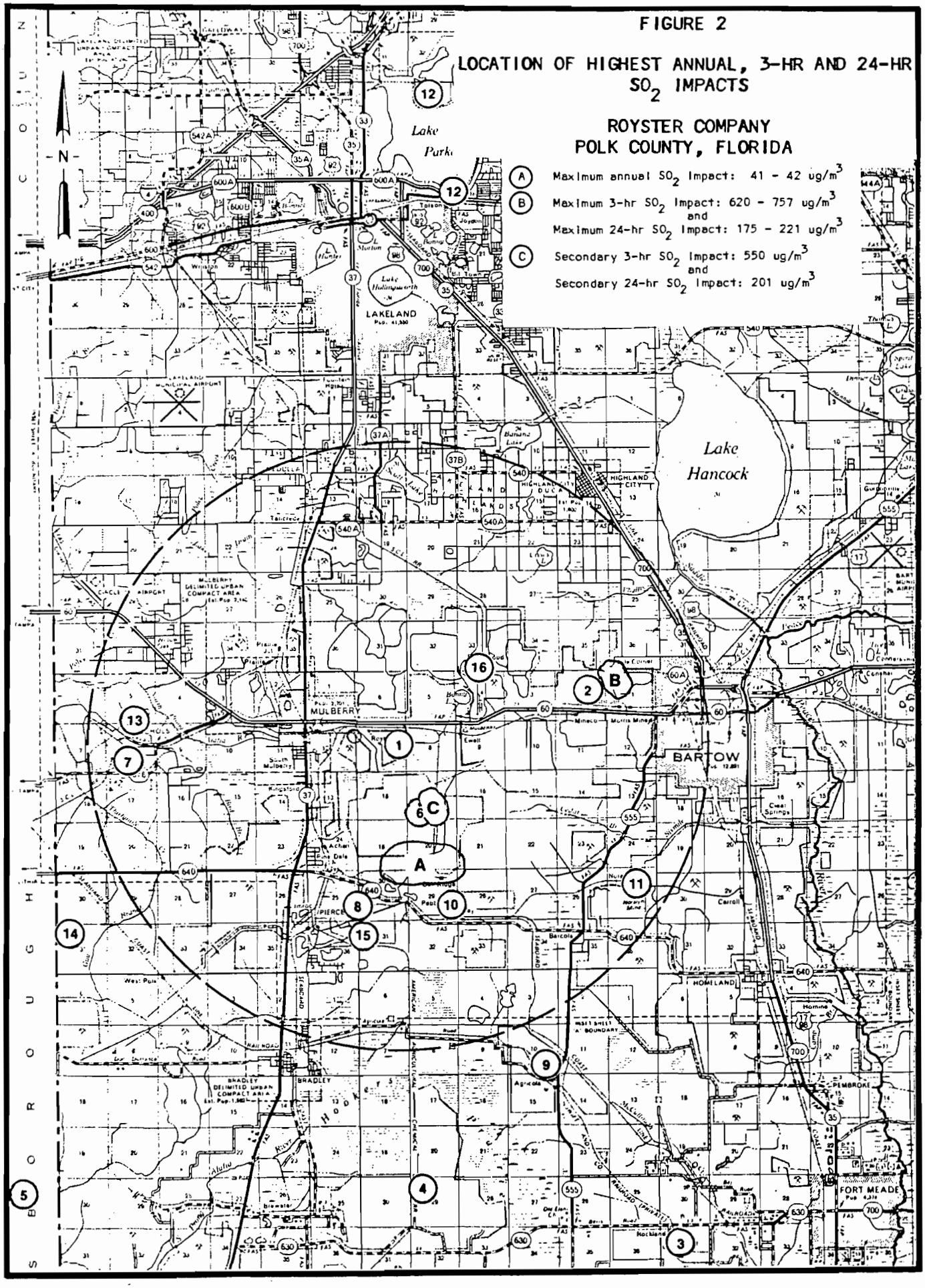
ROYSTER COMPANY
POLK COUNTY, FLORIDA

Year	Annual			3-Hr			24-Hr		
	Royster		All	Royster		All	Royster		All
	Impact‡ (ug/m^3)	Area Influence (km)	Source Impact‡ (ug/m^3)	Impact‡ (ug/m^3)	Area Influence (km)	Source Impact‡ (ug/m^3)	Impact‡ (ug/m^3)	Area Influence (km)	Source Impact‡ (ug/m^3)
1974	1.3	<4.0	41.5	123	<10.0	701	18	~10.4	221
1975	1.5	<4.0	41.5	72	7.5	674	18	~10.6	175
1976	1.6	<7.5	42.0	95	<7.5	757	18	~10.1	207
1977	1.8	<7.5	42.0	79	<10.0	620	17	~13.1	215
1978	1.9	<5.0	41.1	94	<10.0	550	20	~11.9	201
Std.	60	1.0 ug/m^3	60	1300	25 ug/m^3	1300	260	5 ug/m^3	260

SHOLTES & KOOGLER



SHOLTES & KOOGLER



SHOLTES & KOOGLER

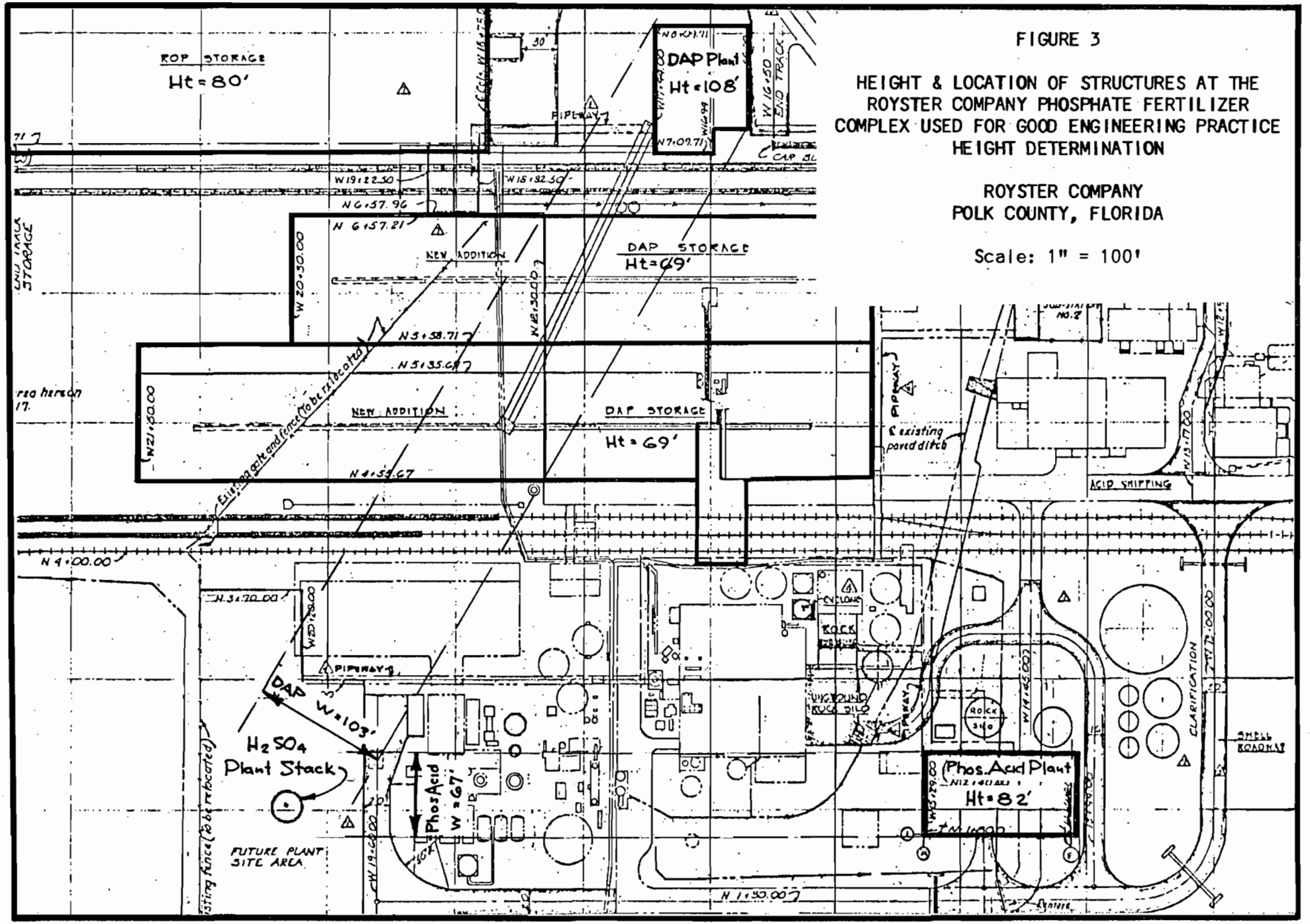
Best Available Copy

FIGURE 3

HEIGHT & LOCATION OF STRUCTURES AT THE ROYSTER COMPANY PHOSPHATE FERTILIZER COMPLEX USED FOR GOOD ENGINEERING PRACTICE HEIGHT DETERMINATION

ROYSTER COMPANY
POLK COUNTY, FLORIDA

Scale: 1" = 100'



SHOLTES & KOOGLER

ROBERT W. HEINZ
VICE PRESIDENT, FLORIDA OPERATIONS

Royster

DER

JUN 21 1984

BAQM

June 19, 1984

Mr. Clair Fancy, P.E., Deputy Chief
Bureau of Air Quality Management
F.D.E.R.
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

Dear Mr. Fancy:

The increase in sulfuric acid production which Royster Company is contemplating with the planned revisions will not significantly change the processing of P_2O_5 in the phosphoric acid plant. Attached are data and calculations which illustrate this.

Royster has purchased supplemental sulfuric acid for P_2O_5 processing at varying quantities in past years. Market requirements have most generally controlled the requirement, however, sulfuric acid plant performance has in some cases been the controlling factor. As can be seen from the data and calculations there will not be a requirement for PSD review since emissions from the phosphoric acid plant will not increase by 3TPY.

The modifications planned for the phosphoric acid plant are not to increase production of P_2O_5 but to conserve steam. The modification is to convert the plant from a Prayon dihydrate to a Fisions hemi-hydrate type plant with approximately the same or even less potential P_2O_5 processing capacity. Essentially this is to be accomplished with existing equipment rearranged in flow lines and by changing the plant process control parameters of concentrations and temperature.

The only new equipment planned that would require permitting is an additional attack section scrubber. Design of this scrubber by the engineering/construct firm has at this time not been accomplished. As a matter of fact there has not been a contractual commitment made for the plant conversion. The design is to be based on the new source standards for phosphoric acid plants. As soon as we have the scrubber design, an application for a Permit to Construct will be submitted.

If you have further questions or need clarification of any of the data presented please contact me.

Very truly yours,

T. R. Schmalz, P.E.
Manager of Engineering and
Environmental Services

TRS:sk

cc: R. W. Heinz
R. T. Van Arsdall
Bill Thomas
John Koogler
File

6/12/84
TRS

H_2SO_4 Consumption – Five Year History

Fiscal Year	Production Short T.	Purchased S.T.	Total Used S.T.
'80	439 858	27 649	467 507
81	423 439	40 612	464 051
82	452 641	6202	458 843
83	427 640	5384	433 024
'84	490,000*	12264	502 264

* Actual through June 7: 462,253 additional 30,000 T projected for balance of year.

Historical Acid Consumption: 2.74 T H_2SO_4 / T P_2O_5 Rec.

Operating Factor: 96 % } H_2SO_4 Plant

Operating Days/Yr: 350 ± }

For 1984 Fiscal

$$\frac{502,264 \text{ T. } H_2SO_4}{2.74 \text{ T } H_2SO_4 / \text{T } P_2O_5} = 183,308 \text{ T. } P_2O_5 \text{ Rec.}$$

Phos. Acid Plant Recovery: ≈ 90%

183,308 / .90 = 203,675 P_2O_5 in Pot

6/12/84
TRS

1600 TPD x 350 x 0.96 = 537,600 TPY H_2SO_4

$\frac{537,600}{2.74}$ = 196,204 / .90 = 218,000 TPY P_2O_5 IN

218,000 - 203,675 = 14,330 TPY P_2O_5

POTENTIAL INCREASE

PRESENT LEVELS OF F EMISSION: ≈ 0.01 # F/T P_2O_5 IN PUT

POTENTIAL EMISSIONS INCREASE: $\frac{14,330 \times .01}{2000}$ = .07 TONS

WELL BELOW THE 3 TPY SIGNIFIGANT EMISSION RATE OF F.A.C. 17-2.500.

BASED ON NEW SOURCE STANDARD OF 0.02 # F/T P_2O_5 IN:

POTENTIAL EMISSIONS INCREASE:

$(218,000 \times 0.02) - (203,675 \times 0.01)/2000$ = 1.16 TPY F/T P_2O_5

POTENTIAL EMISSIONS INCREASE EVEN IF EMISSIONS REGRESS TO NEW SOURCE STANDARDS, STILL LESS THAN SIGNIFIGANT EMISSION RATE.

Best Available Copy

COMPLIANCE TESTS FOR PAP SCRUBBER

	lbF/hr	Rock rate T/D	- % P_2O_5 T/D	= T/Hr	lbF/T P_2O_5	*Annual Operations Report lbF/T P_2O_5
80	0.141	2100	651	27.1	0.005	0.009
	0.104	1898	588	24.5	0.004	
81	0.213	2099	651	27.1	0.008	0.011
	0.155	2100	651	27.1	0.006	
82	0.16	2100	651	27.1	0.006	0.007
	0.0647	1898	588	24.5	0.003	
83	0.215	1917	594	24.8	0.009	0.006
	0.123	1860	577	24.0	0.005	

New Source

0.02 lbF/T P_2O_5

6/12/84

[signature]

* VALUE BASED ON AVERAGE OF ALL TESTS (BASICALLY MONTHLY) PERFORMED DURING THE YEAR.

file

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

June 13, 1984

Mr. T. R. Schmalz
Royster Company
Post Office Drawer 797
Mulberry, Florida 33860

Dear Mr. Schmalz:

Confirming the June 11 conversation you had with Willard Hanks, the Department believes the proposed modifications to Royster's phosphoric acid plant will require a permit to construct. If the actual emissions of fluoride increase by more than 3 TPY, the source will be subject to Prevention of Significant Deterioration (PSD) regulations. The increased sulfuric acid production from the modified sulfuric acid plant cannot be used in Royster's existing phosphoric acid plant until all permitting requirements are complied with.

We request you send a description of Royster's plans that involve construction or operation of any existing or proposed phosphate plant operation. Include the actual, permitted and proposed emissions of any criteria air pollutants and fluorides from the sources. With this information, the department will be able to tell Royster which units will need construction permits and what air pollution control regulations they will be subject to.

If you have any questions on this matter, please call Willard Hanks at 904/488-1344.

Sincerely,

Clair Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

WH/agh

cc: Bill Thomas
John Koogler

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due: _____	Date Due: _____	

TO: Clair Fancy

THROUGH: Bill Thomas, SW District

FROM: Bob Garrett, SW District

DATE: June 12, 1984

SUBJECT: Comments on Royster Phosphates, Sulfuric Acid Plant Expansion Program

Over the past 10 years Royster has increased their original 900 TPD to 1100 TPD H_2SO_4 production. Mr. Thomas is concerned about the effects of the use of this extra H_SO_4 acid. It is to be used to manufacture more phosphoric acid and is this to be used to manufacture more DAP, etc? This could possibly trigger NSR for fluorides on these other activities without their knowledge.

We recommend asking the source about their intentions at this point, and, as Mr. Thomas pointed out, to find out what other expansions of this sort will do such as USS Agricems sulfuric acid production increase.

RGG/scm

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) Claire Tansey W. Ward 6/19	Initial / Date
2.	Initial / Date
3.	Initial / Date
4.	Initial / Date

REMARKS: What do you think about this?

DER
JUN 18 1984
BAQM

6-19-84

Our 6/14/84 letter (attached) addressed this situation. Please return.

mmd

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM:

DATE

PHONE

ROBERT W. HEINZ
VICE PRESIDENT, FLORIDA OPERATIONS

Royster

June 8, 1984

Mr. C. H. Fancy, P.E., Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, Florida 32301-8241

Dear Mr. Fancy:

Pursuant to your letter of May 24, 1984 we wish to inform you that Items A. through E. of your letter of May 2, 1984 are to be addressed by the environmental consulting firm of Sholtes and Koogler with whom you are acquainted.

In the meanwhile in order to expedite our field construction schedule which requires commencement this summer we would request that some form of permission to proceed with construction be issued by the D.E.R. This could be as a Permit to Construct with conditions not to operate at the higher rates until completion of the PSD review or it could be as a letter.

In any event construction work directly on the existing plant would not be performed until that time when all of the new equipment is in place. At that time there will be a plant shut-down with tie-ins made between the existing and new equipment. This tie-in period is scheduled for the summer of 1985 and to be of three-four week duration. In one sense it could be said that no construction work on the existing plant is to be done until that tie-in period to occur a year hence.

Please let me know your position regarding this at your earliest convenience.

Very truly yours,

T. R. Schmalz, P.E.
Manager, Engineering &
Environmental Services

cc: R. T. Van Arsdall
R. W. Heinz
John B. Koogler
Bill Thomas - DER, Tampa

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 24, 1984

Mr. T. R. Schmalz
Engineering and Enviromental Services
Royster Company
P. O. Drawer 797
Mulberry, Florida 33860

Dear Mr. Schmalz:

Your reply to our May 2 letter in which we requested additional information on the proposed modification to Royster's sulfuric acid plant, shows the sulfur dioxide and sulfuric acid mist emissions will increase by more than the significant emissions rates listed in Table 500-2 of Chapter 17-2, FAC. Therefore, the proposed modification is subject to review under Rule 17-2.500, FAC, Prevention of Significant Deterioration (PSD). Please furnish us the information requested in items A through E of the Department's May 2 letter to you.

Modeling will be required to determine increment consumption (item B) and the ambient air quality standard analysis (item C). If you have any questions on the additional information needed to complete Royster's application, please call Willard Hanks or Tom Rogers at (904)488-1344.

As soon as you furnish the rest of the information requested in our May 2 letter, we will resume processing your application.

Sincerely,

C. H. Fancy, P.E.

CHF/WH/s
cc: Bill Thomas, SW District

No. 0156510

RECEIPT FOR CERTIFIED MAIL

**NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL**

(See Reverse)

SENT TO: Mr. T. R. Schmalz	
STREET AND NO.	
P.O., STATE AND ZIP CODE	
POSTAGE	$
CONSULT POSTMASTER FOR FEES — CERTIFIED FEE	¢
OPTIONAL SERVICES — SPECIAL DELIVERY	¢
OPTIONAL SERVICES — RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE — SHOW TO WHOM AND DATE DELIVERED	¢
RETURN RECEIPT SERVICE — SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
RETURN RECEIPT SERVICE — SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE — SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$
POSTMARK OR DATE	5/24/84

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
   - ☒ Show to whom and date delivered..... ¢
   - ☐ Show to whom, date and address of delivery.... ¢
   - ☐ RESTRICTED DELIVERY
     Show to whom and date delivered..... ¢
   - ☐ RESTRICTED DELIVERY.
     Show to whom, date, and address of delivery.$

   (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
   Mr. T. R. Schmalz
   P. O. Drawer 797
   Mulberry, FL 33860

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0156510	

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE ☐ Addressee ☒ Authorized agent

Floyd Lewis

4. DATE OF DELIVERY: 5-29-84 — POSTMARK

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS: GO

☆GPO : 1979-300-459

ROBERT W. HEINZ
VICE PRESIDENT, FLORIDA OPERATIONS

Royster

May 9, 1984

CERTIFIED MAIL

DER
MAY 14 1984
BAQM

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, Florida 32301-8241

Dear Mr. Fancy:

The additional information which was requested in your certified letter of May 2, 1984 is herewith transmitted. The five items which were requested are addressed in the enclosures.

In the second part of the letter there were other items which were indicated as possibly being required if PSD review is necessary. We presumed that Standards of Performance for New Stationary Sources would apply in this case and the application for Permit to Construct reflects this in the entries on page 3 of 6, Item D. Items A through E will require that we retain a consulting firm to perform since we do not have in-house expertise. As for Item F, to the best of my knowledge the E.P.A. has designated that for contact sulfuric acid plants the double absorption process, which is what the Royster Plant is, is B.A.C.T. To answer Item G continuous stack monitoring is presently required for our operations. Certification tests were performed for our DuPont 460 Analyzer System and results were submitted to Mr. Robert Garrett, DER in September, 1981. It has been in continuous service and will be in use also after the modifications.

If the department is going to require that a full blown PSD review be performed it would be appreciated that we know this as soon as possible so that we can proceed.

Very truly yours,

T. R. Schmalz, P.E.
Manager, Engineering &
Environmental Services

cc: Bill Thomas, Southwest District
Florida DER
7601 Highway 301 North
Tampa, Florida 33610 (w/enclosures)

Information submitted as requested for Items 1 through 5, reference FDER letter of May 2, 1984.

Item 1.

The actual emissions of sulfur dioxide and acid mist from all sources in the December, 1977 period are somewhat difficult to define. This period was during the "Purasiv" debacle and emissions at any given time were dependent on what the "Purasiv" performance was at the moment.

Enclosed is a listing of stack tests performed on the sulfuric acid plant during 1977 and 1978 which show low SO_2 emissions of less than 1#/T H_2SO_4 to high emissions of as much as 80#/T H_2SO_4 while producing approximately 1000 TPD of 100% basis H_2SO_4. Acid mist emissions also show a wide variation in values during the period in question from lows of 0.03#/T H_2SO_4 to highs of 7#/T H_2SO_4. It cannot be recalled why there were no tests conducted in December of 1977, but it is surmised that requirements for testing in other plant areas plus the shortened month due to holidays probably are the reason for this void in the data.

Best Available Copy Item I – Exhibit

for Plant
Bellflower Dys.
3/25/80
[illegible]

Form 106

SULFURIC ACID STACK

Date	Stack Volume dry CFM 68°F, 1 atm	Emission SO_2 by Volume Lab	Photometric		100% H_2SO_4 Tons/Day	Specific Emission lb SO_2/Ton H_2SO_4	lb Mist/Ton H_2SO_4
1/5/77	79300	90.7 ppm	?	PuraSiv on stream	1025	1.68	0.0245
2/11	89400	85.2 ppm	4 ppm	"	1249	1.46	0.254
				~~3 Day Avg =~~	~~12[illegible] =~~	~~75.[illegible] =~~	~~0.5[illegible]~~
2/15	88100	0.44%	0.50%	— Low →	1201	76.5	0.52
3/4	88400	434. ppm	12 ppm	PuraSiv on stream	1160	7.91	0.205
3/11	77000	0.39%	?	—	1163	30.5	0.56
4/13	76400	162. ppm	12 ppm	PuraSiv on stream	850	3.36	0.29
4/19 (PuraSiv Down)	76100(?)	0.45%	0.54%	PuraSiv Down	1070	76.5	0.16
5/6	66500 (61966 SCFM)	0.57%	0.49%	PuraSiv Down	1185	~~66.5~~ 68.1	0.48
			Mist by Vol @ 20°C		~~1144~~	~~20.5~~	~~0.0[illegible]~~
5/26	93300 (86939 SCFM)	105 ppm	2.29 ppm 9.3 mg M./M^3	PuraSiv on stream	~~1054~~	~~22.2~~	0.0740
5/27	91600 (85355 SCFM)	722 ppm	3.15 ppm 12.8	"	1245	12.8	0.0848
5/31	87000 (81068 SCFM)	359 ppm	10.7 ppm 43.4	"	1158	6.99	0.293
6/16	69200 (64482 SCFM)	0.46%	15.9 ppm 64.9	PuraSiv Down 235	1086	70.6	0.37
6/30	78900 (73,520 SCFM)	121 ppm	4.0 ppm 16.3	PuraSiv on Stream	1160	1.97	0.10
7/27	76400 (71,191 SCFM)	95.2 ppm	9.0 ppm 36.7	"	1132	1.54	0.22
9/15	74400	550 ppm	12.5 ppm 51.1	" 2342	1010	9.70	0.34
10/6	68700	0.52%	85.8 ppm 349.	PuraSiv Down	991	82.2 – wow!!!	2.2
10/27	64200	0.24%	113. 457.2	PuraSiv Down 195	754	40.6	2.9

Sulfuric Acid Stack

Form 10[illegible]

Date	Stack Volume dry CFM 68°F, 1 atm	Emission SO_2	Emission Acid Mist mg/scm		Actual Production Tons/Day	Specific Emission lb SO_2/Ton H_2SO_4	Specific Emission lb Mist/Ton
11/1/77 1/1/77	60700	1.6 %	793	Purasiv on stream	10.0 441	218.8	4.1
← Boiler Tube Failure							
11/11 1/11	64200	0.38%	1198	Purasiv not on Stream	959	61.2	7.2
11/14 1/14	57000	212. ppm	11	Purasiv on Stream	968	2.98	0.059
11/15 1/15	68600	51. ppm	3	Purasiv on Stream	949	0.885	0.0215
11/28 1/28	74400	44. ppm	11	Purasiv on Stream	1116	0.695	0.0657
11/29 1/29	Tests 77700	36 ppm	19	Purasiv on Stream	17.33 hr 724 / 24 hr 1003	0.656 ~~0.906~~	0.133 ~~0.185~~
Diff compliance	78200	90 ppm	122		Prodn Rate	1.69 ~~2.34~~	0.854 ~~1.18~~
	78200	46 ppm	99			0.865 ~~1.20~~	0.692 ~~0.956~~

Ex. 175e
for Ident.
Bellflower Depo.
3/25/80
JSO

Item 1 – Enclosure

Date	Stack Volume dry CFM @ 65°F, 1 atm	Emission SO_2	Acid Mist mg/scm	Actual Production Tons H_2SO_4/operating day	Specific Emission lb SO_2/ton H_2SO_4	lb Mist/ton
1/18/78	78800	108 ppm	9.2	1010	2.02	0.065
2/2	77800	576	16.3	995	10.78	0.11
2/27	72700	352	9.7	977	6.27	0.065
3/28	88900	17	11.4	963	0.38	0.095
4/14	79400	60	4.4	925	1.24	0.034
5/17	76400	408	41.9	298	8.61	0.33
5/30	78300	132	4.6	901	2.74	0.036
6/21	81500	15	11.0	901	0.34	0.090
7/28	72900	222	36.	867	4.46	0.27
8/2	76100	200	9.0	843	4.32	0.073
8/18	72200	910	149.	248	(14.1)	0.86
	Economizer tube failure				Due to frequent downtimes & lack of operating personnel to keep acids in good shape	
8/31	80960	503	3.6	440	(12.2)	0.033
9/19	76200	729	28.	816	(16.3)	0.23
					9/25 @ 2130 Aunsis taken off stream	
9/29	62800	1908	41.3	830	35.1	0.29
10/2	63000	1531	64.0	678	29.6	0.46
10/8	59600	1930	35.6	726	36.9	0.26
10/10	66000	1890	30.8	845	33.2	0.20

Date	Stack Volume dry CFM @ 68°F, 1 atm	Emission ppm SO_2	Emission Acid Mist mg/cu M	Prodn Rate ton H_2SO_4/per day	Specific Emission lb SO_2/ton H_2SO_4	Specific Emission lb Mist/ton
10/16/78	62700	1872	31.2	892	31.5	0.20
10/27	63000	1812	48.7	864	31.6	0.32
Double Absorption on Stream						
12/15	57700	97	40	1171	1.15	0.18
12/22	69,500	199	9.6	1420	2.34	0.04

Item 2.

AC 53-2584 Issued : December 16, 1974
Expired: September 16, 1975

Purpose of construction: Install SO_2 Recovery unit (Purasiv) in order to meet existing source emission limits.

* Permitted production rate: 1003 TPD - 100% H_2SO_4

* Restriction in operating hours: None

* Allowable emissions of SO_2: 10030#/Day

* Allowable emissions of Acid mist: N.A.

Actual emissions of SO_2: 1178#/Day

Actual emissions of Acid Mist: 616#/Day

AC 53-6458A Issued : August 28, 1978
Expired: August 30, 1979

Purpose of construction: Install double absorption equipment due to failure of the Purasiv unit to perform consistently to meet production and emission requirements.

* Permitted production rate: 1400 TPD - 100% H_2SO_4

* Restriction in operating hours: None

* Allowable emissions of SO_2: 504#/HR.

* Allowable emissions of acid mist: N.A.

Actual emissions of SO_2: 215#/HR.

Actual emissions of acid mist: 3.75#/HR.

---

* Operating conditions were not stipulated in the Construction Permits, but in subsequent Operation Permits.

The actual emissions were determined by stack testing the data and which was submitted to DER for demonstration of compliance.

Item 3.

Enclosed are copies of the contract documents describing the waste heat boiler. On the process diagram submitted with the application for Permit to Construct [supplement 3.] it is labeled BOILER.

Item 4.

Also enclosed is a copy of the cooling tower specifications. The alternate bid was selected for purchase and a purchase order has been issued. Drift loss is specified to be 0.2% of circulating flow.

5.3 STEAM GENERATION EQUIPMENT

Fire-tube Boiler complete with inlet chamber (01-F-003) and Steam Drum

Refer to Data Sheet, Page 5-9A

The fire-tube boiler/steam drum system shall be designed to recover heat from the hot sulfur furnace exit gas and to cool the gas to the first catalyst pass inlet temperature. Steam shall be generated at a nominal boiler pressure of 900 psig.

The boiler shall be of single pass design. Fouling resistance shall be minimum of 0.002°F ft^2 hr/Btu for the tube side based on the inside diameter of the tubes and 0.0005°F ft^2 hr/Btu for the shell side based on the outside diameter of the tubes.

The boiler shall incorporate a natural circulation system consisting of the boiler and elevated steam drum connected by multiple riser and downcomer circulation piping. The minimum circulation ratio shall be 15 to 1. The varying rate of steam generation along the length of the boiler is recognized in sizing and arranging risers and downcomers. Nozzle arrangement shall be such that each riser handles approximately equal mass flow rates from the tube bundle. The riser and downcomer adjacent to the inlet tubesheet is arranged to provide adequate cooling of the tubesheet and prevent vapor blanketing. Maximum water velocity in a downcomer shall be 6.5 ft/sec. Number and size of the riser pipes are such that plug or slug two phase flow regimes are avoided at all loads between design steam production and 60% steam production. Minimum clearance between the centerline of the outermost tube and inside diameter of the shell shall be 4" to facilitate steam release. Riser connections shall be positioned on the top centerline

of the boiler shell. Downcomer connections shall be positioned radially, baffled to prevent tube erosion, and directed internally for uniform distribution across the tube bundle. Sufficient risers and downcomers shall be placed on each side of tube support baffles for proper operation of the boiler.

Shell side and steam drum design pressure shall be normal operating pressure (psig) divided by 0.9 plus the static head of liquid from the top of the elevated steam drum to the bottom of the boiler (based on water with a 1.0 sp. gr.). Shell side and steam drum design temperature shall be the larger of the temperatures corresponding to saturation temperature at a pressure equal to the design pressure or the normal operating temperature plus 40°F. Tubeside design pressure shall be equal to the maximum pressure developed by the main blower under shut-off conditions. Tubeside design temperatures (inlet and exit channels) shall be: for internally lined channels with internal and/or external insulation, the larger of the calculated metal temperature or 650°F; for channels without internal lining, operating temperature plus 50°F.

The inlet channel of the boiler shall be refractory lined. The type of refractory used shall be suitable for the gas temperature, pressure, and composition. The lining shall be such that the channel metal temperature is maintained between 400°F and 600°F. The exterior of the boiler shall be insulated to conserve heat and for personnel protection. The inlet tubesheet shall be refractory lined on the hot face and ceramic ferrules will be inserted in each tube. The minimum thickness of the ferrule shall be 1/8". The ferrules shall extend a minimum distance of 2½" inside the water side face of the tubesheet.

A corrosion allowance of 1/16" shall be added to all shellside and steam drum components (except the tubes) and to all tubeside components. Channels shall be minimum 3/8" thickness. Shellside and steam drum materials shall be carbon steel conforming to the applicable specifications listed in Section 1 of the ASME Code and carbon steel plate material thicker than 5/8" shall be in accordance with ASME specification SA 516 Grade 70; carbon steel flanges and forgings shall be in accordance with specification number SA 105; carbon steel pipes shall be in accordance with ASME specification SA 106 Grade B or C. Channel material shall conform to the applicable specifications listed in Section VIII of the ASME code and for design temperatures above 700°F but less than 900°F, ASME specification SA 515 Grade 70 for plate, SA 105 for forgings. Tubesheet material shall be SA 515 Grade 70. Tube material shall be SA 178A.

The tubes shall be expanded, strength welded and re-expanded into flanged tube sheets. The depth of the tube to the tube sheet welds shall be a maximum one third of tube sheet thickness. The material of the channel shell shall be preheated in accordance with ASME Code. The shell shall be post weld heat treated after completion of welding with temperature and hold times in accordance with ASME Code, Section 1, Power Boilers.

Tube supports shall be provided as required to prevent tube vibration in accordance with the standards of Tubular Exchanger Manufacturers Association, latest Edition. Each tube support plate shall support every tube and be circumferentially trimmed to give maximum possible clearance to the inside diameter of the shell. Tube support plates shall be positioned along the length of the shell in such a manner that they shall not interfere with the recirculation between the inlet and outlet nozzles in any section of the boiler.

Ductwork connections shall be reinforced at the junction to the channel using reinforcing pad. Access to the internal refractory and to the tube to tubesheet joints shall be by flanged manway (minimum 24" inside diameter of refractory) located in the head of each channel.

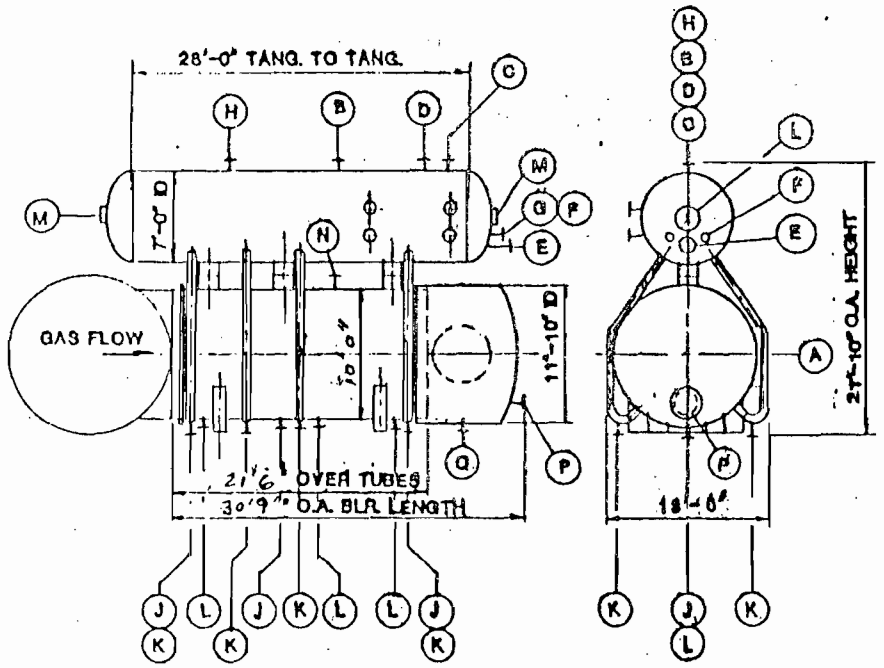
Shellside connections include: a 2" start-up steam connection, with blind flange, on the bottom centerline of the shell with internal sparger pipe; two 1½" blowdown connections located as close as possible to the waterside face of each tubesheet on the bottom centerline of the shell; one 1½" drain connection, with blind flange, on the bottom centerline of the shell; two 6" pad on shell type inspection openings located as close as practical to the waterside face of each tubesheet on the horizontal centerline of the boiler.

Each shellside opening shall be reinforced for the pressure and temperature stamped on the boiler and for the test conditions. Each manway shall be fitted with a davit.

Steam shall be released and separated in the drum by means of steam separation systems of proven design. The steam drum shall include all necessary nozzles, two 24 inch diameter manways, steam baffles, mesh type steam purifier, internal feedwater distribution pipe, continuous blowdown and stainless steel chemical feed pipe. The drum shall be sized to retain an amount of water equal to a minimum of 7 (seven) minutes operation at design steaming rate, measured from the low trip point (shutdown setting) level to the downcomer piping off-takes.

Suitable instrumentation, piping, valves, relief valves and drains shall be included for an operable system.

External insulation for fire tube boiler and steam drum shall be furnished.



MK.	SIZE	QTY.	SERVICE
A	60"	1	GAS OUTLET
B	8"	1	STEAM OUTLET
C	3"	1	SAFETY VALVE
D	4"	1	SAFETY VALVE
E	6"	1	BLR. FDWTR. W/INT. PIPE
F	1"	1	CONT. BLOWDOWN W/INT. PIPE
G	3/4"	1	CHEMICAL FD. W/INT. PIPE
H	1 1/2"	1	VENT
J	2"	3	BLOW - OFF
K	1 1/2"	8	DOWNCOMER DR. W/BF
L	8"	3	HANDHOLE W/BF
M	24"	2	MANWAY W/DAVIT
N	20"	1	MANWAY W/DAVIT
P	24"	1	MANHOLE W/FLANGE
Q	2"	1	CHAMBER DRAIN

NOTES:
1. ALL DIMENSIONS ARE APPROXIMATE.

MATERIALS	
FIRE TUBE BOILER	
SHELL	SA-516-70
FRONT TUBE SHEET	1 STAINLESS STEEL REFRACTORY CUPS, ZIRCONIUM SILICATE FERRULES
OUTLET TUBE SHEET	SA-516-70
TUBES	SA-178A
GAS INLET CHAMBER	SA-516-70 THREE LAYERS OF BRICKLINING
GAS OUTLET CHAMBER	SA-516-70
TUBE BUNDLE DIAMETER	10'0"
TUBE BUNDLE LENGTH	21'6"
TUBE DIAMETER	2" OD x .220" MIN WALL
NUMBER OF TUBES	1328
STEAM DRUM	
SHELL	SA-516-70
INTERNALS	-
DIAMETER	84" ID
LENGTH	28'-0" TL/TL
EXTERNAL INSULATION	MINERAL WOOL W/ ALUMINUM JACKET FIELD INSTALLED

DESIGN DATA (APPROXIMATE)		
STEAM		
STEAM GENERATED	174800	LBS/HR
OPERATING PRESSURE	914	PSIG
DESIGN PRESSURE	1000	PSIG
HYDROSTATIC PRESSURE	1500	PSIG
OPERATING TEMPERATURE	536	°F
DESIGN TEMPERATURE	555	°F
CONTINUOUS BLOWDOWN	2	%
TOTAL HEAT	126.9 (10)^6	BTU/HR
HEATING SURFACE (INTERNAL)	11356	SQ. FT.
GAS		
TOTAL GAS	378000	LBS/HR
GAS INLET PRESSURE	169	"H_2O
GAS PRESSURE DROP	18.5	"H_2O
GAS TEMPERATURE INLET	2084	°F
GAS TEMPERATURE OUTLET	480	°F

LURGI CORPORATION
EASTERN DIVISION

BOILER 01-E-003
STEAM DRUM 01-V-004
PROPOSAL NO.

COOLING TOWER INSTITUTE
INQUIRY & BID FORM
Mechanical Draft Water-Cooling Tower

Customer	Manufacturer
LURGI CORPORATION 666 KINDERKAMACK ROAD RIVER EDGE, NJ 07661 ATTN: STEVEN G. HAYNES SUBCONTRACTS BUYER	LILIE-HOFFMANN COOLING TOWERS, INC. 186 E. KIRKHAM ST. LOUIS, MO. 63119 PHONE: 314 - 962-3872
Inquiry No. 2-6012-S-003-23	Proposal No. 9248-7636G
Date: Orig. 1/30/84 Rev.	Date: Orig. 2/24/84 Rev.

All data set forth herein is in accordance with definitions and standards published by the Cooling Tower Institute.

Symbol * = minimum information to be filled-in by customer, other items may be specified at customer's option.

GENERAL	BASE BID HEAVY DUTY INDUSTRIAL CTI CODE TOWER	ALTERNATE BID
Selection		
Tower Model	S15M-3240-2	S16M-4848-2
Type	INDUCED DRAFT COUNTERFLOW	
DESIGN & OPERATING CONDITIONS		
*Circulating Water Flow, U.S. GPM	14,300	23,000
*Hot (inlet) Water Temp. F.	115	115
*Cold (outlet) Water Temp. F.	90	90
*Wet Bulb Temp. F., Inlet	80	80
Ambient		
Tower Pump Head, Ft.	20.7	21.5
Total Fan B.H.P., (Driver Output)	116.4	190.4
Drift Loss, % of circulating flow	0.2	
Evaporation Loss (at design)	2.5%	
*Design Wind Load, Lbs./sq. ft.	30	
Mi./hr.	100	
*Design Seismic Load, % G	---	
*Tower Site (ground level, roof, etc.)	GROUND LEVEL	
*Elevation Above Sea Level, ft.	0	
*Tower Exposure	UNOBSTRUCTED	
STRUCTURAL DETAILS		
Number of Cells	2	2
Fans per Cell	1	1
Total Number of Fans	2	2
Nominal Cell Dimen., L×W, ft.	32x40	48x48
Overall Tower Dimension, L×W, ft.	67x43	99x51
Height-Basin Curb to Fan Deck, ft.	30	30
Fan Stack Height, ft.	9	9
Overall Tower Height, ft.	39	39
Inside Basin Dimensions, ft.	65'-6"x41'-6"	97'-6"x49'-6"
*Column Extensions, Perimeter, below basin curb, ft.	1	
Internal, below curb, ft. (max.)	1	
Anchorage	ALL COLUMNS	

COOLING TOWER INSTITUTE
INQUIRY & BID FORM

Inquiry No. 2-6012-S-
Proposal No. 9248-7636G

STRUCTURAL DETAILS (Cont'd.)	BASE BID	ALTERNATE BID
Hot Water Inlet–Number	2	2
Nom. Diameter, in.	20	24
Description	Terminating with a separate flanged connection at outside of tower for each cell.	
Height Inlet Above Basin Curb, ft.	15	16
*Access to Top of Tower	ONE STAIRWAY & ONE LADDER	
Shipping Weight, lbs.	128,000	189,000
Operating Weight, lbs.	196,000	296,000

MATERIALS OF CONSTRUCTION	
Framework Members	DOUGLAS FIR
Casing	8 OZ. CORRUGATED FRP
Filling	CELLULAR PVC
Support	DOUGLAS FIR
Drift Eliminators	PVC
Spacer	PVC
Fan Stacks	FRP
Louvers, Material	SAME AS CASING
Partitions	FRP
Fan Deck	11/8" CCX FIR PLYWOOD
Water Distribution–Type	LOW PRESSURE DOWNSPRAY
Material	FRP HEADERS; PVC LATERALS
Lumber Pre-Treatment	ACC
Type of Treatment	PRESSURE
Items Treated	ALL LUMBER
Splashers or Spray Nozzles	POLYPROPYLENE NOZZLES
Stairway and Handrail	DOUGLAS FIR
Structural Connectors	BOLTED BLOCKS
Ring Joint Connectors	304 STAINLESS STEEL
Bolts, Nuts, Washers	304 STAINLESS STEEL
Anchor Connectors	EPOXY COATED CAST IRON
Nails	304 STAINLESS STEEL
Mechanical Equipment Support	UNITIZED, GALVANIZED STRUCTURAL STEEL, EPOXY COATED
*Anchor Bolts–Material	
Furnished by	PURCHASER
*Cold Water Basin–Material	CONCRETE
Furnished by	PURCHASER
*Basin Accessories, by Mfg.	PURCHASER
Anchor Bolt Grouting, By	LILIE-HOFFMANN

MECHANICAL EQUIPMENT		
Fans		
Number	2	2
Type or Model	APT-28B-6	APT-28B-6
Manufacturer	HUDSON PRODUCTS	
Diameter, ft.	28	28
Number of Blades	6	6

COOLING TOWER INSTITUTE
INQUIRY & BID FORM

Inquiry No. 2-6012-S
Proposal No. 9248-76366

MECHANICAL EQUIPMENT (Cont'd.)	BASE BID	ALTERNATE BID
Fans		
Fan Speed, RPM	134.6	
Tip Speed, FPM	11,841	
BHP per fan, driver output	58.2	95.2
Blade Material	FIBERGLASS REINFORCED EPOXY	
Hub Material	GALVANIZED STEEL	
Total Static Pressure, in. H_2O	.4204	.3479
Velocity Pressure, in. H_2O	.0559	.1414
Air Delivery per Fan, ACFM	574,719	914,763
Fan Static Efficiency TOTAL FAN EFFICIENCY	74%	74%
Speed Reducer		
Number	2	2
Type	SPIRAL BEVEL	
Model	1008	1110
Manufacturer	AMARILLO GEAR CO.	
Reduction Ratio	13:1	13:1
AGMA Mechanical H.P. Rating	75	125
Service Factor at Rated H.P. of Driver	2.58	2.63
No. of Reductions	2	
	OIL FILL, DRAIN, VENT & SIGHT GLASS LINES EXTEND TO OUTSIDE OF FAN STACK	
Drive Shaft		
Number	2	2
Type	FLEXIBLE, NON LUBRICATED	
Model	40-LT-10.7	40-LT-10.7
Manufacturer	DANA FORMSPRAG	
Rated H.P.	250	250
Drive Shaft Material	18-8 STAINLESS STEEL	
Coupling Material	18-8 STAINLESS STEEL	
Driver		
Number	2	2
*Kind	ELECTRIC MOTOR	
*Type	TEFC, 2 SPEED, 1.15 S.F., W/SPACE HEATER	
Manufacturer	LOUIS ALLIS	
Full Load Speed, RPM	1750/875	
*Elec. Char.–phase/cycles/volts	3/60/460	
Rated H.P.	60	100

*MOTOR CONTROLS AND ELECTRICAL WORKS TO BE FURNISHED BY OTHERS, A VIBRATION CUT OUT SWITCH FOR EACH INDIVIDUAL DRIVE IS INCLUDED FOR MOUNTING BY OTHERS

ADDITIONAL DATA		
DRAWINGS	4-5	WEEKS AFTER RECEIPT OF ORDER
SHIPMENT	10-12	WEEKS AFTER APPROVAL OF DRAWINGS
ERECTION		APPROXIMATELY 5-6 WEEKS

Item 5.

Catalyst replacement will be performed by removing the existing catalyst by means of a portable industrial vacuum unit which is equipped with classification and air filtering equipment. The dust and the catalyst from this operation will be disposed of on property by placing it in the gypsum storage pile.

Introduction of new catalyst to the converter is done by hand placement of the catalyst from the 1000 liter fibre drums in which it is shipped into the converter. Normal careful handling of the new catalyst is always practiced to avoid breakage. No special problems of fugitive dust generation are generally encountered in this process.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

May 2, 1984

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. T. R. Schmalz
Royster Company
Post Office Drawer 797
Mulberry, Florida 33860

Dear Mr. Schmalz:

The Department has made a preliminary review of your application for a permit to modify an existing sulfuric acid plant. Additional information needed to process the application is listed below.

1. What were the actual sulfur dioxide and acid mist emissions from all sources at this plant as of the baseline date (December, 1977)?

2. Please list the date each application for permit to construct was submitted for the sulfuric acid plant, the purpose of the construction, the permitted production rate, any permitted restriction in hours of operation, and the allowable and actual emissions of sulfur dioxide and acid mist (give basis for determining actual emissions). Were any of the construction permits subject to review under the PSD regulations?

3. Please provide a brief description of the waste heat boiler and note where it will be located on the process drawing.

4. Please provide a brief description of the cooling water tower and estimate the spray loss from it.

5. How will fugitive dust be controlled when the catalyst is replaced? How will the catalyst "dust" be disposed of?

Based on the information in the application, the sulfur dioxide emissions from the modification (Rule 17-2.100(105), FAC) will increase by more than the significant emission rate of 40 TPY that is listed in Table 500-2 of Rule 17-2, Florida Administrative Code (FAC). Therefore, the modification may be subject to Prevention of Significant Deterioration (PSD) Regulations (Rule 17-2.500, FAC) and the modified plant will need to at least comply with Standards of Performance for New Stationary Sources (NSPS, 40 CFR 60). If the proposed modifications are subject to the PSD regulations, the Department will also need the following information.

A. An analysis of existing air quality;

B. A PSD increment analysis;

C. A Florida Ambient Air Quality Standards (AAQS) analysis;

D. An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality impacts; and

E. A "good engineering practice (GEP)" stack height evaluation.

F. Please provide a Best Available Control Technology (BACT) recommendation (Rule 17-2.630, FAC) for the sulfuric acid plant.

G. What continuous emission instrument will be used to comply with the monitoring requirements of 40 CFR 60.84?

Enclosed is a copy of a current application form. Please use this form for future applications for permits to construct or operate air pollution sources.

If you have any questions on the information requested, please write to me or call Willard Hanks at (904) 488-1344. If you prefer, we can discuss this matter at the Department's Office in Tallahassee. We will resume processing your application as soon as you furnish the requested information.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management

CHF/dt

Enclosure: Application

cc: Bill Thomas, Southwest District

No. 0156502

RECEIPT FOR CERTIFIED MAIL

**NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL**

(See Reverse)

SENT TO
Mr. T. R. Schmalz
STREET AND NO.

P.O., STATE AND ZIP CODE

POSTAGE			$
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE		¢
	OPTIONAL SERVICES — SPECIAL DELIVERY		¢
	OPTIONAL SERVICES — RESTRICTED DELIVERY		¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
	RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES			$

POSTMARK OR DATE
5/3/84

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- [X] Show to whom and date delivered..... ¢
- [ ] Show to whom, date and address of delivery..... ¢
- [ ] RESTRICTED DELIVERY
  Show to whom and date delivered..... ¢
- [ ] RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery.$ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Mr. T. R. Schmalz
P. O. Drawer 797
Mulberry, FL 33860

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0156502	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE [ ] Addressee [ ] Authorized agent

Floyd Jones

4. DATE OF DELIVERY
5-7-84

POSTMARK

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

CLERK'S INITIALS

LAKELAND, FL

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-300-459

ROBERT W. HEINZ
VICE PRESIDENT, FLORIDA OPERATIONS

Royster

March 29, 1984

CERTIFIED MAIL

Mr. Bill Thomas, Engineer
Department of Environmental Regulation
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, Florida 32301-8241

Dear Mr. Thomas:

In accord with our telephone conversation of March 27, 1984 herewith is an application for a Permit To Construct along with a check for $1000 for the processing fee. The application is in triplicate with a fourth copy having been sent to Mr. Bill Thomas at the Southwest District office in Tampa.

As I explained to you and as is reflected in the permit application the modifications to be made to the Sulfuric Acid Plant do not change any of the process conditions or the emissions except as related to higher operating rate capabilities.

Lurgi Corporation, our engineering/construct firm is planning to commence field work sometime this summer so if there are any additional requirements for processing the Construction Permit please notify me at the earliest possible time in order that I may expedite acquisition and transmittal.

Very truly yours,

T. R. Schmalz, P.E.
Manager, Engineering &
Environmental Services

TRS:sk

cc: Mr. Bill Thomas
Department of Environmental Regulation
7601 Highway 301 North
Tampa, Florida 33610-9544

R. W. Heinz

R. T. Van Arsdall

FORM 962

IR® Company
FERTILIZERS & AGRICULTURAL CHEMICALS
P. O. BOX 797, MULBERRY, FLORIDA 33860

NO. 87011186

PAYABLE THROUGH
FIRST UNION NATIONAL BANK OF
NORTH CAROLINA
CHAPEL HILL, NORTH CAROLINA

66-156
531

VOID AFTER 90 DAYS

PAY TO THE ORDER OF:

Department of Enviromental Regulations
2600 Blairstone Rd.
Tallahassee, Fl. 32301

DATE	AMOUNT
3-30-84	$1,000.00*******

[redacted]

AUTHORIZED SIGNATURE

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

No 76023

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Poynter Company Date April 5, 1984

Address P.O. Box 797 Mulberry, Fla. 33860 Dollars $ 1000.00

Applicant Name & Address Same as above

Source of Revenue

Revenue Code 001001 Application Number AC 53-85261

By Patricia G. Adams

AC 53-85261

DER

APR 03 1984

BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type: Air Pollution [X] Incinerator [ ]
Type application: [ ] Operation [X] Construction
Source Status: [ ] New [ ] Existing [X] Modification

Source Name: ROYSTER COMPANY County: POLK

Source Location: Street: S.R. 60 EAST City: N/A

UTM: East: 17-406.70E North: 3085.20N

Appl. Name and Title: R. W. HEINZ, VICE PRESIDENT - FLORIDA OPERATIONS
Appl. Address: P.O. DRAWER 797, MULBERRY, FLORIDA 33860

STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

The undersigned owner or authorized representative of * ROYSTER COMPANY is fully aware that the statements made in this application for a CONSTRUCTION permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

R W Heinz
Signature of the Owner or Authorized Representative

Date: 3/29/84 Telephone No.: (813) 425-1176

*Attach a letter of authorization. If applicant is a corporation, a Certificate of Good Standing must be submitted with application. This may be obtained, for a $5.00 charge, from the Secretary of State, Bureau of Corporate Records, Tallahassee, Florida 32304.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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 profesional judgment, that 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 the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: T. R. Schmalz
Name: T. R. SCHMALZ (Please Type)
Company Name: ROYSTER COMPANY
Florida Registration Number: 13656
(Affix Seal)

Mailing Address: P.O. DRAWER 797
MULBERRY, FLORIDA 33860
Telephone No.: (813) 425-1176
Date: 3/29/84

DETAILED DESCRIPTION OF SOURCE

A. Describe the nature and extent of the project. Refer to existing pollution control facilities, expected improvement in performance of the facilities and state whether the project will result in full compliance. Attach additional sheet if necessary.

MODIFICATION OF AN EXISTING DOUBLE ABSORPTION, CONTACT SULFURIC ACID PALNT TO IMPLEMENT THE ADDITION OF ELECTRIC CO-GENERATION EQUIPMENT. REFER TO ATTACHED ADDENDUM FOR COMPLETE DETAILS.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction JULY 1, 1984
Completion of Construction OCTOBER 31, 1985

C. Costs of Construction (Show a breakdown of costs for individual components/units of the project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

TOTAL PROJECT COST OF ACID PLANT MODIFICATIONS EXCLUSIVE OF CO-GENERATION EQUIPMENT IS PROJECTED AT APPROXIMATELY $8,000,000 NONE OF THIS COST IS DIRECTLY RELATED TO POLLUTION CONTROL PURPOSES.

D. For this source indicate any previous DER permit: issuance dates, and expiration dates; and orders and notices.

AC53-2584 ISSUE DATE: DEC. 16, 1974 EXPIRY DATE: SEPT. 16, 1975

CONSENT ORDER #74 DATED SEPT. 27, 1978

CONSENT ORDER, CASE #75-1600 LEON COUNTY DATED OCT. 27, 1975

A053-17115 ISSUE DATE: MAR. 1, 197 EXPIRY DATE: FEB. 1, 1984

A053-6050 ISSUE DATE: MARCH 14, 1978 EXPIRY DATE: JAN. 31, 1983

A053-78016 ISSUE DATE: JAN. 31, 198 EXPIRY DATE: JAN. 15, 198

AC53-6458A ISSUE DATE: AUG. 28, 1978 EXPIRY DATE: AUG. 30, 1979

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code ? .....Yes X.....No

DETAILED DESCRIPTION OF SOURCE

A. Describe the nature and extent of the project. Refer to existing pollution control facilities, expected improvement in performance of the facilities and state whether the project will result in full compliance. Attach additional sheet if necessary.

MODIFICATION OF AN EXISTING DOUBLE ABSORPTION, CONTACT SULFURIC ACID PALNT TO IMPLEMENT THE ADDITION OF ELECTRIC CO-GENERATION EQUIPMENT. REFER TO ATTACHED ADDENDUM FOR COMPLETE DETAILS.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction JULY 1, 1984
Completion of Construction OCTOBER 31, 1985

C. Costs of Construction (Show a breakdown of costs for individual components/units of the project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

TOTAL PROJECT COST OF ACID PLANT MODIFICATIONS EXCLUSIVE OF CO-GENERATION EQUIPMENT IS PROJECTED AT APPROXIMATELY $8,000,000 NONE OF THIS COST IS DIRECTLY RELATED TO POLLUTION CONTROL PURPOSES.

D. For this source indicate any previous DER permit: issuance dates, and expiration dates; and orders and notices.

AC53-2584 ISSUE DATE: DEC. 16, 1974 EXPIRY DATE: SEPT. 16, 1975 CONSENT ORDER #74 DATED SEPT. 27, 1978

CONSENT ORDER, CASE #75-1600 LEON COUNTY DATED OCT. 27, 1975

A053-17115 ISSUE DATE: MAR 1, 1979 EXPIRY DATE: FEB. 1, 1984

A053-6050 ISSUE DATE: MARCH 14, 1978 EXPIRY DATE: JAN. 31, 1983

A053-78016 ISSUE DATE: JAN. 31, 1984 EXPIRY DATE: JAN. 15, 1989

AC53-6458A ISSUE DATE: AUG. 28, 1978 EXPIRY DATE: AUG. 30, 1979

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? .....Yes X.....No

AC 53-85241

DER

APR 03 1984

BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type: Air Pollution [X] Incinerator [ ]
Type application: [ ] Operation [X] Construction
Source Status: [ ] New [ ] Existing [X] Modification

Source Name: ROYSTER COMPANY County: POLK

Source Location: Street S.R. 60 EAST City N/A

UTM: East 17-406.70E North 3085.20N

Appl. Name and Title: R. W. HEINZ, VICE PRESIDENT - FLORIDA OPERATIONS
Appl. Address: P.O. DRAWER 797, MULBERRY, FLORIDA 33860

STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

The undersigned owner or authorized representative of *ROYSTER COMPANY is fully aware that the statements made in this application for a CONSTRUCTION permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

R W Heinz
Signature of the Owner or Authorized Representative

Date: 3/29/84 Telephone No.: (813) 425-1176

*Attach a letter of authorization. If applicant is a corporation, a Certificate of Good Standing must be submitted with application. This may be obtained, for a $5.00 charge, from the Secretary of State, Bureau of Corporate Records, Tallahassee, Florida 32304.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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 profesional judgment, that 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 the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: R. Schmalz
Name: R. SCHMALZ (Please Type)
Company Name: ROYSTER COMPANY
Florida Registration Number: 13656
(Affix Seal)

Mailing Address: P.O. DRAWER 797
MULBERRY, FLORIDA 33860
Telephone No.: (813) 425-1176
Date: 3/29/84

DETAILED DESCRIPTION OF SOURCE
ADDENDUM TC Pg. 2, ITEM A

The modifications to the existing Sulfuric Acid Plant will consist of installation of a new 900 PSIG waste heat boiler with an attendant steam superheater, economizers for boiler feedwater pre-heating, and deaeration, and demineralization of boiler feedwater. A new electric motor driven main air blower will also be installed. Acid cooling will be accomplished by newly installed shell and tube heat exchangers and a new cooling tower will be provided to replace two existing towers and provide additional cooling required for the 100% condensation of the turbo-generator supplied steam. In addition new ring type improved catalyst will be installed in the third pass of the converter.

These modifications will in no way effect the process nor the emission rates from the Plant. It is anticipated however that a higher rate of operation will be achievable due to the modifications. A process guarantee by Lurgi Corporation, the engineering/construct firm supplying the new equipment, stipulates an operating rate of 1500 STPD 100% basis sulfuric acid is achievable at recovery efficiency of 99.7%, which is the same as our present operation. An additional stipulation is that all new equipment shall perform within design conditions at 1600 STPD.

AIR POLLUTION SOURCES & CONTROL DEVICES
(other than incinerators)

A. Identification of Air Contaminants

1) [ ] Particulates
   a) [ ] Dust b) [ ] Fly Ash c) [ ] Smoke d) [ ] Other (Identify)

2) [X] Sulfur Compounds
   a) a) [X] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [ ] Nitrogen Compounds
   a) [ ] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides 5) [X] Acid Mist 6) [ ] Odor

7) [ ] Hydrocarbons 8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify) _____

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization Rate lbs./hr.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	% Wt.	
SULFUR	43,652	SO_2	200	SULFUR
AIR	343,073	N/A	N/A	AIR
WATER	24,552	N/A	N/A	WATER

C. Process Rate:

1) Total Process input Rate* 4935 TPD Units.
2) Product Weight* 1600 TPD - 100% H_2SO_4 Units.
3) Normal Operating Time YEAR ROUND, if seasonal describe: N/A
   hrs./day 24 days/wk. 7 wks/yr. 50

D. Airborne Contaminants Discharged:

Name of Contaminant	Actual** Discharge		Discharge Criteria Rate*	Allowable Discharge Lbs./hr.	Relate to Flow Diagram
	lbs./hr.	T/yr.			
SO_2	230	918	4.0 SO_2/T H_2SO_4	267	TO ATMOSPHERE
ACID MIST	4.0	16	0.15#ACID MIST/T	10.0	TO ATMOSPHERE
			10% OPACITY		

*Refer to Chapter 17-2.04(2), Florida Administrative Code.
(Discharge Criteria: Rate= #/ton P_2O_5, #/M BTU/hr., etc.)
**Estimate only if this is an application to construct.

D. Airborne Contaminants Discharged. (Cont'd.)

Name of Contaminant	Hourly Emission (lb./hr.)	Daily Emission (lb./day)	Yearly Emission (T/yr.)	Basis for Emission Estimate (Test Data, Material Balance)
SO_2	230	5520	918	TEST DATA
ACID MIST	4.0	96	16	TEST DATA

E. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency*	Conditions of Operations	Basis for Efficiency Operational Data, Test, Design, Data)
DC/DA CONTACT				
SULFURIC ACID	SO_2	99.74	GAS	TEST DATA
PROCESS				
BRINK HE & HV				
DEMISTER	ACID MIST	99.99	PARTICULATE	TEST DATA

*See required supplement.
(Include any test data and/or design data for efficiency substantiation)

F. Fuels

Type (Be Specific, includes %S, etc.)	Daily Consumption *		Maximum Heat Input MBTU/hr.
	Avg./hr.	Max./hr.	

* Units: Natural Gas–MCF/hr.; Fuel Oils, Coal–lbs./hr.

Fuel Analysis:

Percent Sulfur _____ Percent Ash _____

Density _____ lb./gal.

Heat Capacity _____ BTU/lb. _____ BTU/gal.

Other Fuel Contaminants _____

D. Airborne Contaminants Discharged. (Cont'd.)

Name of Contaminant	Hourly Emission (lb./hr.)	Daily Emission (lb./day)	Yearly Emission (T/yr.)	Basis for Emission Estimate (Test Data, Material Balance)
SO_2	230	5520	918	TEST DATA
ACID MIST	4.0	96	16	TEST DATA

E. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency*	Conditions of Operations	Basis for Efficiency Operational Data, Test, Design, Data)
DC/DA CONTACT				
SULFURIC ACID	SO_2	99.74	GAS	TEST DATA
PROCESS				
BRINK HE & HV				
DEMISTER	ACID MIST	99.99	PARTICULATE	TEST DATA

*See required supplement.
(Include any test data and/or design data for efficiency substantiation)

F. Fuels

Type (Be Specific, includes %S, etc.)	Daily Consumption *		Maximum Heat Input MBTU/hr.
	Avg./hr.	Max./hr.	

* Units: Natural Gas–MCF/hr.; Fuel Oils, Coal–lbs./hr.

Fuel Analysis:

Percent Sulfur _____ Percent Ash _____

Density _____ lb./gal.

Heat Capacity _____ BTU/lb. _____ BTU/gal.

Other Fuel Contaminants _____

AIR POLLUTION SOURCES & CONTROL DEVICES
(other than incinerators)

A. Identification of Air Contaminants

1) [ ] Particulates
   a) [ ] Dust b) [ ] Fly Ash c) [ ] Smoke d) [ ] Other (Identify)

2) [X] Sulfur Compounds
   a) a) [X] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [ ] Nitrogen Compounds
   a) [ ] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides 5) [X] Acid Mist 6) [ ] Odor

7) [ ] Hydrocarbons 8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify) _____

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization Rate lbs./hr.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	% Wt.	
SULFUR	43,652	SO_2	200	SULFUR
AIR	343,073	N/A	N/A	AIR
WATER	24,552	N/A	N/A	WATER

C. Process Rate:

1) Total Process input Rate* 4935 TPD Units.
2) Product Weight* 1600 TPD - 100% H_2SO_4 Units.
3) Normal Operating Time YEAR ROUND, if seasonal describe: N/A
   hrs./day 24 days/wk. 7 wks/yr. 50

D. Airborne Contaminants Discharged:

Name of Contaminant	Actual** Discharge		Discharge Criteria Rate*	Allowable Discharge Lbs./hr.	Relate to Flow Diagram
	lbs./hr.	T/yr.			
SO_2	230	918	4.0 SO_2/T H_2SO_4	2.67	TO ATMOSPHERE
ACID MIST	4.0	16	0.15#ACID MIST/T	10.0	TO ATMOSPHERE
			10% OPACITY		

*Refer to Chapter 17-2.04(2), Florida Administrative Code.
(Discharge Criteria: Rate=#/ton P_2O_5, #/M BTU/hr., etc.)
**Estimate only if this is an application to construct.

G. Describe briefly, without revealing trade secrets, the processes/operations generating the airborne emissions identified in this application.

DOUBLE CATALYSIS/DOUBLE ABSORPTION CONTACT SULFURIC ACID PLANT

H. Indicate liquid or solid wastes generated and method of disposal.

WASTE HEAT BOILER AND COOLING TOWER BLOWDOWN TO IMPOUNDMENT AREA

I. Emission Stack Geometry and Flow Characteristics, (Provide Date for each Stack).

Stack Height 200 ft, Stack Diameter 7 ft

Gas Flow Rate 75,000 ± ACFM, Gas Exit Temperature 200 ± °F

J. Required Supplements:

1. Total process input rate and product weight — show deviation.

2. Efficiency Estimation.

3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate whether raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particulates are evolved and where finished products are obtained.

4. An 8½" x 11" plot plan showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

5. An 8½" x 11" plot plan showing the exact location of the establishment, and points of airborne emissions in relation to the surrounding area, residences and other permanent structures and roadways.

6. If applicable, provide a brief description of the control device or treatment system serving the discharge point for airborne contaminants identified in this application. Include details of the manufacturer, model, size, type and capacity for control/treatment device and the features of the discharge point (height above ground, diameter, period(s) of discharge and discharge temperature).

7. Plans for storm water control during and after construction.

INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patho-logical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs./Hr. incinerated							

Description of Waste _____

Total Weight Incinerated lbs./hr. _____ Design Capacity lbs./hr. _____

Approximate Number of Hours of Operation per Day _____, days/week _____

Manufacturer _____ Model No.: _____

Date Constructed: _____

	Volume (ft. *)³	Heat Release (BTU/hr.)	Fuel		Temp. (° F)
			Type	BTU/hr.	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp.: _____ °F

Type of Pollution Control Device [ ] Cyclone [ ] Wet scrubber [ ] Afterburner
[ ] Other (Specify): _____

Brief Description of Operating Characteristics of Control Device: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.) _____

INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patho-logical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs./Hr. incinerated							

Description of Waste _____

Total Weight Incinerated lbs./hr. _____ Design Capacity lbs./hr. _____

Approximate Number of Hours of Operation per Day _____, days/week _____

Manufacturer _____ Model No.: _____

Date Constructed: _____

	Volume (ft. *)³	Heat Release (BTU/hr.)	Fuel		Temp. (° F)
			Type	BTU/hr.	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp.: _____ °F

Type of Pollution Control Device [ ] Cyclone [ ] Wet scrubber [ ] Afterburner
[ ] Other (Specify): _____

Brief Description of Operating Characteristics of Control Device: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.) _____

G. Describe briefly, without revealing trade secrets, the processes/operations generating the airborne emissions identified in this application.

DOUBLE CATALYSIS/DOUBLE ABSORPTION CONTACT SULFURIC ACID PLANT

H. Indicate liquid or solid wastes generated and method of disposal.

WASTE HEAT BOILER AND COOLING TOWER BLOWDOWN TO IMPOUNDMENT AREA

I. Emission Stack Geometry and Flow Characteristics, (Provide Date for each Stack).

Stack Height 200 ft, Stack Diameter 7 ft.

Gas Flow Rate 75,000 ± ACFM, Gas Exit Temperature 200 ± °F

J. Required Supplements:

1. Total process input rate and product weight — show deviation.

2. Efficiency Estimation.

3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate whether raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particulates are evolved and where finished products are obtained.

4. An 8½" x 11" plot plan showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

5. An 8½" x 11" plot plan showing the exact location of the establishment, and points of airborne emissions in relation to the surrounding area, residences and other permanent structures and roadways.

6. If applicable, provide a brief description of the control device or treatment system serving the discharge point for airborne contaminants identified in this application. Include details of the manufacturer, model, size, type and capacity for control/treatment device and the features of the discharge point (height above ground, diameter, period(s) of discharge and discharge temperature).

7. Plans for storm water control during and after construction.

CONTACT SULFURIC ACID PLANT MATERIAL BALANCE FOR 1600 STPD H_2SO_4 - 100% BASIS

STOCHIOMETRY

(1) $S + O_2 \longrightarrow SO_2$

(2) $SO_2 + \frac{1}{2}O_2 \longrightarrow SO_3$

(3) $SO_3 + H_2O \longrightarrow H_2SO_4$

(4) $S + 1\frac{1}{2}O_2 + H_2O \longrightarrow H_2SO_4$

MOLE WTS

$S = 32$
$O_2 = 32$
$H_2O = 18$
$H_2SO_4 = 98$
AIR = 29

MATERIAL BALANCE

PARAMETERS:
FURNACE EXIT GAS AT 11.5% SO_2 BY VOLUME (MOLAR)
STACK GAS AT 3.45 # SO_2 / T H_2SO_4 - 100% BASIS
NO DILUTION AIR

a. SULFUR

$1600/24 \times {}^{32}/_{98} \times 2000 = 43,537$ #/HR. S IN PROD.

$1600/24 \times {}^{32}/_{64} \times 3.45 = 115$ #/HR. S IN STACK

43,652 #/HR. S INPUT

b. AIR

$43,652/32 = 1364$ MOLS S/HR IN PUT

FROM EQUATION (1) 1364 MOLS S/HR = 1364 MOLS SO_2/HR.

AT 11.5% SO_2 BY VOLUME (MOLAR)

1364 / .115 = 11,861 MOLS GAS (ALSO AIR)

11,861 x 29 = 343,073 #/HR AIR INPUT

C. WATER

FROM EQUATION (4)

43,652 / 32 = 1364 mols S

1364 mols (H_2O) x 18 = 24,552 #/HR H_2O

SUPPLEMENT #2
SHT 1 OF 2

CALCULATION OF EFFICIENCY AND EMISSIONS

STACK TEST DATA

FDER COMPLIANCE TESTS ON MAR 10&14, 1983 AND SEPT. 15&16, 1983

	3/10-14	9/15-16
OPERATING RATE:	1498 TPD	1413 TPD
SO_2 EMISSIONS:	3.45 #/T	3.43 #/T
ACID MIST EMISSIONS:	0.06 #/T	0.06 #/T

DAILY EMISSION

1600 TPD x 3.45 #/T = 5520 #/D SO_2

1600 TPD x 0.06 #/T = 96 #/D ACID MIST

HOURLY EMISSION

5520 / 24 = 230 #/HR SO_2

96 / 24 = 4.0 #/HR ACID MIST

ANNUAL EMISSION

ASSUME 95% OPERATING FACTOR

5520 x 7 x 50 x .95 / 2000 = 918 TPY SO_2

96 x 7 x 50 x .95 / 2000 = 16 TPY ACID MIST

SULFUR RECOVERY EFFICIENCY

FROM SUPPLEMENT # 1 SHT. 1

SULFUR IN PUT 43,652 #/HR

SULFUR IN PRODUCT 43,537 #/HR.

$\frac{43,537}{43,652} \times 100 =$ **99.74 % S RECOVERY**

ACID RECOVERY EFFICIENCY

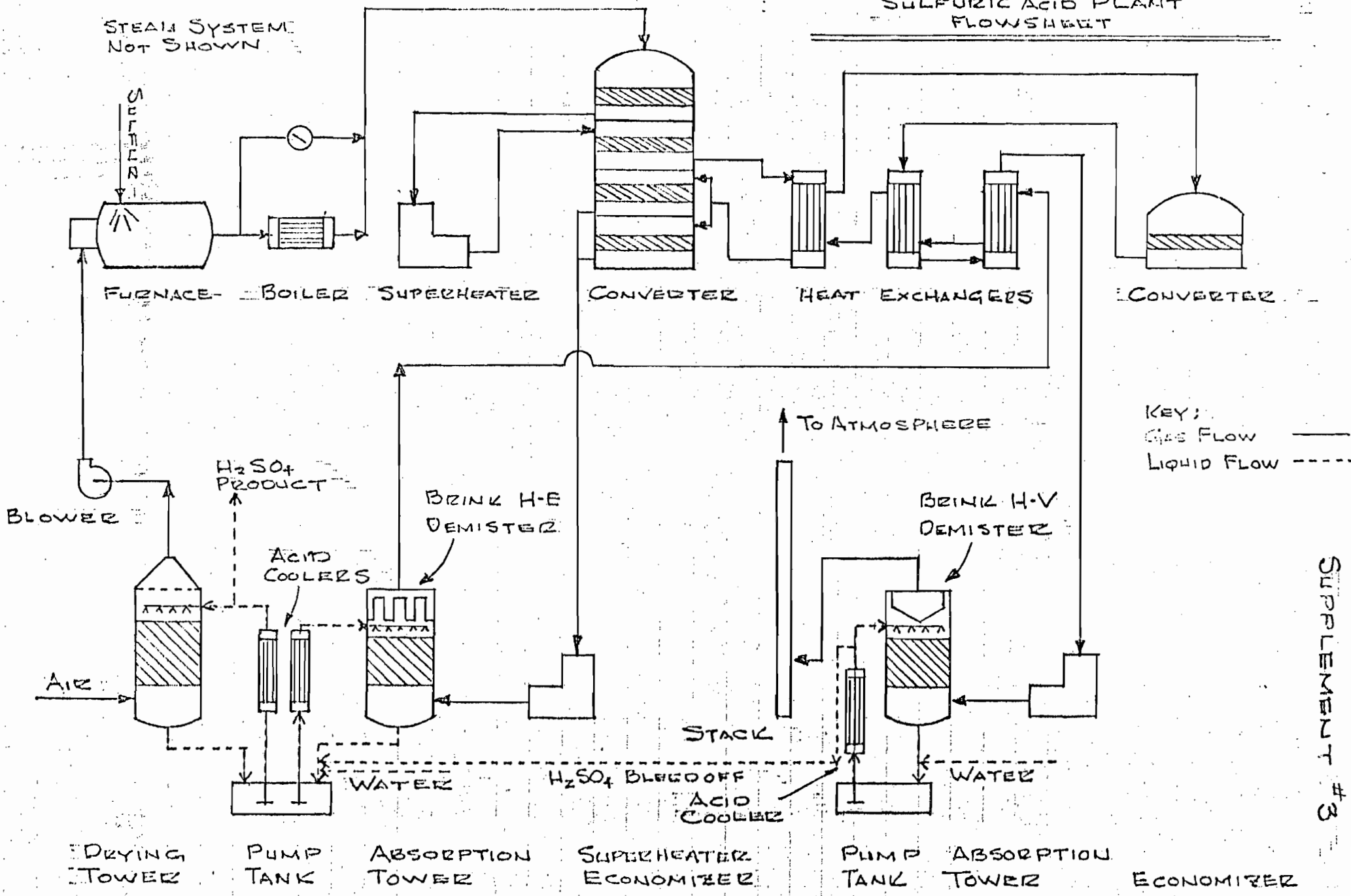
ACID MIST = 0.06 #/T H_2SO_4

$\frac{2000 - 0.06}{2000} =$ **99.99% H_2SO_4 RECOVERY**

OVERALL PLANT EFFICIENCY

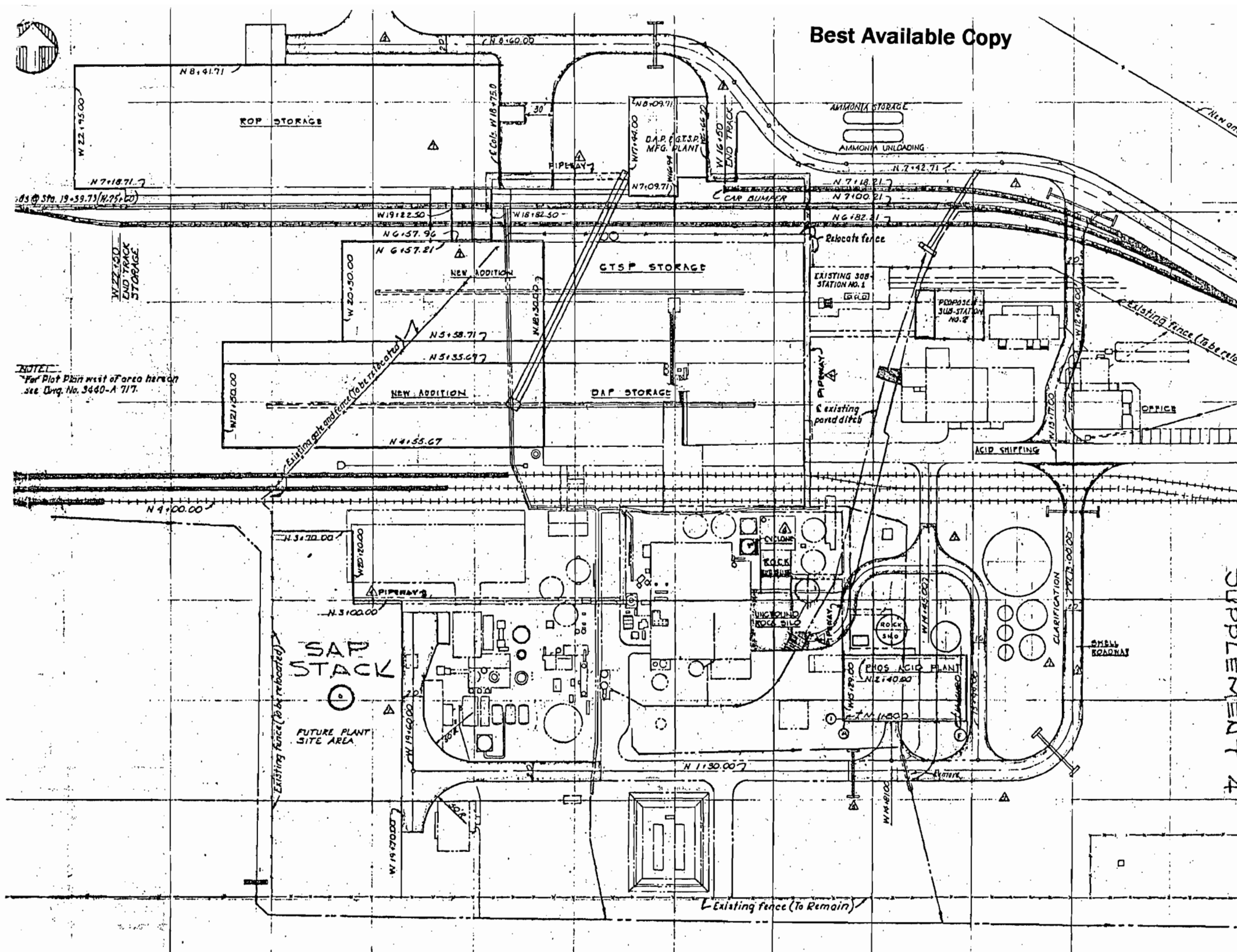
$0.9974 \times 0.9999 \times 100 =$ **99.74%** OVERALL RECOVERY EFFICIENCY

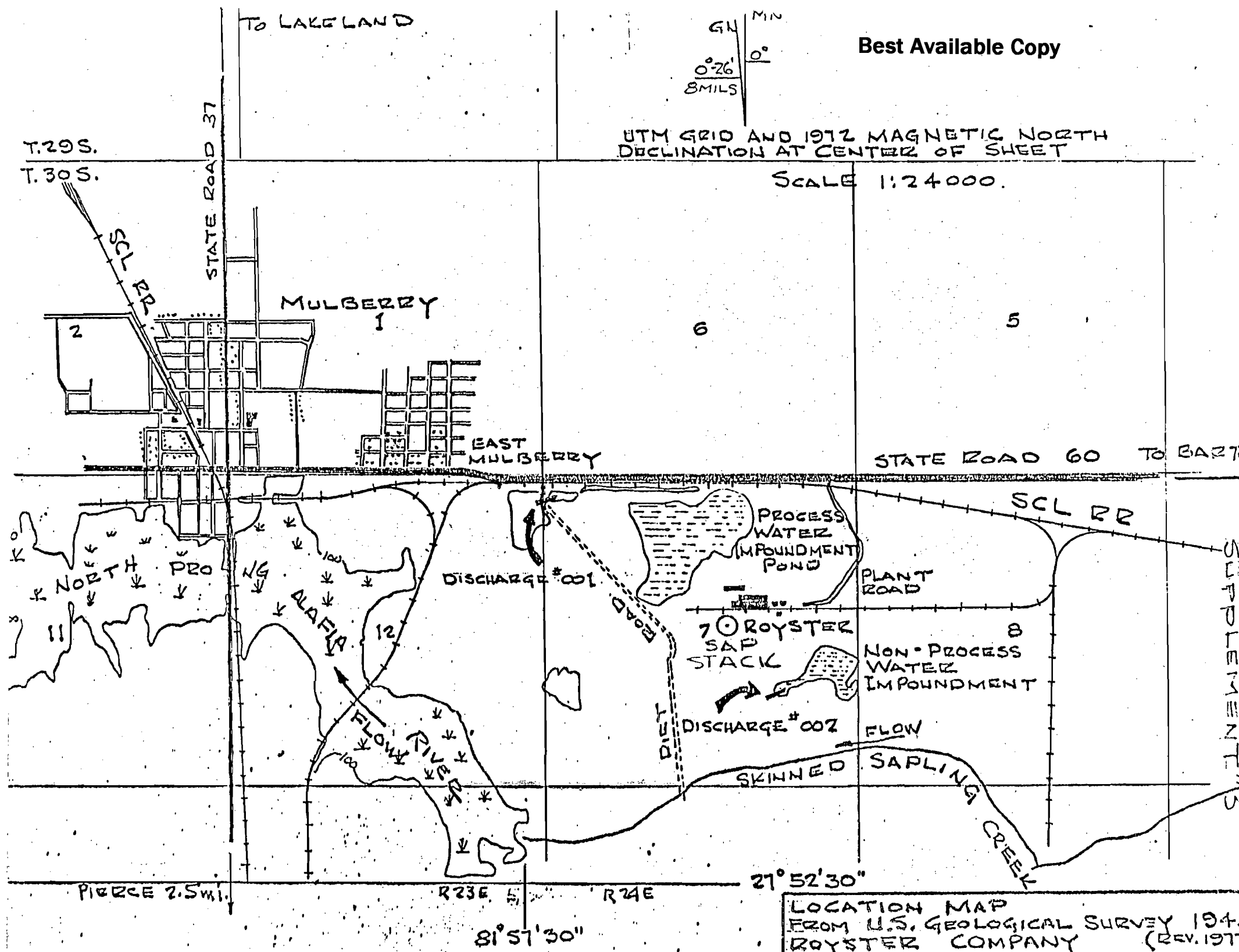
Royster Company
Double Contact / Double Absorption Sulfuric Acid Plant Flowsheet



Supplement #3

TRS
8-84





LOCATION MAP
FROM U.S. GEOLOGICAL SURVEY 19
ROYSTER COMPANY (REV. 197

SUPPLEMENT #6

DESCRIPTION OF ACID MIST ELIMINATOR ON 2ND ABSORPTION TOWER:

MANUFACTURER: MONSANTO COMPANY

MODEL: BRINK H-V

SIZE: 38 ELEMENTS - 18.5" x 53" TO HANDLE 73,000 ACFM @ 8" W.C. ΔP, 190° F.

SEPERATION SPECIFICATION: WILL REMOVE ACID MIST AT 100% LARGER THAN 3 MICRON PARTICLES, 85% OF PARTICLES 1-3 MICRONS, 70% OF PARTICLES ½ TO 1 MICRON, LESS THAN 70% OF PARTICLES SMALLER THAN ½ MICRON.

DETAILED DESCRIPTION OF SOURCE
ADDENDUM TO Pg. 2, ITEM A

The modifications to the existing Sulfuric Acid Plant will consist of installation of a new 900 PSIG waste heat boiler with an attendant steam superheater, economizers for boiler feedwater pre-heating, and deaeration, and demineralization of boiler feedwater. A new electric motor driven main air blower will also be installed. Acid cooling will be accomplished by newly installed shell and tube heat exchangers and a new cooling tower will be provided to replace two existing towers and provide additional cooling required for the 100% condensation of the turbo-generator supplied steam. In addition new ring type improved catalyst will be installed in the third pass of the converter.

These modifications will in no way effect the process nor the emission rates from the Plant. It is anticipated however that a higher rate of operation will be achievable due to the modifications. A process guarantee by Lurgi Corporation, the engineering/construct firm supplying the new equipment, stipulates an operating rate of 1500 STPD 100% basis sulfuric acid is achievable at recovery efficiency of 99.7%, which is the same as our present operation. An additional stipulation is that all new equipment shall perform within design conditions at 1600 STPD.

CONTACT SULFURIC ACID PLANT MATERIAL BALANCE FOR 1600 STPD H_2SO_4 - 100% BASIS

STOCHIOMETRY

(1) $S + O_2 \longrightarrow SO_2$

(2) $SO_2 + \frac{1}{2}O_2 \longrightarrow SO_3$

(3) $SO_3 + H_2O \longrightarrow H_2SO_4$

(4) $S + 1\frac{1}{2}O_2 + H_2O \longrightarrow H_2SO_4$

MOLE WTS

S = 32
O_2 = 32
H_2O = 18
H_2SO_4 = 98
AIR = 29

MATERIAL BALANCE

PARAMETERS:
FURNACE EXIT GAS AT 11.5% SO_2 BY VOLUME (MOLAR)
STACK GAS AT 3.45 #SO_2/T H_2SO_4 - 100% BASIS
NO DILUTION AIR

a. SULFUR

$1600/24 \times 32/98 \times 2000 =$ 43,537 #/HR. S IN PROD.

$1600/24 \times 32/64 \times 3.45 =$ 115 #/HR. S IN STACK

43,652 #/HR. S INPUT

b. AIR

43,652/32 = 1364 MOLS S/HR IN PUT

FROM EQUATION (1) 1364 MOLS S/HR = 1364 MOLS SO_2/HR.

AT 11.5% SO_2 BY VOLUME (MOLAR)

1364 / .115 = 11,861 MOLS GAS (ALSO AIR)

11,861 x 29 = 343,073 #/HR AIR INPUT

C. WATER

FROM EQUATION (4)

43,652 / 32 = 1364 mols S

1364 mols (H_2O) x 18 = 24,552 #/HR H_2O

SUPPLEMENT #2
SHT 1 OF 2

CALCULATION OF EFFICIENCY AND EMISSIONS

STACK TEST DATA

FDEP COMPLIANCE TESTS ON MAR 10&14, 1983 AND SEPT. 15 & 16, 1983

	3/10-14	9/15-16
OPERATING RATE:	1498 TPD	1413 TPD
SO_2 EMISSIONS:	3.45 #/T	3.43 #/T
ACID MIST EMISSIONS:	0.06 #/T	0.06 #/T

DAILY EMISSION

1600 TPD x 3.45 #/T = 5520 #/D SO_2

1600 TPD x 0.06 #/T = 96 #/D ACID MIST

HOURLY EMISSION

5520 / 24 = 230 #/HR SO_2

96 / 24 = 4.0 #/HR ACID MIST

ANNUAL EMISSION

ASSUME 95% OPERATING FACTOR

5520 x 7 x 50 x .95 / 2000 = 918 TPY SO_2

96 x 7 x 50 x .95 / 2000 = 16 TPY ACID MIST

SULFUR RECOVERY EFFICIENCY

FROM SUPPLEMENT # 1 SHT. 1

SULFUR INPUT 43,652 #/HR

SULFUR IN PRODUCT 43,537 #/HR.

$\frac{43,537}{43,652} \times 100 =$ **99.74 % S RECOVERY**

ACID RECOVERY EFFICIENCY

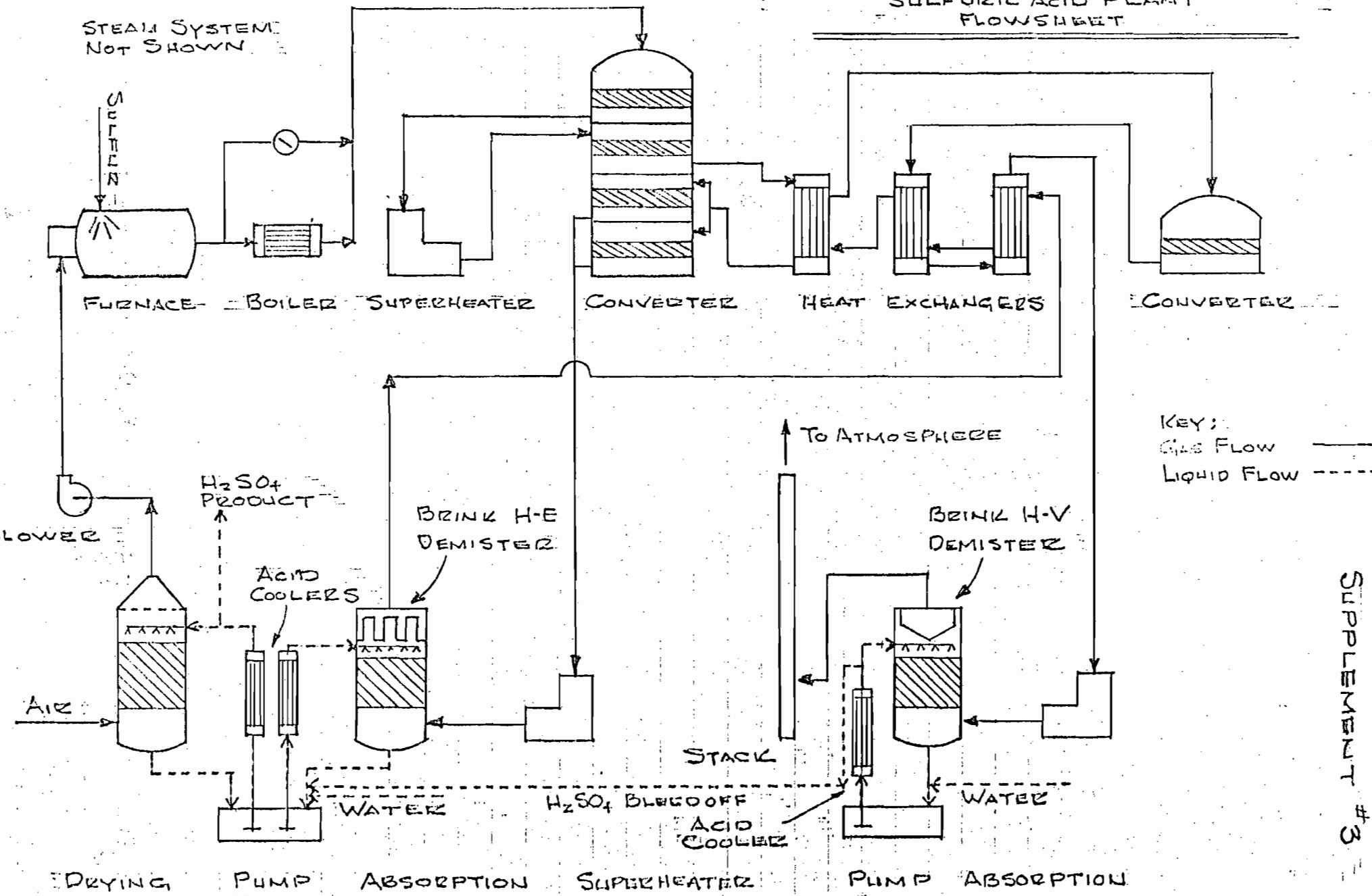
ACID MIST = 0.06 #/T H_2SO_4

$\frac{2000 - 0.06}{2000} =$ **99.99% H_2SO_4 RECOVERY**

OVERALL PLANT EFFICIENCY

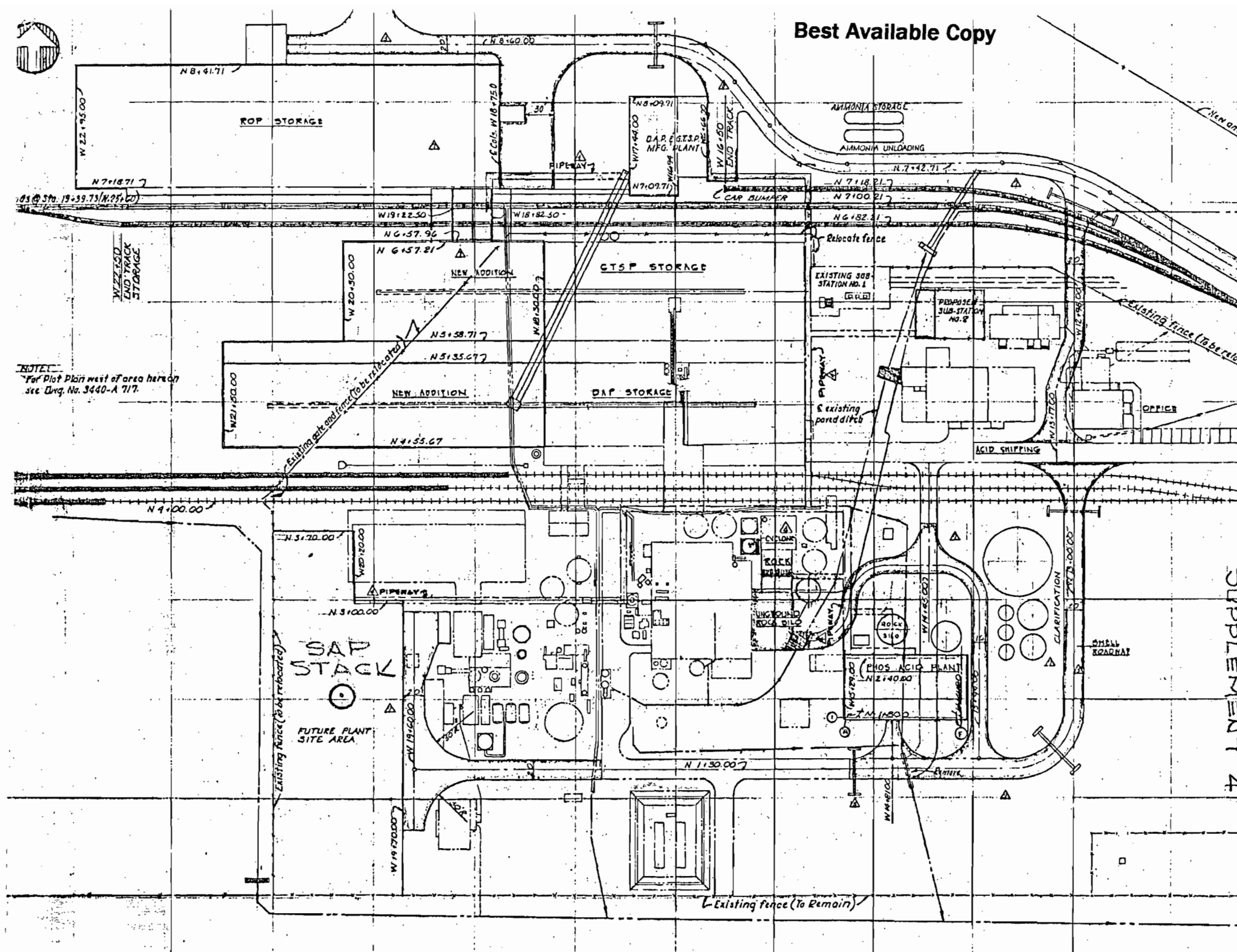
$0.9974 \times 0.9999 \times 100 =$ **99.74%** OVERALL RECOVERY EFFICIENCY

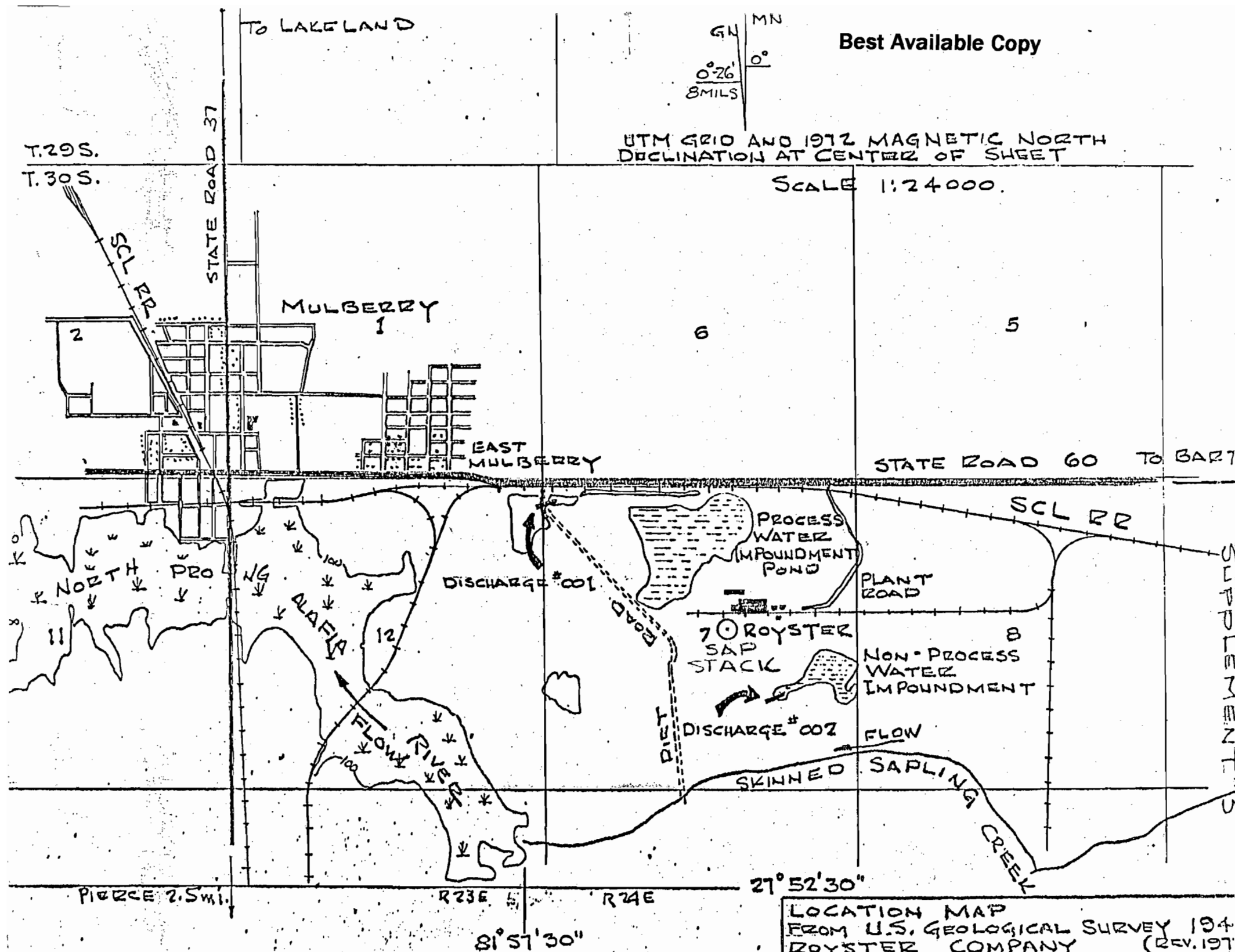
ROYSTER COMPANY
DOUBLE CONTACT / DOUBLE ABSORPTION SULFURIC ACID PLANT FLOWSHEET



SUPPLEMENT #3

TRS
3-84





LOCATION MAP
FROM U.S. GEOLOGICAL SURVEY 194
ROYSTER COMPANY (REV. 197

SUPPLEMENT #6

DESCRIPTION OF ACID MIST ELIMINATOR ON 2ND ABSORPTION TOWER:

MANUFACTURER: MONSANTO COMPANY

MODEL: BRINK H-V

SIZE: 38 ELEMENTS - 18.5" x 53" TO HANDLE 73,000 ACFM @ 8" W.C. ΔP, 190° F.

SEPERATION SPECIFICATION: WILL REMOVE ACID MIST AT 100% LARGER THAN 3 MICRON PARTICLES, 85% OF PARTICLES 1-3 MICRONS, 70% OF PARTICLES ½ TO 1 MICRON, LESS THAN 70% OF PARTICLES SMALLER THAN ½ MICRON.

Check Sheet

Company Name: Royster Company
Permit Number: AC53-085261
PSD Number: PSD ~~[illegible]~~ PL-106
Permit Engineer:

Application:

- ☑ Initial Application
  - ☑ Incompleteness Letters
  - ☑ Responses
  - ☐ Waiver of Department Action
  - ☐ Department Response
  - ☐ Other

Cross References:
- ☐
- ☐
- ☐

Intent:

- ☐ Intent to Issue
- ☑ Notice of Intent to Issue
- ☐ Technical Evaluation
- ☑ BACT or LAER Determination
- ☐ Unsigned Permit

  Correspondence with:
  - ☐ EPA
  - ☐ Park Services
  - ☐ Other
- ☑ Proof of Publication
  - ☐ Petitions - (Related to extensions, hearings, etc.)
  - ☐ Waiver of Department Action
  - ☐ Other

Final Determination:

- ☑ Final Determination
- ☑ Signed Permit
- ☐ BACT or LAER Determination
  - ☐ Other

Post Permit Correspondence:

- ☐ Extensions/Amendments/Modifications
- ☐ Other

$$\frac{d}{dx} p \, dx = \frac{\tau}{\frac{1}{2}\rho u_m^2} \, dx$$

$$C_f = \frac{\tau}{\frac{1}{2}\rho u_m^2}$$

$$St = \frac{Nu \cdot \cancel{Dx}}{Re} = \frac{C_f}{2} = 0.332 \, Re^{-1/2} Pr^{-1/3}$$

Reynold's Analogy

$Nu \cdot Pr = 1$