



# CARGILL FERTILIZER, INC.

P.O. Box 9002 • Bartow, Florida 33831 • Telephone 941-534-9610 • FAX 941-534-9680

June 21, 2000  
Federal Express Delivery  
8121 1148 9490

Al Linero, P.E.  
New Source Review Section  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

**RECEIVED**

JUN 22 2000

Dear Mr. Linero,

**BUREAU OF AIR REGULATION**

RE: CARGILL FERTILIZER – BARTOW FACILITY  
TITLE V PERMIT NO. 1050046-003-AV  
NO. 4 PHOSPHORIC ACID PLANT FILTER MODIFICATION  
PERMIT APPLICATION

Enclosed please find 6 copies of an Application for Air Permit – Title V Source (Form 62-210.900(1)) and PSD Report for the No. 4 Phosphoric Acid Plant Filter at Cargill Fertilizer's Bartow facility. Also enclosed is a check in the amount of \$7500 for the application fee.

If you have any questions please call me at (863) 534-9615 or email [Debra\\_Waters@Cargill.com](mailto:Debra_Waters@Cargill.com).

Sincerely,

Debra R. Waters  
Environmental Superintendent

Xc: Jellerson  
Edgemon  
File 60-07-05A

*S. Arif*

*EPA*

*NPS*

*SWD*

*C. Halladay*



recycled paper

RECEIVED

JUN 22 2000

BUREAU OF AIR REGULATION

PHOSPHORIC ACID PLANT  
CARGILL FERTILIZER, INC.  
BARTOW PLANT

Prepared For:

Cargill Fertilizer, Inc.  
3200 Highway 60 West  
Bartow, Florida 33830

Prepared By:

Golder Associates Inc.  
6241 NW 23rd Street, Suite 500  
Gainesville, Florida 32653-1500

June 2000  
0037539Y/F1

DISTRIBUTION:

8 Copies - Cargill - Bartow  
2 Copies - Golder Associates Inc.

**Application for Air Permit**



# Department of Environmental Protection

## Division of Air Resources Management

### APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

#### I. APPLICATION INFORMATION

##### Identification of Facility

1. Facility Owner/Company Name: <b>Cargill Fertilizer, Inc.</b>	
2. Site Name: <b>Bartow Facility</b>	
3. Facility Identification Number: <b>1050046</b> [ ] Unknown	
4. Facility Location: Street Address or Other Locator: <b>3200 Highway 60 West</b> City: <b>Bartow</b> County: <b>Polk</b> Zip Code: <b>33830</b>	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

##### Application Contact

1. Name and Title of Application Contact: <b>Debra Waters, Environmental Superintendent</b>	
2. Application Contact Mailing Address: Organization/Firm: <b>Cargill Fertilizer, Inc.</b> Street Address: <b>PO Box 9002</b> City: <b>Bartow</b> State: <b>FL</b> Zip Code: <b>33831</b>	
3. Application Contact Telephone Numbers: Telephone: <b>( 941 ) 534-9615</b> Fax: <b>( 941 ) 534-9680</b>	

##### Application Processing Information (DEP Use)

1. Date of Receipt of Application:	<b>6-22-00</b>
2. Permit Number:	<b>1050046-013-AC</b>
3. PSD Number (if applicable):	<b>PSD-FL-295</b>
4. Siting Number (if applicable):	

## **Purpose of Application**

### **Air Operation Permit Application**

This Application for Air Permit is submitted to obtain: (Check one)

- ☐ Initial Title V air operation permit for an existing facility which is classified as a Title V source.
- ☐ Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: \_\_\_\_\_

- ☐ Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: \_\_\_\_\_

Operation permit number to be revised: \_\_\_\_\_

- ☐ Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: \_\_\_\_\_

- ☐ Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised: \_\_\_\_\_

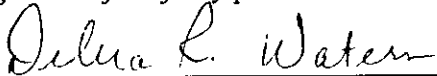
Reason for revision: \_\_\_\_\_

### **Air Construction Permit Application**

This Application for Air Permit is submitted to obtain: (Check one)

- ☒ Air construction permit to construct or modify one or more emissions units.
- ☐ Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.
- ☐ Air construction permit for one or more existing, but unpermitted, emissions units.

**Owner/Authorized Representative or Responsible Official**

1. Name and Title of Owner/Authorized Representative or Responsible Official: <b>Debra Waters, Environmental Superintendent</b>
2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: <b>Cargill Fertilizer, Inc.</b> Street Address: <b>PO Box 9002; 3200 Hwy 60 West</b> City: <b>Bartow</b> State: <b>FL</b> Zip Code: <b>33830</b>
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: <b>( 941 ) 534-9615</b> Fax: <b>( 941 ) 534-9680</b>
4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative*(check here [X], if so) or the responsible official (check here [ ], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i>  <div style="display: flex; justify-content: space-between;"><div style="width: 45%;"> Signature</div><div style="width: 45%; text-align: right;"><u>6/21/00</u> Date</div></div>

\* Attach letter of authorization if not currently on file.

**Professional Engineer Certification**

1. Professional Engineer Name: <b>David A. Buff</b> Registration Number: <b>19011</b>
2. Professional Engineer Mailing Address: Organization/Firm: <b>Golder Associates Inc.</b> Street Address: <b>6241 NW 23rd Street, Suite 500</b> City: <b>Gainesville</b> State: <b>FL</b> Zip Code: <b>32653-1500</b>
3. Professional Engineer Telephone Numbers: Telephone: <b>( 352 ) 336-5600</b> Fax: <b>( 352 ) 336-6603</b>

4. Professional Engineer Statement:

*I, the undersigned, hereby certify, except as particularly noted herein\*, that:*

*(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and*

*(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.*

*If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.*

*If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.*

*If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.*

  
Signature

6/19/00  
Date

(seal)

\* Attach any exception to certification statement.

**Scope of Application**

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
010	Phosphoric Acid Plant	AC1F	7,500

**Application Processing Fee**

Check one: ☒ Attached - Amount: \$: 7,500      ☐ Not Applicable



**Construction/Modification Information**

1. Description of Proposed Project or Alterations:

**Modernization of the Phosphoric Acid Plant by replacing the No. 4 Phosphoric Acid Filter with a more efficient (greater recovery of P2O5) unit.**

2. Projected or Actual Date of Commencement of Construction:

3. Projected Date of Completion of Construction:

**Application Comment**

### A. GENERAL FACILITY INFORMATION

1. Facility UTM Coordinates: Zone: <b>17</b>				East (km): <b>409.8</b>	North (km): <b>3086.7</b>	
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): <b>27 / 52 / 22</b>						Longitude (DD/MM/SS): <b>81 / 54 / 59</b>
3. Governmental Facility Code: <b>O</b>	4. Facility Status Code: <b>A</b>	5. Facility Major Group SIC Code: <b>28</b>	6. Facility SIC(s): <b>2874, 2819</b>			
7. Facility Comment (limit to 500 characters):          						

1. Name and Title of Facility Contact: <b>Debra Waters, Environmental Superintendent</b>			
2. Facility Contact Mailing Address: Organization/Firm: <b>Cargill Fertilizer, Inc</b> Street Address: <b>PO Box 9002</b> City: <b>Bartow</b> State: <b>FL</b> Zip Code: <b>33831</b>			
3. Facility Contact Telephone Numbers: Telephone: <b>( 941 ) 534-9615</b> Fax: <b>( 941 ) 534-9680</b>			

**Check all that apply:**

### **List of Applicable Regulations**

DEP Form No. 62-210.900(1) - Form  
Effective: 2/11/99

## B. FACILITY POLLUTANTS

### **List of Pollutants Emitted**

[illegible]

### C. FACILITY SUPPLEMENTAL INFORMATION

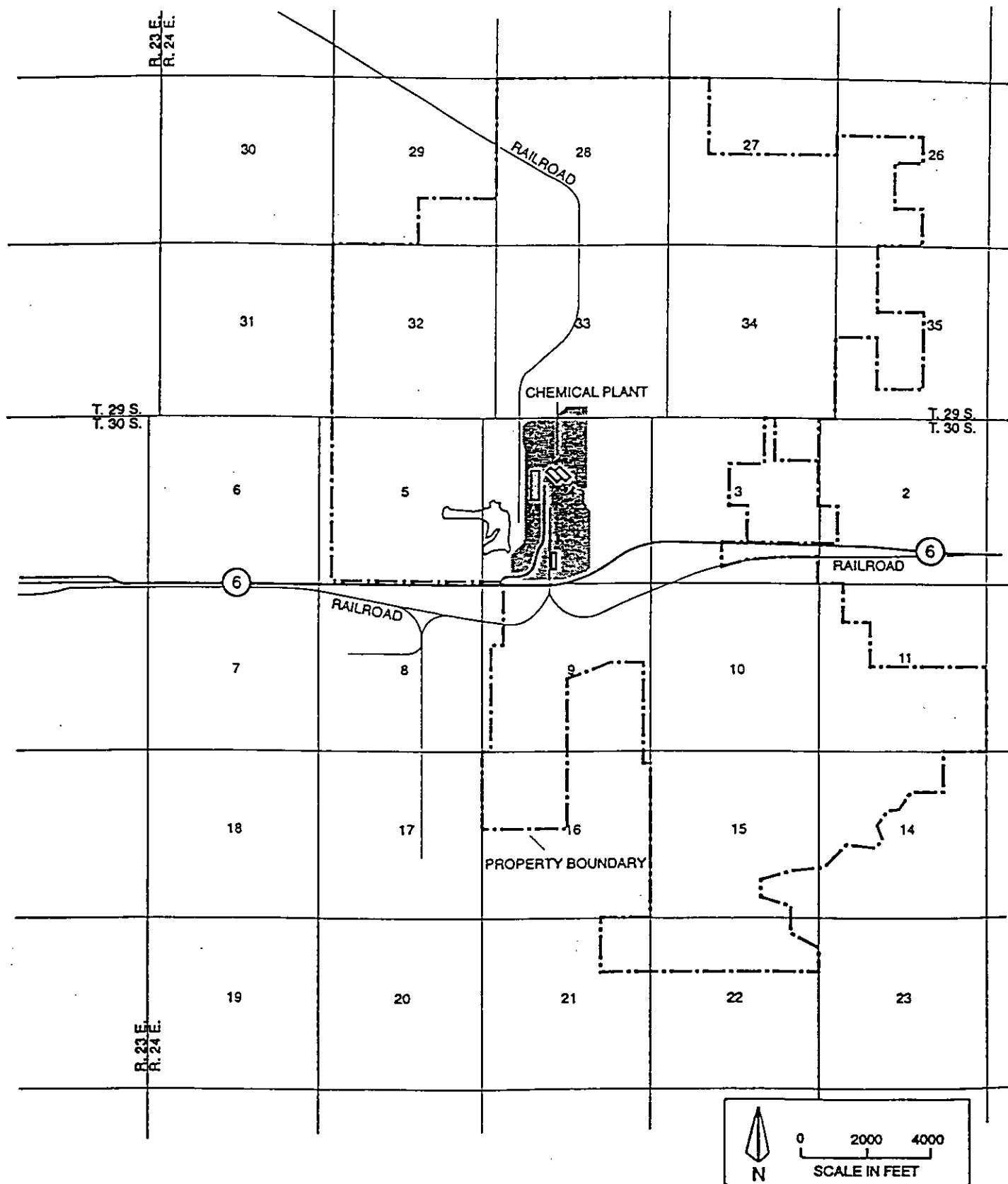
## **Supplemental Requirements**

1. Area Map Showing Facility Location: [ <b>X</b> ] Attached, Document ID: <u>CB-FI-C1</u> [ ] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [ <b>X</b> ] Attached, Document ID: <u>CB-FI-C2</u> [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [ <b>X</b> ] Attached, Document ID: <u>CB-FI-C3</u> [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable [ ] Waiver Requested
5. Fugitive Emissions Identification: [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable [ ] Waiver Requested
6. Supplemental Information for Construction Permit Application: [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable
7. Supplemental Requirements Comment:

**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

8. List of Proposed Insignificant Activities: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
9. List of Equipment/Activities Regulated under Title VI: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities On site but Not Required to be Individually Listed <input type="checkbox"/> Not Applicable
10. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
11. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
12. Identification of Additional Applicable Requirements: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
13. Risk Management Plan Verification: <input type="checkbox"/> Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID: _____) or previously submitted to DEP (Date and DEP Office: _____) <input type="checkbox"/> Plan to be submitted to CEPPO (Date required: _____) <input type="checkbox"/> Not Applicable
14. Compliance Report and Plan: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable
15. Compliance Certification (Hard-copy Required): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable

**ATTACHMENT CB-FI-C1**  
**AREA MAP**

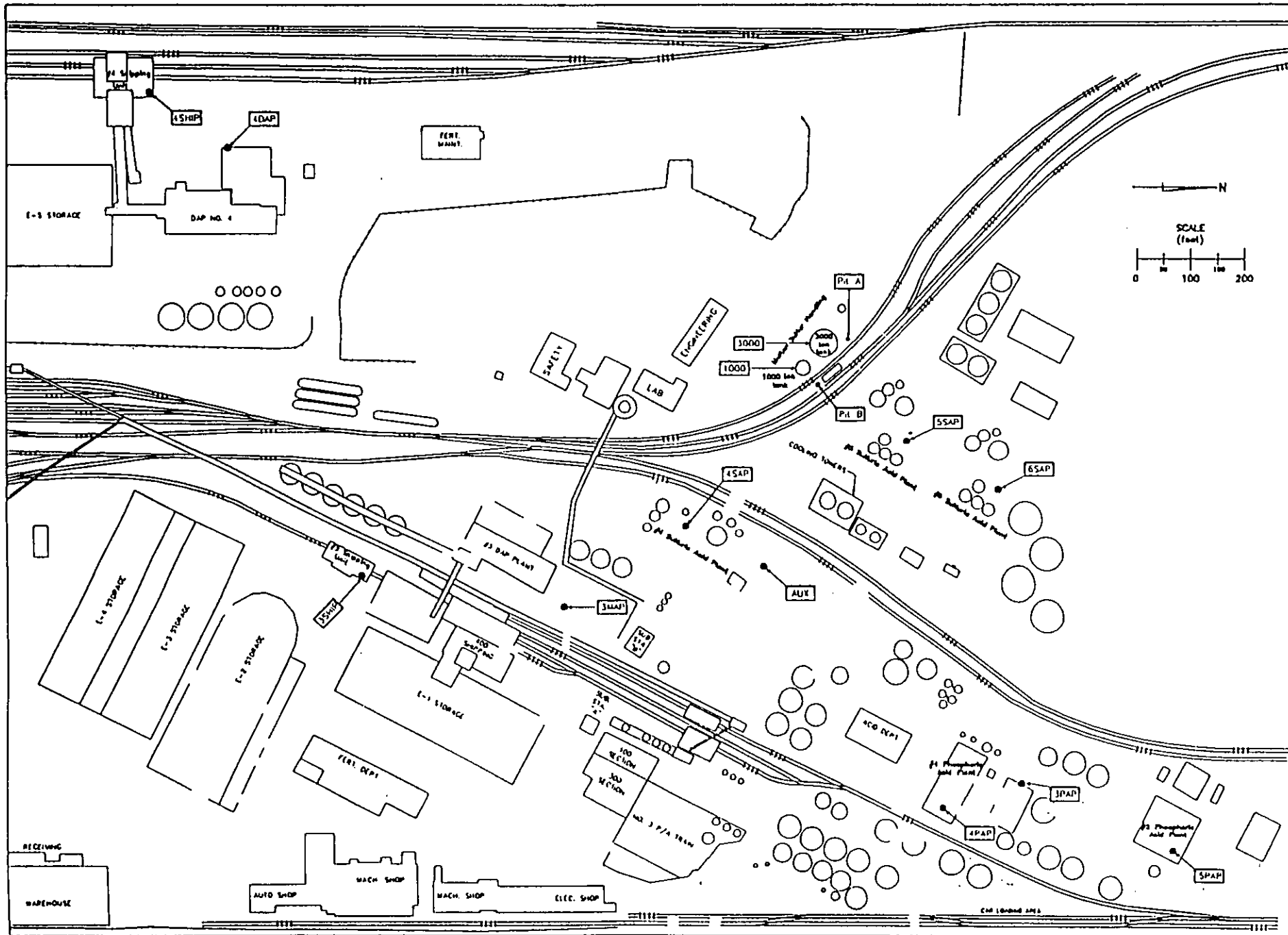


Attachment CB-FI-C1  
Area Map Showing Facility Location





**ATTACHMENT CB-FI-C2**  
**FACILITY PLOT PLAN**



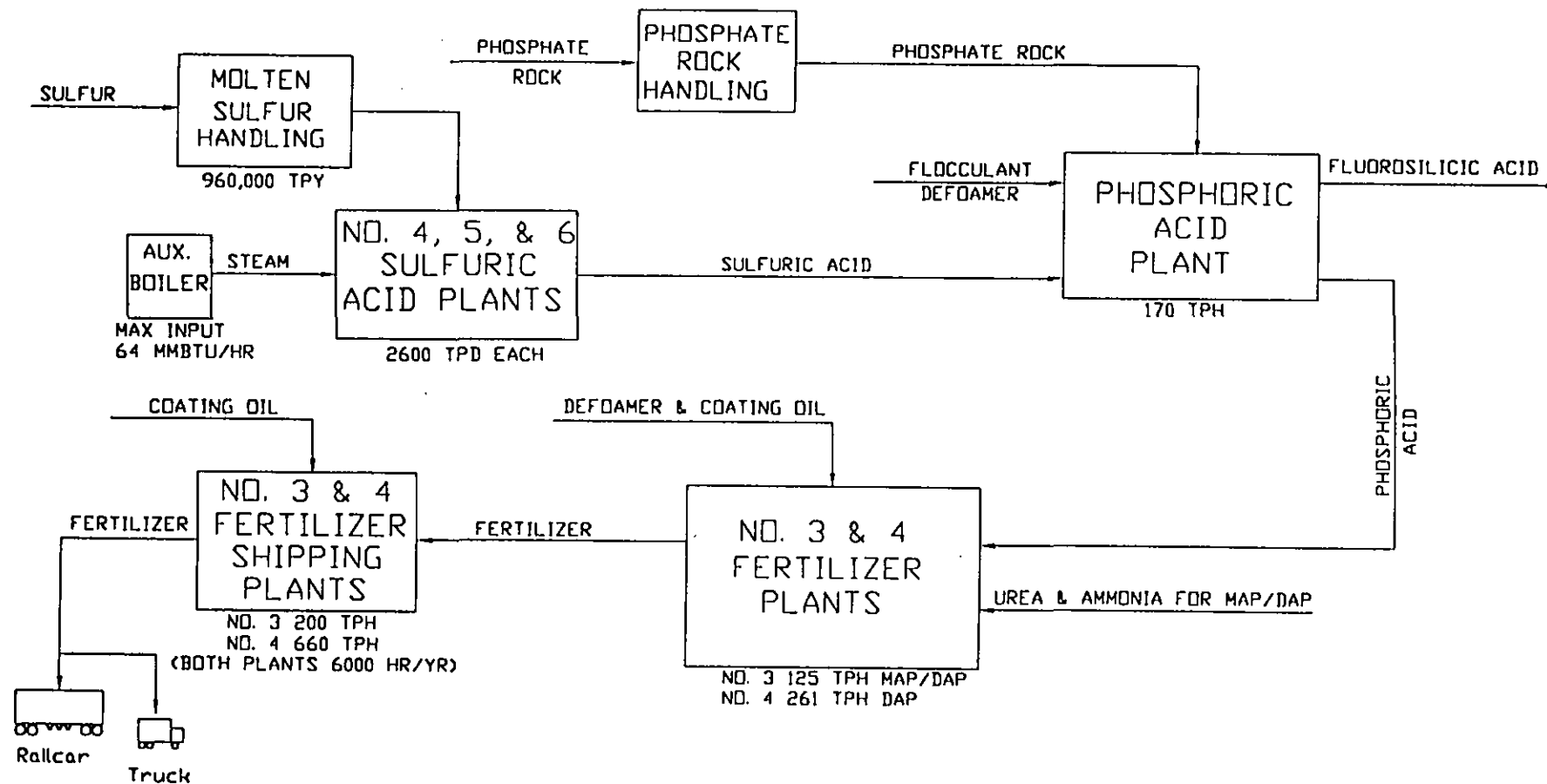
Attachment CB-FI-C2

Facility Plot Plan



**ATTACHMENT CB-FI-C3**  
**PROCESS FLOW DIAGRAM**

# OVERALL PROCESS OF FERTILIZER MANUFACTURING



Attachment CB-FI-C3

<b>CARGILL FERTILIZER, INC.</b> 1000 MICHAEL DR. WEST DALLAS, TEXAS 75201 (214) 344-1000			
CARGILL FILE # 1000 MICHAEL DR. WEST DALLAS, TEXAS 75201 (214) 344-1000	FERTILIZER 1000 MICHAEL DR. WEST DALLAS, TEXAS 75201 (214) 344-1000	FERTILIZER 1000 MICHAEL DR. WEST DALLAS, TEXAS 75201 (214) 344-1000	FERTILIZER 1000 MICHAEL DR. WEST DALLAS, TEXAS 75201 (214) 344-1000
FERTILIZER PRODUCTION PROCESS DIAGRAM			
PREPARED BY JOHN WOOTEN DATE 10/10/80	CHECKED BY DATE 10/10/80	DESIGNED BY DATE 10/10/80	DRAWN BY DATE 10/10/80

**III. EMISSIONS UNIT INFORMATION**

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION**  
**(All Emissions Units)****Emissions Unit Description and Status**

1. Type of Emissions Unit Addressed in This Section: (Check one)			
<input checked="" type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).			
<input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.			
<input type="checkbox"/> This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.			
2. Regulated or Unregulated Emissions Unit? (Check one)			
<input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.			
<input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.			
3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):			
Phosphoric Acid Plant			
4. Emissions Unit Identification Number:		[ ] No ID	
ID: 010		[ ] ID Unknown	
5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		28	[ ]
9. Emissions Unit Comment: (Limit to 500 Characters)			
See Attachment CB-EU1-A6			

**Emissions Unit Control Equipment**

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

**Cross flow scrubbers (2)****Venturi Scrubber**2. Control Device or Method Code(s): **50, 53****Emissions Unit Details**

1. Package Unit:

Manufacturer:

Model Number:

2. Generator Nameplate Rating:

MW

3. Incinerator Information:

Dwell Temperature:

°F

Dwell Time:

seconds

Incinerator Afterburner Temperature:

°F

**B. EMISSIONS UNIT CAPACITY INFORMATION**  
(Regulated Emissions Units Only)**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:	mmBtu/hr
2. Maximum Incineration Rate:	lb/hr      tons/day
3. Maximum Process or Throughput Rate:	<b>170    TPH P205</b>
4. Maximum Production Rate:	
5. Requested Maximum Operating Schedule:	
<b>24</b> hours/day	<b>7</b> days/week
<b>52</b> weeks/year	<b>8,760</b> hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):	
<b>Maximum Production Rate = 170 TPH as 100% P205 input.</b>	

**C. EMISSIONS UNIT REGULATIONS  
(Regulated Emissions Units Only)****List of Applicable Regulations**

40 CFR 60.11(a)
40 CFR 60.11(d)
40 CFR 60.11(f)
40 CFR 60.12
40 CFR 60.13(a)
40 CFR 60.13(b)
40 CFR 60.13(e)
40 CFR 60.13(f)
40 CFR 60.19
40 CFR 60.222 – Standards for Fluorides
40 CFR 60.223 – Monitoring of Operation
40 CFR 60.224 – Test Methods and Procedures
40 CFR 60.7
40 CFR 60.8
62-204.800(7)26.
62-297.310 – Compliance Testing
62-297.401 – Compliance Test Methods



**D. EMISSION POINT (STACK/VENT) INFORMATION**  
**(Regulated Emissions Units Only)****Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram? <b>3PAP, 4PAP, 5PAP</b>		2. Emission Point Type Code: <b>3</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>144</b> feet	7. Exit Diameter: <b>4</b> feet	
8. Exit Temperature: <b>100</b> °F	9. Actual Volumetric Flow Rate: <b>40,500</b> acfm	10. Water Vapor: <b>%</b>	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):			
14. Emission Point Comment (limit to 200 characters):  <b>Actual Exit Diameter – 3.92 feet. Stack parameters are for the No. 4 PAP reactor.</b>			

**E. SEGMENT (PROCESS/FUEL) INFORMATION**  
(All Emissions Units)**Segment Description and Rate:** Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):  <b>Chemical Manufacturing; Phosphoric Acid: Wet Process Reactor</b>		
2. Source Classification Code (SCC): <b>3-01-016-01</b>		3. SCC Units: <b>Tons Phosphate Rock</b>
4. Maximum Hourly Rate: <b>586.2</b>	5. Maximum Annual Rate: <b>5,135,172</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):  <b>Represents No. 4 and No. 5 Phosphoric Acid Units Combined. Based on 29% P2O5 in the rock. 170 TPH (daily average) + 0.29 = 586.2 TPH phosphate rock.</b>		

**Segment Description and Rate:** Segment \_\_\_\_ of \_\_\_\_

1. Segment Description (Process/Fuel Type ) (limit to 500 characters):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

**F. EMISSIONS UNIT POLLUTANTS**  
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
FL	050	053	EL

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION****(Regulated Emissions Units -****Emissions-Limited and Preconstruction Review Pollutants Only)****Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>FL</b>	2. Total Percent Efficiency of Control: <b>%</b>
3. Potential Emissions: <b>2.29 lb/hour 10.01 tons/year</b>	4. Synthetically Limited? <input type="checkbox"/>
5. Range of Estimated Fugitive Emissions: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 _____ to _____ tons/year	
6. Emission Factor: <b>2.29 lb/hr</b> Reference: <b>Permit 1050046-003AV</b>	7. Emissions Method Code: <b>0</b>
8. Calculation of Emissions (limit to 600 characters): <b>2.29 lb/hr x 8,760 hr/yr + 2,000 lb/ton = 10.01 TPY</b>	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

**Allowable Emissions** Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: <b>OTHER</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: <b>2.29 lb/hour 10.01 tons/year</b>
5. Method of Compliance (limit to 60 characters): <b>Annual Stack Test using EPA Method 13A or 13B</b>	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>Based on BACT</b>	

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION****(Regulated Emissions Units -****Emissions-Limited and Preconstruction Review Pollutants Only)****Potential/Fugitive Emissions**

1. Pollutant Emitted: <b>FL</b>	2. Total Percent Efficiency of Control: <b>%</b>
3. Potential Emissions: <b>lb/hour tons/year</b>	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 to tons/year	
6. Emission Factor: <b>Reference:</b>	7. Emissions Method Code:
8. Calculation of Emissions (limit to 600 characters):	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

**Allowable Emissions** Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: <b>RULE</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>0.02 lb/ton P205</b>	4. Equivalent Allowable Emissions: <b>2.29 lb/hour 10.01 tons/year</b>
5. Method of Compliance (limit to 60 characters): <b>Annual Stack Test Using EPA Method 13A or 13B</b>	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): <b>Based on NSPS, 40 CFR 60, Subpart T. Emissions limited to lesser of 0.02 lb/ton and 2.29 lb/hr.</b>	

**H. VISIBLE EMISSIONS INFORMATION**  
(Only Regulated Emissions Units Subject to a VE Limitation)

**Visible Emissions Limitation:** Visible Emissions Limitation \_\_\_\_\_ of \_\_\_\_\_

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions:                      %      Exceptional Conditions:                      % Maximum Period of Excess Opacity Allowed:                      min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

**I. CONTINUOUS MONITOR INFORMATION**  
(Only Regulated Emissions Units Subject to Continuous Monitoring)

**Continuous Monitoring System:** Continuous Monitor \_\_\_\_\_ of \_\_\_\_\_

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:    Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION**  
(Regulated Emissions Units Only)**Supplemental Requirements**

1. Process Flow Diagram [ <b>X</b> ] Attached, Document ID: <u>CB-EU1-J1</u> [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ <b>X</b> ] Attached, Document ID: <u>See Part B</u> [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID: _____ [ ] Previously submitted, Date: _____ [ <b>X</b> ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ <b>X</b> ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable
10. Supplemental Requirements Comment:          

**Additional Supplemental Requirements for Title V Air Operation Permit Applications****11. Alternative Methods of Operation**

☐ Attached, Document ID: \_\_\_\_\_ ☒ Not Applicable

**12. Alternative Modes of Operation (Emissions Trading)**

☐ Attached, Document ID: \_\_\_\_\_ ☒ Not Applicable

**13. Identification of Additional Applicable Requirements**

☐ Attached, Document ID: \_\_\_\_\_ ☒ Not Applicable

**14. Compliance Assurance Monitoring Plan**

☐ Attached, Document ID: \_\_\_\_\_ ☒ Not Applicable

**15. Acid Rain Part Application (Hard-copy Required)**

☐ Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))  
Attached, Document ID: \_\_\_\_\_

☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)  
Attached, Document ID: \_\_\_\_\_

☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)  
Attached, Document ID: \_\_\_\_\_

☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)  
Attached, Document ID: \_\_\_\_\_

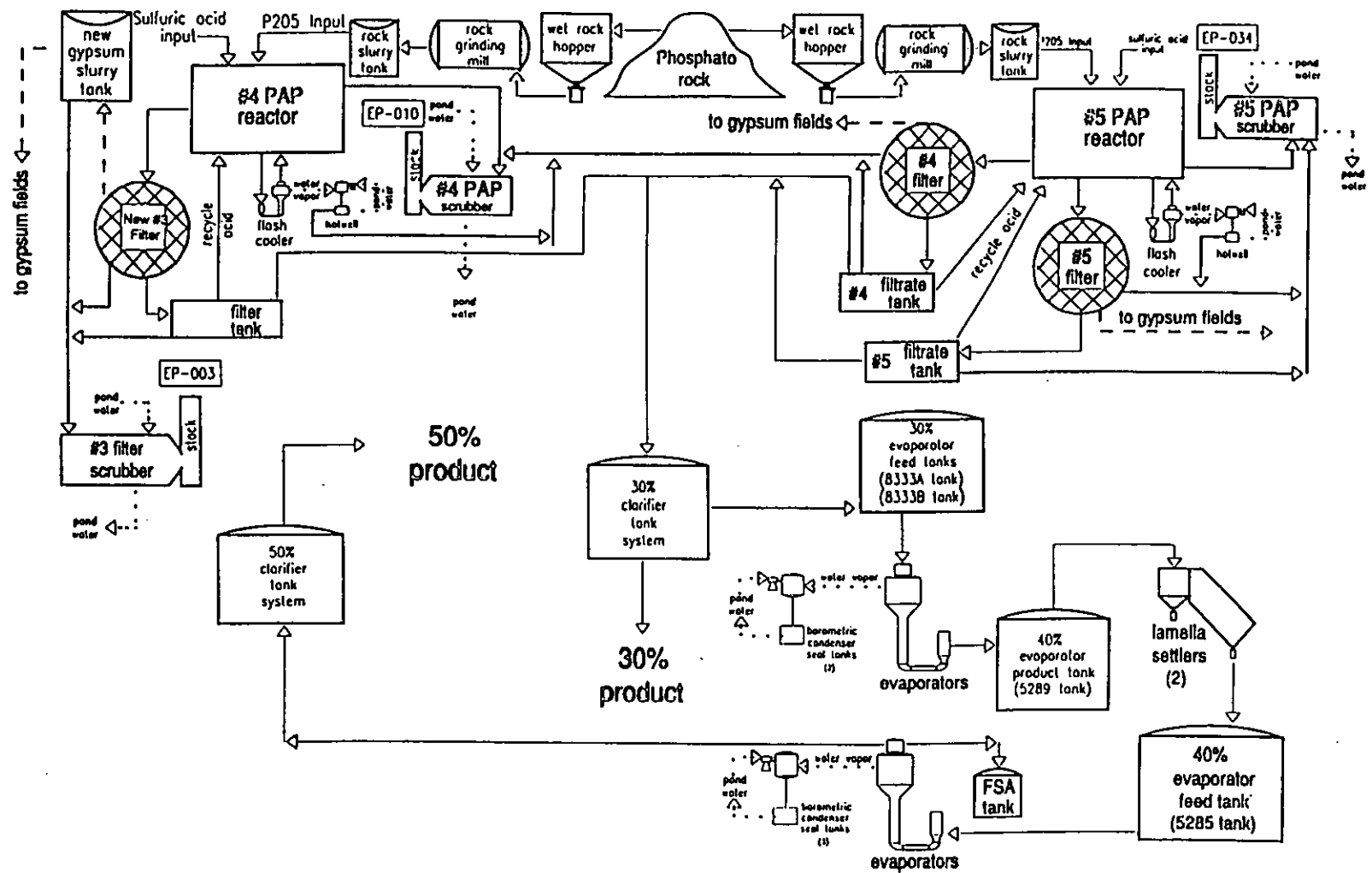
☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)  
Attached, Document ID: \_\_\_\_\_

☐ Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)  
Attached, Document ID: \_\_\_\_\_

☒ Not Applicable



**ATTACHMENT CB-EU1-J1**  
**PROCESS FLOW DIAGRAM**  
**EMISSION UNIT**



	evacuation		water flow	Cargill Fertilizer, Inc. - Bartow Emissions Unit: EU8 Phosphoric Acid Plant - Process Flow
	process flow		gypsum flow	

REVISION BY: COLDER ASSOCIATES  
REVISION DATE: Jan. 12, 1998

## PSD Report

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## 1.0 INTRODUCTION

Cargill Fertilizer, Inc., operates a phosphate fertilizer manufacturing facility located west of Bartow in Polk County, Florida (refer to Figure 1-1). As part of the overall manufacturing process, phosphoric acid is produced in the Phosphoric Acid Plant (PAP). Phosphoric acid is then reacted with anhydrous ammonia to produce either monoammonium phosphate (MAP) or diammonium phosphate (DAP) elsewhere in the facility.

Currently, the PAP consists of the Nos. 4 and 5 Phosphoric Acid Reactors, the Nos. 3, 4, and 5 Phosphoric Acid Filters, and associated material handling and pollution control equipment. Cargill is proposing to replace existing Phosphoric Acid Filter No. 4. with a new filter capable of recovering more of the  $P_2O_5$  received from Phosphoric Acid Reactor No. 5. The improved  $P_2O_5$  recovery efficiency will result in increased phosphoric acid production without increasing the permitted maximum  $P_2O_5$  feed rate to the reactors or increasing maximum permitted fluoride emission rates.

Based on the difference between actual annual fluoride emission from the existing PAP and potential fluoride emissions from the PAP after replacement of No. 4 Phosphoric Acid Filter, as well as potential debottlenecking of other emission units at the facility, the proposed project will constitute a major modification to a major stationary source under current federal and state air quality regulations. This report addresses the requirements of new source review under the prevention of significant deterioration (PSD) rules and regulations implementing the Clean Air Act Amendments of 1977. The Florida Department of Environmental Protection (FDEP) has PSD review and approval authority in Florida. Based on the PSD source applicability analysis, a PSD review is indicated for  $PM_{10}$  (particulate matter with an aerodynamic diameter less than 10 microns) and fluoride emissions.

This application contains six additional sections. A complete description of the project, including air emission rates, is presented in Section 2.0. The air quality review

requirements and new source review applicability of the project are discussed in Section 3.0.

Ambient monitoring requirements under PSD are addressed in Section 4.0. The best available control technology (BACT) analysis is presented in Section 5.0. The air quality impact analysis and impacts on soils, vegetation and visibility required as part of the PSD permitting process are addressed in Sections 6.0 and 7.0, respectively.

## 2.0 PROJECT DESCRIPTION

Cargill Fertilizer Inc., operates a phosphate fertilizer facility located west of Bartow, Florida (see Figure 1-1). Cargill is proposing to modify the existing Phosphoric Acid Plant (PAP) by replacing the No. 4 Phosphoric Acid Filter with a new filter capable of more efficient (higher recovery of  $P_2O_5$ ) operation.

The existing PAP is currently operating under Permit No. 1050046-003-AV, issued October 6, 1998. The location of the PAP at Cargill is shown in Figure 2-1, which is a plot plan of the Bartow facility.

## 2.1 DESCRIPTION OF EXISTING PROCESS

Currently, the PAP consists of the Nos. 4 and 5 Phosphoric Acid Reactors, the Nos. 3, 4, and 5 Phosphoric Acid Filters, along with associated material handling and pollution control equipment. In the PAP, sulfuric acid is combined with ground phosphate rock in the reactors. The reactors produce a slurry of phosphoric acid and gypsum. The No. 4 Phosphoric Acid Reactor discharges to the No. 3 Phosphoric Acid Filter. The No. 5 Phosphoric Acid Reactor discharges to the No. 4 and No. 5 Phosphoric Acid Filters. The filters separate the phosphoric acid from the gypsum. The phosphoric acid, which is about 30 percent strength at this point, is sent to the filtrate tanks, to a clarifier, and then to evaporators where the strength of the acid is increased to 40 percent. From the evaporators, the 40 percent strength acid is pumped to the evaporator storage tank, to the two lamella settlers, and then to the 40 percent evaporator feed tank. A second evaporator is used to further concentrate the acid to a strength of 50 percent, after which it is again clarified and stored as the final product from the PAP.

Fluoride emissions from the existing gypsum slurry tank, the No. 3 Phosphoric Acid Filter, and the filtrate tank serving the No. 4 Phosphoric Acid Reactor, are controlled by the No. 3 Phosphoric Acid Filter Scrubber. Fluoride emissions from the No. 4 Phosphoric Acid Reactor, the No. 4 Filtrate Tank, and the No. 4 Phosphoric Acid Filter are controlled by the No. 4 PAP Scrubber. Fluoride emissions from the No. 5



Phosphoric Acid Reactor, the No. 5 Phosphoric Acid Filter, and the No. 5 Filtrate Tank are controlled by the No. 5 PAP Scrubber.

The existing No. 4 Phosphoric Acid Filter consists of a rotating filter table approximately 52.5 ft in diameter. The filter table is divided into 24 pie-shaped compartments. A slurry of phosphoric acid and gypsum from the reactor is discharged into each compartment as it passes the discharge point. A fixed hood (does not rotate with the filter table), covering approximately a 90 degree sector of the filter starting at the slurry discharge point, is used to capture fluoride emissions which evolve from the surface of the filter table. As the filter rotates, gypsum is filtered out and phosphoric acid is collected below in the No. 4 Filtrate Tank. The rate of rotation of the filter is adjusted to allow for sufficient recovery of phosphoric acid. As each compartment completes its cycle, the gypsum accumulated on the top of the filter is discharged. The compartment is then ready to receive a new batch of slurry.

## **2.2 DESCRIPTION OF PROPOSED MODIFICATION**

Cargill is proposing to modify the existing PAP by replacing the existing No. 4 Phosphoric Acid Filter. The design of the proposed phosphoric acid filter will be similar to the existing No. 4 Phosphoric Acid Filter except the diameter of the filter table will be increased slightly, resulting in additional filter surface area. The larger surface area of the proposed filter will allow Cargill to recover phosphoric acid that is currently lost in the void space of the gypsum.

A new hood covering approximately a 104 degree sector of the proposed filter table will be used to capture fluoride emissions which will be vented to the existing No. 4 PAP Scrubber. Although the proposed project will increase the actual production of phosphoric by increasing recovery of phosphoric acid from the slurry, Cargill is not requesting to increase the currently permitted  $P_2O_5$  feed rate to the PAP of 170 tons per hour (TPH), based on 586 TPH phosphate rock at 29%  $P_2O_5$ . As described above, the purpose of the project is to enhance  $P_2O_5$  recovery.

### 2.3 EMISSIONS AND STACK PARAMETERS

The PAP is currently subject to a fluoride emission limit of 2.29 lb/hr as specified in Operating Permit No. 1050046-003-AV. The current operating permit further limits the capacity of the existing PAP to 170.0 TPH of equivalent  $P_2O_5$  feed rate. Although, the proposed project will likely result in an increase in the production of  $P_2O_5$ , the increase is due to better recovery of  $P_2O_5$  and not an increase in the amount of  $P_2O_5$  feed rate. Since there is a finite amount of fluoride in phosphate rock, and the amount of phosphate rock fed to the modified PAP will not change as a result of this project, potential fluoride emissions from the modified PAP are not expected increase as a result of this project. As such, Cargill is not requesting to increase the fluoride emission rate currently permitted for the PAP.

### 3.0 SOURCE APPLICABILITY

#### 3.1 PSD REVIEW

##### 3.1.1 POLLUTANT APPLICABILITY

The Cargill Bartow facility is considered to be an existing major stationary facility because potential emissions of certain regulated pollutants exceed 100 TPY (for example, potential PM emissions currently exceed 100 TPY). As a result, PSD review is required for the proposed modification for each pollutant for which the net increase in emissions exceeds the PSD significant emission rates (i.e., a major modification; see Table 3-1).

The proposed project includes replacement of the No. 4 Phosphoric Acid Filter. As a result of the proposed project, actual annual fluoride emissions from the PAP may increase (based on the difference between potential fluoride emissions and average of fluoride emissions reported for the PAP in Annual Operating Reports for 1998 and 1999 operations).

A PSD applicability analysis is presented in Table 3-1. The increase in annual emissions due to the proposed project, changes in annual emissions due to potential debottlenecking of upstream and downstream sources associated with the proposed project, and contemporaneous emission changes occurring over the last 5 years, are shown in Table 3-1.

Sulfuric acid is used in the production of phosphoric acid. Sulfuric acid is produced at three sulfuric acid plants at the Bartow facility. Significant amounts of sulfuric acid are also purchased from outside sources. Although the proposed project will result in the production of additional phosphoric acid ( $P_2O_5$ ), this increase is a result of better recovery of the  $P_2O_5$  in the phosphoric acid and not a result of processing of additional phosphate rock. No additional sulfuric acid will be needed as a result of this project. Therefore, the sulfuric acid plants will not be affected by the proposed project.

Several emission units at the Bartow facility located downstream from the PAP. These emission units include the Nos. 3 and 4 Fertilizer Plants and the Nos. 3 and 4 Shipping

Plants. Production of additional  $P_2O_5$  could allow these downstream emission units to increase production.

The No. 3 Fertilizer Plant is currently under a PSD construction permit to increase MAP/DAP production from 2,640 tons per day (TPD) to 3,000 TPD. This construction permit was issued April 21, 1999, but has not yet been implemented by Cargill. As such, there is no operational history on which to base actual annual emissions. In accordance with FDEP/EPA PSD rules, actual emissions can be assumed to be equal to potential emissions for the No. 3 Fertilizer Plant in such a case. Based on this discussion, the proposed project does not affect emissions from the No. 3 Fertilizer Plant.

Only the MAP/DAP produced in the No. 3 Fertilizer Plant is sent to the No. 3 Shipping Plant. The debottlenecking analysis presented in the previous PSD application for the for the No. 3 Fertilizer Plant already addressed potential emission resulting from additional MAP/DAP handling in the No. 3 Shipping Plant. Since the No. 3 Fertilizer Plant is unaffected by this project, and emissions that might result from handling additional MAP/DAP in the shipping plant were addressed in the previous PSD application and permit, the No. 3 Shipping Plant is also not affected by this project.

The No. 4 Fertilizer and No. 4 Shipping Plant may be affected by the proposed project. Therefore these emissions units were included in the PSD source applicability analysis. Actual annual fluoride and  $PM_{10}$  emissions from the No. 4 Fertilizer Plant and the Nos. 3 and 4 Shipping Plants were based on the average of emissions reported in Cargill's 1998 and 1999 Annual Operating Reports for the Bartow facility. The annual average emission rates for these sources are presented in Table 3-2.

PSD regulations require that contemporaneous emission changes at a facility, occurring during the previous 5 years, be included the PSD source applicability analysis. The results of the contemporaneous emissions evaluation for Cargill's Bartow facility are presented in Table 3-2. Four projects resulting in contemporaneous emission changes over the last five years are listed in the table. Three of these projects triggered PSD

review for one or more pollutants. Per EPA guidance, when PSD is triggered for a particular pollutant, the slate is "wiped clean" and there is no further consideration of past, contemporaneous emission changes for that pollutant.

Based on the net increase in emissions due to the modification and contemporaneous emission changes over the past 5 years, PSD new source review is required for SO<sub>2</sub>, PM<sub>10</sub>, and F. PM<sub>10</sub> is defined as PM with an aerodynamic particle size diameter of 10 micrometers or less. Under PSD new source review requirements, a proposed modification that results in a significant net emissions increase must undergo the following reviews:

1. BACT evaluation,
2. Air quality impact analysis,
3. Ambient monitoring analysis, and
4. Additional impact analysis.

These requirements are addressed in Sections 4.0 through 7.0.

### 3.1.2 AMBIENT MONITORING

Based on the increase in emissions from Cargill's proposed project, a PSD preconstruction ambient monitoring analysis is required for SO<sub>2</sub>, PM<sub>10</sub> and F. However, if the increase in impacts of a pollutant is less than the *de minimis* monitoring concentration, then an exemption from the preconstruction ambient monitoring requirement may be granted for that pollutant. In addition, if an acceptable ambient monitoring method for the pollutant has not been established by EPA, monitoring is not required.

For SO<sub>2</sub>, the maximum 24-hour impact due to the proposed project is 4.1 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) (refer to Section 6.0). The increase in ambient impact due to the project is less than the *de minimis* monitoring concentration of 13  $\mu\text{g}/\text{m}^3$ . As a result, the proposed modification can be exempted from the preconstruction monitoring requirements for SO<sub>2</sub>.

For  $PM_{10}$ , the maximum 24-hour impact due to the proposed expansion is  $11.34 \mu\text{g}/\text{m}^3$  (refer to Section 6.0). The increase in impacts is above the *de minimis* monitoring concentration of  $10 \mu\text{g}/\text{m}^3$ . As a result, the proposed modification cannot be exempted from the preconstruction monitoring requirements for  $PM_{10}$ .

There is no *de minimis* monitoring concentration for F. As a result, preconstruction monitoring is not required for fluorides.

### 3.1.3 GEP STACK HEIGHT ANALYSIS

The GEP stack height regulations allow any stack to be at least 65 m (213 ft) high. All stack heights at the Bartow facility are less than 213 ft. Therefore, all stacks at Cargill's Bartow facility are in compliance with GEP stack height regulations.

### 3.1.4 BEST AVAILABLE CONTROL TECHNOLOGY

The federal PSD regulations as promulgated in 40 CFR 52.21(j)(3) states that BACT is applied only to those emission units that are being physically modified, or for which there is a change in the method of operation, due to the proposed project. The rule quote is provided below:

"A major modification shall apply best available control technology for each pollutant subject to regulation under the Act for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit."

Florida's PSD rules (Rule 62-212.400) were designed to be equivalent to EPA's rules. Therefore, BACT review only applies to the modification to the PAP. A BACT determination is not required for affected sources upstream or downstream of the PAP, even though they are required to be included in the PSD source applicability determination, since these emissions units are not undergoing a physical or operational change.

### 3.2 NON-ATTAINMENT REVIEW

The Cargill facility is located in Polk county, which has been designated as an attainment area for SO<sub>2</sub>, PM<sub>10</sub> and F. As a result, non-attainment review does not apply to the proposed project.

### 3.3 NEW SOURCE PERFORMANCE STANDARDS

Federal NSPS have been promulgated for new and modified PAP plants (40 CFR 60, Subpart T). The NSPS currently applies to the PAP, and will continue to apply in the future. The NSPS limit for F emissions is 0.02 lb/ton of P<sub>2</sub>O<sub>5</sub>. Cargill's current operating permit for the PAP limits production of P<sub>2</sub>O<sub>5</sub> to 170 TPH and fluoride emissions to 2.29 lb/hr. Using these permit limits, fluoride emissions are calculated to be 0.0135 lb/ton of P<sub>2</sub>O<sub>5</sub>, which is well below the NSPS limit of 0.02 lb/ton of P<sub>2</sub>O<sub>5</sub>.

#### 4.0 AMBIENT MONITORING ANALYSIS

##### 4.1 INTRODUCTION

In accordance with requirements of 40 CFR 52.21(m) and Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate.

Ambient air monitoring for a period of up to 1 year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987).

An exemption from the preconstruction ambient monitoring requirements is also available if certain criteria are met. If the predicted increase in ambient concentrations due to the proposed modification is less than specified *de minimis* concentrations, then the modification can be exempted from the preconstruction air monitoring requirements for that pollutant.

The PSD *de minimis* monitoring concentration for PM<sub>10</sub> is 10 µg/m<sup>3</sup>, 24-hour average. The PSD *de minimis* monitoring concentration for SO<sub>2</sub> is 13 µg/m<sup>3</sup>, 24-hour average. The predicted increase in PM<sub>10</sub> and SO<sub>2</sub> concentrations due to the proposed modification only are presented in Section 6.0. The predicted 24-hour average, PM<sub>10</sub> and SO<sub>2</sub> impacts from the proposed project are 11.34 and 4.1 µg/m<sup>3</sup>, respectively. Since the predicted increase of PM<sub>10</sub> impacts due to the proposed modification to the PAP are greater than the *de minimis* monitoring concentration for that pollutant, a preconstruction air monitoring analysis is required PM<sub>10</sub>. A preconstruction air monitoring analysis is not



required for  $\text{SO}_2$  because the predicted increase in impact due to the project is less than the *de minimis* monitoring concentration.

#### 4.2 PM<sub>10</sub> AMBIENT MONITORING BACKGROUND CONCENTRATIONS

The PSD ambient monitoring guidelines allow the use of existing data to satisfy preconstruction review requirements and to develop background concentrations. "Background concentrations" are defined as concentrations due to sources other than those specifically included in the modeling analysis. For  $\text{PM}_{10}$ , background would include other point sources not included in the modeling (i.e., faraway sources or small sources), fugitive emission sources, and natural background sources.

Presented in Table 4-1 is a summary of existing ambient  $\text{PM}/\text{PM}_{10}$  data for monitors located in the vicinity of Cargill's Bartow facility. Data are presented for 1998 and 1999. As shown in Table 4-1, these  $\text{PM}_{10}$  monitors were in operation in the vicinity of Cargill's Bartow facility during this period.

The monitoring data shows that ambient  $\text{PM}_{10}$  concentrations were well below the ambient air quality standards of  $150 \mu\text{g}/\text{m}^3$ , maximum 24-hour average, and  $50 \mu\text{g}/\text{m}^3$ , annual average. For purposes of an ambient  $\text{PM}_{10}$  background concentration for use in the modeling analysis, the annual average  $\text{PM}_{10}$  concentration of  $22 \mu\text{g}/\text{m}^3$ , measured in 1999 at both monitoring locations, was used. This concentration was utilized for both the 24-hour and annual average background  $\text{PM}_{10}$  concentrations in the air quality impact analysis since this monitor is impacted by sources explicitly included in the modeling.

## 5.0 BACT ANALYSIS

### 5.1 REQUIREMENTS

The 1977 Clean Air Act Amendments established requirements for the approval of preconstruction permit applications under the PSD program. One of these requirements is that the best available control technology (BACT) be installed for all applicable pollutants emitted by new or modified emissions units. BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives. To bring consistency to the BACT process, the EPA developed the so called "top-down" approach to BACT determinations. This approach has been challenged in court and a settlement agreement reached that requires EPA to initiate formal rulemaking on the "top-down" approach. However, EPA has not yet promulgated rules which address this approach. Nonetheless, in the absence of formal rules related to this approach, the "top-down" approach is followed in the Cargill BACT analysis.

The first step in a "top-down" BACT analysis is to determine, for each applicable pollutant, the most stringent control alternative available for a similar source or source category. If it can be shown that this level of control is not feasible on the basis of technical, economic, energy, or environmental impacts for the source in question, then the next most stringent level of control is identified and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any technical, economic, energy, or environmental consideration.

In the case of the proposed project at Cargill, annual emissions of PM/PM<sub>10</sub>, SO<sub>2</sub>, and fluoride are above significant emissions rates triggering PSD review for these pollutants. However, the proposed project involves physical modification of just the phosphoric acid plant which is a source of fluoride emissions only. Emissions of PM/PM<sub>10</sub> and SO<sub>2</sub> will only increase as a result of debottlenecking or contemporaneous emission increases at emission units that will not be physically modified as a result of this project. As such, this BACT analysis only addresses control of fluoride emissions.

## 5.2 PROPOSED FLUORIDE CONTROL TECHNOLOGY

Fluoride emissions from the existing PAP are currently controlled by three scrubbers. A description of these scrubbers is presented below:

Scrubber Manufacturer	Sources Controlled	Scrubber Type
Wellman-Lord	No. 4 Reactor/Hotwell	Cross-Flow Packed Scrubber
	No. 4 Filter	
	No. 4 Filtrate Tank	
	Nos. 1- 4 Evaporator Seal Tanks	
Wellman-Lord	No. 5 Reactor/Hotwell	Cross-Flow Packed Scrubber
	No. 5 Filter	
	No. 5 Filtrate Tank	
	30% Evaporator Feed Tank	
	40% Evaporator Product Tanks	
	Lamella Settlers	
	40% Evaporator Feed Tank	
VESCOR Replica	No. 3 Filter	Venturi/Demister
	Gypsum Slurry Tank	
	No. 3 Filtrate Tank	

Fluoride emissions from the entire PAP are limited by Operation Permit 1050046-300-AV to 2.29 lb/hr and 10.01 TPY. Currently, the existing scrubber system is achieving lower fluoride emission rates than required by the Operation Permit. The results of the last two compliance tests for the facility are summarized in Table 5-1. As shown in Table 5-1, actual fluoride emission rates for the existing PAP measured during the 1998 and 1999 compliance tests were 0.49 lb/hr (0.0032 lb/ton of  $P_2O_5$ ) and 0.37 lb/hr (0.0025 lb/ton  $P_2O_5$ ), respectively.

A summary of recent BACT determinations for fluoride emissions from phosphoric acid plants is presented in Table 5-2. The source of the BACT determinations presented in

Table 5-2 is USEPA's RACT/BACT/LAER Clearinghouse web site. The two most recent and stringent BACT determinations are for the PAP at Cargill's facility located in Riverview, Fl and the PAP at Bartow that is the subject of this application. However, the BACT determination presented in the RACT/BACT/LAER Clearinghouse document for the existing PAP at this facility is incorrectly presented as 0.012 pounds of F per ton of  $P_2O_5$ . As part of a BACT determination for a previous project modifying the existing PAP at the Bartow facility, FDEP concluded that BACT for a new facility would be 0.012 pounds of F per ton of  $P_2O_5$ , but BACT for the existing facility was 0.0135 pounds of F per ton of  $P_2O_5$ .

Since there is a finite amount of fluoride in phosphate rock and Cargill is not requesting to increase the hourly rate phosphate rock processed, no increase in emissions is anticipated. However, given the uncertainties associated with operation of a new filter table, the benefit to the environment (increased  $P_2O_5$  recovery without an increase in the amount of rock processed and associated F emissions at a substantial capital cost to Cargill), and that no more stringent control alternatives have been implemented than those already in place, Cargill is proposing their current emissions limits, based on 0.0135 pounds of F per ton of  $P_2O_5$ , as BACT.

## 6.0 AIR QUALITY IMPACT ANALYSIS

Note: Currently PM<sub>10</sub> emission inventory information is being obtained from FDEP.  
This section will be provided when the modeling analysis is completed.

## 7.0 ADDITIONAL IMPACT ANALYSIS

Note: Currently  $PM_{10}$  emission inventory information is being obtained from FDEP.  
This section will be provided when the modeling analysis is completed

Table 3-1. Contemporaneous and Debottlenecking Emissions Analysis and PSD Applicability

Source Description	Pollutant Emission Rate (TPY)						
	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM/PM10	VOC	Fluoride	H <sub>2</sub> SO <sub>4</sub> Mist
<b>Potential Emissions From Modified/New/Affected Sources</b>							
A. Proposed Modification to the Phosphoric Acid Plant	--	--	--	--	--	10.0	--
B. No. 4 Fertilizer Plant <sup>a</sup>	37.8	27.2	6.0	96.9	0.60	23.4	--
C. No. 4 Shipping Plant <sup>a</sup>	--	--	--	31.6	--	--	--
<u>Total Potential Emission Rates</u>	37.8	27.2	6.0	128.5	0.60	33.4	0.0
<b>Actual Emissions from Current Operations<sup>b</sup></b>							
A. Existing Phosphoric Acid Plant	--	--	--	--	--	5.1	--
B. No. 4 Fertilizer Plant	0.034	5.9	4.6	21.3	0.03	9.2	--
C. No. 4 Shipping Plant	--	--	--	0.41	--	--	--
<u>Total Actual Emission Rates</u>	0.034	5.9	4.6	21.7	0.03	14.3	0.0
<b>TOTAL CHANGE DUE TO THE PROPOSED PROJECT</b>	37.8	21.3	1.4	106.8	0.57	19.1	0.0
<b>Contemporaneous Emission Changes</b>							
A. Phosphoric Acid Plant Production Rate Increase (August 1995)	--	--	--	--	--	c	--
B. Sulfuric Acid Plant Production Rate Increase (November 1995)	c	c	--	--	--	--	c
C. No. 3 Fertilizer Plant Expansion (April 1999)	39.6	17.8	3.6	c	0.29	c	--
D. Phosphoric Acid Reactor Modification (April 1999) <sup>d</sup>	--	--	--	--	--	--	--
<u>Total Contemporaneous Emission Changes</u>	39.6	17.8	3.6	0.00	0.29	0.00	0.00
<b>TOTAL NET CHANGE</b>	77.4	39.1	5.0	106.8	0.86	19.1	0.00
<b>PSD SIGNIFICANT EMISSION RATE</b>	40	40	100	15	40	3	7
<b>PSD REVIEW TRIGGERED?</b>	Yes	No	No	Yes	No	Yes	No

## Footnotes:

<sup>a</sup> Debottlenecking analysis revealed that actual emissions from these sources could potentially increase as part of the proposed project.<sup>b</sup> Average annual actual emissions based on Annual Operating Reports for 1998 and 1999.<sup>c</sup> Denotes that PSD review was triggered for this pollutant; therefore any previous contemporaneous increases/decreases are wiped clean.<sup>d</sup> Project was determined to not result in an increase in emissions of any pollutant.

Table 3-2. Summary of Actual Emissions From Cargill Bartow Based on 1998 and 1999 Annual Operating Reports

EU ID	EMISSION UNIT DESCRIPTION	SCC CODE	YEAR	ANNUAL EMISSIONS								
				CO (TPY)	F (TPY)	NO <sub>x</sub> (TPY)	PM <sup>a</sup> (TPY)	PM <sub>10</sub> <sup>b</sup> (TPY)	SO <sub>2</sub> (TPY)	VOC (TPY)	SAM (TPY)	TRS (TPY)
001	Ammonium Phosphate Fertilizer Plant	1-03-004-04	1998	--	--	--	--	--	--	--	--	--
		3-01-030-02	1998	--	5.00	--	11.54	--	--	--	--	--
		3-90-006-89	1998	<u>1.25</u>	--	<u>4.98</u>	<u>0.18</u>	--	<u>0.021</u>	<u>0.10</u>	--	--
		TOTAL FOR 1998:		1.25	5.00	4.98	11.72	0	0.021	0.10	0	0
		1-03-004-04	1999	0	0	0	0	0	0	--	--	--
		3-01-030-02	1999	--	2.81	--	12.63	12.63	--	--	--	--
		3-90-004-99	1999	0	0	0	0	0	0	0	--	--
		3-90-006-89	1999	0	0	0	0	0	0	0	--	--
		3-90-006-99	1999	<u>1.73</u>	<u>0</u>	<u>2.06</u>	<u>0.16</u>	<u>0.16</u>	<u>0.012</u>	<u>0.11</u>	--	--
		TOTAL FOR 1999:		1.73	2.81	2.06	12.78	12.78	0.012	0.11	0	0
		1998/1999 AVERAGE:		1.49	3.90	3.52	12.25	6.39	0.017	0.11	0	0
002	No. 4 Fertilizer Shipping Plant	3-05-105-97	1998	--	--	--	0.54	--	--	--	--	--
		3-01-030-03	1998	--	--	--	--	--	--	--	--	--
		TOTAL FOR 1998:		0	0	0	0.54	0	0	0	0	0
		3-05-105-97	1999	--	--	--	<u>0.29</u>	<u>0.29</u>	--	--	--	--
		TOTAL FOR 1999:		0	0	0	0.29	0.29	0	0	0	0
		1998/1999 AVERAGE:		0	0	0	0.41	0.14	0	0	0	0
004	No. 3 Fertilizer Shipping Plant	3-05-105-97	1998	--	--	--	--	--	--	--	--	--
		3-01-030-03	1998	--	--	--	--	--	--	--	--	--
		TOTAL FOR 1998:		0	0	0	0	0	0	0	0	0
		3-05-105-97	1999	--	--	--	<u>0</u>	--	--	--	--	--
		TOTAL FOR 1999:		0	0	0	0	0	0	0	0	0
		1998/1999 AVERAGE:		0	0	0	0	0	0	0	0	0



Table 3-2. Summary of Actual Emissions From Cargill Bartow Based on 1998 and 1999 Annual Operating Reports

EU ID	EMISSION UNIT DESCRIPTION	SCC CODE	YEAR	ANNUAL EMISSIONS								
				CO (TPY)	F (TPY)	NO <sub>x</sub> (TPY)	PM <sup>a</sup> (TPY)	PM <sub>10</sub> <sup>b</sup> (TPY)	SO <sub>2</sub> (TPY)	VOC (TPY)	SAM (TPY)	TRS (TPY)
010	Wet Process Phosphoric Acid Plant	3-01-016-01	1998	=	<u>2.13</u>	=	=	=	=	=	=	=
		TOTAL FOR 1998:		0	2.13	0	0	0	0	0	0	0
		3-01-016-01	1999	=	<u>8.04</u>	=	=	=	=	=	=	=
		TOTAL FOR 1999:		0	8.04	0	0	0	0	0	0	0
		1998/1999 AVERAGE:		0	5.0844	0	0	0	0	0	0	0
012	No. 4 Sulfuric Acid Plant	3-01-023-01	1998	--	--	43.33	--	--	1466.67	--	11.36	--
		3-90-006-99	1998	<u>0.009</u>	--	<u>0.035</u>	<u>0.0013</u>	--	<u>0.0015</u>	<u>0.00070</u>	--	--
		TOTAL FOR 1998:		0.009	0	43.37	0.0013	0	1466.67	0.0007	11.36	0
		3-01-023-01	1999	--	--	49.52	--	--	1568.26	--	90.79	--
		3-90-006-99	1999	--	--	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	--	--	--
		TOTAL FOR 1999:		0	0	49.52	0	0	1568.26	0	90.79	0
		1998/1999 AVERAGE:		0.0045	0	46.44	0	0	1517.47	0	51.08	0
021	Diammonium Phosphate Fertilizer Plant	1-03-004-04	1998	--	--	--	--	--	--	--	--	--
		3-01-030-02	1998	--	14.62	--	23.31	--	--	--	--	--
		3-90-006-89	1998	<u>0.32</u>	--	<u>1.26</u>	<u>0.045</u>	--	<u>0.0054</u>	<u>0.025</u>	--	--
		TOTAL FOR 1998:		0.32	14.62	1.26	23.36	0	0.0054	0.025	0	0
		1-03-004-04	1999	0	0	0	0	0	0	0	--	--
		3-01-030-02	1999	--	3.70	--	18.50	18.50	--	--	--	--
		3-90-004-99	1999	0	0	0	0	0	0	0	--	--
		3-90-006-89	1999	0	0	0	0	0	0	0	--	--
		3-90-006-99	1999	<u>8.83</u>	<u>0</u>	<u>10.52</u>	<u>0.80</u>	<u>0.80</u>	<u>0.063</u>	<u>0.58</u>	--	--
		TOTAL FOR 1999:		8.83	3.70	10.52	19.30	19.30	0.063	0.58	0	0

Table 3-2. Summary of Actual Emissions From Cargill Bartow Based on 1998 and 1999 Annual Operating Reports

EU ID	EMISSION UNIT DESCRIPTION	SCC CODE	YEAR	ANNUAL EMISSIONS										
				CO (TPY)	F (TPY)	NO <sub>x</sub> (TPY)	PM <sup>a</sup> (TPY)	PM <sub>10</sub> <sup>b</sup> (TPY)	SO <sub>2</sub> (TPY)	VOC (TPY)	SAM (TPY)	TRS (TPY)		
		1998/1999 AVERAGE:		4.57	9.16	5.89	21.33	9.65	0.034	0.30	0	0		
032	No. 6 Sulfuric Acid Plant	3-01-023-01	1998	--	--	47.63	--	--	1613.59	--	5.05	--		
		3-90-006-99	1998	<u>0.035</u>	--	<u>0.14</u>	<u>0.0050</u>	--	<u>0.0060</u>	<u>0.0028</u>	--	--		
		TOTAL FOR 1998:		0.035	0	47.77	0.0050	0	1613.60	0.0028	5.05	0		
		3-01-023-01	1999	--	45.98	--	--	--	1379.34	--	7.66	--		
		3-90-006-99	1999	<u>0.019</u>	--	<u>0.045</u>	<u>0.0036</u>	<u>0.0036</u>	<u>0.00029</u>	--	<u>0</u>	--		
		TOTAL FOR 1999:		0.019	45.98	0.045	0.0036	0.0036	1379.34	0	7.66	0		
		1998/1999 AVERAGE:		0.027	22.99	23.91	0.0043	0.0018	1496.47	0.0014	6.36	0		
		033	No. 5 Sulfuric Acid Plant	3-01-023-01	1998	--	--	51.34	--	--	1582.21	--	8.09	--
				3-90-006-99	1998	<u>0.0088</u>	--	<u>0.035</u>	<u>0.0013</u>	--	<u>0.00015</u>	<u>0.00070</u>	--	--
				TOTAL FOR 1998:		0.0088	0	51.38	0.0013	0	1582.21	0.00070	8.09	0
3-01-023-01	1999			--	--	47.42	--	--	1422.63	--	43.54	--		
3-90-006-99	1999			<u>0.019</u>	--	<u>0.045</u>	<u>0.0036</u>	<u>0.0036</u>	<u>0.00029</u>	--	--	--		
TOTAL FOR 1999:				0.019	0	47.47	0.0036	0.0036	1422.63	0	43.54	0		
1998/1999 AVERAGE:		0.014	0	49.42	0.0025	0.0018	1502.42	0.00035	25.815	0				
034	Phosphoric Acid Plant No.5 w/ Wellman-Lord Scrubber	3-01-016-01	1998	Included in EU ID 010										
		3-01-016-01	1999	Included in EU ID 010										
045	Molten Sulfur System - Stack 45 from West 200 ton molten sulfur	3-05-104-08	1998	--	--	--	<u>3.98</u>	--	<u>10.19</u>	<u>7.26</u>	--	<u>4.89</u>		
		TOTAL FOR 1998:		0	0	0	3.98	0	10.19	7.26	0	4.89		
		3-01-999-99	1999	--	--	--	2.68	2.68	6.84	4.88	--	3.28		
		3-05-104-08	1999	Emissions included under unit 3-05-104-08										

Table 3-2. Summary of Actual Emissions From Cargill Bartow Based on 1998 and 1999 Annual Operating Reports

EU ID	EMISSION UNIT DESCRIPTION	SCC CODE	YEAR	ANNUAL EMISSIONS								
				CO (TPY)	F (TPY)	NO <sub>x</sub> (TPY)	PM <sup>a</sup> (TPY)	PM <sub>10</sub> <sup>b</sup> (TPY)	SO <sub>2</sub> (TPY)	VOC (TPY)	SAM (TPY)	TRS (TPY)
		TOTAL FOR 1999:		0	0	0	2.68	2.68	6.84	4.88	0	3.28
		1998/1999 AVERAGE:		0	0	0	3.33	1.34	8.52	6.07	0	4.09
046	Molten Sulfur System - Vent 44 from 1,000 ton tank	3-05-104-08	1998	==	==	==	0.040	==	0.040	0.040	==	0.040
		TOTAL FOR 1998:		0	0	0	0.040	0	0.040	0.040	0	0.040
		3-01-999-99	1999	==	==	==	==	==	==	==	==	==
		TOTAL FOR 1999:		0	0	0	0	0	0	0	0	0
		1998/1999 AVERAGE:		0	0	0	0.020	0	0.020	0.020	0	0.020
047	Molten Sulfur System - Vent from 3000 ton surge tank	3-01-999-99	1998	==	==	==	0.040	==	0.040	0.040	==	==
		TOTAL FOR 1998:		0	0	0	0.040	0	0.040	0.040	0	0
		3-01-999-99	1999	==	==	==	==	==	==	==	==	==
		TOTAL FOR 1999:		0	0	0	0	0	0	0	0	0
		1998/1999 AVERAGE:		0	0	0	0.020	0	0.020	0.020	0	0
048	Molten Sulfur System - 3000 ton surge tank, two inlets	3-01-999-99	1998	==	==	==	0	0	0	0	==	==
		TOTAL FOR 1998:		0	0	0	0	0	0	0	0	0
049	Molten Sulfur System - Inlet from 3000 ton tank	3-01-999-99	1998	==	==	==	0	0	0	0	==	==
		TOTAL FOR 1998:		0	0	0	0	0	0	0	0	0
050	300 Ton Molten Sulfur Pit for railcar unloading	3-01-999-99	1998	==	==	==	0.55	==	1.41	1.00	==	0.68
		TOTAL FOR 1998:		0	0	0	0.55	0	1.41	1.00	0	0.68
		3-01-999-99	1999	==	==	==	2.68	2.68	6.84	4.88	==	3.28

Table 3-2. Summary of Actual Emissions From Cargill Bartow Based on 1998 and 1999 Annual Operating Reports

EU ID	EMISSION UNIT DESCRIPTION	SCC CODE	YEAR	ANNUAL EMISSIONS								
				CO (TPY)	F (TPY)	NO <sub>x</sub> (TPY)	PM <sup>a</sup> (TPY)	PM <sub>10</sub> <sup>b</sup> (TPY)	SO <sub>2</sub> (TPY)	VOC (TPY)	SAM (TPY)	TRS (TPY)
051	Cleaver Brooks Package Watertube Boiler	TOTAL FOR 1999:		0	0	0	2.68	2.68	6.84	4.88	0	3.28
		1998/1999 AVERAGE:		0	0	0	1.61	1.34	4.13	2.94	0	1.98
		1-02-004-04	1998	--	--	--	--	--	--	--	--	--
		1-02-006-02	1998	<u>1.6</u>	--	<u>6.4</u>	<u>0.63</u>	--	<u>0.028</u>	<u>0.11</u>	--	--
		TOTAL FOR 1998:		1.6	0	6.4	0.63	0	0.028	0.11	0	0
		1-02-004-04	1999	0	--	0	0	0	0	0	--	--
		1-02-006-02	1999	<u>2.64</u>	--	<u>3.14</u>	<u>0.24</u>	<u>0.24</u>	<u>0.019</u>	<u>0.17</u>	--	--
		TOTAL FOR 1999:		2.64	0	3.14	0.24	0.24	0.019	0.17	0	0
1998/1999 AVERAGE:		2.12	0	4.77	0.43	0.12	0.023	0.14	0	0		

References: 1998 and 1999 Annual Operating Permits, Cargill Fertilizer, Inc.

**Footnotes:**

<sup>a</sup> 1998 PM emissions include PM10 emissions.

<sup>b</sup> PM10 emissions for 1999 are calculated as 100% of PM emissions.

**Table 4-1. Summary of PM<sub>10</sub> Monitoring Data Collected Near Cargill's Bartow Facility**

County	Station ID	Monitor Location	Year	Number of Observations	Reported Concentration (µg/m <sup>3</sup> )		
					Highest 24-Hour	Second- Highest 24-Hour	Annual
Polk	12-105-0010	Anderson & Pine Crest Road, Mulberry	1998	58	54	48	24
			1999	53	45	42	22
Polk	12-105-2006	NW 4th Circle, Mulberry	1998	317	108	91	25
			1999	326	50	47	22

Table 5-1. Summary of 1998 and 1999 Stack Test Data for Fluoride Emissions from Cargill's Phosphoric Acid Plant

Test Date	Unit	PAP Process Rate (TPH P <sub>2</sub> O <sub>5</sub> )	Measured Emission Rate		Allowable PAP Process Rate (TPH P <sub>2</sub> O <sub>5</sub> )	Allowable Emission Rate	
			(lb/hr)	(lb/ton P <sub>2</sub> O <sub>5</sub> )		(lb/hr)	(lb/ton P <sub>2</sub> O <sub>5</sub> )
July 10, 1998	No. 3 Filter Scrubber		0.13				
	No. 4 Reactor/Filter Scrubber		0.14				
	No. 5 Reactor/Filter Scrubber		<u>0.22</u>				
	Total	150	0.49	0.0032	170	2.29	0.0135
July 10, 1998	No. 3 Filter Scrubber		0.04				
	No. 4 Reactor/Filter Scrubber		0.11				
	No. 5 Reactor/Filter Scrubber		<u>0.22</u>				
	Total	146	0.37	0.0025	170	2.29	0.0135

Table 5-2. Summary of BACT Determination for Fluoride Emission From Phosphoric Acid Plants

Company	State	RBLC ID	Permit Issue Date	Process Rate	Emission Rate	Control Equipment	% Efficiency
Cargill Fertilizer, Inc. (Bartow)	FL	FL-0106	8/24/95	170 TPH P <sub>2</sub> O <sub>5</sub>	0.012 <sup>a</sup> lb/ton P <sub>2</sub> O <sub>5</sub>	Packed Scrubber	--
Cargill Fertilizer, Inc. (Riverview)	FL	FL-0112	8/27/96	170 TPH P <sub>2</sub> O <sub>5</sub>	0.0135 lb/ton P <sub>2</sub> O <sub>5</sub>	Packed Scrubber Using Pond Water	--
IMC Fertilizer, Inc.	FL	FL-0066	8/2/93	2500 TPD	0.02 lb/ton P <sub>2</sub> O <sub>5</sub>	Crossflow Scrubber	--

Reference: RACT/BACT/LAER Clearinghouse on EPA's web page, 2000.

**Footnotes:**

- <sup>a</sup> The information contained in the RACT/BACT/LAER Clearinghouse database is incorrect based on AC53-262532 (PSD-FL-224). Although FDEP determined that 0.012 pounds F per ton P<sub>2</sub>O<sub>5</sub> to be BACT for a new facility, they concluded that 0.0135 pounds F per ton of P<sub>2</sub>O<sub>5</sub> was BACT for modification of this existing facility.

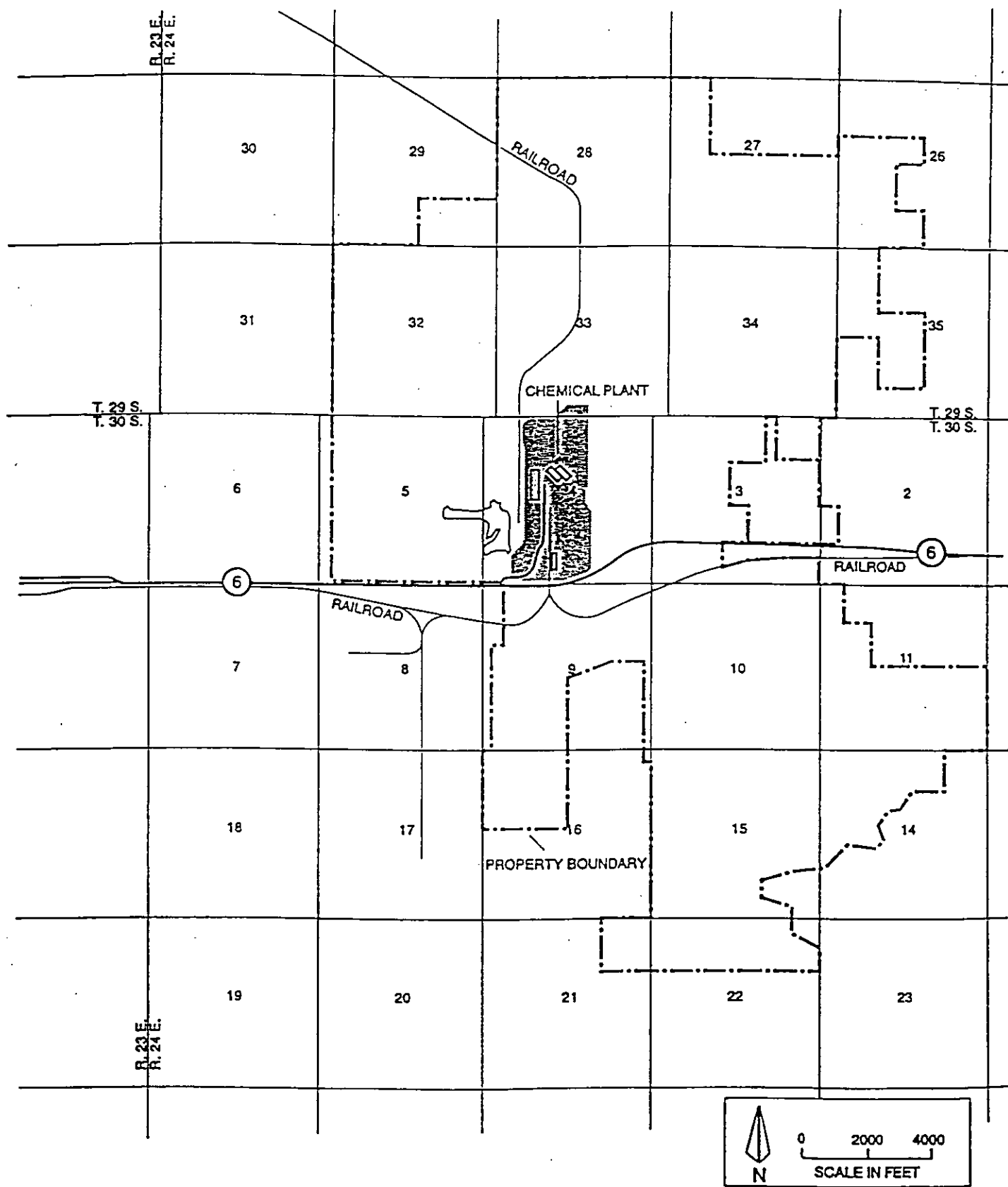


Figure 1-1  
Area Map Showing Facility Location



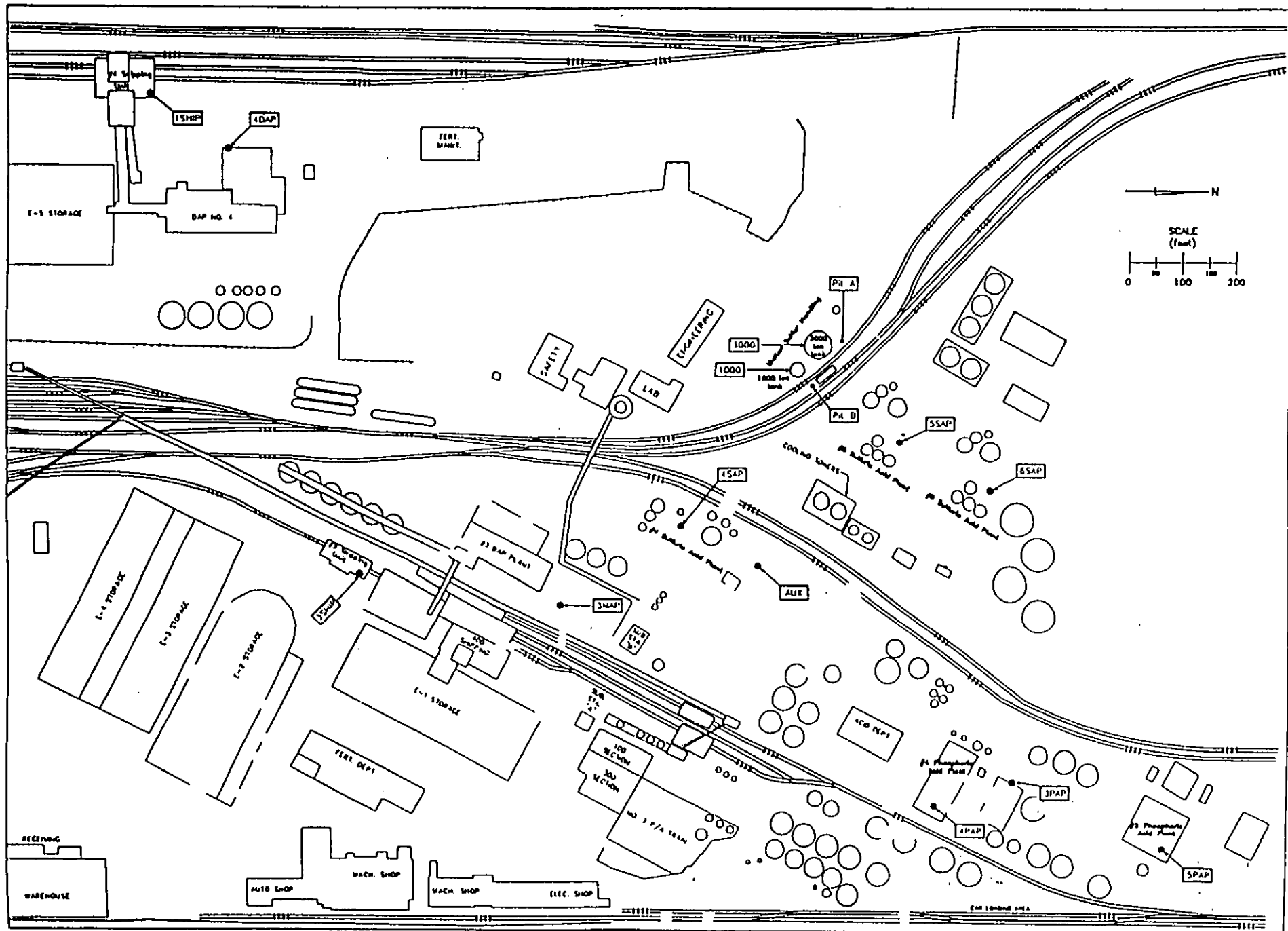


Figure 2-1

# Facility Plot Plan