


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: December 31, 1984

SUBJECT: Gardinier Nos. 7 & 8 Sulfuric Acid Plant  
Modifications, AC29-089696 and 089697,  
Technical Evaluation, 12/4/84

On the first page, section I B, end of 1st paragraph; correct typo to "2200", TPD acid.

In proposed permit specific conditions, add: (1) HCEPC shall be notified in writing, 15 days prior to any compliance testing; (2) Compliance testing shall be within + 5% of the designed production rate, 91.7 TPH of Sulfuric Acid; (3) All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with the provision in Section 17-2.610 (3), F.A.C.. These provisions are applicable to any source, including, but not limited to, vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or industrial related activities such as loading, unloading, storing and handling.

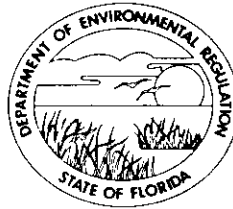
DEP.  
JAN 7 1985  
SACM

*Patty Adams*

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

December 3, 1984

Gardinier, Inc  
P. O. Box 3269  
Tampa, Florida 33601

Attn: Tony Egitgo

Dear Mr Egitgo:

Analytical samples are enclosed to assist you in self evaluation of your fluoride procedures. I understand that you are conducting experiments to build proof of confidence in the detection ability of the ion electrode method of using field samples spiked with knowns; plus other experiments.

An assessment of precision and accuracy of the procedure, based upon measured concentrations should be included in your planned quality control activities.

To further assist you, I have requested analytical samples from a federal agency which I am passing along. I understand that a state can request these free whereas a private firm cannot. My enclosures include:

1. Instructions for nitrate/fluoride analysis, with stated proviso's included.
2. The true values are included on separate sheet. The statistical numbers do not apply except to certain very specific Fluoride-Methods (353.1, 353.2, 353.3).
3. The concentration ranges, if you hit them, will be of positive value to your cause and your method. If missed, no detrimental significance will result, beyond the value of your own analytical understanding.

Gardinier, Inc.  
December 3, 1984  
Page two

4. Instruction for Ampul opening and sample prep are enclosed.

Let me know if I can be of any further help.

Sincerely

Edward H. Sirois  
Environmental Specialist  
Bureau of Air Quality  
Management

EHS:ht

enclosure

cc: D. R. Barker  
R. J. Arbes  
✓ DER Gardinier File & P. Adams

U.S. Environmental Protection Agency

Quality Control Check Samples

Instructions for NITRATE/FLUORIDE Analyses

CAUTION: Read Instructions Carefully Before Opening Ampuls.

The requested set(s) of quality control sample concentrates are enclosed in this package. The quality control samples were prepared from the highest quality material available and were designed for and verified by the methodology stated in the EPA manual 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes," (Nitrate-Method 352.1 and Fluoride-Method 353.1, 353.2 and 353.3). Any other method of analyses may yield different results and would not be applicable or valid to the given statistics. These samples are to be used as a means to check the individual analyst's accuracy and precision related to the EPA methods. The quality control samples are not to be used as standards.

Sample Preparation

To begin the analyses, add approximately 900 mL of laboratory pure or tap water to a 1000 mL volumetric flask. Open an ampul by snapping the top off at the break area on the neck and pipet 20.0 mL of the concentrate into the volumetric flask. Dilute to volume and mix well.

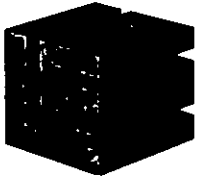
The blank laboratory pure water should be analyzed concurrently for background correction. Comparison of recoveries from laboratory pure water and the tap water is a check on possible interferences.

A sheet containing the statement of added levels is attached with these instructions for use as you desire. If there are any questions or problems.

**True Values for NITRATE/FLUORIDE**

The mean recovery ( $\bar{X}$ ) and the standard deviation (S) are listed below along with the true value and the 95% confidence interval. The true value represents the actual weighing and all subsequent dilutions. The 95% confidence interval represents the mean recovery plus or minus two standard deviations ( $\bar{X} \pm 2S$ ). The mean recovery and the standard deviation were generated from data from Performance Evaluation Studies. All values below are expressed as mg/liter.

Parameter	True Value for Sample (4)	$\bar{X}$	S	95% Confidence Interval
Nitrate-Nitrogen	0.08	0.08	0.02	0.04 - 0.12
Fluoride	0.23	0.23	0.02	0.19 - 0.27
Parameter	True Value for Sample (13)	$\bar{X}$	S	95% Confidence Interval
Nitrate-Nitrogen	1.67	1.66	0.07	1.52 - 1.80
Fluoride	1.36	1.36	0.05	1.26 - 1.46
Parameter	True Value for Sample (15)	$\bar{X}$	S	95% Confidence Interval
Nitrate-Nitrogen	9.10	9.04	0.33	8.38 - 9.70
Fluoride	2.28	2.27	0.08	2.11 - 2.43



# GARDINIER INC.

Post Office Box 3269 • Tampa, Florida 33601 • Telephone 813-677-9111 • TWX 810-876-0548 • Telex-52655 • Cable - Gardinphos

RUDY J. CABINA  
VICE PRESIDENT

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

October 15, 1984

U E R

OCT 17 1984

BAQM

Subject: No. 8 Sulfuric Acid Plant Modification

Dear Mr. Fancy:

In response to your letter of September 26, 1984, Gardinier agrees that the No. 8 Sulfuric Acid Plant, after modifications, must meet new source performance standards of 4 lb. SO<sub>2</sub> and 0.15 lb Acid Mist per ton of sulfuric acid produced. Accordingly, will you please amend the previously submitted application by substituting Pages 2, 3, 6 and the supplemental requirements enclosed?

Due to economic considerations, we desire to phase this process as follows:

First Modification:

- A. Install the necessary gas ducting to permit parallel gas flows through the last two catalyst masses in the main converter. This would allow increased production by reducing the pressure drop (resistance to gas flow) throughout the system.
- B. Install larger diameter export steam piping to handle additional steam production from the plant.

If the facility cannot achieve 4 lb/ton and 0.15 lb/ton at the desired 2200 STPD; operating at production rates as required to remain below those limits would be necessary until the next major overhaul.

Second Modification:

- C. Install a superheater in parallel with the No. 1 Boiler. This would reduce gas side pressure drop through this section of the plant and also relieve the loading of the No. 1 Boiler.

- D. Install a new superheater/economizer in the exit of the 3A pass in parallel with the existing one. Lower gas temperature to the absorbing tower and reduced gas side pressure drop would result.
- E. Install additional catalyst in main converter. This would improve conversion at higher rates, when "C" and "D" above, are installed.
- F. Replace cast iron cooling coils with new stainless steel heat exchangers for acid cooling. This would allow slightly colder air into sulfur burner and remove possible bottlenecks on acid cooling system.

Third Modification:

If the above-described two steps do not achieve the desired 2200 STPD at 4 lb/ton of acid and 0.15 lb/mist/ton of acid than implementation of more extensive replacement of the steam system, boiler, blower and turbine, etc., would be required.

At no time during the construction period will 4 lb SO<sub>2</sub> and 0.15 lb acid mist per ton of sulfuric acid produced, be exceeded.

It is not possible at this time to estimate the cost of the project. It could be as low as \$250,000 or as much as several million dollars.

If this letter is acceptable, please consider the applications for both the No. 7, and No. 8 Sulfuric Acid Plants complete as of this date and process them together.

Please contact me if you have any questions.

Yours very truly,



Rudy J. Cabina  
Vice President

RJC:rw  
Enclosures  
cc: Mr. Bill Thomas  
Mr. Steve Gyotog

**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.

This project will modify the No. 8 Sulfuric Acid Plant to produce 430 tons per day of additional sulfuric acid. Emissions from this source will comply with all applicable State of Florida and Hillsborough County regulations.

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

Start of Construction November 1, 1984 Completion of Construction June 30, 1987

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.)

(See cover letter)

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

Permit No.	A029-18228	A029-2930	AC29-2390
Issued	Apr 26, 1979	Apr 21, 1977	Nov 25, 1974
Expire	Apr 15, 1984	May 10, 1979	Mar 1, 1977

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  No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr n/a ; if seasonal, describe: not seasonal

G. 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? Yes
  - a. If yes, has "offset" been applied? N/A
  - b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
  - c. If yes, list non-attainment pollutants.  
Total suspended particulates, Ozone
- 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
- 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements 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? Yes
- 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

**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	-	-	60,124	A
Oxygen	-	-	89,913	B
Water	-	-	33,677	C

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

1. Total Process Input Rate (lbs/hr): 183,714

2. Product Weight (lbs/hr): 183,333

**C. Airborne Contaminants Emitted:**

Name of Contaminant	Emission <sup>1</sup>		Allowed Emission <sup>2</sup> Rate per Ch. 17-2, F.A.C.	Allowable <sup>3</sup> Emission lbs/hr	Potential Emission <sup>4</sup>		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Sulfur Dioxide	367	1,607	4 lb/ton H <sub>2</sub> SO <sub>4</sub>	367	367	1,607	D
Sulfuric Acid	13.7	60	0.15 lb/ton H <sub>2</sub> SO <sub>4</sub>	13.7	13.7	60	D

**D. Control Devices: (See Section V, Item 4)**

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It <sup>5</sup> )
Final Converter	Sulfur Dioxide	99.5+	-	See Attach.
Final Absorber and Mist Eliminator	Sulfuric Acid Mist	99+	Unk	

<sup>1</sup>See Section V, Item 2.

<sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 0.1 pounds per million BTU heat input)

<sup>3</sup>Calculated from operating rate and applicable standard

<sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5</sup>If Applicable



9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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**

- 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
Sulfur Dioxide	4 lb/ton H <sub>2</sub> SO <sub>4</sub>
Sulfuric Acid Mist	0.15 lb/ton H <sub>2</sub> SO <sub>4</sub>

- 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
Sulfur Dioxide	4 lb/ton H <sub>2</sub> SO <sub>4</sub>
Sulfuric Acid Mist	0.15 lb/ton H <sub>2</sub> SO <sub>4</sub>

- D. Describe the existing control and treatment technology (if any).

- |                           |                      |
|---------------------------|----------------------|
| 1. Control Device/System: | 4. Capital Costs:    |
| 2. Operating Principles:  | 6. Operating Costs:  |
| 3. Efficiency: *          | 8. Maintenance Cost: |
| 5. Useful Life:           |                      |
| 7. Energy:                |                      |
| 9. Emissions:             |                      |

Contaminant	Rate or Concentration

\*Explain method of determining D 3 above.

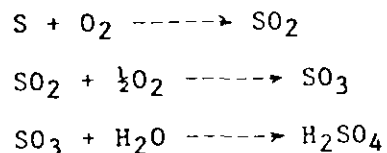
## Supplemental Requirements

### 1. Total Process Input Rate and Product Weight:

The following data and chemical equations will describe the input rates and product weight:

The atomic weight of sulfur (S) is 32.064  
The molecular weight of oxygen (O<sub>2</sub>) is 31.9988  
The molecular weight of water (H<sub>2</sub>O) is 18.01534  
The molecular weight of sulfur dioxide (SO<sub>2</sub>) is 64.0628  
The molecular weight of sulfur trioxide (SO<sub>3</sub>) is 80.0622  
The molecular weight of sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) is 98.0754

The following chemical equations describe the production of sulfuric acid:



If the plant produces 183,333 lbs/hr of H<sub>2</sub>SO<sub>4</sub> and emits 367 lbs/hr of SO<sub>2</sub> and 13.7 lbs/hr of H<sub>2</sub>SO<sub>4</sub> mist, then the amounts of sulfur, oxygen and water required are easily calculated. These amounts are:

Sulfur = 60,124 lbs/hr  
Oxygen = 89,913 lbs/hr  
Water = 33,677 lbs/hr  
Total = 183,714 lbs/hr input weight

2. Emission estimate is based on performance standards for new sulfuric acid plants. EPA Method 8 will be used to determine compliance.
3. Potential discharge is the actual emission.
4. Design details are discussed in attached report.
5. SO<sub>2</sub> Efficiency based on sulfur budget is as follows:

Total Sulfur input = 60,124 lbs/hr	$\frac{183}{60124} \times 100 = 0.30\%$
Sulfur Emitted as SO <sub>2</sub> = 183 lbs/hr	
100% - 0.30% = 99.70% Efficiency	

Acid Mist Efficiency is 99.99%

COUNTY



OF HILLSBOROUGH

DER  
OCT 1 1984  
BAQM

MEMORANDUM

Date September 26, 1984

To Ed Palagyi, BAQM

From Steve Gyroq *SG*

Subject: Gardinier #7 and #8 Sulfuric Acid Plant Draft BACT

The draft BACT incorporates all of our concerns. We have no further comments.

No. 0157025

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO	
Mr. Rudy J. Cabina	
STREET AND NO.	
P.O., STATE AND ZIP CODE	
POSTAGE	\$
CERTIFIED FEE	¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
OPTIONAL SERVICES	
RETURN RECEIPT SERVICE	
SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	\$
POSTMARK OR DATE	
9/27/84	

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.)

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. Rudy J. Cabina  
P. O. Box 3269  
Tampa, Florida 33601

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0157025	

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE  Addressee  Authorized agent

*[Signature]*

4. DATE OF DELIVERY

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

CLERK'S INITIALS

POSTMARK

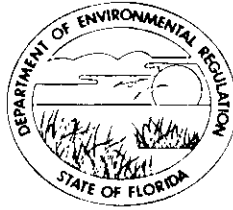
SEP 27 1984

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

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

September 26, 1984

Mr. Rudy J. Cabina  
Vice President  
Gardinier, Inc.  
P. O. Box 3269  
Tampa, Florida 33601

Dear Mr. Cabina:

The department acknowledges receipt of Gardinier's September 11, 1984, letter which provided the additional information we requested to complete your applications for permits to modify the numbers 7 and 8 sulfuric acid plants. The bureau has resumed processing these applications.

The information that was furnished showed the proposed production increase of each acid plant would result in significant net emissions increases of sulfur dioxide and acid mist. By federal regulations (40 CFR 60.14), each sulfuric acid plant will be (if not already) an affected facility and subject to the applicable Standards of Performance for New Stationary Sources. The allowable emission standards for the modified sulfuric acid plants will be established by a Best Available Control Technology (BACT) determination. These standards will be equivalent to, or more restrictive than, the standards listed in 40 CFR 60, Subpart H - Standards of Performance for Sulfuric Acid Plants.

Tentatively, the proposed modifications to the No. 7 sulfuric acid plant appear to comply with the air pollution control regulations and may be able to be approved. However, the proposed modifications to the No. 8 sulfuric acid plant cannot be approved unless additional modifications are made to the plant to lower the emissions to at least the standards listed in 40 CFR 60, Subpart H. It was stated in your September 11, 1984, letter that Gardinier, Inc. did not plan to modify the No. 8 sulfuric acid plant so that the emissions would meet the Standards listed in 40 CFR 60, Subpart H. If we have misunderstood Gardinier's position on the No. 8 plant, please contact us immediately.

Mr. Rudy J. Cabina  
Page Two  
September 26, 1984

If you have any questions on this matter or care to modify the application for the No. 8 sulfuric acid plant, please write to me or call Willard Hanks at (904)488-1344.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. H. Fancy', written in a cursive style.

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

CHF/WH/s

cc: Bill Thomas  
Steve Gyrog

control devices or systems deemed necessary and ordered by the Department.

(2) Objectionable Odor Prohibited - No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

Specific Authority: 403.061, F.S.  
Law Implemented: 403.021, 403.031, 403.061, 403.087, F.S. History: Formerly 17-2.04(4) and (5), 17-2.05(4) and (5); Revised 1-18-72; Renumbered 1-3-78; Amended and Renumbered 11-1-81.

#### **17-2.630 Best Available Control Technology (BACT).**

(1) Determination.

Following receipt of a complete application for a permit to construct a source or facility which requires a determination of Best Available Control Technology, the Department shall make a determination of Best Available Control Technology. In making the BACT determination, the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants). The above references are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., and may be inspected at the Department's Tallahassee office. In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed under 40 CFR Parts 60 or 61.

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

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

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

(2) Exceptions

(a) Any source which has received a written determination of Latest Reasonably Available Control Technology from the Department prior to the effective date of this Subsection shall be exempt from the requirements of Best Available Control Technology.

(b) Any pending petition or proceeding involving a determination of Latest Reasonably Available Control Technology (LRACT) in process on the effective date of this Subsection, and any construction permit application or construction permit proceeding relating to a category of sources encompassed by such proceeding shall be governed by the provisions of the LRACT rule, Chapter 17-2.02(30), and 17-2.03(1), Florida Administrative Code (Repealed).

(3) Phased Construction Projects - For phased construction projects, the determination of BACT shall be reviewed and modified as appropriate at the latest reasonable time not later than 18 months prior to commencement of construction of each independent phase of the project. At such time, the owner or operator of the facility may be required to demonstrate the adequacy of any previous determination of BACT.

(4) Use of Innovative Control Technology

17-2.620(1)(a) -- 17-2.630(4)

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: Ed Palaygi, CAPS  
THRU: Bill Thomas *[Signature]*  
FROM: Bob Garrett *[Signature]*  
DATE: September 24, 1984  
SUBJECT: Comments on BACT for Gardinier's Sulfuric Acid  
Plants, 7 & 8

Page one, descriptions 75 and 179 lbs of SO<sub>2</sub>/tons of H<sub>2</sub>SO<sub>4</sub> appears excessive. Should this be lbs/hr.? We are in complete agreement with the BACT limits incorporating the NSPS Standards.

BG/BT/rw

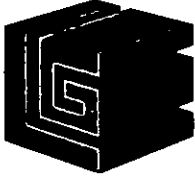
Attachments

DER

SEP 27 1984

BAQM





# GARDINIER INC.

Post Office Box 3269 • Tampa, Florida 33601 • Telephone 813-577-9111 • TWX 810-876-0648 • Telex-52666 • Cable - Gardinphos

September 11, 1984

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

DER

SEP 13 1984

Dear Mr. Fancy:

BAQM

The following information is supplied in response to your letter of July 27, 1984:

1. Section II.C. of the application states the converter and steam systems of the acid plants will be modified to increase production. Section 1.0 of Environmental Science and Engineering, Inc.'s attachment to the applications mentions changes to the drying tower, converter, and absorbing tower cooling systems. What are the current design capacities (acid production) of the absorbing towers and sulfuric acid mist eliminators? Please describe briefly all modifications to each of the acid plants that may be required to increase production to the proposed capacity and supply engineering design details that confirm this equipment can handle the proposed production rates.

#### DESCRIPTION OF NO. 7 ACID PLANT MODIFICATIONS:

A. The acid cross-circulating system between the Dry and Interpass Tower acid coolers and pump tanks will be changed from "Cold Side" cross flow to "Hot" cross flow. This would allow better acid temperature control of the absorbing tower at the higher production rates.

B. Mixing vanes in the gas duct at the second catalyst mass inlet will be added. This would provide better mixing of gas streams of three different temperatures and improve the performance of this mass.

C. Install a new separate pump to improve the flow of water from the existing cooling tower to the final absorbing tower cooler. This would increase the cooler's capacity.

DESCRIPTION OF NO. 8 ACID PLANT MODIFICATIONS:

A. Install the necessary gas ducting to permit parallel gas flows through the last two catalyst masses in the main converter. This would allow increased production by reducing the pressure drop (resistance to gas flow) throughout the system.

B. Install larger diameter export steam piping to handle the additional steam production from the plant.

ENGINEERING DESIGN DETAILS

Interpass Absorbing Tower

	Standard	No. 7 at 2200 STPD	No. 8 at 2200 STPD
Tower			
Diameter Ratio Sq.Ft./STPD	0.13	0.230	0.230
Packing Volume Ratio Cu.Ft./STPD	1.7	3.24	3.24
Mist Eliminator Area Ratio-Sq.Ft./STPD	.09	0.098	0.115
Final Absorbing Tower			
Tower			
Diameter Ratio Sq.Ft./STPD	.11	0.116	0.15
Packing Volume Ratio Cu.Ft./STPD	1.6	1.67	2.3
Mist Eliminator Area Ratio-Sq.Ft./STPD	0.09	0.093	0.103

2. Please provide technical data to support your statement that the acid mist removal efficiencies for the two plants are 99.99 percent.

The removal efficiencies were based on the mist emitted as compared to the acid produced. It was not intended to represent the efficiency of the mist eliminators only.

3. Your answer to question 5 of the supplemental requirements for the No. 7 Acid Plant listed that 124 lb/hr of sulfur is emitted as sulfur dioxide. Is this number correct?

The number is a typographical error. The correct figure is 184.

4. Environmental Science and Engineering, Inc. attached two tables titled, "No. 7 Sulfuric Acid Plant Emission Tests". What are the bases for the average and maximum emissions listed in the tables? In three instances (Dec 9, 1977; Mar 7, 1979; and Oct 25, 1979) the emissions exceeded NSPS. Is the cause of these higher emissions known? Please provide a similar table of data and explanation for emissions in excess of NSPS for the No. 8 acid plant.

This is a typographical error. Page A-2 is incorrectly labeled "#7 Sulfuric Acid Plant". It should be labeled "#8 Sulfuric Acid Plant". Also, Page A-3 should be labeled, "#9 Sulfuric Acid Plant". Three runs are made with each stack test. The value shown as maximum is the highest of the three. The average is the average of the three. There were no emissions in excess of NSPS for #7 Sulfuric Acid Plant (Page A-1). #8 Sulfuric Acid Plant is an existing source and is not subject to NSPS. There were no violations of the State of Florida standards for existing sulfuric acid plants.

5. Please provide a copy of the document in which EPA concluded that BACT for a sulfuric acid plant is 10 lb SO<sub>2</sub>/T acid and 0.3 lb mist/T acid.

The statement is incorrect. The figures are limitations for an existing source by Chapter 17-2 FAC.

6. Why are the emissions from the No. 8 acid plant greater than those from the No. 7 Plant? Can the No. 8 plant be modified to meet the NSPS of 4 lb SO<sub>2</sub>/T acid and 0.15 lb mist/T acid? If so, what modifications will be needed and what is the approximate cost of these modifications?

Why are the emissions from the No. 8 Acid Plant greater than those from the No. 7 Plant?

No. 8 Plant has not undergone and is not planned to undergo the major modifications carried out at No. 7 Acid Plant.

Can the No. 8 Plant be modified to meet the NSPS of 4 lb SO<sub>2</sub>/T acid and 0.15 lb mist/T acid?

Yes, it could be.

If so, what modifications will be needed and what is the approximate cost of these modifications?

The modifications required would be very extensive and would include a new boiler, new water and steam system, new blower and turbine, new catalyst, etc. The total cost would be in excess of \$7mm (1984 dollars).

7. Will any phosphate plant (acid, DAF, GTSP, etc) have to be modified to increase its production up to its permitted capacity? If so, which plants will be modified and what modifications will be required?

No.

8. Please estimate the actual increases in particulate matter, sulfur dioxide and fluoride emissions from each phosphate plant due directly or indirectly to the use of the additional sulfuric acid that can be produced by the modified sulfuric acid plants.

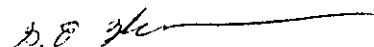
There will be no increase in the daily maximum emissions as the downstream plants are operated at their maximum rates as long as acid is available. There could and probably will be an increase in the daily average rate.

This is not possible to quantify because of two factors; the additional sulfuric acid requirements could, as has occurred in the past, be purchased, and it is not possible to predict the end product split.

The attached report by ESE supplies responses to Questions 9 thru 13, inclusive. Supportive computer printouts are enclosed.

Please contact me if you have any questions.

Yours very truly,



G. E. Wilkinson

GEW:rw

Enclosure

cc: Mr. Rudy J. Cabina  
Mr. A. E. Morrison

SEP 13 1984

Comment 9

The listing of sources provided by DER as missing or incorrect is acknowledged and has been verified by Mr. Steve Gyororg of Hillsborough County Environmental Protection Commission. To investigate the effects of these sources on maximum predicted sulfur dioxide (SO<sub>2</sub>) concentrations due to the proposed Gardinier H<sub>2</sub>SO<sub>4</sub> plant expansion, Environmental Science and Engineering, Inc. (ESE) performed additional air dispersion modeling. The Industrial Source Complex (ISC) Model was used, with model assumptions identical to those used in the previous modeling analysis (ESE report dated January 13, 1984).

The source inventory consisted of the original source inventory (January 1984 report) modified to account for the new/revised sources. The worst-case days identified from the previous analysis were rerun with the revised inventory. Only the receptor grids around Gardinier (north, south, east-west) were considered because the previous analysis showed that Gardinier did not contribute significantly to maximum concentrations predicted for other receptor grids (see Table 5-5 of January 1984 report).

In addition, only receptors located at or off of plant property were considered. The results of revised SO<sub>2</sub> modeling analysis are shown in Tables 1 and 2. As shown, the highest, second-highest 3-hour SO<sub>2</sub> concentration increased slightly from 901 ug/m<sup>3</sup> to 915 ug/m<sup>3</sup>. The revised maximum concentration is still well below the Florida ambient air quality standard (AAQS) of 1,300 ug/m<sup>3</sup>. The maximum predicted 24-hour SO<sub>2</sub> concentration did not increase above the 249-ug/m<sup>3</sup> level predicted previously. However, a 249-ug/m<sup>3</sup> level is now also predicted for the south grid.

Comment 10

A map locating the Gardinier plant property boundaries is provided under the response to Comment 11. The Gardinier plant is surrounded on two

Table 1. Revised Maximum 3-Hour Average SO<sub>2</sub> Concentrations for Comparison to AAQS--  
Receptors Around Gardinier

Receptor Grid Location	Value	Concentration (ug/m <sup>3</sup> )				Receptor Location		Period		
		Total	Contribution From			UTM		Julian Day	Hour Ending	Year
			Gardinier Sources	Other Modeled Sources	Back- ground	Coordinates (km)				
						X	Y			
<u>Previous Modeling</u>										
North	H2H	901	456	430	15	363.5	3083.4	158	18	1978
<u>Revised Modeling</u>										
North	H	972	396	561	15	363.5	3083.4	160	9	1978
	H2H	915	456	444	15	363.5	3083.4	158	18	1978
South	H	786	771	0	15	362.8	3081.8	235	15	1978
	H2H	750	735	0	15	362.8	3081.8	257	15	1978
East-West	H	1062	298	749	15	363.6	3083.6	82	12	1975
	H2H	843	565	263	15	363.6	3083.6	66	12	1975

Note: H = Highest concentration.  
H2H = Highest, second-highest.

Source: ESE, 1984.

Table 2. Revised Maximum 24-Hour Average SO<sub>2</sub> Concentrations for Comparison to AAQS--  
Receptors Around Gardinier

Receptor Grid Location	Value	Concentration (ug/m <sup>3</sup> )				Receptor Location		Period	
		Total	Contribution From			UTM		Julian	
			Gardinier Sources	Other Modeled Sources	Back- ground	Coordinates		Day	Year
						(km)			
X	Y								
<u>Previous Modeling</u>									
North	H2H	249	234	0	15	362.0	3083.1	127	1979
<u>Revised Modeling</u>									
North	H	272	257	0	15	362.0	3083.1	263	1979
	H2H	249	234	0	15	362.0	3083.1	127	1979
South	H	251	104	132	15	364.35	3081.1	58	1973
	H2H	249	127	107	15	364.35	3081.1	351	1973
East-West	H	236	221	0	15	362.0	3082.4	253	1979
	H2H	234	219	0	15	362.0	3082.4	254	1979

Note: H = Highest concentration.  
H2H = Highest, second-highest concentration.

Source: ESE, 1984.

sides by water. To the north is located the Gypsum stack, which is precluded from public access. To the northeast and east, the plant is bounded by U.S. 41 and railroad tracks, providing an effective barrier against public access.

The location and magnitude of maximum ground-level SO<sub>2</sub> concentrations without regard to plant boundaries was determined by performing additional dispersion modeling. Receptor locations are shown in the map under the response to Comment 11. A 5-year screening analysis was performed using all sources from the revised SO<sub>2</sub> inventory with annual emissions exceeding 250 tons per year. The results of these analyses are presented in Tables 3, 4 and 5.

Table 3 shows maximum predicted on-plant property 3-hour SO<sub>2</sub> concentrations. Of concern is whether the 3-hour AAQS of 1,300 ug/m<sup>3</sup>, not to be exceeded more than once per year, is predicted to be violated. The highest (H) and highest, second-highest (H2H) concentrations occurring in 1975 were both due to the occurrence of calm winds. The next valid H concentration was 871 ug/m<sup>3</sup> in 1975. The other years in which the 1,000-ug/m<sup>3</sup> level was exceeded were: the H2H in 1974 of 1,107 ug/m<sup>3</sup> was due to calm winds; the H2H in 1978 of 1,189 ug/m<sup>3</sup> was due to calm winds. This analysis demonstrates that maximum predicted (unrefined) 3-hour SO<sub>2</sub> impacts on plant property are below 1,189 ug/m<sup>3</sup>, and well below the 1,300-ug/m<sup>3</sup> AAQS.

Table 4 shows a similar analysis for the 24-hour averaging time. The H and H2H levels predicted in any year (351 and 326 ug/m<sup>3</sup> in 1978) were both due to calms in the meteorological data base. The next highest H2H value is 227 ug/m<sup>3</sup> (1975) and is well below the 24-hour AAQS of 260 ug/m<sup>3</sup>.



Table 3. Maximum 3-Hour Average SO<sub>2</sub> Concentrations for Receptors Located on Plant Property

Year	Value	Concentration (ug/m <sup>3</sup> )			Receptor Location		Period		Comments
		Total	Contribution From		UTM Coordinates (km)		Julian Day	Hour Ending	
			Modeled Sources	Back-ground	X	Y			
1973	H	931	916	15	363.1	3082.9	37	8	No check for calms
	H2H	867	852	15			346	7	No check for calms
1974	H	1,146	1,131	15	362.4	3083.6	69	1	No check for calms
	H2H	1,107	1,092	15			162	8	Due to calms
1975	H	1,659	1,644	15	362.4	3083.6	165	1	Due to calms
	H2H	1,491	1,476	15			300	1	Due to calms
	H	871	856	15			82	4	Valid
1978	H	1,266	1,251	15	362.4	3083.6	119	1	Due to calms
	H2H	1,189	1,172	15			161	1	Due to calms
1979	H	914	899	15	362.5	3082.9	235	4	Valid
	H2H	819	804	15			276	8	Due to calms

Note: H = Highest concentration.  
H2H = Highest, second-highest concentration.

Source: ESE, 1984.

Table 4. Maximum 24-Hour Average SO<sub>2</sub> Concentrations for Receptors Located on Plant Property

Year	Value	Concentration (ug/m <sup>3</sup> )			Receptor Location		Julian Day	Comments
		Total	Modeled Sources	Back-ground	UTM Coordinates (km)			
					X	Y		
1973	H	210	195	15	362.1	3083.2	359	Not checked for calms
	H2H	202	187	15			88	Not checked for calms
1974	H	195	190	15	362.95	3083.2	106	Not checked for calms
	H2H	191	176	15			40	Not checked for calms
1975	H	387	372	15	362.4	3083.6	165	Not checked for calms
	H2H	227	212	15			300	Not checked for calms
1978	H	351	336	15	362.4	3083.6	119	Due to calms
	H2H	326	311	15			63	Due to calms
	H	241	226	15	362.3	3082.6	171	Valid
	H2H	233	218	15			114	Valid
1979	H	248	233	15	362.3	3082.6	262	Not checked for calms
	H2H	226	211	14			176	Not checked for calms

Note: H = Highest concentration.  
H2H = Highest, second-highest concentration.

Source: ESE, 1984.

Table 5. Maximum Annual Average SO<sub>2</sub> Concentrations for Receptors Located on Plant Property

Year	Concentration (ug/m <sup>3</sup> )			Receptor Location		Comments
	Total	Contribution From		UTM Coordinates (km)		
		Modeled Sources	Back-ground	X	Y	
1973	54	39	15	362.2	3082.9	Includes contribution due to calms
1974	54	39	15	362.3	3082.6	Includes contribution due to calms
1975	61	46	15	362.3	3082.6	Includes contribution due to calms
1978	64	49	15	362.4	3082.2	Includes contribution due to calms
1979	60	45	15	362.3	3082.6	Includes contribution due to calms

Source: ESE, 1984.

Maximum annual average SO<sub>2</sub> impacts on plant property are shown in Table 5. The maximum value of 64 ug/m<sup>3</sup> slightly exceeds the annual AAQS of 60 ug/m<sup>3</sup>, but the predicted value includes the effects of calm wind conditions on the concentration estimates. This maximum also occurs well within plant property boundaries.

Comment 11

See attached working maps for receptor sites in the vicinity of Gardinier (north, south, and east-west grids) and TEC Big Bend. A table of receptor locations is provided for northern receptors which clearly defines distance and direction from Gardinier.

Comment 12

Working maps are provided in response to this comment.

Comment 13

Additional dispersion modeling was conducted in order to assess the impact of the proposed modification upon the Pinellas County SO<sub>2</sub> nonattainment area. A 5-year ISC model execution was performed, using only the increase in allowable SO<sub>2</sub> emissions from the Gardinier H<sub>2</sub>SO<sub>4</sub> Plants 7 and 8. Stack parameters were assumed to be the same for before and after the modification. This assumption is conservative since the stack flows are based upon the higher production rate and allowable emissions, and therefore would tend to underpredict baseline impacts and overpredict the increase in air quality impacts. Because of the distance to the nonattainment area from Gardinier, a single receptor point was used in the analysis (329.0, 3112.0). The results of the analysis are summarized in Table 6.

As shown, the predicted increase in SO<sub>2</sub> concentrations in the nonattainment area due to the proposed modification are less than significance levels. The significance levels are 1, 5, and 25 ug/m<sup>3</sup> for the annual, 24-hour, and 3-hour averaging times, respectively.

Table 6. Maximum SO<sub>2</sub> Concentrations Predicted for the SO<sub>2</sub> Nonattainment Area

Averaging Time	Value	Increase in Concentration (ug/m )	Period		
			Julian Day	Hour Ending	Year
Annual	H	0.1	--	--	All
24-Hour	H	3.2	15	24	1973
	H2H	3.1	253	24	1973
3-Hour	H	17	253	6	1973
	H2H	15	15	6	1973

Note: H = Highest concentration.  
H2H = Highest, second-highest concentration.

Source: ESE, 1984.

RECEPTOR GAUGES

- NORTH
- X EAST-WEST
- SOUTH
- ◇ ON PLANT PROPERTY
- ▨ PLANT PROPERTY

362                      363                      364                      365

GIBSONTON QUADRANGLE  
FLORIDA - HILLSBOROUGH CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)

TAMPA COURTHOUSE 9 M

319 MNE  
BRANDON

3084

370 000 FEET

3083

3083

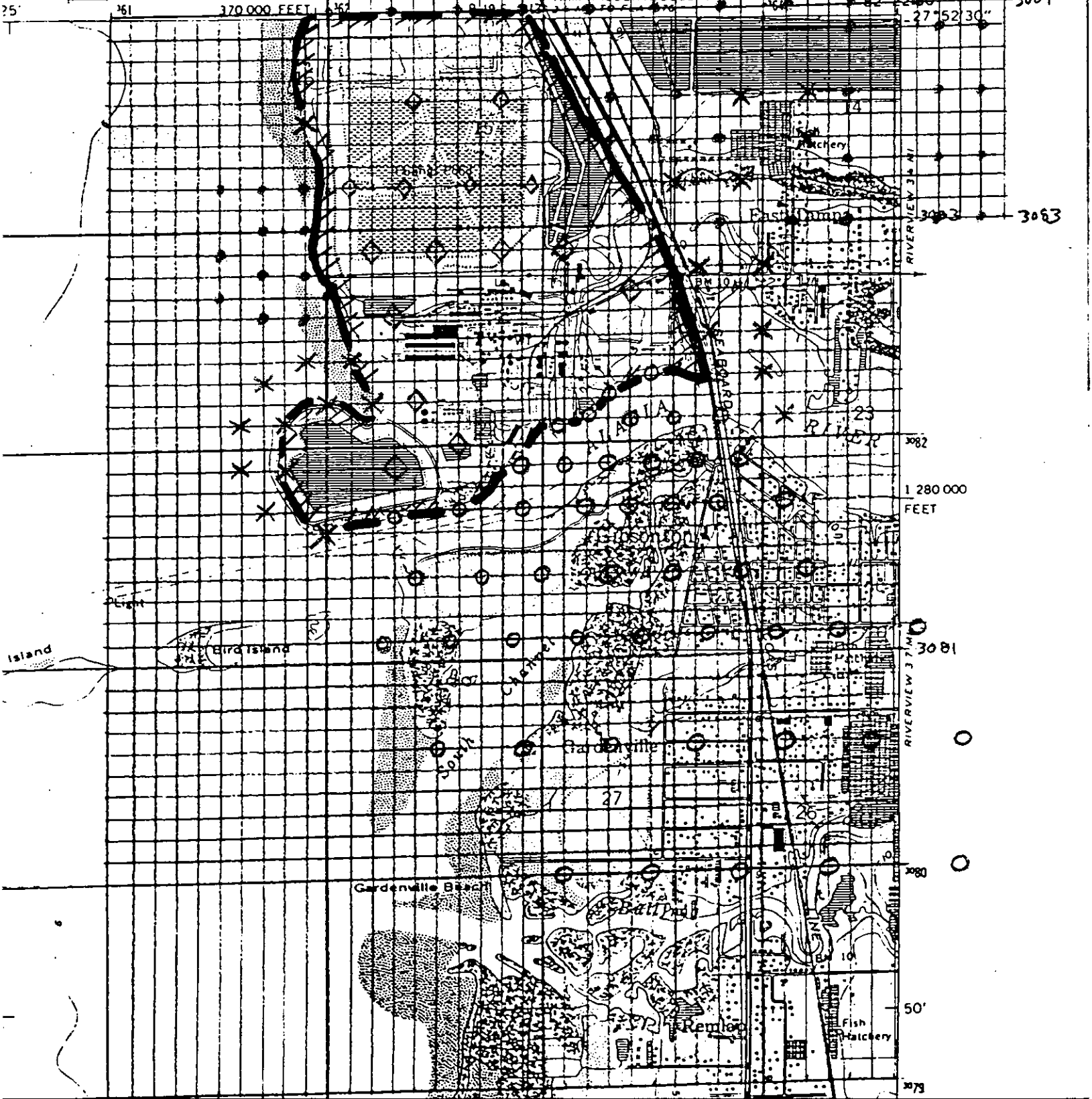
3082

1 280 000  
FEET

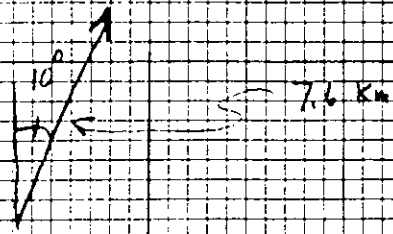
3081

50'

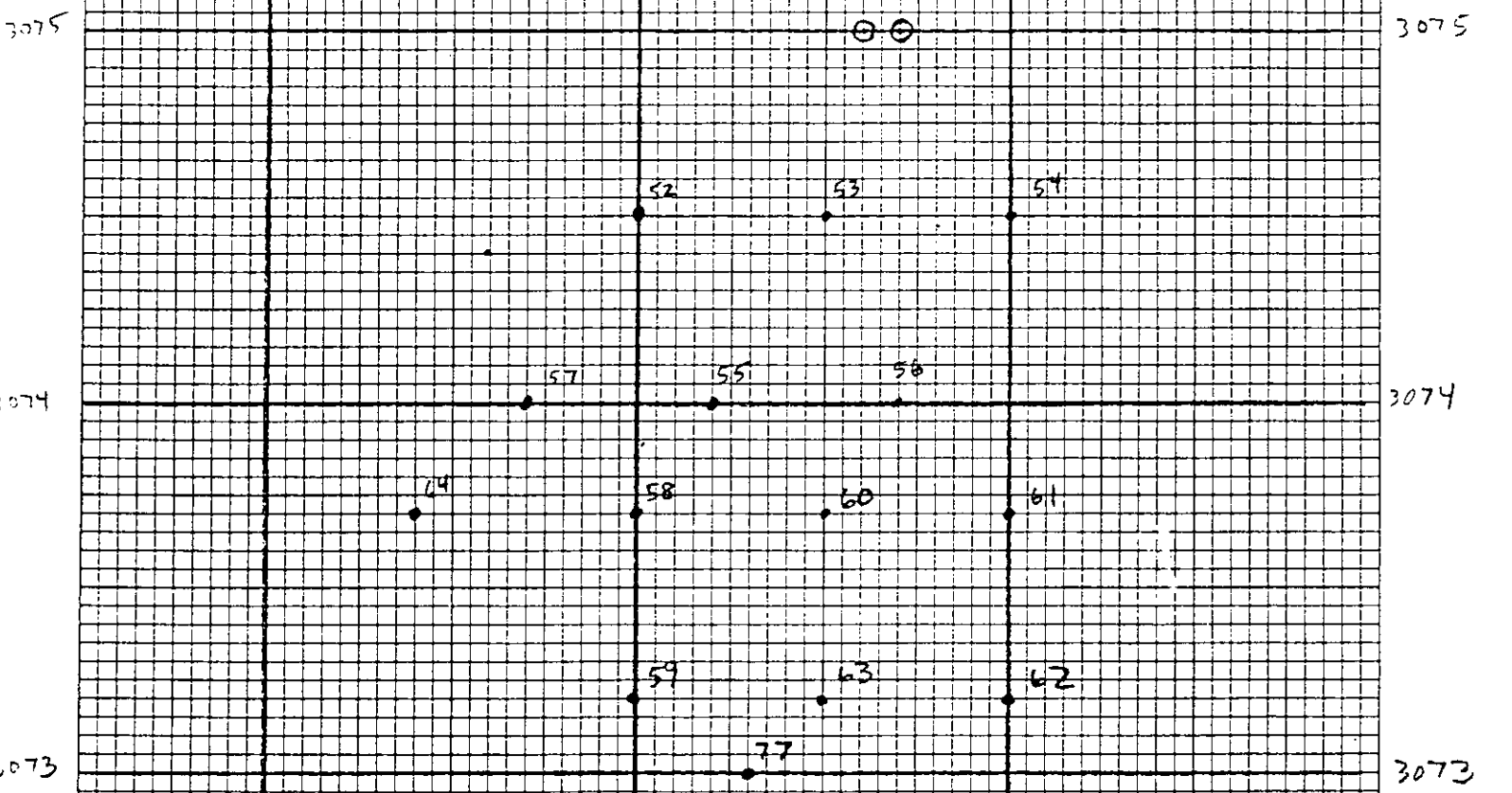
Blk



Gardiner 363  
30° 2.5'



Big Bend

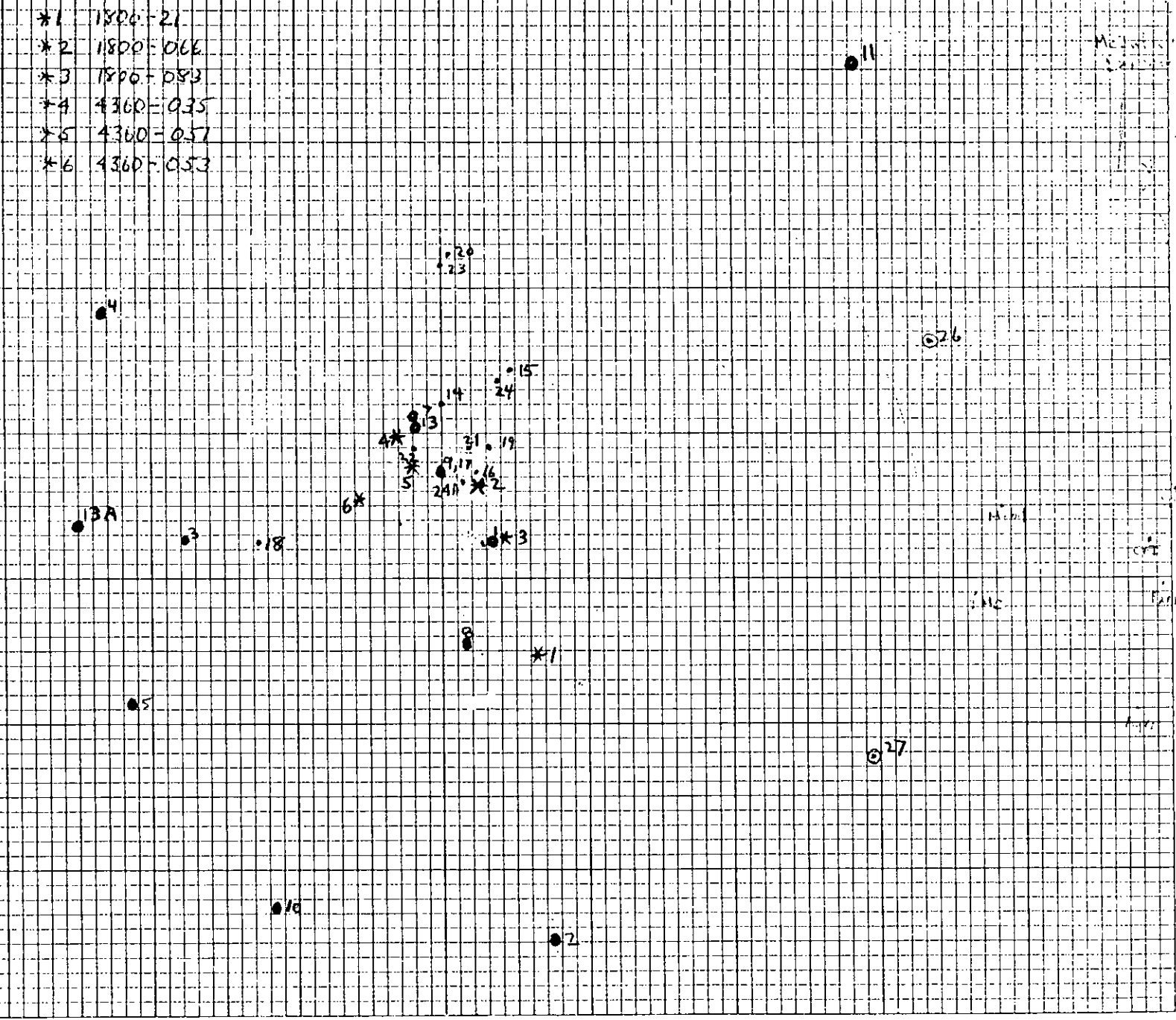


RECEPTOR GRID SOUTH  
OF BIG BEND

HPBooks - GRAPH PAPER FROM YOUR COPIER

Sources SO<sub>2</sub> Monitoring Sites

- 1. Gardiner
- 2. AFL Manatee
- 3. FPC Bartow
- 4. FPC Higgins
- 5. FPC Bayboro
- 6. FAC Anclote
- 7. TECO Hookers Pt +
- 8. TECO Big Bend +
- 9. TECO Gannett +
- 10. AMAX
- 11. PLT 5 (Central Phosphate)
- 12. PLT 2 (Grandisland)
- 13. General Portland +
- 14. Water Pump
- 15. Florida Steel
- 16. Exxon
- 17. IMC Corp
- 18. National Gypsum -
- 19. Mittam -
- 20. Thatcher -
- 21. Chloride M +
- 22. Sulfur T
- 23. Anheiser Busch
- 24. Gulf Coast +
- 25. Head bras.
- 26. Darden Chem
- 27. Occwaster



<50 km  
 >1000 TPI  
 <20 km  
 >25 TPI  
 <1000 TPI  
 >20 km  
 >250  
 <1000 TPI

LOCATION SO<sub>2</sub> SOURCES AND AMBIENT MONITORING SITES



ESE  
 P. O. Box ESE  
 GAINESVILLE, FL 32602  
 (904) 332-3318

SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_

CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

RECEPTOR GRID NORTH  
 OF INTERACTION SOURCE SCALE \_\_\_\_\_

					Direction from Sardinia	Distance (km)
6	Sardinia	363	3082.5			
	(St. No. in Map)					
2	Chloride Metals (2)	361.8	3088.3		348	5.9
3	TECO HP (7)	358.0	3091.0		330	9.9
5	TECO Gannam (9)	360.0	3087.5		329	5.9
1	Gen Portland (13)	358.0	3090.6		328	9.5
2	Gulf Coast (24)	363.9	3093.8		5	11.3

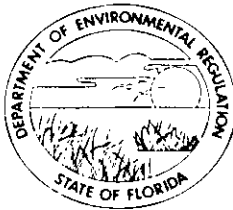
18

Receptors - north of Interaction Source

Source	Receptors	Downwind Distance from source	Direction	Source Location
Gannam	359.74, 3087.93	from { 0.5	329°	360.0 3087.5
	359.48, 3088.02	Gannam { 1.0		
	358.29, 3088.53	{ 2.0		
TECO HP Gen Port	357.75, 3091.43	from { 0.5	330°	358 3091
	357.50, 3091.87	HP { 1.0		
	357.0, 3092.73	{ 2.0		
Chloride Metals	361.7, 3088.79	from { 0.5	348°	361.8 3088.3
	361.59, 3089.28	Chloride { 1.0		
	361.38, 3090.26	Metals { 2.0		
Gulf Coast	363.94, 3094.3	{ 0.5	5°	363.9 3093.8
	363.99, 3094.8	{ 1.0		
	364.07, 3095.79	{ 2.0		

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

July 27, 1984

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. A. E. Morrison  
Manager, Environmental Services  
Gardinier, Inc.  
P. O. Box 3269  
Tampa, Florida 33601

Dear Mr. Morrison:

The Department has made a preliminary review of your applications for permits to increase production in Gardinier's Nos. 7 and 8 sulfuric acid plants. Before these applications can be processed, the Department will need the information being requested below.

1. Section II.C. of the application states the converter and steam systems of the acid plants will be modified to increase production. Section 1.0 of Environmental Science and Engineering, Inc.'s attachment to the applications mentions changes to the drying tower, converter, and absorbing tower cooling systems. What are the current design capacities (acid production) of the absorbing towers and sulfuric acid mist eliminators? Please describe briefly all modifications to each of the acid plants that may be required to increase production to the proposed capacity and supply engineering design details that confirm this equipment can handle the proposed production rates.
2. Please provide technical data to support your statement that the acid mist removal efficiencies for the two plants is 99.99 percent.
3. Your answer to question 5 of the supplemental requirements for the No. 7 acid plant listed that 124 lb/hr of sulfur is emitted as sulfur dioxide. Is this number correct?
4. Environmental Science and Engineering, Inc. attached two tables titled No. 7 Sulfuric Acid Plant Emission Tests. What are the basis for the average and maximum emissions listed in the tables? In three instances (Dec. 9, 1977,

Mr. A. E. Morrison  
 Page Two  
 July 27, 1984

March 7, 1979 and Oct. 25, 1979), the emissions exceeded NSPS. Is the cause of these higher emissions known? Please provide a similar table of data and explanation for emissions in excess of NSPS for the No. 8 acid plant.

5. Please provide a copy of the document in which EPA concluded that BACT for a sulfuric acid plant is 10 lb SO<sub>2</sub>/T acid and 0.3 lb mist/T acid.
6. Why are the emissions from the No. 8 acid plant greater than those from the No. 7 plant? Can the No. 8 plant be modified to meet the NSPS of 4 lb SO<sub>2</sub>/T acid and 0.15 lb mist/T acid? If so, what modifications will be needed and what is the approximate cost of these modifications?
7. Will any phosphate plant (acid, DAP, GTSP, etc.) have to be modified to increase its production up to its permitted capacity? If so, which plants will be modified and what modifications will be required?
8. Please estimate the actual increases in particulate matter, sulfur dioxide, and fluoride emissions from each phosphate plants due directly or indirectly to the use of the additional sulfuric acid that can be produced by the modified sulfuric acid plants.
9. The following sources were not considered in the modeling analysis:

Source	SO <sub>2</sub> (g/s)	H(m)	T(K)	D(m)	V(m/s)	UTME	UTMN
Columbia Paving	3.7	12.2		1.2	22.2	366.8	3077.8
Couch Constr.	3.3	10.4		1.4	14.4	364.4	3098.1
Columbus Co.	4.8	12.6		1.3	20.2	362.1	3096.7
McKay Bay RRF	21.4	50		1.8	18.3	360.3	3092.3
General Portland 18-06	349.1	61.0		4.7	9.1	358.0	3090.6

The following sources were listed but with different allowable emissions than were used in the analysis.

Mr. A. E. Morrison  
Page Three  
July 27, 1984

<u>Source</u>	<u>SO<sub>2</sub> (g/s)</u>
Gulf Coast Lead	47.2
Big Bend Unit 4	655.3
IMC (24-01)	41.5

The following sources were listed but are no longer operational or permitted.

Source

Tampa Water Pump  
9-01  
9-02

General Portland  
18-04  
18-05

All of these changes should be made in corrective modeling or an explanation of why each of these sources will not significantly alter the previous modeling should be made.

10. In that the maximum predicted concentrations are often occurring at the plant property line, please provide a map locating the plant boundary. Also, justify the use of the plant boundary restriction by proving that the general public is precluded from access inside this boundary by a physical barrier.

Determine the location and magnitude of the maximum ground-level concentrations without regard to any plant boundary. If the predicted concentrations exceed ambient standards or increments, then allowance can be made for the plant boundary provided it can be demonstrated that the boundary constitutes a physical barrier.

11. Provide a map locating the receptor sites used in the modeling analysis.

Mr. A. E. Morrison  
Page Four  
July 27, 1984

12. Provide a map locating the six SO<sub>2</sub> monitoring sites in relation to nearby sources.
13. An analysis of the ambient impact on the SO<sub>2</sub> nonattainment area located in Pinellas county by sources within the area of influence should be made until such time as this area is officially designated attainment.

If you have any questions on the information needed to complete your applications, please write me or call Willard Hanks on questions 1-8 and Tom Rogers on questions 9-13 at (904)488-1344. We will resume processing your applications when the information requested above is submitted.

Sincerely,



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

CHF/WH/s

cc: SW District  
Hillsborough County EPC

PLANT 0008 GARDINIÈR INC TAMPA FL  
U.S. HWY 41.  
TAMPA  
R J CABINA  
P O BOX 3269  
TAMPA

FL. 33601

PRIVATE FILE STATUS NEW ADD  
OTHER  
FL. 33601  
AOCR=052 SIC=1475  
LAT=27:51:28N LON=82:23:15W  
UTM ZONE 17 362.9EAST 3082.5NORTH

POINT 05 CONST PATS#

OPER PATS#

ISS= / / EXP= / /  
SULFURIC ACID PLANT NO. 8  
SOURCE= IPP=00 EXIST NSPS  
STACK HT= 150FT DIAM= 8.0FT TEMP= 461F FLOW= 42000CFM PLUME= 0FT  
BOILER CAP= 0MBTU/HR FUEL FOR SPACE HEAT= 0.0%

ISS=~~04/26/79~~ EXP=04 ~~15/84~~  
155 COMM.PNTS. 113,790  
OPERATING PROCESS RATES YOR=~~29.3~~ RAW MATERIAL= 19.720 TN/PRC  
PRODUCT 60.1 TN/PRC FUEL 0 OTHER

NORMAL COND. DEC-FEB=25% MAR-MAY=25% JUN-AUG=25% SEP-NOV=25%

PERMIT SCHEDULE 24HRS/DAY 7DAYS/WK 52WKS/YR

AOR FOR ~~03/07/79~~ 20HRS/DAY 7DAYS/WK 52WKS/YR

EXCESS HEAT USED TO PROCESS PHOS ACID

COMPLIANCE NEDS=1 QRC=2 UPDATE= / SCHED= / UPDATED= / /

PERMIT=1 YOR=~~79~~ INSPECTED=~~04/07/79~~ NEXT DUE= ~~12/18/79~~

3/23/84

84

\*SCC'S 3-01-023-08 YOR: 83 SOURCE: P RATE: 138491 MAX: 30.2 CONFID: 2

POLLUTANTS MONITORED

VE 11204 NORM. EST/METH. 044 / MAX.ALW. TNS/YR.  
CTLS. PRI=000 SEC=000 EFF=88.0% NEXT DUE ~~07/30/84~~ TEST/FREQ=6  
TESTED 11/15/83 AGENCY=3 REG=2.600(2)(a)2. COMPLIANCE=1  
EMITTED 600.00 ALLOWED= ~~600.00~~ 600.10 HR OP-RATE= 70TN/PRD

S-A 12604 NORM. 13.8 EST/METH. 014 9.6 / MAX.ALW. 100.5 TNS/YR.  
CTLS. PRI=044 SEC=014 EFF=99.9% NEXT DUE 07/30/84 TEST/FREQ=6  
TESTED 11/15/83 AGENCY=3 REG=2.600(2)(a)2. COMPLIANCE=1  
EMITTED 2.73 ALLOWED= ~~2.73~~ 21.15 HR OP-RATE= 70TN/PRD

SO2 42401 NORM. 366.7 EST/METH. 044 628 / MAX.ALW. 1606 TNS/YR.  
CTLS. PRI=044 SEC=014 EFF=99.9% NEXT DUE 07/30/84 TEST/FREQ=6  
TESTED 11/15/83 AGENCY=3 REG=~~2.600(2)(a)2~~ COMPLIANCE=1  
EMITTED 137.50 ALLOWED= ~~280.00~~ 280.00LBS/HR OP-RATE= 70TN/PRD

2.600(2)(a)2.

SCC COMMENTS: NO FUEL FOR THIS OPERATION; MAX BASED ON SULFU

To: Willard Aants, BAQM

Re: Gardiner #7 & #8

Sulfuric Acid Plant ~~APR~~  
updates

AUG 01 1984

From: Steve Gyones BAQM  
Hillsborough County ETC

LANT 0008 GARDINIER INC TAMPA FL  
U.S. HWY 41  
TAMPA  
R J CABINA  
P O BOX 3269  
TAMPA

PRIVATE FILE STATUS NEW ADD  
OTHER  
FL. 33601  
AOCR=052 SIC=1475  
LAT=27:51:28N LON=82:23:15W  
UTM ZONE 17 362.9EAST 3082.5NORTH

POINT 04 CONST PATSH

OPER PATSH

~~1029 30795~~

ISS= / / EXP= / /

ISS=~~09/10/83~~ EXP=~~04/15/84~~

NO. 7 SULFURIC ACID PLANT  
SOURCE= IPP=02 ~~NEW~~ **NEW** **N5PS**

149 COMM.PNTS. **113,925 CFM**

STACK HT= 150FT DIAM= 7.5FT TEMP= ~~150~~F FLOW= ~~70700~~CFM PLUME= 0FT  
BOILER CAP= 0MBTU/HR FUEL FOR SPACE HEAT= 0.0%  
OPERATING PROCESS RATES YOR=~~20.9~~ RAW MATERIAL= **20.9** TN/PRC

PRODUCT **63.9** TN/PRD FUEL 0 OTHER

NORMAL COND. DEC-FEB=25% MAR-MAY=25% JUN-AUG=25% SEP-NOV=25%

PERMIT SCHEDULE 24HRS/DAY 7DAYS/WK 52WKS/YR

AOR FOR ~~04/15/84~~ **25**HRS/DAY 7DAYS/WK 50WKS/YR

**03/23/84 22**

COMPLIANCE NEDS= 1 QRC=2 UPDATE= / SCHED= / UPDATED= / /  
PERMIT= 1 YOR= **83** INSPECTED=~~11/10/83~~ NEXT DUE= ~~10/10/83~~

**POINT COMMENTS: RAW MATERIAL RATE IS ESTABLISHED AS SULFUR**

SCC'S

~~3-01-023-01~~ SOURCE=P RATE= 383800 MAX= 46 TN/PRC  
FUEL CONT S02=0.00% ASH=00.00% MBTU YOR=79 CONFID=2

~~3-01-023-00~~ YOR=**83** SOURCE=P RATE= ~~417052~~ MAX= ~~47700~~ **B2**  
FUEL CONT S02=0.00% ASH=00.00% MBTU YOR= CONFID=2

**SCC COMMENTS: NO FUEL FOR THIS OPERATION; MAX BASED ON SULFUR**

POLLUTANTS MONITORED

~~TSP 11101 NORM. 0.00 EST/METH. 5.11 MAX.ALW. TNS/YR.  
CTLS. PRI=015 SEC=000 EFF=90.0% NEXT DUE 10/20/78 TEST/FREQ=  
TESTED 04/19/78 AGENCY= REG= COMPLIANCE=  
EMITTED 0.00 ALLOWED= 0.00LBS/HR OP-RATE= OTHER~~

~~VE 11204 NORM. 0.44 EST/METH. / MAX.ALW. TNS/YR.  
CTLS. PRI=015 SEC=000 EFF=99.9% NEXT DUE 10/30/80 TEST/FREQ=6  
TESTED 11/10/83 AGENCY=3 REG= COMPLIANCE=1  
EMITTED 300.00 ALLOWED= 600.20LBS/HR OP-RATE= 82TN/PRD~~

~~S-A 12604 NORM. 13.8 EST/METH. 21.1 12/8 MAX.ALW. 60.226 TNS/YR.  
CTLS. PRI=015 SEC=000 EFF=99.9% NEXT DUE 11/30/83 TEST/FREQ=6  
TESTED 11/10/83 AGENCY=3 REG= COMPLIANCE=1  
EMITTED 4.98 ALLOWED= 12.36LBS/HR OP-RATE= 82.4 TN/PRD~~

~~SO2 42401 NORM. 267 EST/METH. 269/3 MAX.ALW. 1606 TNS/YR.  
CTLS. PRI=044 SEC=000 EFF=99.9% NEXT DUE 11/30/83 TEST/FREQ=6  
TESTED 11/10/83 AGENCY=3 REG=.05(6)B1B COMPLIANCE=1  
EMITTED 242.26 ALLOWED= 329.60LBS/HR OP-RATE= 82TN/PRD~~



No. 0156534

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO		
Mr. A. E. Morrison		
STREET AND NO.		
P.O., STATE AND ZIP CODE		
POSTAGE \$		
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢
	SPECIAL DELIVERY	¢
	RESTRICTED DELIVERY	¢
	OPTIONAL SERVICES	
	RETURN RECEIPT SERVICE	
	SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢	
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢	
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢	
TOTAL POSTAGE AND FEES \$		
POSTMARK OR DATE		
7/31/84		

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979

② 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. A. E. Morrison  
P. O. Box 3269  
Tampa, Florida 33601

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0156534	

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE  Addressee  Authorized agent

*Thomas...*

4. DATE OF DELIVERY

AUG - 5 1984

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: *b-t*

CLERK'S INITIALS

TAMPA FLORIDA AUG 16 1984 USPS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

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: Bob Garrett *RRG*  
THRU: Bill Thomas *[Signature]*  
DATE: July 19, 1984  
SUBJECT: Review comments for Gardinier Sulfuric Acid Plants  
7 and 8 Expansion Request

DER  
JUL 23 1984  
BAQM

Gardinier has applied to CAPS for a construct modification to their sulfuric acid plants 7 and 8, increasing production 880 tms/day or 15% over present total production.

1. Our question, as with Royster and USSAC, is what will the extra acid be utilized for? Will this cause an increase in phosphoric acid, DAP and/or GTSP production here at this facility?
2. An error presently exists in para 2.3.2 and is repeated throughout the ESE report concerning the acid mist allowable of 0.3 lbs/ton acid. The previous operating permit allowed 0.3 lbs acid mist per ton of acid produced. A recent permit A029-84015, Sulfuric Acid Plant No. 8, was issued with a limit of 0.15 lbs/ton. Gardinier has put in a formal request to increase this to the 0.3 level. If the District does not honor this request, the environmental increase calculated by ESE will change and be a greater amount. We feel as probably you do, that it is time to bring this plant in line with NSPS limits.
3. We note that the 24 hour maximum concentration of SO<sub>2</sub> near their plant is 249  $\mu\text{G}/\text{M}^3$  or extremely close to the standard of 260  $\mu\text{G}/\text{M}^3$  of which Gardinier is a 94% contributor. Also the annual maximum is 58.4 where 60  $\mu\text{G}/\text{M}^3$  is the AAQS! Here they contribute 50% as predicted by model. This is a strong point in insisting on NSPS of 4 lbs/ton instead of 10 lbs/ton of 100% sulfuric acid.
4. Perhaps HCEPC will pick up the 10% opacity allowed in para 6.3. They have a rule of 5% maximum allowable visible emissions.

RRG/rbh

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO. \_\_\_\_\_  
 ACTION DUE DATE \_\_\_\_\_

1. TO: (NAME, OFFICE, LOCATION)	INITIAL
<i>Clair Jones</i>	DATE
2.	INITIAL
<i>DER - Jalky</i>	DATE
3.	INITIAL
<i>Bill T 7/24</i>	DATE
4.	INITIAL
<i>Willard</i>	DATE

REMARKS:  
 I would like to know what Willard thinks about H's.  
 Clair

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 & REPLY	
INITIAL & FORWARD	
DISTRIBUTE	
CONCURRENCE	
FOR PROCESSING	
INITIAL & RETURN	

- ① Goodwin said extra acid used to increase phosphate fertilizer production to their permitted limit.
- ② Don't know the plant's allowable limits but plan to permit at NSPS.
- ③ Tom Rogers requested additional information in the "incompleteness" letter to review model.
- ④ MAY HAVE TO GIVE PLANTS 5% opacity (instead of NSPS or 10%) because of HSPC rules.

FROM: *Bob Garrett* DATE: *7-20-84*  
 PHONE: \_\_\_\_\_

COUNTY



OF HILLSBOROUGH

*Not I/C Questions,*

*Need review when drafting permits*

MEMORANDUM

DER

JUL 19 1984

BAQ 1

Date

July 16, 1984

To Willard Hanks, BAQM

From Steve Gyrog, HCEPC *SG*

Subject: Modification To Gardinier's #7 and #8 Sulfuric Acid Plants

The #7 and #8 Sulfuric Acid Plants are currently undergoing modification to boost production. Each plant will produce 183,333 lb/hr of 99% sulfuric acid. Having inspected the sources and reviewed the applications, I recommend the issuance of two five month construction permits subject to the following specific conditions:

1. The maximum feed rate of sulfur to the burner shall be 60,124 lb/hr for the #7 Plant and 60,404 lb/hr for the #8 Plant.
2. Sulfur dioxide emissions shall not exceed 4 lbs/ton of 100% H<sub>2</sub>SO<sub>4</sub> produced as per 40 CFR 60.82.
3. Sulfuric acid mist emissions shall not exceed 0.15 lb/ton of 100% H<sub>2</sub>SO<sub>4</sub> produced as per 40CFR60.83.
4. Visible emissions shall not exceed 5% opacity as per Chapter 1-3.03 VI. C., except for 30 minute periods during plant startup when opacity shall be no greater than 40%.
5. The compliance test shall consist of the following methods and practices listed in 40CFR60.85:
  - a. Method 1 for sample and velocity traverses;
  - b. Method 2 for velocity and volumetric flow rate;
  - c. Method 3 for gas analysis.
  - d. Method 8 for the concentrations of SO<sub>2</sub> and acid mist;
    1. The minimum sampling time and sample volume for each Method 8 run shall be 60 minutes and 40.6 dscf. Other sampling times and sample volumes as necessitated by process variables may be approved by the HCEPC.
  - e. During each testing period, the rate of acid produced shall be determined by a suitable method and confirmed by a material balance over the production system. The production rate shall be expressed in tons per hour of 100% H<sub>2</sub>SO<sub>4</sub>.
  - f. The emission rates shall be determined by multiplying the volumetric flow rate calculated by EPA Method 2 and the acid mist and SO<sub>2</sub> concentrations calculated by EPA Method 8. Consistent units shall be used.

Page two

July 16, 1984

Modification To Gardinier's #7 and #8 Sulfuric Acid Plants

6. Emission monitoring shall consist of the following practices listed in 40CFR60.84:
  - a. Sulfur dioxide emissions shall be monitored continuously.
  - b. Performance evaluation of the monitoring system shall be conducted using the SO<sub>2</sub> portion of the Method 8 results.
  - c. Monitored data shall be made available to the DER or the HCEPC upon request.
  - d. Gardinier shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard.
    1. The conversion factor shall be determined, as a minimum, three times daily by measuring the sulfur dioxide concentration of the gas entering the converter. The Reich test may be used.
    2. The calculated conversion factors shall be recorded and the yearly average transmitted to the HCEPC on the Annual Operating Report.
7. Gardinier shall take precautionary measures to prevent excess emissions in the form of leaks.
8. All construction on the plants shall be completed by March 1, 1985, unless the HCEPC is notified for an extension review.
9. Upon completion of construction and within 30 days of startup, compliance test results and a Certificate of Completion of Construction shall be submitted to the HCEPC.

If you have any questions or comments, please call me.

sw/4-A23

cc:

Bob Garrett/Bill Thomas, DER