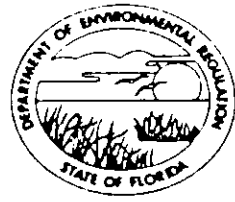


STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

BAOM

ST. JOHNS RIVER  
DISTRICT  
3319 MAGUIRE BOULEVARD  
SUITE 232  
ORLANDO, FLORIDA 32803



BOB GRAHAM  
GOVERNOR  
VICTORIA J. TSCHINKEL  
SECRETARY  
ALEX SENKEVICH  
DISTRICT MANAGER

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sulfuric Acid Plant  New<sup>1</sup>  Existing<sup>1</sup>  
APPLICATION TYPE:  Construction  Operation  Modification  
COMPANY NAME: USS Agri-Chemicals 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) No. 2 Sulfuric Acid Plant  
SOURCE LOCATION: Street SR 630; 3.5 mi west of Ft. Meade City Ft. Meade  
UTM: East 416.12 North 3068.67  
Latitude 27 ° 44 ' 29 "N Longitude 81 ° 51 ' 4 "W  
APPLICANT NAME AND TITLE: J.C. Daniel, Manager, Environmental & Special Projects  
APPLICANT ADDRESS: Post Office Box 867, Ft. Meade, Florida 33841

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative\* of USS Agri-Chemicals  
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

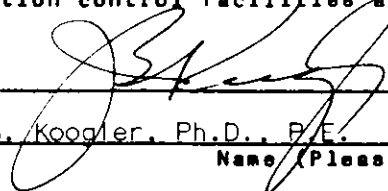
Signed: J.C. Daniel  
J.C. Daniel, Manager, Environmental & Special  
Name and Title (Please Type) Projects  
Date: \_\_\_\_\_ Telephone No. (813) 533-8184

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~~ 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

<sup>1</sup> 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 

John B. Koogler, Ph.D., P.E.  
Name (Please Type)

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS  
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601  
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 4/22/85 Telephone No. (904) 377-5822

**SECTION II: GENERAL PROJECT INFORMATION**

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

A construction permit application to increase the permitted production rate of a new double absorption contact sulfuric acid plant from 2,200 tpd of 100% sulfuric acid to 3,000 tpd of 100% sulfuric acid. The plant will operate in full compliance with applicable regulations. See project PSD package for more detailed project description.

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

Start of Construction October 1986 Completion of Construction November 1986

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.)

The cost of the additional catalyst necessary to maintain the sulfur dioxide recovery efficiency is \$150,000.00. The existing mist eliminators are adequate to control acid mist emissions at the higher production rate.

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

PSD FL-064 Approval, April 1981; AC53-33819; issued 12/24/80 and expired 9/30/83;  
AO 53-69838 issued 9/27/83 and expiring 8/15/88

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;  
if power plant, hrs/yr \_\_\_\_\_; if seasonal, describe: Annual operating time will  
not exceed 7,967 hours per year.

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 Deterioration" (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? YES

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 justifi-  
cation for any answer of "No" that might be considered questionable.

See project PSD Application 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      | Ash          | 0.5% | 81,878                    | A (Attachment 1)       |
|             |              |      |                           |                        |
|             |              |      |                           |                        |
|             |              |      |                           |                        |

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

- Total Process Input Rate (lbs/hr): 81,878 (sulfur)
- Product Weight (lbs/hr): 255,102 (98% acid)

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

| Name of Contaminant | Emission <sup>1</sup> |             | Allowed Emission Rate per Rule 17-2 | Allowable <sup>3</sup> Emission lbs/hr | Potential <sup>4</sup> Emission |      | Relate to Flow Diagram |
|---------------------|-----------------------|-------------|-------------------------------------|--|---------------------------------|------|------------------------|
|                     | Maximum lbs/hr        | Actual T/yr |                                     |  | lbs/yr                          | T/yr |                        |
| Sulfur Dioxide      | 500                   | 1992        | 4 lb/ton                            | 500                                    | 500                             | 1992 | B (Attach1)            |
| Acid Mist           | 18.8                  | 74.7        | 0.15 lb/ton                         | 18.8                                   | 213                             | 846  | "                      |
|                     |                       |             |                                     |  |                                 |      |                        |
|                     |                       |             |                                     |  |                                 |      |                        |

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

<sup>2</sup>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)

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

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

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

| Name and Type<br>(Model & Serial No.) | Contaminant    | Efficiency | Range of Particles<br>Size Collected<br>(in microns)<br>(If applicable) | Basis for<br>Efficiency<br>(Section V<br>Item 5) |
|---------------------------------------|----------------|------------|---|--|
| Double absorber                       | Sulfur dioxide | 99.7       | NA  | AP-42, Supp12                                    |
| Demister                              | Acid Mist      | 91.2       | > 0.5 um  | " "  |
|                                       |                |            |   |  |
|                                       |                |            |   |  |
|                                       |                |            |   |  |

E. Fuels

| Type (Be Specific) | Consumption* |         | Maximum Heat Input<br>(MMBTU/hr) |
|--------------------|--------------|---------|----------------------------------|
|                    | avg/hr       | max./hr |                                  |
| None               |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |

\*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average NA Maximum \_\_\_\_\_

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

Cooling tower blowdown, boiler blowdown and feedwater treatment unit blowdown are non-process effluents and will be discharged to the plant outfall.

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

Stack Height: 175 ft. Stack Diameter: 8.5 ft.  
 Gas Flow Rate: 150,800 ACFM 124,400 DSCFM Gas Exit Temperature: 180 °F.  
 Water Vapor Contents: 0 % Velocity: 52.2 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) <sup>3</sup> | Heat Release (BTU/hr) | Fuel |        | Temperature (°F) |
|-------------------|--------------------------|-----------------------|------|--------|------------------|
|                   |                          |                       | Type | BTU/hr |                  |
| Primary Chamber   |                          |                       |      |        |                  |
| Secondary Chamber |                          |                       |      |        |                  |

Stack Height: \_\_\_\_\_ ft. Stack Diameter: \_\_\_\_\_ 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: \_\_\_\_\_

See project PSD Application package for description of control systems.

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

See Section III, G

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

#### SECTION V: SUPPLEMENTAL REQUIREMENTS

SEE PAGES 7a and 7b

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.

## SECTION V - SUPPLEMENTAL REQUIREMENTS

### 1. Production and Material Input Rates

#### Product

$$\begin{aligned} & 3,000 \text{ STPD of } 100\% \text{ sulfuric acid as } 98\% \text{ acid} \\ & = 3,000 \text{ STPD } (2000 \text{ lb/ton}) / (0.98) (24 \text{ hr/day}) \\ & = 255,102 \text{ lb/hr of } 98\% \text{ acid.} \end{aligned}$$

#### Process Losses

Sulfur dioxide emission rate of 4 lbs sulfur dioxide per ton of 100% acid is equivalent to a 99.7% sulfur recovery.

#### Material Input

$$\begin{aligned} & = 3,000 \text{ STPD } (32/98 \text{ ton S/ton acid}) / (0.997) \\ & = 983 \text{ STPD} \\ & \quad \times 2,000/24 \\ & = 81,878 \text{ lb/hr of sulfur.} \end{aligned}$$

### 2&3. Controlled and Uncontrolled Emissions

#### Sulfur Dioxide

$$\begin{aligned} & \text{Controlled and uncontrolled @ } 4 \text{ lb/ton of acid} \\ & = 4 \text{ lb/ton } (3,000) / 24 \\ & = 500 \text{ lb/hr} \\ & \quad \times 7,967 / 2000 \\ & = 1,992 \text{ tpy} \end{aligned}$$

#### Acid Mist

$$\begin{aligned} & \text{Uncontrolled @ } 1.7 \text{ lb/ton of acid (AP-42, Supp. 12)} \\ & = 1.7 \text{ lb/ton } (3,000) / 24 \\ & = 213 \text{ lb/hr} \\ & \quad \times 7,967 / 2000 \\ & = 846 \text{ tpy} \end{aligned}$$

$$\begin{aligned} & \text{Controlled @ } 0.15 \text{ lb/ton of acid} \\ & = 0.15 \text{ lb/ton } (3,000) / 24 \\ & = 18.8 \text{ lb/hr} \\ & \quad \times 7,967 / 2000 \\ & = 74.7 \text{ tpy} \end{aligned}$$

4. See PSD package for description of control technology.

### 5. Control Efficiency

Sulfur dioxide emission rate of 4.0 lb sulfur dioxide per ton of 100% acid is equivalent to a sulfur recovery efficiency of 99.7% (AP-42, Supplement 12).

#### Acid Mist

$$\begin{aligned} E & = (213 - 18.8) (100) / 213 \\ & = 91.2\% \end{aligned}$$



6. Flow Diagram - Attachment 1.
7. Location Map - Attachment 2.
8. Site Map - Attachment 3.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**

SEE PROJECT PSD PACKAGE FOR BACT ANALYSIS

- 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

| 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

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

- C. What emission levels do you propose as best available control technology?

Contaminant

Rate or Concentration

| 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

| 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:<sup>1</sup>
- d. Capital Cost:
- e. Useful Life:
- f. Operating Costs:
- g. Energy:<sup>2</sup>
- 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:<sup>1</sup>
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:<sup>2</sup>
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>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:<sup>1</sup>
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:<sup>2</sup>
- 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:<sup>1</sup>
- d. Capital Costs:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:<sup>2</sup>
- 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:<sup>1</sup>
- 3. Capital Cost:
- 4. Useful Life:
- 5. Operating Cost:
- 6. Energy:<sup>2</sup>
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:
- a. (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

10. Reason for selection and description of systems:

<sup>1</sup>Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

**SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION**

SEE PROJECT PSD PACKAGE FOR AIR QUALITY REVIEW

**A. Company Monitored Data**

1. \_\_\_\_\_ no. sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sub>2</sub>\* \_\_\_\_\_ Wind spd/dir

Period of Monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

\*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent?  Yes  No

b. Was instrumentation calibrated in accordance with Department procedures?  
 Yes  No  Unknown

B. Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

2. Surface data obtained from (location) \_\_\_\_\_

3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_

4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

C. Computer Models Used

1. \_\_\_\_\_ Modified? If yes, attach description.

2. \_\_\_\_\_ Modified? If yes, attach description.

3. \_\_\_\_\_ Modified? If yes, attach description.

4. \_\_\_\_\_ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

| Pollutant       | Emission Rate   |
|-----------------|-----------------|
| TSP             | _____ grams/sec |
| SO <sup>2</sup> | _____ grams/sec |

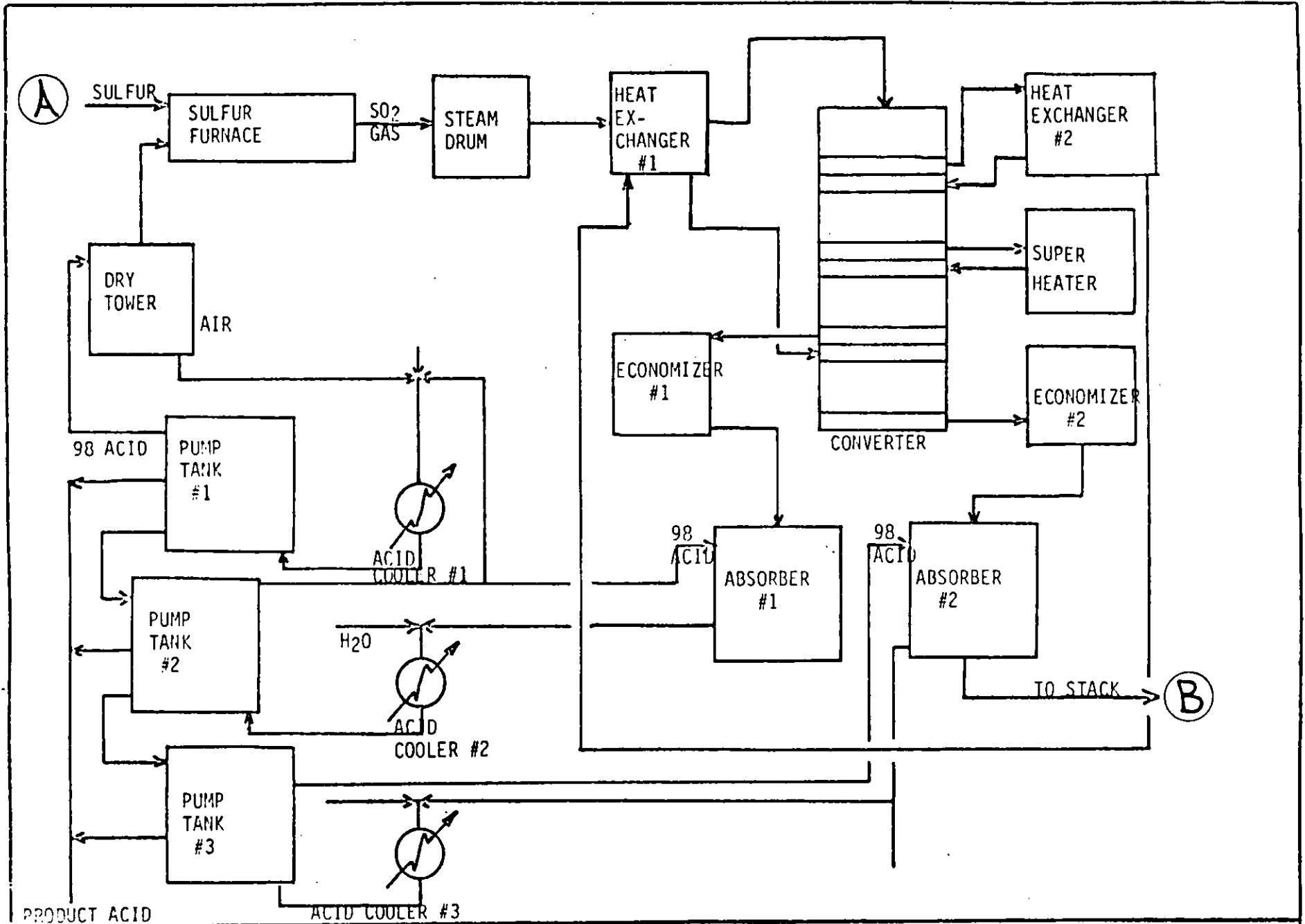
E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

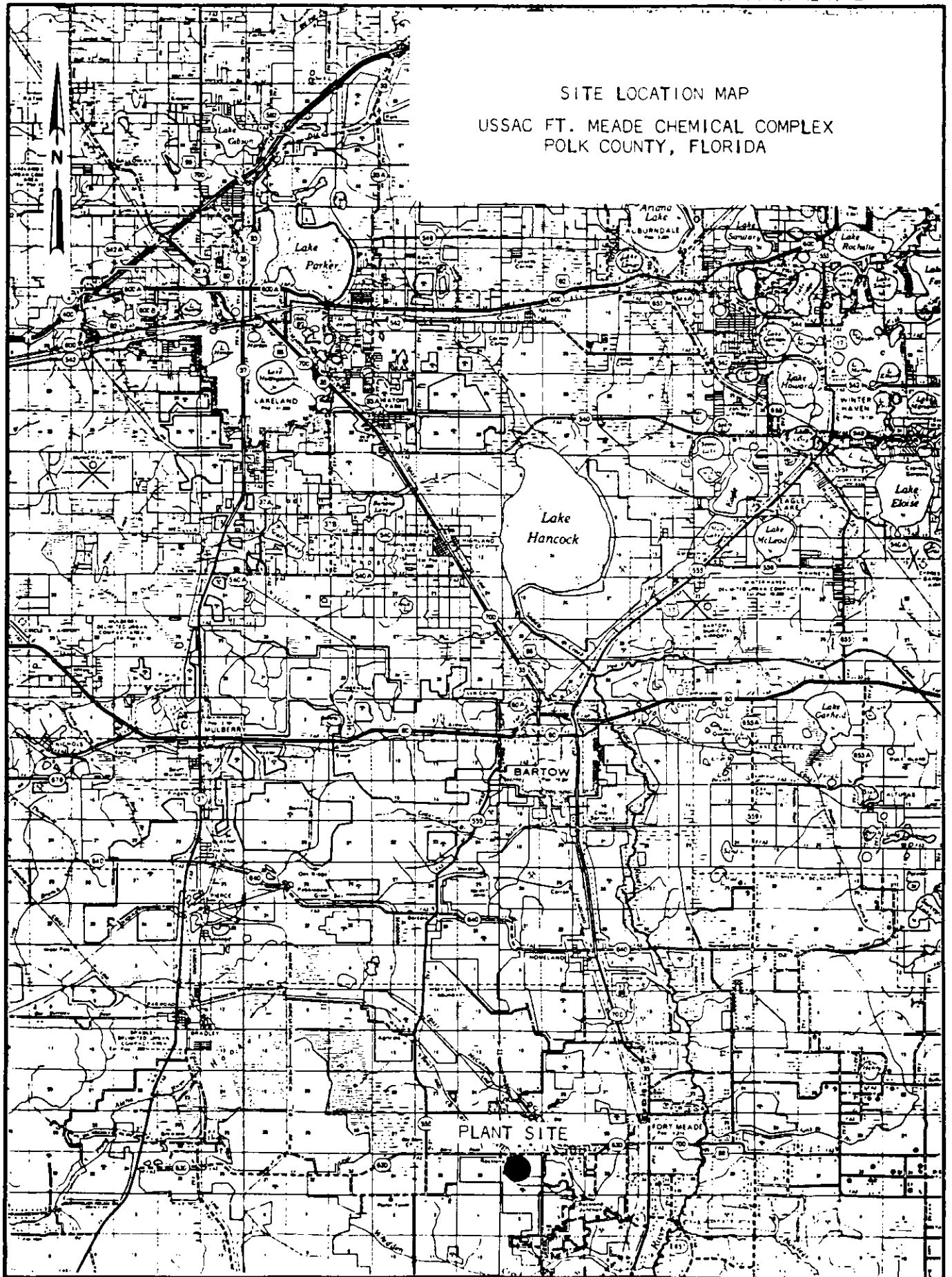
G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

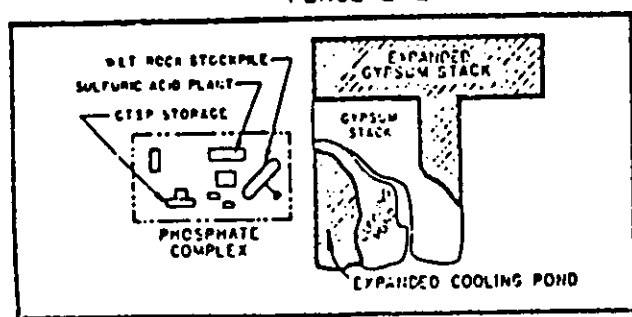
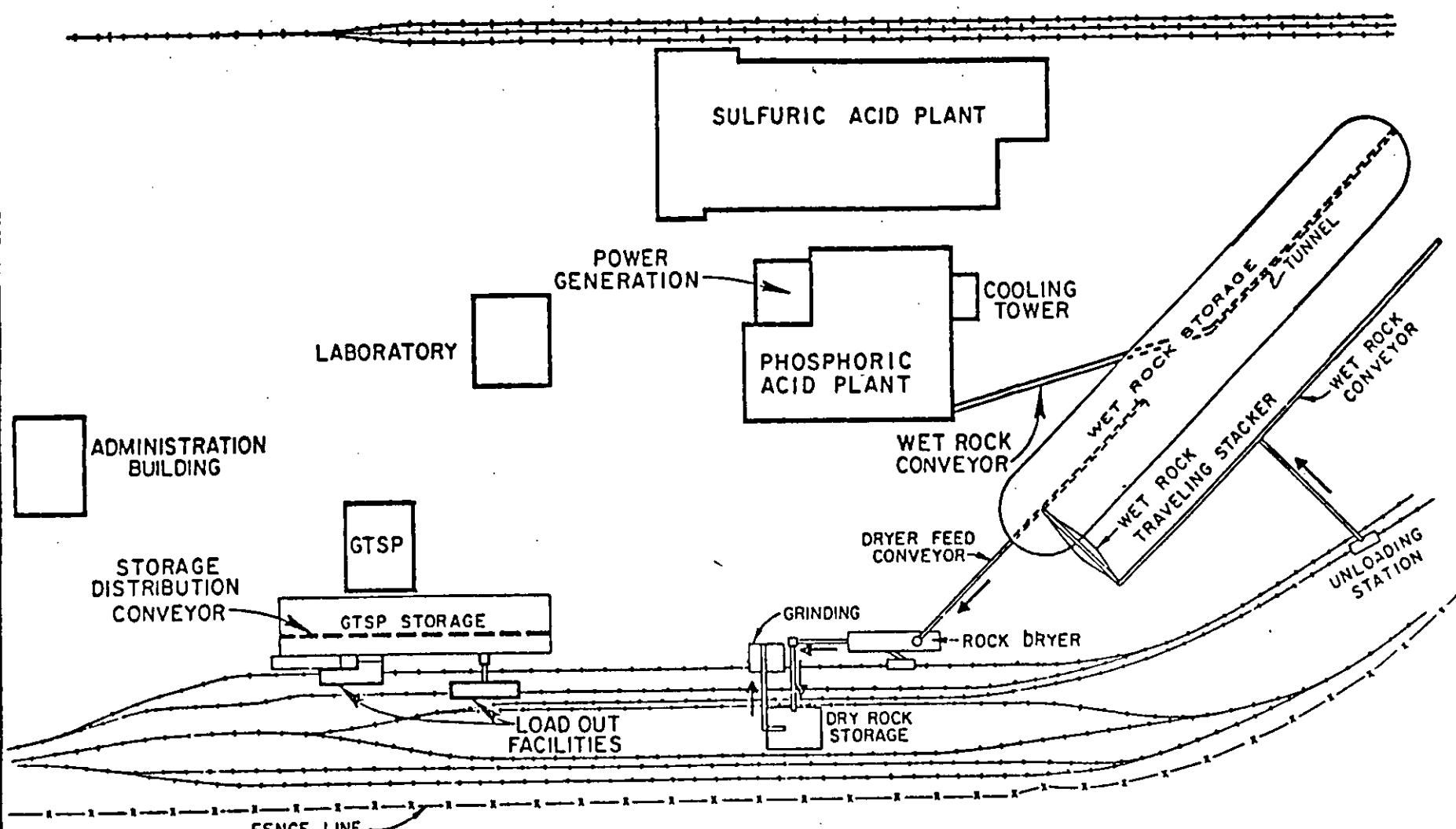
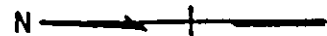


DOUBLE CONTACT/DOUBLE ABSORPTION - SULFURIC ACID MANUFACTURE

SITE LOCATION MAP  
USSAC FT. MEADE CHEMICAL COMPLEX  
POLK COUNTY, FLORIDA







**FT. MEADE PHOSPHATE COMPLEX**  
**U.S. STEEL AGRI-CHEMICALS**  
**FT. MEADE, FLORIDA**

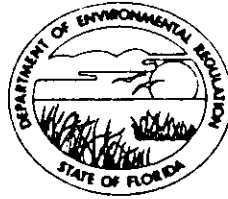
GRAPHIC SERVICES - ENGINEERING - PITTSBURGH  
 UNITED STATES STEEL CORPORATION

|                       |         |                   |         |        |
|-----------------------|---------|-------------------|---------|--------|
| 7925/7926<br>DF3705-2 | ALTIERI | FRICHARD<br>STORY | 5-12-60 | PD 103 |
|-----------------------|---------|-------------------|---------|--------|

AC 53-103829

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

ST. JOHNS RIVER  
DISTRICT  
3319 MAGUIRE BOULEVARD  
SUITE 232  
ORLANDO, FLORIDA 32803



DER

MAY 6 1985

BAQM

BOB GRAHAM  
GOVERNOR  
VICTORIA J. TSCHINKEL  
SECRETARY  
ALEX SENKEVICH  
DISTRICT MANAGER

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sulfuric Acid Plant [] New<sup>1</sup> [ ] Existing<sup>1</sup>  
APPLICATION TYPE: [ ] Construction [ ] Operation [] Modification  
COMPANY NAME: USS Agri-Chemicals 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) No. 1 Sulfuric Acid Plant

SOURCE LOCATION: Street SR 630; 3.5 mi west of Ft. Meade City Ft. Meade  
UTM: East 416.12 North 3068.62  
Latitude 27 ° 44 ' 27 "N Longitude 81 ° 51 ' 4 "W

APPLICANT NAME AND TITLE: J.C. Daniel, Manager, Environmental & Special Projects  
APPLICANT ADDRESS: Post Office Box 867, Ft. Meade, Florida 33841

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative\* of USS Agri-Chemicals

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: J.C. Daniel  
J.C. Daniel, Manager, Environmental & Special Projects  
Name and Title (Please Type) Projects  
Date: \_\_\_\_\_ Telephone No. (813) 533-8184

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

<sup>1</sup> 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 

John B. Koogler, Ph.D., P.E.  
Name (Please Type)

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS  
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601  
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 4/22/85 Telephone No. (904) 377-5822

**SECTION II: GENERAL PROJECT INFORMATION**

- A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

A construction permit application to increase the permitted production rate of a new double absorption contact sulfuric acid plant from 2,200 tpd of 100% sulfuric acid to 3,000 tpd of 100% sulfuric acid. The plant will operate in full compliance with applicable regulations. See project PSD package for more detailed project description.

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

Start of Construction October 1986 Completion of Construction November 1986

- 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.)

The cost of the additional catalyst necessary to maintain the sulfur dioxide recovery efficiency is \$ 150,000.00 . The existing mist eliminators are adequate to control acid mist emissions at the higher production rate.

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

PSD FL-064 Approval, April 1981; AC53-33818 issued 12/24/80 and expired 9/30/83;  
A0 53-69837 issued 9/27/83 and expiring 8/15/88

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;  
if power plant, hrs/yr \_\_\_\_\_; if seasonal, describe: Annual operating time will  
not exceed 7,967 hours per year.

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 Deterioration" (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? YES

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 justifi-  
cation for any answer of "No" that might be considered questionable.

See project PSD Application 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      | Ash          | 0.5% | 81,878                    | A (Attachment 1)       |
|             |              |      |                           |                        |
|             |              |      |                           |                        |
|             |              |      |                           |                        |

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

1. Total Process Input Rate (lbs/hr): 81,878 (sulfur)
2. Product Weight (lbs/hr): 255,102 (98% acid)

**C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)**

| Name of Contaminant | Emission <sup>1</sup> |             | Allowed Emission Rate per Rule 17-2 | Allowable <sup>3</sup> Emission lbs/hr | Potential <sup>4</sup> Emission |      | Relate to Flow Diagram |
|---------------------|-----------------------|-------------|-------------------------------------|--|---------------------------------|------|------------------------|
|                     | Maximum lbs/hr        | Actual T/yr |                                     |  | lbs/yr                          | T/yr |                        |
| Sulfur Dioxide      | 500                   | 1992        | 4 lb/ton                            | 500                                    | 500                             | 1992 | B (Attach1)            |
| Acid Mist           | 18.8                  | 74.7        | 0.15 lb/ton                         | 18.8                                   | 213                             | 846  | "                      |
|                     |                       |             |                                     |  |                                 |      |                        |
|                     |                       |             |                                     |  |                                 |      |                        |

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

<sup>2</sup>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)

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

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

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

| Name and Type<br>(Model & Serial No.) | Contaminant    | Efficiency | Range of Particles<br>Size Collected<br>(in microns)<br>(If applicable) | Basis for<br>Efficiency<br>(Section V<br>Item 5) |
|---------------------------------------|----------------|------------|---|--|
| Double absorber                       | Sulfur dioxide | 99.7       | NA  | AP-42, Supp12                                    |
| Demister                              | Acid Mist      | 91.2       | > 0.5 um  | " "  |
|                                       |                |            |   |  |
|                                       |                |            |   |  |
|                                       |                |            |   |  |

E. Fuels

| Type (Be Specific) | Consumption* |         | Maximum Heat Input<br>(MMBTU/hr) |
|--------------------|--------------|---------|----------------------------------|
|                    | avg/hr       | max./hr |                                  |
| None               |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |

\*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average NA Maximum \_\_\_\_\_

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

Cooling tower blowdown, boiler blowdown and feedwater treatment unit blowdown  
are non-process effluents and will be discharged to the plant outfall.

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

Stack Height: 175 ft. Stack Diameter: 8.5 ft.  
 Gas Flow Rate: 150,800 ACFM 124,400 DSCFM Gas Exit Temperature: 180 °F.  
 Water Vapor Content: 0 % Velocity: 52.2 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) <sup>3</sup> | Heat Release (BTU/hr) | Fuel |        | Temperature (°F) |
|-------------------|--------------------------|-----------------------|------|--------|------------------|
|                   |                          |                       | Type | BTU/hr |                  |
| Primary Chamber   |                          |                       |      |        |                  |
| Secondary Chamber |                          |                       |      |        |                  |

Stack Height: \_\_\_\_\_ ft. Stack Diameter: \_\_\_\_\_ 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: \_\_\_\_\_

See project PSD Application package for description of control systems. \_\_\_\_\_

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

See Section III, G. \_\_\_\_\_

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

**SECTION V: SUPPLEMENTAL REQUIREMENTS**

SEE PAGES 7a and 7b

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.



## SECTION V - SUPPLEMENTAL REQUIREMENTS

### 1. Production and Material Input Rates

#### Product

$$\begin{aligned} & 3,000 \text{ STPD of } 100\% \text{ sulfuric acid as } 98\% \text{ acid} \\ & = 3,000 \text{ STPD } (2000 \text{ lb/ton}) / (0.98)(24 \text{ hr/day}) \\ & = 255,102 \text{ lb/hr of } 98\% \text{ acid.} \end{aligned}$$

#### Process Losses

Sulfur dioxide emission rate of 4 lbs sulfur dioxide per ton of 100% acid is equivalent to a 99.7% sulfur recovery.

#### Material Input

$$\begin{aligned} & = 3,000 \text{ STPD } (32/98 \text{ ton S/ton acid}) / (0.997) \\ & = 983 \text{ STPD} \\ & \quad \times 2,000/24 \\ & = 81,878 \text{ lb/hr of sulfur.} \end{aligned}$$

### 2&3. Controlled and Uncontrolled Emissions

#### Sulfur Dioxide

$$\begin{aligned} & \text{Controlled and uncontrolled @ } 4 \text{ lb/ton of acid} \\ & = 4 \text{ lb/ton } (3,000) / 24 \\ & = 500 \text{ lb/hr} \\ & \quad \times 7,967 / 2000 \\ & = 1,992 \text{ tpy} \end{aligned}$$

#### Acid Mist

$$\begin{aligned} & \text{Uncontrolled @ } 1.7 \text{ lb/ton of acid (AP-42, Supp. 12)} \\ & = 1.7 \text{ lb/ton } (3,000) / 24 \\ & = 213 \text{ lb/hr} \\ & \quad \times 7,967 / 2000 \\ & = 846 \text{ tpy} \end{aligned}$$

$$\begin{aligned} & \text{Controlled @ } 0.15 \text{ lb/ton of acid} \\ & = 0.15 \text{ lb/ton } (3,000) / 24 \\ & = 18.8 \text{ lb/hr} \\ & \quad \times 7,967 / 2000 \\ & = 74.7 \text{ tpy} \end{aligned}$$

4. See PSD package for description of control technology.

### 5. Control Efficiency

Sulfur dioxide emission rate of 4.0 lb sulfur dioxide per ton of 100% acid is equivalent to a sulfur recovery efficiency of 99.7% (AP-42, Supplement 12).

#### Acid Mist

$$\begin{aligned} E & = (213 - 18.8)(100) / 213 \\ & = 91.2\%. \end{aligned}$$

6. Flow Diagram - Attachment 1.
7. Location Map - Attachment 2.
8. Site Map - Attachment 3.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**  
 SEE PROJECT PSD PACKAGE FOR BACT ANALYSIS

- 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

| 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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:<sup>2</sup>

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

10. Reason for selection and description of systems:

<sup>1</sup>Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

**SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION**

SEE PROJECT PSD PACKAGE FOR AIR QUALITY REVIEW

**A. Company Monitored Data**

1. \_\_\_\_\_ no. sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sub>2</sub>\* \_\_\_\_\_ Wind spd/dir

Period of Monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

\*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?  
[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

2. Surface data obtained from (location) \_\_\_\_\_

3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_

4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

C. Computer Models Used

- 1. \_\_\_\_\_ Modified? If yes, attach description.
- 2. \_\_\_\_\_ Modified? If yes, attach description.
- 3. \_\_\_\_\_ Modified? If yes, attach description.
- 4. \_\_\_\_\_ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

| Pollutant       | Emission Rate   |
|-----------------|-----------------|
| TSP             | _____ grams/sec |
| SO <sup>2</sup> | _____ grams/sec |

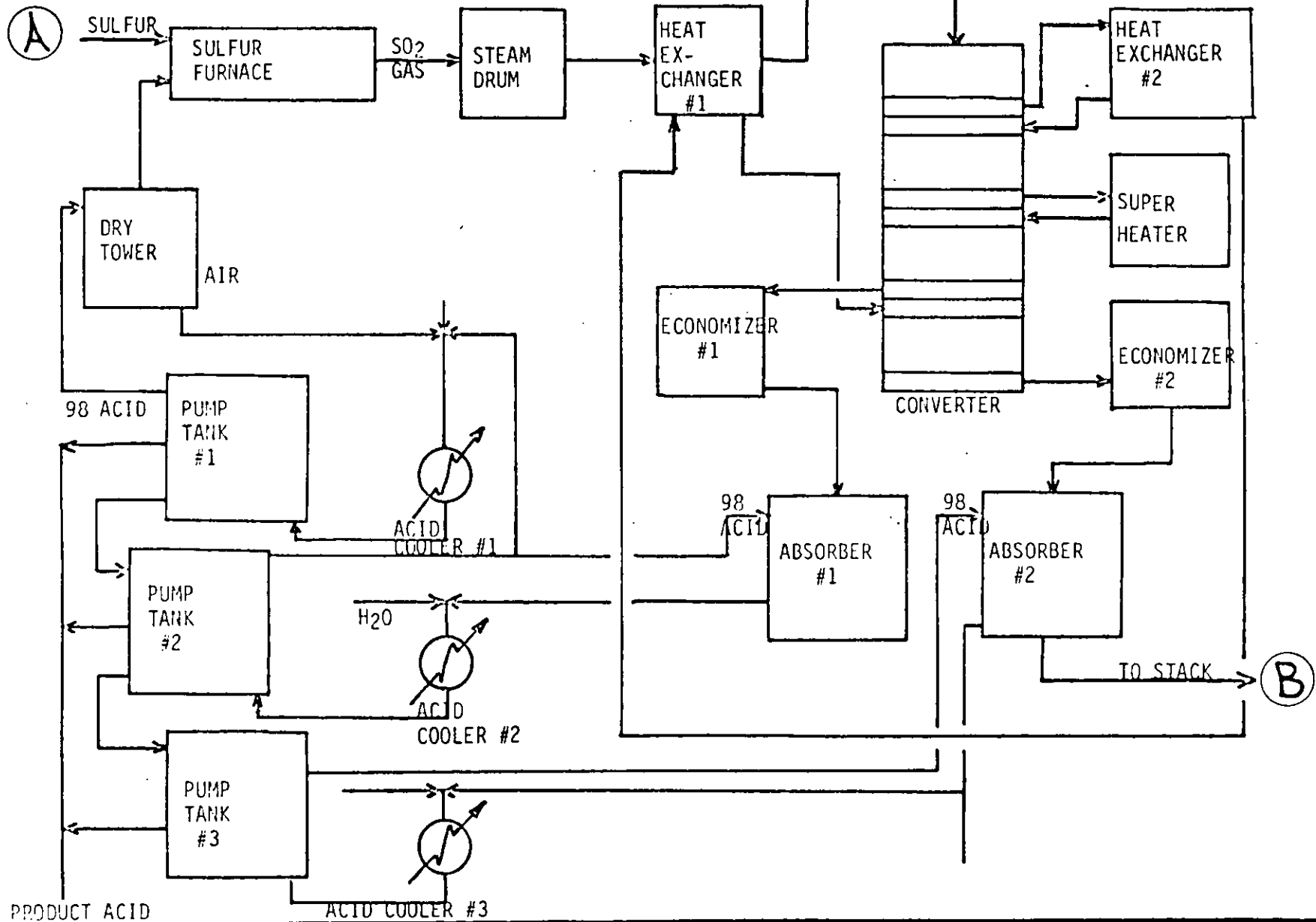
E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

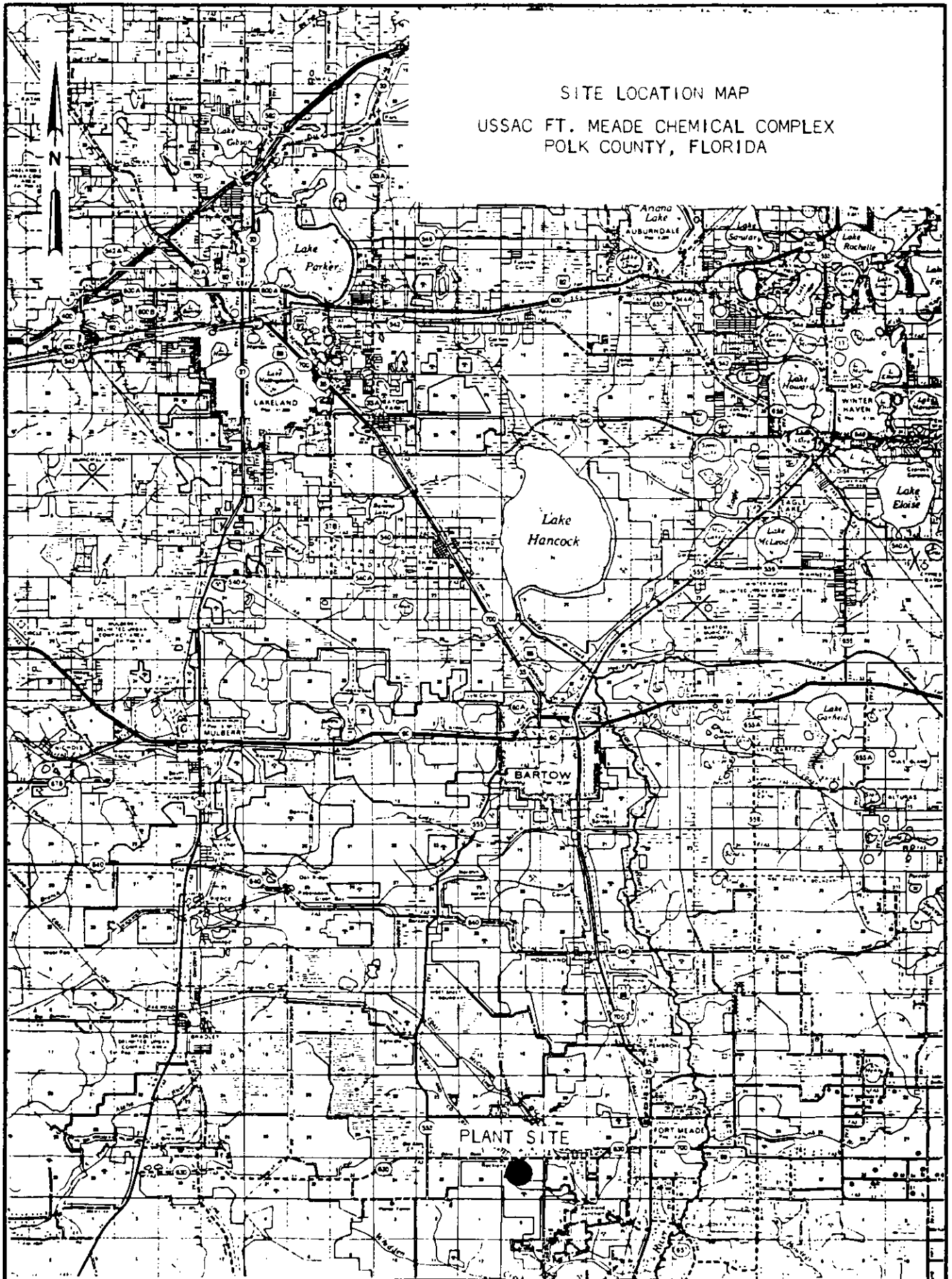
H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

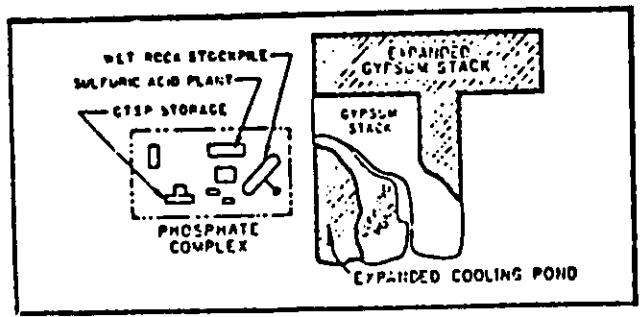
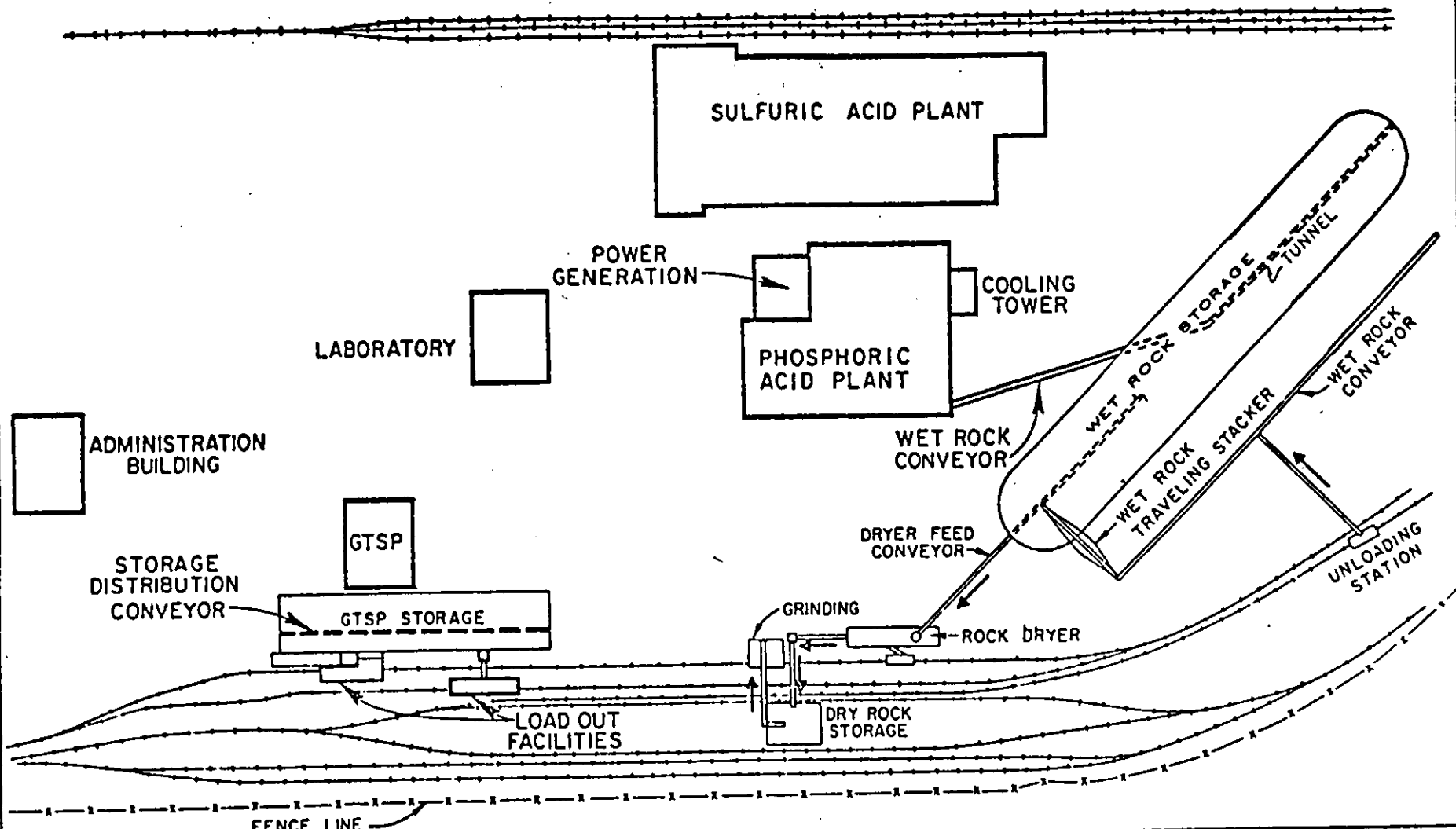


DOUBLE CONTACT/DOUBLE ABSORPTION - SULFURIC ACID MANUFACTURE



SITE LOCATION MAP  
USSAC FT. MEADE CHEMICAL COMPLEX  
POLK COUNTY, FLORIDA





FT. MEADE PHOSPHATE COMPLEX

U.S. STEEL AGRI-CHEMICALS  
FT. MEADE, FLORIDA

GRAPHIC SERVICES - ENGINEERING - PITTSBURGH  
UNITED STATES STEEL CORPORATION

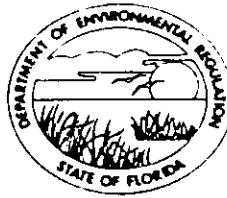
|                       |         |                   |         |        |
|-----------------------|---------|-------------------|---------|--------|
| 7925/7926<br>DF3705-2 | ALTIERI | PRICHARD<br>STORY | 5-12-60 | PD 108 |
|-----------------------|---------|-------------------|---------|--------|

AC 53-103830

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION  
DER

ST. JOHNS RIVER  
DISTRICT

3319 MAGUIRE BOULEVARD  
SUITE 232  
ORLANDO, FLORIDA 32803



MAY 6 1985

BAQM

BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

ALEX SENKEVICH  
DISTRICT MANAGER

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

SOURCE TYPE: Phosphoric Acid Plant  New<sup>1</sup>  Existing<sup>1</sup>

APPLICATION TYPE:  Construction  Operation  Modification

COMPANY NAME: USS Agri-Chemicals 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) Phosphoric Acid Plant B

SOURCE LOCATION: Street SR630; 3.5 mi west of Ft. Meade City Ft. Meade

UTM: East 416.07 North 3068.70

Latitude 27 ° 44 ' 30 "N Longitude 81 ° 51 ' 6 "W

APPLICANT NAME AND TITLE: J.C. Daniel, Manager, Environmental & Special Projects

APPLICANT ADDRESS: Post Office Box 867, Ft. Meade, Florida 33841

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A. APPLICANT

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Signed: J.C. Daniel  
J.C. Daniel, Manager, Environmental & Special Projects  
Name and Title (Please Type)

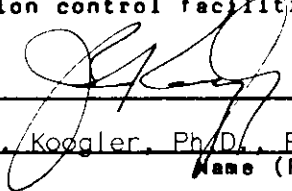
Date: \_\_\_\_\_ Telephone No. (813) 533-8184

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Signed 

John B. Koogler, Ph.D., P.E.  
Name (Please Type)

SHOLTES & KOGLER, ENVIRONMENTAL CONSULTANTS  
Company Name (Please Type)

1213 NW 6th Street, Gainesville, Florida 32601  
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 4/22/85 Telephone No. (904) 377-5822

**SECTION II: GENERAL PROJECT INFORMATION**

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

A construction permit application to increase the production rate of an existing new phosphoric acid plant for 800 tpd (P<sub>2</sub>O<sub>5</sub>) to 1000 tpd (P<sub>2</sub>O<sub>5</sub>) as 29% P<sub>2</sub>O<sub>5</sub> phosphoric acid. The plant uses wet rock grinding. Fluorides are recovered as fluorosilicic acid. The plant will be in compliance with all applicable air quality regulations. See project PSD package for more complete description.

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

Start of Construction November 1986 Completion of Construction December 1986

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.)

There will be no cost associated with upgrading the existing air pollution control system as a result of the production rate increase. The existing control system is adequate to control emissions at the increased production rate.

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

PSD-FL-064 approved April 1981; AC53-33820 issued 12/24/80 and expired 9/30/83;  
AO 53-69839 issued 9/27/83 and expiring 8/15/88.

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;  
if power plant, hrs/yr \_\_\_\_\_; if seasonal, describe: Annual operating time will not  
exceed 7,968 hours.

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 Deterioration" (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? YES

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 justifi-  
cation for any answer of "No" that might be considered questionable.

See project PSD Application 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 |                           |                        |
| Phosphate Rock                             | Fluorine      | 3.5  | 290,461 (1)               | A (Attachment 1)       |
| Sulfuric Acid                              | None          | ---  | 229,592 (2)               | B (Attachment 1)       |
|  |               |      |                           |                        |
| (1) P <sub>2</sub> O <sub>5</sub> Input is | 87,719 lbs/hr |      |                           |                        |
| (2) As 98% acid.                           |               |      |                           |                        |

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

1. Total Process Input Rate (lbs/hr): 520,053 (phosphate rock and sulfuric acid)

2. Product Weight (lbs/hr): 287,356 as 29% P<sub>2</sub>O<sub>5</sub> phosphoric acid.

**C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)**

| Name of Contaminant | Emission <sup>1</sup> |             | Allowed Emission Rate per Rule 17-2 | Allowable <sup>3</sup> Emission lbs/hr | Potential <sup>4</sup> Emission |       | Relate to Flow Diagram |
|---------------------|-----------------------|-------------|-------------------------------------|--|---------------------------------|-------|------------------------|
|                     | Maximum lbs/hr        | Actual T/yr |                                     |  | lbs/yr                          | T/yr  |                        |
| Fluoride            | 0.88                  | 3.5         | 0.02 lb/ton                         | 0.88                                   | 2,350                           | 9,362 | C (Attachment 1)       |
|                     |                       |             |                                     |  |                                 |       |                        |
|                     |                       |             |                                     |  |                                 |       |                        |
|                     |                       |             |                                     |  |                                 |       |                        |

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

<sup>2</sup>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)

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

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

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

| Name and Type<br>(Model & Serial No.)  | Contaminant | Efficiency                             | Range of Particles<br>Size Collected<br>(in microns)<br>(If applicable) | Basis for<br>Efficiency<br>(Section V<br>Item 5) |
|--|-------------|--|---|--|
| Acid Plant Venturi<br>Scrubber         | Fluoride    | 99.96%                                 | NA  | Estimate (1)                                     |
|  |             |  |   |  |
| (1) Calculated in Section V.5 based on |             | AP-42 uncontrolled emission factor and |   |  |
| NSPS emission limit.                   |             |  |   |  |
|  |             |  |   |  |

E. Fuels

| Type (Be Specific) | Consumption* |         | Maximum Heat Input<br>(MMBTU/hr) |
|--------------------|--------------|---------|----------------------------------|
|                    | avg/hr       | max./hr |                                  |
| None               |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |

\*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average Not Applicable Maximum \_\_\_\_\_

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

Gypsum slurry is transferred to an on-site gypsum disposal area. The process and scrubber water is recycled through the process water cooling pond.

(acid plant/acid clarification)

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

Stack Height: 85 ft. Stack Diameter: 3.4/2.0 ft.
Gas Flow Rate: 12,000/6000 ACFM 10,635/5690 DSCFM Gas Exit Temperature: 100/80 °F.
Water Vapor Content: 6/3 % Velocity: 22.0/32.0 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Table with 8 columns: 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.). Rows include Actual lb/hr Incinerated and 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.

Table with 5 columns: Volume (ft³), Heat Release (BTU/hr), Fuel (Type, BTU/hr), Temperature (°F). Rows for Primary Chamber and Secondary Chamber.

Stack Height: ft. Stack Diameter: 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: \_\_\_\_\_

See PSD Application package

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

See Section III, G

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

#### SECTION V: SUPPLEMENTAL REQUIREMENTS

(See Page 7a)

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.

SECTION V  
SUPPLEMENTAL REQUIREMENTS

1. Production and Material Input Rates

Product

1,000 STPD of 100%  $P_2O_5$  as 29%  $P_2O_5$  phosphoric acid. Over 90% of the acid is concentrated in two stages to 54%  $P_2O_5$  phosphoric acid.  
= (1000 STPD)(2000 lb/ton)/(0.29)(24 hrs/day)  
= 287,356 lb/hr of 29% acid.

Process Losses

$P_2O_5$  losses to the gypsum area are 5.0%.

Material Input

Wet phosphate rock (dry weight basis) @ 30.2%  $P_2O_5$   
= (1000 STPD)(2000)/(1-0.05 loss factor)(0.302)(24)  
= 290,461 lbs/hr phosphate rock  
x 0.302  
= 87,719 lb/hr  $P_2O_5$ .

98% Sulfuric Acid at a use rate of 2.7 tons of 100% acid per ton of  $P_2O_5$  produced  
= (1000 STPD)(2000)(2.7)/(0.98 acid strength)(24)  
= 229,592 lbs/hr 98% sulfuric acid.

2&3. Controlled and Uncontrolled Emissions

Fluoride

Uncontrolled @ 56.4 lb/ton of  $P_2O_5$  produced (AP-42, Supp. 10)  
= (1000 STPD)(56.4)/24  
= 2,350 lb/hr  
x 7968/2000  
= 9362 tpy

Controlled @ 0.02 lb/ton  $P_2O_5$  Input  
= (87,719 lb/hr  $P_2O_5$ )(0.02)/2000  
= 0.88 lb/hr  
x 7968/2000  
= 3.5 tpy

4. See PSD package for description of control system.

5. Fluoride Control Efficiency

$$E = (2350 - 0.88)(100)/2350 \\ = 99.96\%$$

6. Flow Diagram - Attachment 1.

7. Location Map - Attachment 2.

8. Site Map - Attachment 3.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**

See PSD Package for BACT Analysis

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

| 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

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

C. What emission levels do you propose as best available control technology?

Contaminant

Rate or Concentration

| 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:
- 7. Energy:
- 9. Emissions:

- 6. Operating Costs:
- 8. Maintenance Cost:

Contaminant

Rate or Concentration

| 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:<sup>1</sup>
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:<sup>2</sup>
- 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:<sup>1</sup>
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:<sup>2</sup>
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:<sup>2</sup>

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

10. Reason for selection and description of systems:

<sup>1</sup>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**

A. Company Monitored Data <sup>See PSD Package for Air Quality Review</sup>

1. \_\_\_\_\_ no. sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sub>2</sub>\* \_\_\_\_\_ Wind spd/dir

Period of Monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

\*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?  
[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

2. Surface data obtained from (location) \_\_\_\_\_

3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_

4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

C. Computer Models Used

1. \_\_\_\_\_ Modified? If yes, attach description.

2. \_\_\_\_\_ Modified? If yes, attach description.

3. \_\_\_\_\_ Modified? If yes, attach description.

4. \_\_\_\_\_ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

| Pollutant       | Emission Rate   |
|-----------------|-----------------|
| TSP             | _____ grams/sec |
| SO <sup>2</sup> | _____ grams/sec |

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

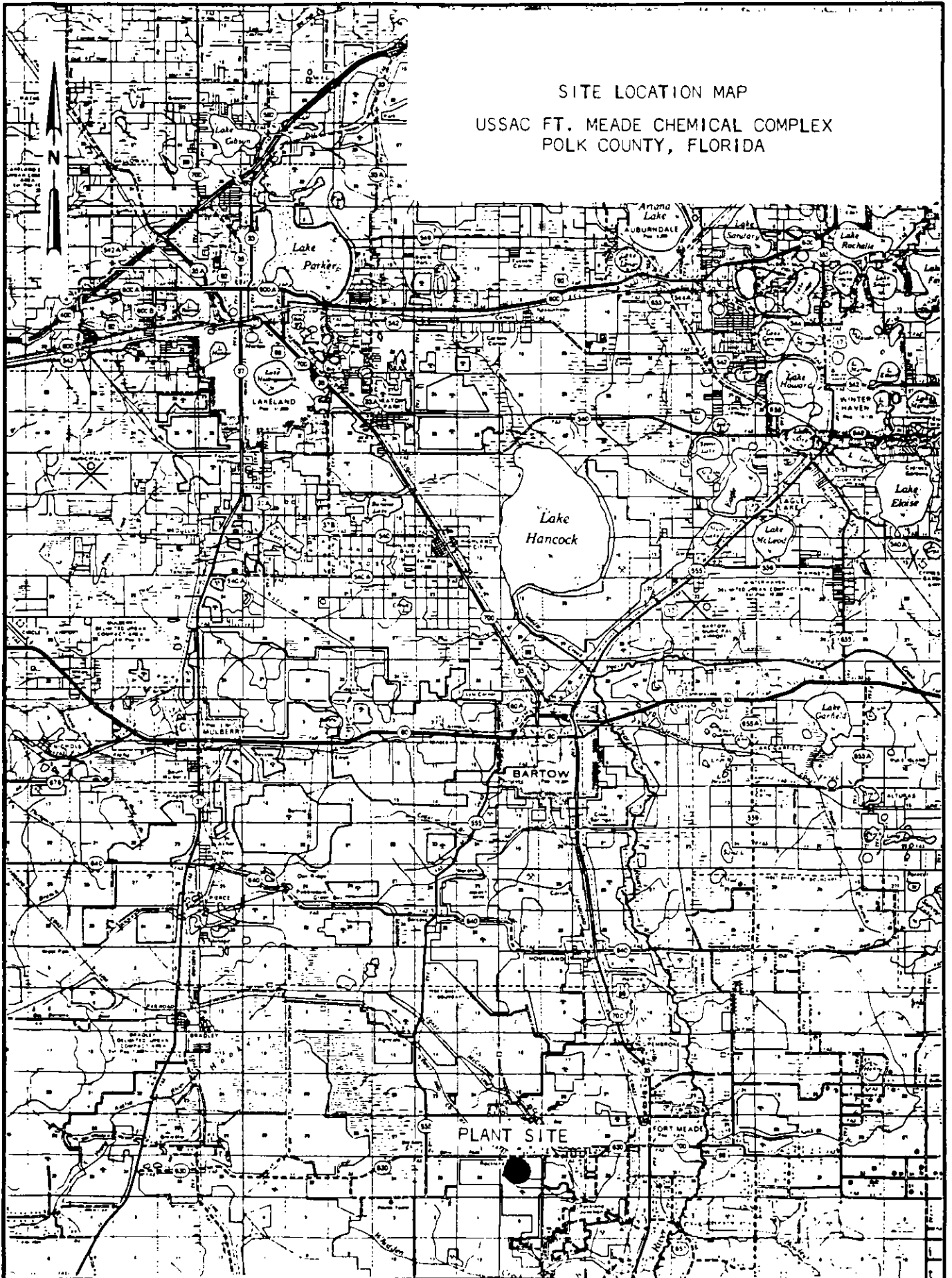
G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

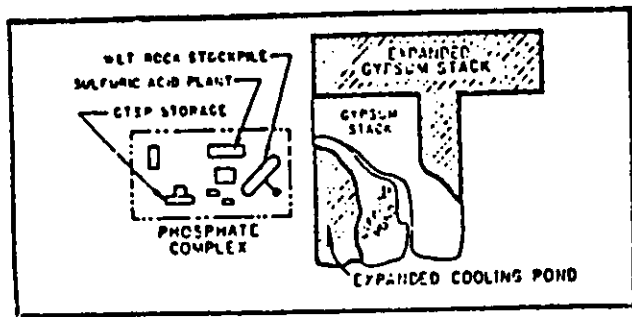
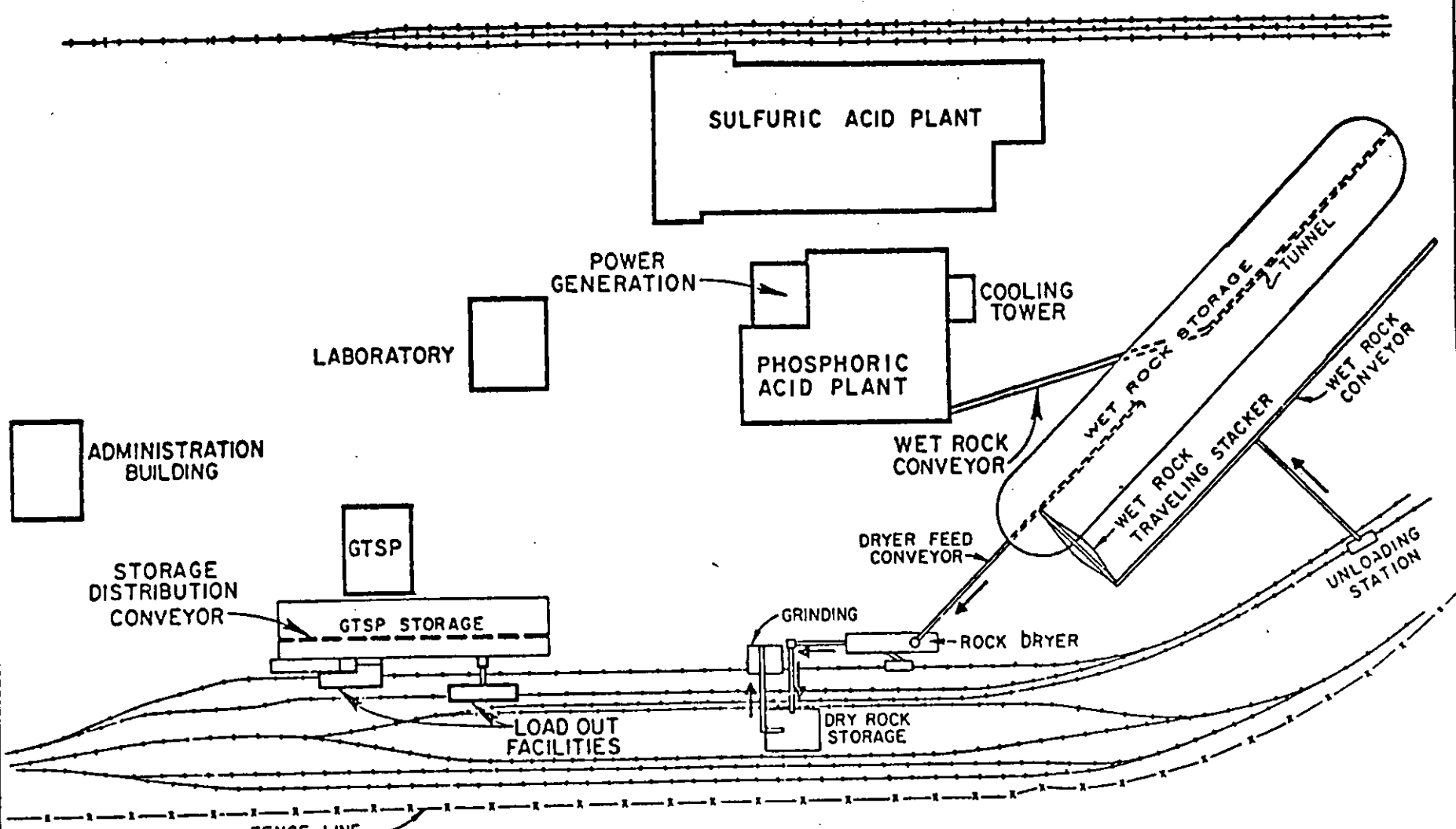
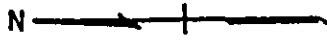
H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.





SITE LOCATION MAP  
USSAC FT. MEADE CHEMICAL COMPLEX  
POLK COUNTY, FLORIDA





**FT. MEADE PHOSPHATE COMPLEX**  
**U.S. STEEL AGRI-CHEMICALS**  
**FT. MEADE, FLORIDA**

GRAPHIC SERVICES - ENGINEERING - PITTSBURGH  
 UNITED STATES STEEL CORPORATION

|           |         |          |         |        |
|-----------|---------|----------|---------|--------|
| 7925/7926 | ALTIERI | PRICHARD | 5-12-60 | PD 103 |
| DF3705-2  |         | STORY    |         |        |

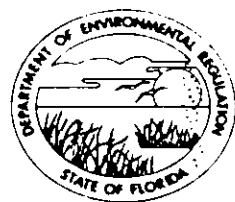
AC 53-103831 DER

MAY 6 1985

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION BAQM

ST. JOHNS RIVER DISTRICT
3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803



DER
MAY 6 1985
BAQM

BOB GRAHAM GOVERNOR
VICTORIA J. TSCHINKEL SECRETARY
ALEX SENKEVICH DISTRICT MANAGER

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Phosphoric Acid Plant [x] New [ ] Existing
APPLICATION TYPE: [ ] Construction [ ] Operation [x] Modification
COMPANY NAME: USS Agri-Chemicals 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) Phosphoric Acid Plant A and acid storage
SOURCE LOCATION: Street SR630; 3.5 mi west of Ft. Meade City Ft. Meade
UTM: East 416.07 North 3068.78
Latitude 27° 44' 32" N Longitude 81° 51' 6" W

APPLICANT NAME AND TITLE: J.C. Daniel, Manager, Environmental & Special Projects
APPLICANT ADDRESS: Post Office Box 867, Ft. Meade, Florida 33841

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative\* of USS Agri-Chemicals
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

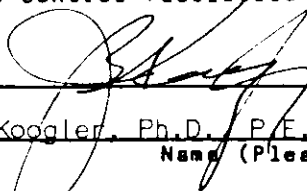
Signed: J.C. Daniel
J.C. Daniel, Manager, Environmental & Special Projects
Date: Telephone No. (813) 533-8184

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 

John B. Koogler, Ph.D., P.E.  
Name (Please Type)

SHOLTES & KOGLER, ENVIRONMENTAL CONSULTANTS  
Company Name (Please Type)

1213 NW 6th Street, Gainesville, Florida 32601  
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 4/22/85 Telephone No. (904) 377-5822

**SECTION II: GENERAL PROJECT INFORMATION**

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

See Attached Page 2a

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

Start of Construction November 1986 Completion of Construction December 1986

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.)

There will be no cost associated with upgrading the existing air pollution control systems as a result of the production rate increase. The existing control systems are adequate to control emissions at the increased production rate.

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

PSD-FL-064 approved April 1981; AC53-33821 issued 12/24/80 and expired 9/30/83;  
A0 53-69840 issued 9/27/83 and expiring 8/15/88

A. A construction permit application to increase the production rate of an existing new phosphoric acid plant from 800 tpd ( $P_2O_5$ ) to 1000 tpd ( $P_2O_5$ ) as 29%  $P_2O_5$ . The acid is evaporated to 54%  $P_2O_5$  phosphoric acid. The plant uses wet rock grinding. Available fluorides are recovered as fluorosilicic acid.

The application also covers the acid storage and clarification area; an area common to the "A" and "B" phosphoric acid plants. The storage tanks, acid clarifiers and miscellaneous vents are vented through a common venturi scrubber.

See the project PSD package for a more detailed description of the acid plant and storage area.

The sources will operate in compliance with all applicable air quality regulations.

**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 |                           |                        |
| Phosphate Rock                             | Fluorine      | 3.5  | 290,461 (1)               | A (Attachment 1)       |
| Sulfuric Acid                              | None          | ---  | 229,592 (2)               | B (Attachment 1)       |
|  |               |      |                           |                        |
| (1) P <sub>2</sub> O <sub>5</sub> Input is | 87,719 lbs/hr |      |                           |                        |
| (2) As 98% acid.                           |               |      |                           |                        |

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

- Total Process Input Rate (lbs/hr): 520,053 (phosphate rock and sulfuric acid)
- Product Weight (lbs/hr): 287,356 as 29% P<sub>2</sub>O<sub>5</sub> phosphoric acid.

**C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)**

| Name of Contaminant   | Emission <sup>1</sup> |             | Allowed Emission Rate per Rule 17-2 | Allowable <sup>3</sup> Emission lbs/hr | Potential <sup>4</sup> Emission |       | Relate to Flow Diagram |
|---|-----------------------|-------------|-------------------------------------|--|---------------------------------|-------|------------------------|
|   | Maximum lbs/hr        | Actual T/yr |                                     |  | lbs/yr                          | T/yr  |                        |
| Fluoride *  | 0.88                  | 3.5         | 0.02 lb/ton                         | 0.88                                   | 2,350                           | 9,362 | C&D(Attach.1)          |
|   |                       |             |                                     |  |                                 |       |                        |
|   |                       |             |                                     |  |                                 |       |                        |
| * Combined emissions from the phosphoric acid plant scrubber and the acid storage and clarification area scrubber.. |                       |             |                                     |  |                                 |       |                        |

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

<sup>2</sup>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)

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

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

E. Requested permitted equipment operating time: hrs/day 24; days/wk 7; wks/yr 52; if power plant, hrs/yr \_\_\_\_\_; if seasonal, describe: Annual operating time will not exceed 7,968 hours. Acid storage and clarification area will be active 8,760  
hours per year.

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 Deterioration" (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? YES

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.

See project PSD Application Package.

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

| Name and Type<br>(Model & Serial No.)   | Contaminant | Efficiency | Range of Particles<br>Size Collected<br>(in microns)<br>(If applicable) | Basis for<br>Efficiency<br>(Section V<br>Item 5) |
|---|-------------|------------|---|--|
| Acid Plant Venturi<br>Scrubber  | Fluoride    | 99.96%     | NA  | Estimate (1)                                     |
| Stg. & Clair<br>Venturi Scrubber  | Fluoride    | 95%        | NA  | Vendor Est.                                      |
| (1) Calculated in Section V.5 based on AP-42 uncontrolled emission factor and<br>NSPS emission limit. |             |            |   |  |

E. Fuels

| Type (Be Specific) | Consumption* |         | Maximum Heat Input<br>(MMBTU/hr) |
|--------------------|--------------|---------|----------------------------------|
|                    | avg/hr       | max./hr |                                  |
| None               |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |
|                    |              |         |                                  |

\*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average Not Applicable Maximum \_\_\_\_\_

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

Gypsum slurry is transferred to an on-site gypsum disposal area. The process and scrubber water is recycled through the process water cooling pond. Scrubber water from acid clarification is recycled through the process water cooling pond.



(Acid plant/Acid Clarification)

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

Stack Height: 85/60 ft. Stack Diameter: 3.4/2.0 ft. Gas Flow Rate: 12,000/6,000 ACFM 10,635/5,690 DSCFM Gas Exit Temperature: 100/80 °F. Water Vapor Content: 6/3 % Velocity: 22.0/32.0 FPS

SECTION IV: INCINERATOR INFORMATION NOT APPLICABLE

Table with 8 columns: Type of Waste, Type D (Plastics), Type I (Rubbish), Type II (Refuse), Type III (Garbage), Type IV (Pathological), Type V (Liq. & Gas By-prod.), Type VI (Solid By-prod.). Rows include Actual lb/hr Incinerated and 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.

Table with 5 columns: Volume (ft)³, Heat Release (BTU/hr), Fuel (Type, BTU/hr), Temperature (°F). Rows include Primary Chamber and Secondary Chamber.

Stack Height: ft. Stack Diameter: 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: \_\_\_\_\_

See PSD Application package

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

See Section III, G

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

### SECTION V: SUPPLEMENTAL REQUIREMENTS

(See Page 7a)

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.

SECTION V  
SUPPLEMENTAL REQUIREMENTS

1. Production and Material Input Rates

Product

1,000 STPD of 100%  $P_2O_5$  as 29%  $P_2O_5$  phosphoric acid. Over 90% of the acid is concentrated in two stages to 54%  $P_2O_5$  phosphoric acid.  
= (1000 STPD)(2000 lb/ton)/(0.29)(24 hrs/day)  
= 287,356 lb/hr of 29% acid.

Process Losses

$P_2O_5$  losses to the gypsum area are 5.0%.

Material Input

Wet phosphate rock (dry weight basis) @ 30.2%  $P_2O_5$   
= (1000 STPD)(2000)/((1-0.05 loss factor)(0.302)(24))  
= 290,461 lbs/hr phosphate rock  
x 0.302  
= 87,719 lb/hr  $P_2O_5$ .

98% Sulfuric Acid at a use rate of 2.7 tons of 100% acid per ton of  $P_2O_5$  produced  
= (1000 STPD)(2000)(2.7)/(0.98 acid strength)(24)  
= 229,592 lbs/hr 98% sulfuric acid.

2&3. Controlled and Uncontrolled Emissions from acid plant and acid clarification area (total).

Fluoride

Uncontrolled @ 56.4 lb/ton of  $P_2O_5$  produced (AP-42, Supp. 10)  
= (1000 STPD)(56.4)/24  
= 2,350 lb/hr  
x 7968/2000  
= 9362 tpy

Controlled @ 0.02 lb/ton  $P_2O_5$  Input  
= (87,719 lb/hr  $P_2O_5$ )(0.02)/2000  
= 0.88 lb/hr  
x 7968/2000  
= 3.5 tpy

4. See PSD package for description of control system.

5. Fluoride Control Efficiency  
Acid Plant

$E = (2350 - 0.88)(100)/2350$   
= 99.96%.

Acid Clarification -  $E = 95%$  based on supplier guarantee.

6. Flow Diagram - Attachment 1.

7. Location Map - Attachment 2.

8. Site Map - Attachment 3.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**

(See PSD Package for BACT Analysis)

- 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

| 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

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

- C. What emission levels do you propose as best available control technology?

Contaminant

Rate or Concentration

| 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 Costs:

9. Emissions:

Contaminant

Rate or Concentration

| 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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:<sup>2</sup>

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate:<sup>1</sup>

10. Reason for selection and description of systems:

<sup>1</sup>Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

**SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION**  
(See PSD Package for Air Quality Review)

**A. Company Monitored Data**

1. \_\_\_\_\_ no. sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sub>2</sub>+ \_\_\_\_\_ Wind spd/dir

Period of Monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

\*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent?  Yes  No

b. Was instrumentation calibrated in accordance with Department procedures?

Yes  No  Unknown

B. Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

2. Surface data obtained from (location) \_\_\_\_\_

3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_

4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

C. Computer Models Used

1. \_\_\_\_\_ Modified? If yes, attach description.

2. \_\_\_\_\_ Modified? If yes, attach description.

3. \_\_\_\_\_ Modified? If yes, attach description.

4. \_\_\_\_\_ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

| Pollutant       | Emission Rate   |
|-----------------|-----------------|
| TSP             | _____ grams/sec |
| SO <sup>2</sup> | _____ grams/sec |

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

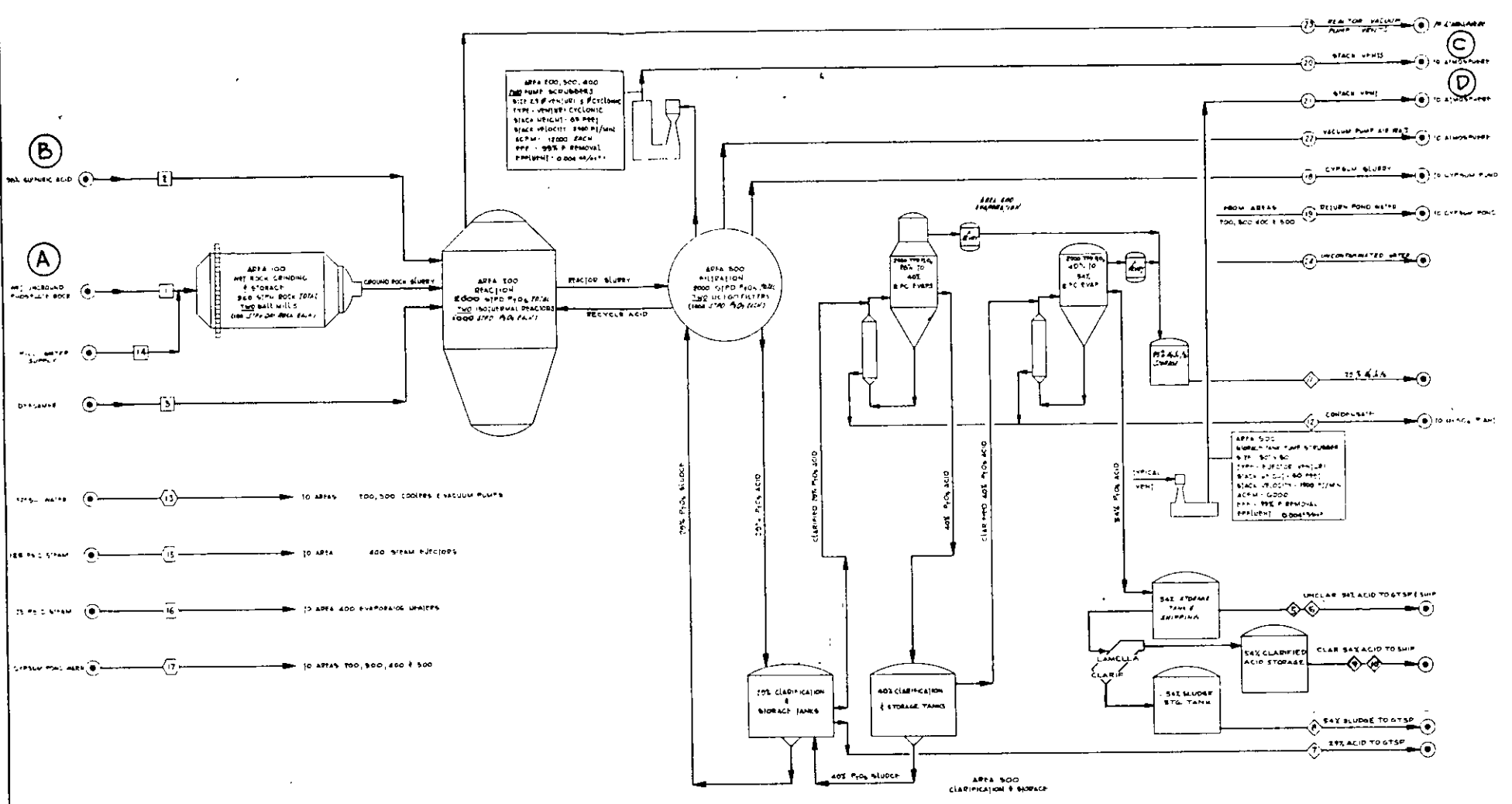
F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.



E-7541-106-0



| RAW MATERIALS                                   |      | PRODUCTS |    |     |     |     |     |     |     |     |     | UTILITIES |     |     |     |    |     |     |     | EFFLUENTS |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |  |
|---|------|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----|-----|-----|----|-----|-----|-----|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|--|
| STREAM NUMBER                                   | UNIT | 1        | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11        | 12  | 13  | 14  | 15 | 16  | 17  | 18  | 19        | 20  | 21  | 22  | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35 |  |
| 100   | 100  | 100      | 90 | 130 | 130 | 130 | 130 | 140 | 140 | 140 | 210 | 80        | 100 | 263 | 267 | 95 | 140 | 100 | 100 | 100       | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |    |  |
| [Detailed stream flow data omitted for brevity] |      |          |    |     |     |     |     |     |     |     |     |           |     |     |     |    |     |     |     |           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |  |

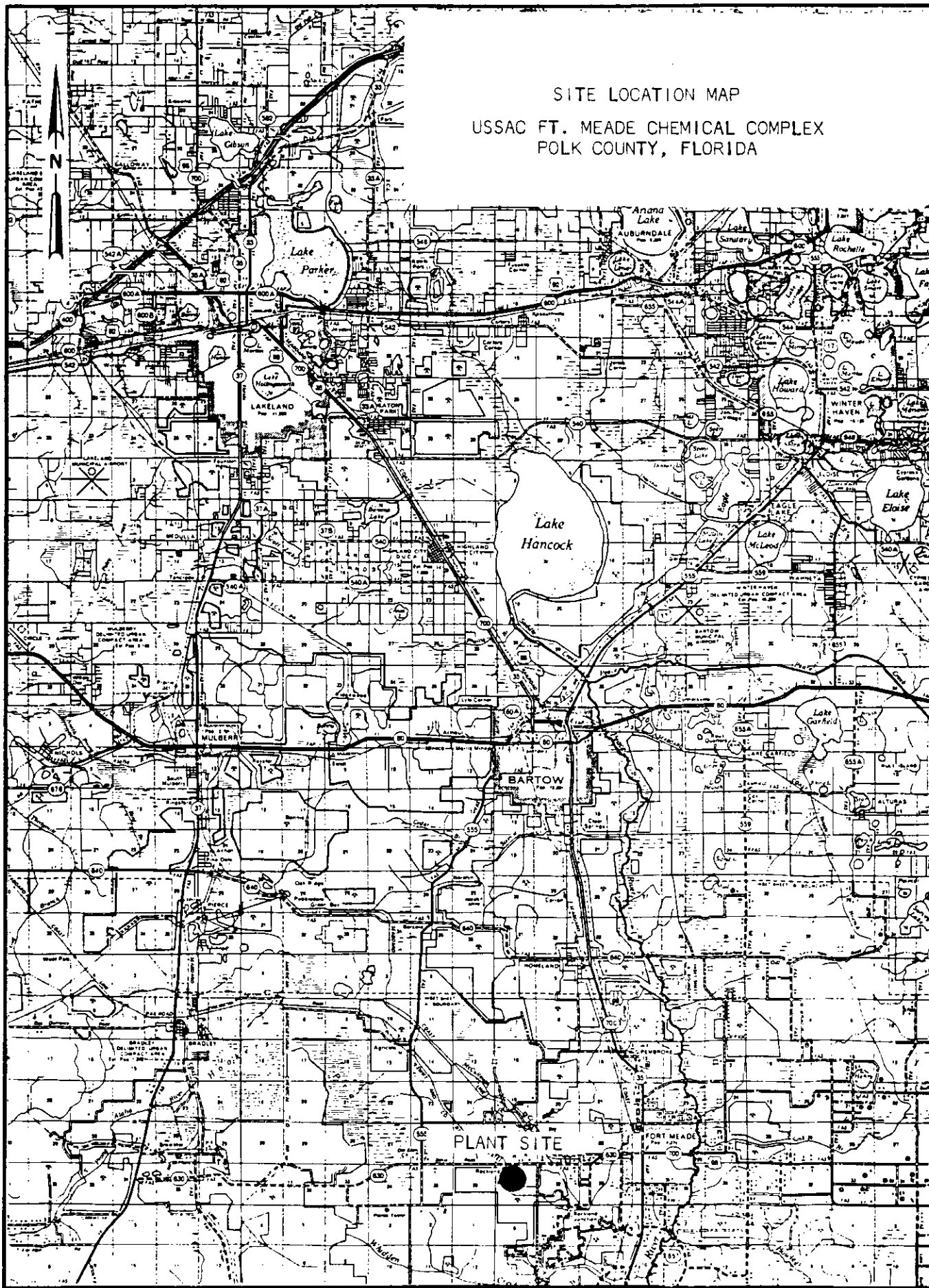
REVISED 11/87 SKEC

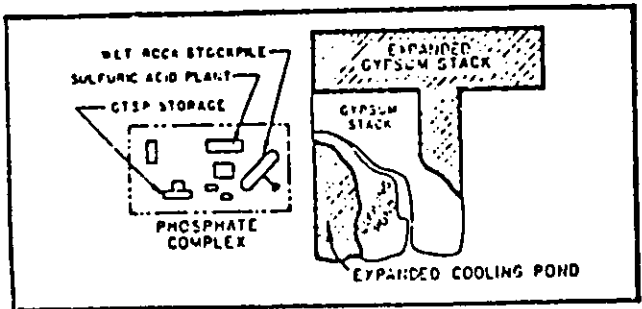
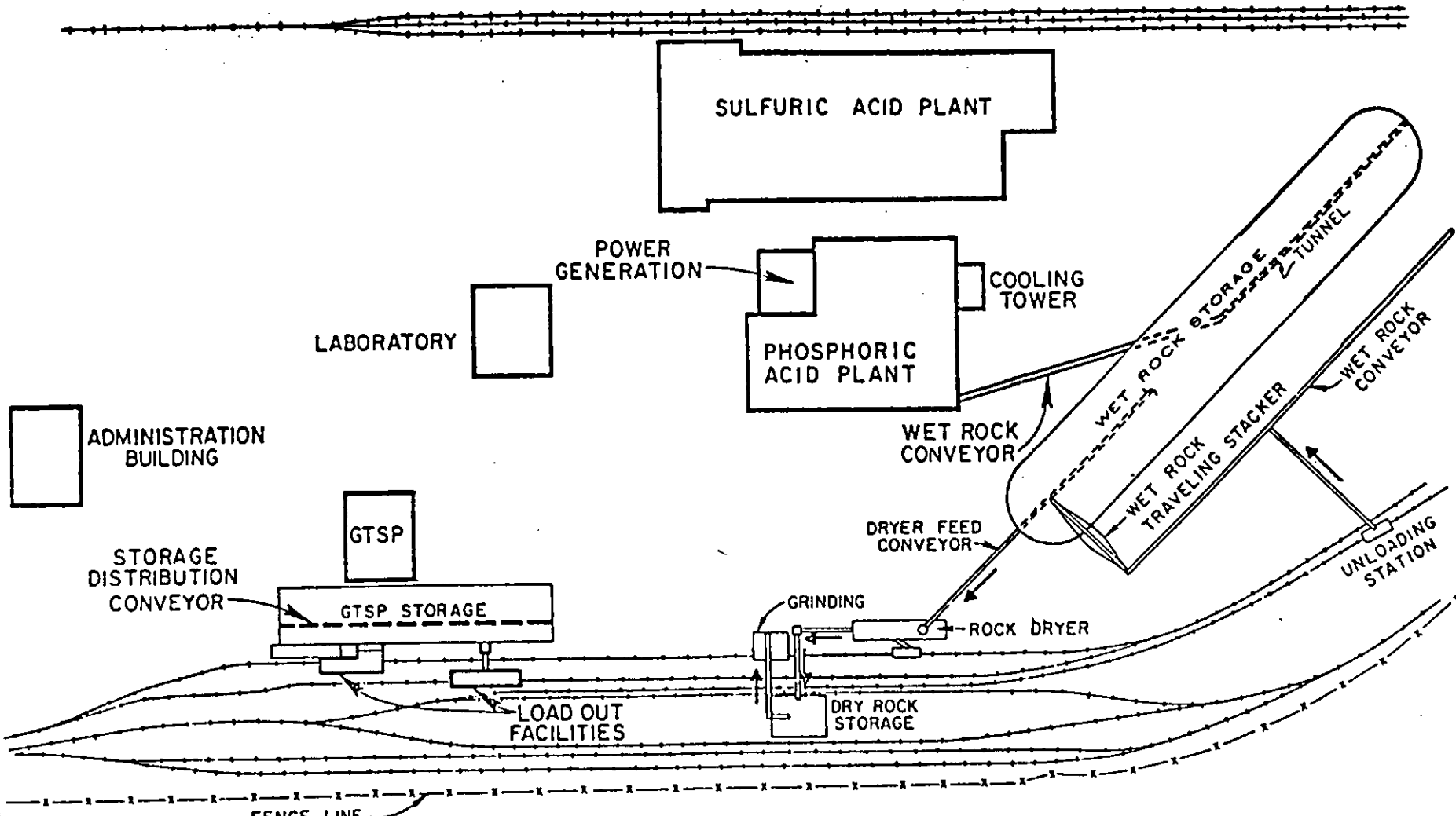
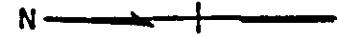
**FLOW DIAGRAM  
RAW MATERIALS, PRODUCTS,  
UTILITIES AND EFFLUENTS  
PHOSPHORIC ACID PLANT  
USS AGRI-CHEMICALS**

**MADDER AMERICA INC**  
FT. MEADE, FLORIDA

WATER SUPPLY: 100 GPM  
WATER: 100 GPM  
ELECTRICITY: 100 KW  
HEAT: 100 MBTU

SITE LOCATION MAP  
USSAC FT. MEADE CHEMICAL COMPLEX  
POLK COUNTY, FLORIDA





FT. MEADE PHOSPHATE COMPLEX

U.S. STEEL AGRI-CHEMICALS  
FT. MEADE, FLORIDA

GRAPHIC SERVICES - ENGINEERING - PITTSBURGH  
UNITED STATES STEEL CORPORATION

|           |         |         |         |       |
|-----------|---------|---------|---------|-------|
| 7925/7926 | ALTIERI | RICHARD | 5-12-60 | PDIOS |
| DF3705-2  |         | STORY   |         |       |