CARGILL FERTILIZER, INC.

8813 Highway 41 South - Riverview, Florida 33569 - Telephone 813-677-9111 - TWX 810-876-0648 - Telex 52666 - FAX 813-671-6146

February 14, 2001

Mr. Al Linero, P.E.
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Linero:

Re: Cargill Fertilizer Riverview Facility, AIRS ID No. 0570008
PSD Construction Permit Application

Please find enclosed four copies of a PSD construction permit application for various emission units at Cargill Fertilizer's Riverview Facility. These copies do not include sections six and seven, which will be sent along with the application fee in the near future.

If you have any questions or require additional information please call me at (813) 671-6369 or email me at *kathy_edgemon@cargill.com*

Sincerely,

Kathy Edgemon, P.E.
Environmental Superintendent

cc: Jellerson
Alice Harman, HCEPC (**one copy of attachement, CERTIFIED MAIL:** 7000 0520 0014 8871 3046)
File

PSD APPLICATION FOR FACILITY EXPANSION CARGILL FERTILIZER, INC. RIVERVIEW, FLORIDA

Prepared For:
Cargill Fertilizer, Inc.
8813 U.S. Highway 41 South
Riverview, FL 33569

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

February 2001
0037650Y/F1

DISTRIBUTION:
4 Copies - FDEP
2 Copies - Cargill Fertilizer, Inc.
2 Copies - Golder Associates Inc.

AIR PERMIT APPLICATION FORM

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: **Cargill Fertilizer, Inc.**	
2. Site Name: **Tampa Plant**	
3. Facility Identification Number: **0570008** [ ] Unknown	
4. Facility Location: Street Address or Other Locator: **8813 U.S. Highway 41 South** City: **Riverview** County: **Hillsborough** Zip Code: **33569**	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Kathy Edgemon, Environmental Superintendent**
2. Application Contact Mailing Address: Organization/Firm: **Cargill Fertilizer, Inc.** Street Address: **8813 Highway 41 South** City: **Riverview** State: **FL** Zip Code: **33569**
3. Application Contact Telephone Numbers: Telephone: **(813) 671 - 6369** Fax: **(813) 671 - 6149**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3-13-01
2. Permit Number:	0570008-036-AC
3. PSD Number (if applicable):	PSD-FL-315
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)

[X] 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:
   Mr. E. O. Morris, Vice President of Environment, Health, and Safety
2. Owner/Authorized Representative or Responsible Official Mailing Address:
   Organization/Firm: **Cargill Fertilizer, Inc.**
   Street Address: **8813 Highway 41 South**
   City: **Riverview** State: **FL** Zip Code: **33569**
3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: (**813**) **671 - 6161** Fax: (**813**) **671 - 6149**
4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [ ], 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.*

   E. O. Morris — Signature

   02/14/01 — Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

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

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.

David A. Buff — Signature

02/14/01 — Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
064-069, 074	Molten Sulfur Handling System	AC1A	
005	No. 8 Sulfuric Acid Plant	AC1A	
006	No. 9 Sulfuric Acid Plant	AC1A	
007	Enhanced Phosphate Products Plant (Formerly GTSP)	AC1A	
073	Phosphoric Acid Production Facility	AC1A	
078	Animal Feed Ingredient Plant No. 1	AC1A	
055	No. 5 DAP Manufacturing Plant	AC1A	

Application Processing Fee

Check one: [X] Attached - Amount: $: $7,500.00 [ ] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

   This application is for the proposed modification of the Molten Sulfur Handling System, Phosphoric Acid Plant, the GTSP Plant, the Animal Feed Ingredient (AFI) Plant, and the No. 5 DAP Plant. This application also addresses a modification to the maximum production rate and emissions rates for the Nos. 8 and 9 Sulfuric Acid Plants.

2. Projected or Actual Date of Commencement of Construction: **1 Apr 2001**

3. Projected Date of Completion of Construction: **31 May 2005**

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **362.9** North (km): **3082.5**			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): **27 / 51 / 28** Longitude (DD/MM/SS): **82 / 23 / 15**			
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **28**	6. Facility SIC(s): **2874**
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact: **Kathy Edgemon, Environmental Superintendent**
2. Facility Contact Mailing Address: Organization/Firm: **Cargill Fertilizer, Inc.** Street Address: **8813 U.S. Highway 41 South** City: **Riverview** State: **FL** Zip Code: **33569**
3. Facility Contact Telephone Numbers: Telephone: (**813**) **671 - 6369** Fax: (**813**) **671 - 6149**

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source? [ ] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?
5. [ ] Synthetic Minor Source of HAPs?
6. [X] One or More Emissions Units Subject to NSPS?
7. [X] One or More Emission Units Subject to NESHAP?
8. [ ] Title V Source by EPA Designation?
9. Facility Regulatory Classifications Comment (limit to 200 characters):

List of Applicable Regulations

62-212.400 - PSD Preconstruction Review	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
PM	A				Particulate Matter-Total
PM_{10}	A				Particulate Matter-PM_{10}
FL	A				Fluorides - Total
SO_2	A				Sulfur Dioxide
NO_X	A				Nitrogen Oxides
H107	A				Hydrogen Fluoride
SAM	A				Sulfuric Acid Mist

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

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

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities:
   [ ] Attached, Document ID:_____ [X] Not Applicable

9. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID:_____
   [ ] Equipment/Activities On site but Not Required to be Individually Listed
   [X] Not Applicable

10. Alternative Methods of Operation:
    [ ] Attached, Document ID:_____ [X] Not Applicable

11. Alternative Modes of Operation (Emissions Trading):
    [ ] Attached, Document ID:_____ [X] Not Applicable

12. Identification of Additional Applicable Requirements:
    [ ] Attached, Document ID:_____ [X] Not Applicable

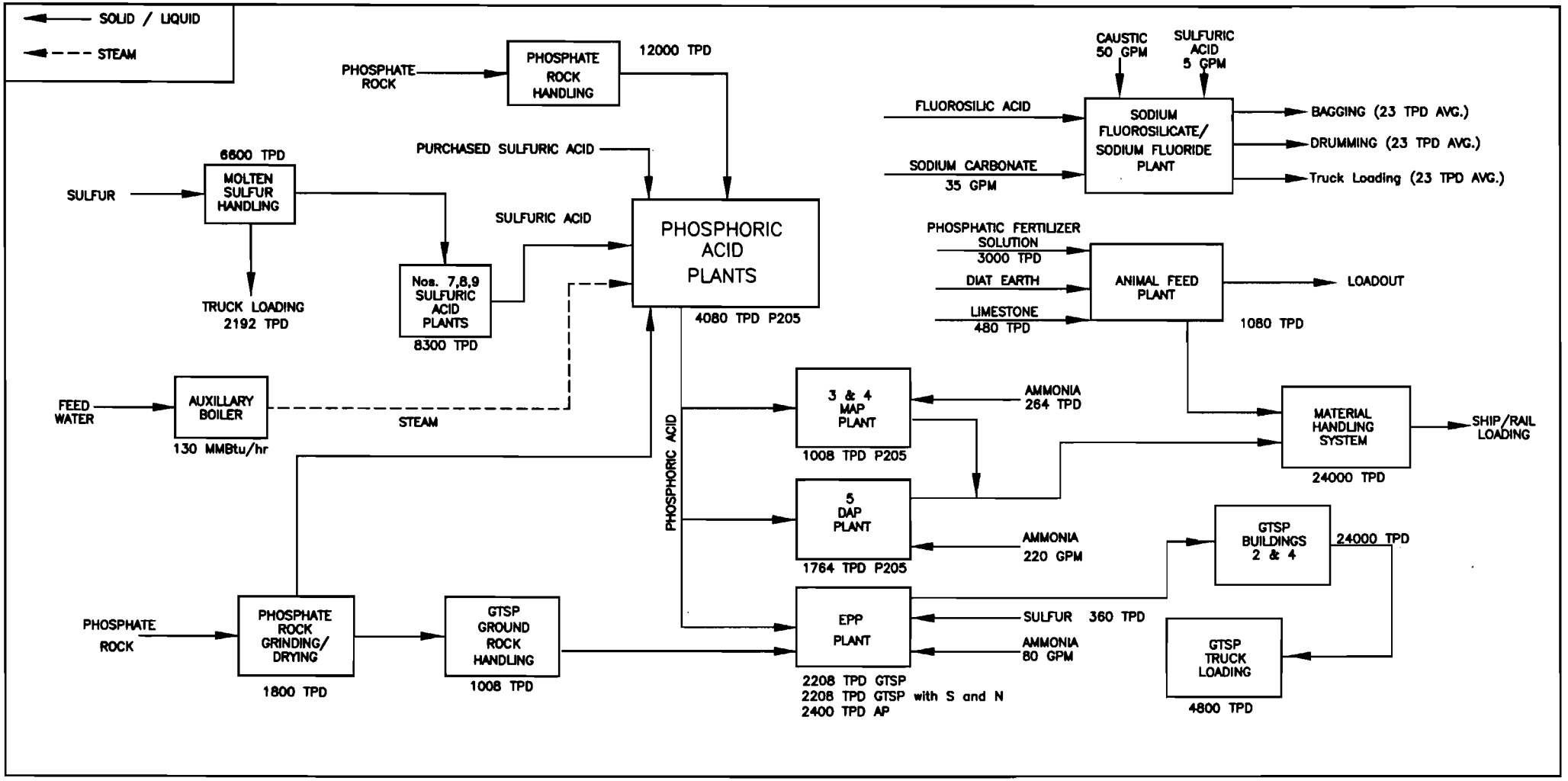
13. Risk Management Plan Verification:
    [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:_____) or previously submitted to DEP (Date and DEP Office:_____)
    [ ] Plan to be submitted to CEPPO (Date required:_____)
    [X] Not Applicable

14. Compliance Report and Plan:
    [ ] Attached, Document ID:_____ [X] Not Applicable

15. Compliance Certification (Hard-copy Required):
    [ ] Attached, Document ID:_____ [X] Not Applicable

ATTACHMENT CR-FI-C3

PROCESS FLOW DIAGRAM



Attachment CR-FI-C3 – Future
Facility Flow Diagram
Cargill Riverview

EMISSION UNIT:	FACILITY WIDE
PROCESS AREA:	
FILENAME:	0037650Y\F1\WP\CR-FI-C3.dwg
LATEST REVISION:	02/11/01 by PAC

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)

[X] 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).

[ ] 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.

[ ] 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)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] 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):

Molten Sulfur Storage and Handling System: Tanks, Pits, Loading Station

4. Emissions Unit Identification Number: [ ] No ID
ID: **064-069, 074** [ ] 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)

There exists a potential for fugitive emissions of PM/PM_{10}/TRS/SO_2/VOC to occur from this EU. It is our understanding, based on past FDEP interpretations and permitting history, that these emissions are not regulated under federal/state/local emission standards.

Emissions Unit Control Equipment

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

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:		**2,408,483**	**TPY Sulfur**
4. Maximum Production Rate:		**2,408,483**	**TPY Sulfur**
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-296.411(1)(a) Sulfur Storage and Handling Facility
62-296.411(1)(b)
62.296.411(1)(d)
62.296.411(1)(e)
62.296.411(1)(f)
62.296.411(1)(g)
62.296.411(1)(h)
62.296.411(1)(i)
62.296.411(1)(j)
62-297.310 General Compliance test requirements
62-297.401 Compliance Test Methods
62-411.5(b)

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? **Pit 7, 8, 9, T1, T2, T3**	2. Emission Point Type Code: **3**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **64 = Tank 2; 65 = Tank 3; 66 = Pit 7; 67 = Pit 8; 68 = Pit 9; 74 = Truck loading**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **30** feet	7. Exit Diameter: **0.8** feet
8. Exit Temperature: **110** °F	9. Actual Volumetric Flow Rate: **665** acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: **454** 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): **Parameters are representative of the wet scrubber serving the tanks and the truck loading station.**		

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): **Mineral Products; Bulk Materials Unloading Operation; Sulfur**		
2. Source Classification Code (SCC):	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **2,240**	5. Maximum Annual Rate: **2,408,483**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Maximum hourly rate is based on ship unloading.**		

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
PM			EL
PM_{10}			NS
VOC			NS
H_2S			NS
SO_2			NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.6** lb/hour **2.1** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Table B-2, PSD Report**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters):	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: **1.6** lb/hour **2.1** tons/year
5. Method of Compliance (limit to 60 characters): **VE test using EPA Method 9 within 120 days of 0570008-014-AV expiration**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Based on Rule 62-296.411(5)(b) and Permit No. 0570008-014-AV.**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.6** lb/hour **2.1** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Table B-2, PSD Report**	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 _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2.5** lb/hour **6.4** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Table B-2, PSD Report**	7. Emissions Method Code: **1**
8. Calculation of Emissions (limit to 600 characters):	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: H_2S	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.7** lb/hour **4.3** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Table B-2, PSD Report**	7. Emissions Method Code: **1**
8. Calculation of Emissions (limit to 600 characters):	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **3.5** lb/hour **9.0** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Table B-2, PSD Report**	7. Emissions Method Code: **1**
8. Calculation of Emissions (limit to 600 characters):	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **VE Test using EPA Method 9 within 120 days of Permit 0570008-014-AV expiration.**	
5. Visible Emissions Comment (limit to 200 characters): **Applies to all points except ship unloading. Rule 62-296.411(1)(g).**	

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):	

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

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE15**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **15** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual VE Test using EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **Applies to tanks during ship unloading. Rule 62-296.411(1)(i)**	

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 [X] Attached, Document ID: PSD Report [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [X] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [X] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] 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:_____

[X] Not Applicable

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)

[X] 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).

[ ] 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.

[ ] 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)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] 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):

No. 8 Sulfuric Acid

4. Emissions Unit Identification Number: [ ] No ID
ID: **005** [ ] 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)

There exists a potential for fugitive emissions of SO_2/NO_x/SAM to occur from this emissions unit. It is our understanding, based on past FDEP interpretations and permitting history, that these emissions are not regulated under federal/state/local emission standards.

Emissions Unit Control Equipment

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

Sulfuric Acid Plant - Double Contact Process

Mist Eliminator - High Velocity

2. Control Device or Method Code(s): **044, 014**

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:			
4. Maximum Production Rate:		**2700**	**TPD 100% H_2SO_4**
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

40 CFR 60.11	62.296.402(2) SAP Plants
40 CFR 60.12	62.296.402(3)
40 CFR 60.13(a)	62.296.402(4)
40 CFR 60.13(b)	62.296.402(5)
40 CFR 60.13(c)(2)	62.297.310 General Compliance Test Requirements
40 CFR 60.13(d)(1)	62.297.401 Compliance Test Methods
40 CFR 60.13(e)(2)	62.297.520(2) Continuous Monitor Performance Standards
40 CFR 60.13(f)	
40 CFR 60.13(i)	
40 CFR 60.13(j)	
40 CFR 60.19	
40 CFR 60.7	
40 CFR 60.8	
40 CFR 60.82	
40 CFR 60.83	
40 CFR 60.84	
40 CFR 60.85	
62-204.800(7)(b)9. Reference to NSPS	
62.212.400(7)(b) PSD	

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? **SAP 8**	2. Emission Point Type Code: **3**	
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: **V**	6. Stack Height: **150** feet	7. Exit Diameter: **8** feet
8. Exit Temperature: **165** °F	9. Actual Volumetric Flow Rate: **129,400** acfm	10. Water Vapor: %
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):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Chemical Manufacturing; Sulfuric Acid; Contact Process; Absorber at 99.9% Conversion.**		
2. Source Classification Code (SCC): **3-01-023-01**	3. SCC Units: **Tons of 100% H_2SO_4**	
4. Maximum Hourly Rate: **112.5**	5. Maximum Annual Rate: **985,500**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Max hourly rate based on 2,700 ton/day.**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **In-process Fuel Use; Distillate Oil; CAP Plant Burner**		
2. Source Classification Code (SCC): **3-90-005-99**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **0.004**	5. Maximum Annual Rate: **39**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.5**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,000**
10. Segment Comment (limit to 200 characters): **Fuel oil usage results from cold startup of Sulfuric Acid Plant. Typically, the plant experiences 3 cold startups per year and 13,000 gals per cold startup.**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
SO_2	044		EL
SAM	014		EL
NO_X			NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **450** lb/hour **1,725** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Proposed Permit Limit**	7. Emissions Method Code: **0**

8. Calculation of Emissions (limit to 600 characters):

3-hr average: 4 lb/ton 100% H_2SO_4 x 112.5 ton/hr 100% H_2SO_4 = 450 lb/hr

24-hr average: 3.5 lb/ton 100% H_2SO_4 x 112.5 ton/hr 100% H_2SO_4 = 393.75 lb/hr
393.75 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 1,724.6 TPY

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Proposed limit is for 3.5 lb/ton 100% H_2SO_4 for a daily average and 4 lb/ton 100-percent H_2SO_4 for a 3-hr average.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: **450** lb/hour **1,725** tons/year
5. Method of Compliance (limit to 60 characters): **Annual Stack Test with EPA Method 8 for 4 lb/ton 100-percent H_2SO_4 limit & Continous SO_2 Monitor for 3.5 lb/ton 100-percent H_2SO_4 limit.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Requested Allowable Emissions 3.5 lb/ton 100% H_2SO_4 as a daily average and 4 lb/ton 100-percent H_2SO_4 for a 3-hr average.**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **13.5** lb/hour **59.1** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton 100% H_2SO_4** Reference: **BACT Analysis**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **0.12 lb/ton 100% H_2SO_4 x 112.5 ton/hr 100% H_2SO_4 = 13.50 lb/hr** **13.50 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 59.13 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.12 lb/ton 100% H_2SO_4**	4. Equivalent Allowable Emissions: **13.5** lb/hour **59.1** tons/year
5. Method of Compliance (limit to 60 characters): **Annual stack test using EPA Method 8**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **40 CFR 60.83 and Rule 62-296.402(2)(c)**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **NO_X**	2. Total Percent Efficiency of Control:

3. Potential Emissions: **13.5** lb/hour **59.1** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton 100% H_2SO_4** Reference: **Test Data 4/98**	7. Emissions Method Code: **5**

8. Calculation of Emissions (limit to 600 characters):

0.12 lb/ton 100% H_2SO_4 x 112.5 ton/hr 100% H_2SO_4 = 13.5 lb/hr
13.5 lb/hr x 8,760 hr/yr x 1 ton/2000 lb = 59.13 TPY

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year

5. Method of Compliance (limit to 60 characters):

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual Visible Emissions test using EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **40 CFR 60.83 and Rule 62-296.402(2)(a)**	

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

Continuous Monitoring System: Continuous Monitor 1 of 1

1. Parameter Code: **EM**	2. Pollutant(s): **SO_2**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Ametek/Dupont** Model Number: **400/460** Serial Number: **4502**	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **No. 8 SAP (Primary Unit)**	

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

Supplemental Requirements

1. Process Flow Diagram [X] Attached, Document ID: PSD Report [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: CR-EU2-J2 [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [X] Attached, Document ID: PSD Report [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID: _____ [ ] Previously submitted, Date: _____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: PSD Report [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID: _____ [X] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] 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:_____

[X] Not Applicable

ATTACHMENT CR-EU2-J2

FUEL ANALYSIS

Attachment CR-EU2-J2

No. 8 Sulfuric Acid Plant
Fuel Analysis

Fuel	Density (lb/scf)/ (lb/gal)	Moisture (%)	Weight % Sulfur	Weight % Nitrogen	Weight % Ash	Heat Capacity
No. 2 Fuel Oil	6.83	<0.01	0.5	0.006	<0.01	140,000 Btu/gal

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)

[X] 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).

[ ] 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.

[ ] 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)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] 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):

No. 9 Sulfuric Acid

4. Emissions Unit Identification Number: [ ] No ID
ID: **006** [ ] 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)

There exists a potential for fugitive emissions of SO_2/NO_X/SAM to occur from this EU. It is our understanding, based on past FDEP interpretations and permitting history, that these emissions are not regulated under federal/state/local emission standards.

Emissions Unit Control Equipment

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

Sulfuric Acid Plant - Double Contact Process

Mist Eliminator - High Velocity

2. Control Device or Method Code(s): **044, 014**

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:			
4. Maximum Production Rate:		**3,400**	**TPD 100% H_2SO_4**
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

40 CFR 60.11	62.296.402(2) SAP Plants
40 CFR 60.12	62.296.402(3)
40 CFR 60.13(a)	62.296.402(4)
40 CFR 60.13(b)	62.296.402(5)
40 CFR 60.13(c)(2)	62.297.310 General Compliance Test Requirements
40 CFR 60.13(d)(1)	62.297.401 Compliance Test Methods
40 CFR 60.13(e)(2)	62.297.520(2) Continuous Monitor Performance Standards
40 CFR 60.13(f)	
40 CFR 60.13(i)	
40 CFR 60.13(j)	
40 CFR 60.19	
40 CFR 60.7	
40 CFR 60.8	
40 CFR 60.82	
40 CFR 60.83	
40 CFR 60.84	
40 CFR 60.85	
62-204.800(7)(b)9. Reference to NSPS	
62.212.400(7)(b) PSD	

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? **SAP 9**	2. Emission Point Type Code: **3**	
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: **V**	6. Stack Height: **150** feet	7. Exit Diameter: **9** feet
8. Exit Temperature: **155** °F	9. Actual Volumetric Flow Rate: **171,000** acfm	10. Water Vapor: %
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):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Chemical Manufacturing; Sulfuric Acid; Contact Process; Absorber at 99.9% Conversion.**		
2. Source Classification Code (SCC): **3-01-023-01**	3. SCC Units: **Tons of 100% H_2SO_4**	
4. Maximum Hourly Rate: **141.67**	5. Maximum Annual Rate: **1,241,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Max hourly rate based on 3,400 tons/day.**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **In-process Fuel Use; Distillate Oil; CAP Plant Burner**		
2. Source Classification Code (SCC): **3-90-005-99**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **0.004**	5. Maximum Annual Rate: **39**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.5**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,000**
10. Segment Comment (limit to 200 characters): **Fuel oil usage results from cold startup of Sulfuric Acid Plant. Typically, the plant experiences 3 cold startups per year and 13,000 gals per cold startup.**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
SO_2	044		EL
SAM	014		EL
NO_X			NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **567** lb/hour **2,172** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Proposed Permit Limit**	7. Emissions Method Code: **0**

8. Calculation of Emissions (limit to 600 characters):

3-hr average: 4 lb/ton 100% H_2SO_4 x 141.67 ton/hr 100% H_2SO_4 = 566.67 lb/hr

24-hr average: 3.5 lb/ton 100% H_2SO_4 x 141.67 ton/hr 100% H_2SO_4 = 495.8 lb/hr
495.8 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 2,171.8 TPY

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Proposed limit is 3.5 lb/ton 100-percent H_2SO_4 for a daily average and 4 lb/ton 100-percent H_2SO_4 for a 3-hr average.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: **567** lb/hour **2,172** tons/year

5. Method of Compliance (limit to 60 characters):

Annual Stack Test with EPA Method 8 for 4 lb/ton 100-percent H_2SO_4 limit & Continous SO_2 Monitor for 3.5 lb/ton 100-percent H_2SO_4 limit.

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):

Requested Allowable Emissions is 3.5 lb/ton 100% H_2SO_4 as a daily average and 4 lb/ton 100-percent H_2SO_4 for a 3-hr average.

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton 100% H_2SO_4** Reference: **40 CFR 60.83**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **0.12 lb/ton 100% H_2SO_4 x 141.67 ton/hr 100% H_2SO_4 = 17.0 lb/hr** **17.0 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 74.46 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.12 lb/ton 100% H_2SO_4**	4. Equivalent Allowable Emissions: **17.0** lb/hour **74.5** tons/year
5. Method of Compliance (limit to 60 characters): **Annual stack test using EPA Method 8**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **40 CFR 60.83 and Rule 62-296.402(2)(c)**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **NO_X**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.0** lb/hour **74.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.12 lb/ton 100% H_2SO_4** Reference: **Test Data 4/98**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **0.12 lb/ton 100% H_2SO_4 x 141.7 ton/hr 100% H_2SO_4 = 17.0 lb/hr** **17.0 lb/hr x 8,760 hr/yr x 1 ton/2000 lb = 74.46 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual Visible Emissions test using EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **40 CFR 60.83 and Rule 62-296.402(2)(a)**	

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

Continuous Monitoring System: Continuous Monitor 1 of 1

1. Parameter Code: **EM**	2. Pollutant(s): **SO_2**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Ametek/Dupont** Model Number: **400/460** Serial Number: **4133**	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **No. 9 SAP (Primary Unit)**	

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

Supplemental Requirements

1. Process Flow Diagram
   [X] Attached, Document ID: **PSD Report** [ ] Not Applicable [ ] Waiver Requested

2. Fuel Analysis or Specification
   [X] Attached, Document ID: **CR-EU3-J2** [ ] Not Applicable [ ] Waiver Requested

3. Detailed Description of Control Equipment
   [X] Attached, Document ID: **PSD Report** [ ] Not Applicable [ ] Waiver Requested

4. Description of Stack Sampling Facilities
   [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested

5. Compliance Test Report
   [ ] Attached, Document ID: _____
   [ ] Previously submitted, Date: _____
   [X] Not Applicable

6. Procedures for Startup and Shutdown
   [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested

7. Operation and Maintenance Plan
   [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested

8. Supplemental Information for Construction Permit Application
   [X] Attached, Document ID: **PSD Report** [ ] Not Applicable

9. Other Information Required by Rule or Statute
   [ ] Attached, Document ID: _____ [X] Not Applicable

10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] 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:_____

[X] Not Applicable

ATTACHMENT CR-EU3-J2

FUEL ANALYSIS

Attachment CR-EU3-J2

No. 9 Sulfuric Acid Plant
Fuel Analysis

Fuel	Density (lb/scf)/ (lb/gal)	Moisture (%)	Weight % Sulfur	Weight % Nitrogen	Weight % Ash	Heat Capacity
No. 2 Fuel Oil	6.83	<0.01	0.5	0.006	<0.01	140,000 Btu/gal

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)

[ ] 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).

[X] 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.

[ ] 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)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] 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 Unknown
ID: **073**

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)

A potential exists for fugitive emissions of F to occur from this EU. It is our understanding, based on past FDEP interpretations and permitting history, that these emissions are not regulated under federal/state/local emission standards. Consists of two reactors, three filters, new digester system, and associated filtrate tanks, hot wells, storage tanks, etc.

Emissions Unit Control Equipment

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

Two packed-bed scrubbers

Two venturi/packed-bed scrubbers

2. Control Device or Method Code(s): **050, 053**

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:		**170**	**TPH P_2O_5**
4. Maximum Production Rate:		**170**	**TPH P_2O_5**
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

40 CFR 60.11(a)	62-212.400(7)(b) PSD-Operation Permits
40 CFR 60.11(d)	62-297.310 General Compliance Test Requirements
40 CFR 60.11(f)	62-297.401 Compliance Test Methods
40 CFR 60.12	
40 CFR 60.13(a)	
40 CFR 60.13(b)	
40 CFR 60.13(c)(2)	
40 CFR 60.13(d)	
40 CFR 60.13(e)(2)	
40 CFR 60.13(f)	
40 CFR 60.13(g)	
40 CFR 60.13(i)	
40 CFR 60.19	
40 CFR 60.202 Standard for Fluorides	
40 CFR 60.203 Monitoring of Operation	
40 CFR 60.204 Test Methods and Procedures	
40 CFR 60.7 Notification of Record Keeping	
40 CFR 60.8 Performance tests	
62-204.800(7)(b)24. Federal Standards, Adopted by Reference	

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? **PAP4**	2. Emission Point Type Code: **3**	
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: **V**	6. Stack Height: **110** feet	7. Exit Diameter: **4.8** feet
8. Exit Temperature: **115** °F	9. Actual Volumetric Flow Rate: **45,000** acfm	10. Water Vapor: %
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): **Stack parameters are for Vescor scrubber. Parameters for all scrubbers shown in PSD Report.**		

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): **Phosphoric Acid: Wet Process: Reactor**		
2. Source Classification Code (SCC): **3-01-016-01**	3. SCC Units: **Tons Phosphate Rock**	
4. Maximum Hourly Rate: **550**	5. Maximum Annual Rate: **4,818,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Rates are based on an assumed phosphate rock P_2O_5 content of 30.9% and the maximum process rate of 170 TPH P_2O_5.**		

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: **FL**	2. Total Percent Efficiency of Control:

3. Potential Emissions: **2.29** lb/hour **10.03** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.0135 lb/ton P_2O_5** Reference: **Permit Limit**	7. Emissions Method Code: **0**

8. Calculation of Emissions (limit to 600 characters):

170 tons/hr P_2O_5 x 0.0135 lb/ton P_2O_5 = 2.29 lb/hr
2.29 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 10.03 TPY

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Fluoride emission limits are from Title V Permit No. 0570008-014-AV and are the proposed BACT limits.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.0135 lb/ton P_2O_5**	4. Equivalent Allowable Emissions: **2.29** lb/hour **10.03** tons/year

5. Method of Compliance (limit to 60 characters):

Stack testing of each scrubber using EPA Methods 13A or 13B

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):

Maximum emissions are limited to the lesser of 2.29 lb/hr or 0.0135 lb/ton P_2O_5 input.

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 1 of 6

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Ramsey** Model Number: **40-220** Serial Number: **3441**	
5. Installation Date: **01 Jan 1985**	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **No. 13 Rock Grinding Mill scale (or equivalent); 40 CFR 60, Subpart T; Parameter is mass flow of phosphorus-bearing material (P_2O_5 input).**	

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 2 of 6

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Ramsey** Model Number: **40-20** Serial Number: **3409**	
5. Installation Date: **01 Jan 1985**	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **No. 14 Rock Grinding Mill scale (or equivalent); 40 CFR 60, Subpart T; Parameter monitored is mass flow of phosphorus-bearing material (P_2O_5 input)**	

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 3 of 6

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Taylor** Model Number: **504T** Serial Number:	
5. Installation Date: **01 Jun 1990**	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **Teller scrubber (Prayon Reactor); 40 CFR 60, Subpart T; Parameter monitored is total pressure drop across scrubber.**	

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 4 of 6

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Foxboro** Model Number: **823DP-I351SM2** Serial Number:	
5. Installation Date: **01 Jun 1990**	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **VESCOR scrubber (Nos. 1 and 2 Filtration Units); 40 CFR 60, Subpart T; Parameter monitored is total pressure drop across scrubber.**	

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 5 of 6

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Taylor** Model Number: **504T** Serial Number:	
5. Installation Date: **01 Jun 1993**	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **VESCOR Replica (No. 3 filter; No. 3 filtrate tank); 40 CFR 60, Subpart T; Parameter monitored is total pressure drop across scrubber.**	

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 6 of 6

1. Parameter Code: PRS	2. Pollutant(s):
3. CMS Requirement:	[X] 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): **Unit is for proposed Dorrco scrubber (Dorrco Reactor and Digester).**	

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

Supplemental Requirements

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

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] 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:_____

[X] Not Applicable

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)

[X] 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).

[ ] 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.

[ ] 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)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] 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):

Enhanced Phosphate Products (EPP) Plant

4. Emissions Unit Identification Number:
ID: **007**
[ ] No ID
[ ] 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)

There exists a potential for fugitive emissions of PM/PM_{10}/FL to occur from this emission unit. It is our understanding, based on past FDEP interpretations and permitting history, that these emissions are not regulated under federal/state/local emission standards.

Emissions Unit Control Equipment

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

Venturi Scrubber (2)

Tailgas Scrubber (2)

2. Control Device or Method Code(s): **053, 013**

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:		**80**	mmBtu/hr
2. Maximum Incineration Rate:	lb/hr		tons/day
3. Maximum Process or Throughput Rate:			
4. Maximum Production Rate:		**2,208**	**TPD GTSP**
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8,760**	hours/year

6. Operating Capacity/Schedule Comment (limit to 200 characters):

There are two methods of operation: GTSP mode and ammoniated phosphates mode. Maximum production rate is 2,208 TPD GTSP and 2,400 TPD for AP. Ammoniated phosphate products with added nutrients can also be produced. Maximum heat input represents a monthly average.

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

40 CFR 60.11(a)	62-297.310 Compliance Testing
40 CFR 60.11(d)	62-297.401 Compliance test methods
40 CFR 60.11(f)	
40 CFR 60.12	
40 CFR 60.13(a)	
40 CFR 60.13(b)	
40 CFR 60.13(f)	
40 CFR 60.13(i)	
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)(b)26. NSPS for DAP	
62-212.400(7)(b) PSD	
62-296.403(2) Phosphate Processing	
62-296.403(3)	
62-296.320(4)(b) General VE Limitation	

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? **EPP**	2. Emission Point Type Code: **1**
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: **V**	6. Stack Height: **126** feet	7. Exit Diameter: **8** feet
8. Exit Temperature: **132** °F	9. Actual Volumetric Flow Rate: **225,000** acfm	10. Water Vapor: %
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):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Chemical Manufacturing; Triple Superphosphate; Ammoniator/Granulator.**		
2. Source Classification Code (SCC): **3-01-029-23**	3. SCC Units: **Tons of Fertilizer Produced**	
4. Maximum Hourly Rate: **92**	5. Maximum Annual Rate: **805,920**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **GTSP Production Rate. Production rate for GTSP with sulfur and nitrogen added is also 92 TPH (2,208 TPD).**		

Segment Description and Rate: Segment 2 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Chemical Manufacturing; Ammonium Phosphates; Ammoniator/Granulator**		
2. Source Classification Code (SCC): **3-01-030-23**	3. SCC Units: **Tons of Fertilizer Produced**	
4. Maximum Hourly Rate: **100**	5. Maximum Annual Rate: **876,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **AP production rate.**		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 3 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **In-Process Fuel Use; Ammonium Phosphate Dryer; Natural Gas.**		
2. Source Classification Code (SCC): **3-90-006-99**	3. SCC Units: **Millions of Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.08**	5. Maximum Annual Rate: **701**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,000**
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate = 700.8 (rounded to 701). Maximum hourly rate based on maximum heat input rate 80.0 MMBtu/hr.**		

Segment Description and Rate: Segment 4 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **In-Process Fuel Oil; Distillate Oil; Ammonium Phosphate Dryer.**		
2. Source Classification Code (SCC): **3-90-005-99**	3. SCC Units: **1,000 Gallons Burned**	
4. Maximum Hourly Rate: **0.571**	5. Maximum Annual Rate: **228**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.5**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **140**
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate = 228.4 (rounded to 228). Fuel oil burning limited to 400 hours per year. Maximum hourly rate based on maximum heat input rate of 80 MMBtu/hr.**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	013	053	EL
FL	013	053	EL
SO_2			EL
NO_X			NS
CO			NS
PM_{10}	013	053	NS
VOC			NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **12.0** lb/hour **52.6** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.13 lbs/ton GTSP** Reference: **BACT Analysis**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **0.13 lbs/ton GTSP x 92 Ton GTSP/hr = 12.0 lbs/hr** **12.0 lbs/hr x 8,760 hr/yr x 1 ton/2000 lbs = 52.56 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **PM is emitted through two modes of operation, this is GTSP mode. PM Emissions Limits for AP mode are 8.0 lb/hr and 35.04 TPY.**	

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.13 lb/ton GTSP**	4. Equivalent Allowable Emissions: **12.0** lb/hour **52.6** tons/year
5. Method of Compliance (limit to 60 characters): **Annual Stack Test using EPA Method 5**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Allowable emissions from GTSP mode, Permit No. 0570008-014-AV.**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference:	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:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.08 lb/ton AP**	4. Equivalent Allowable Emissions: **8.0** lb/hour **35.0** tons/year
5. Method of Compliance (limit to 60 characters): **Annual Stack Test using EPA Method 5**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Proposed allowable emissions for AP production at GTSP Plant based on proposed BACT.**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **FL**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2.5** lb/hour **10.8** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.058 lb/ton P_2O_5 input** Reference: **BACT Analysis**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **0.058 lb/ton P_2O_5 input x 42.32 TPH P_2O_5 = 2.45 lb/hr** **2.45 lb/hr x 8,760 hr/yr x 1 ton/2,000 lbs = 10.75 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **Estimated emission based on operating in GTSP mode. Emission Limits for AP mode are 4.10 lb/hr and 17.96 TPY.**	

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: **2.5** lb/hour **10.8** tons/year
5. Method of Compliance (limit to 60 characters): **Annual Stack Test Using EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Applies to operation in GTSP mode. Permit No. 0570008-014-AV.**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **FL**	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference:	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: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.041 lbs F/ton P_2O_5**	4. Equivalent Allowable Emissions: **4.1** lb/hour **18.0** tons/year
5. Method of Compliance (limit to 60 characters): **Annual Stack Test using EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Applies to operation in AP mode.**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:

3. Potential Emissions: **40.5** lb/hour **8.1** tons/year	4. Synthetically Limited? [X]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **142 S lb/Mgal** Reference: **AP-42**	7. Emissions Method Code: **0**

8. Calculation of Emissions (limit to 600 characters):

See PSD Report, Table 2-6.

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.5 % S fuel oil**	4. Equivalent Allowable Emissions: **40.5** lb/hour **8.1** tons/year

5. Method of Compliance (limit to 60 characters):

Fuel analysis and usage records

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):

Limited by Permit No. 0570008-014-AV. Maximum 400 hr/yr on fuel oil.

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other °
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual VE Test using EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **Rule 62-296.320(4)(b)**	

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

Continuous Monitoring System: Continuous Monitor 1 of 2

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **FoxBoro Magnetic Flow Transmitter** Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **Represents flow of phosphate bearing material. 40 CFR 60 Subpart V for Operation during AP mode.**	

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 2 of 2

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Taylor Differential Pressure Transmitter** Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **Pressure drop across scrubbing system. 40 CFR 60 Subpart V for operation during AP mode.**	

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

Supplemental Requirements

1. Process Flow Diagram [X] Attached, Document ID: **PSD Report** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: **CR-EU5-J2** [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [X] Attached, Document ID: **PSD Report** [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID: _____ [ ] Previously submitted, Date: _____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: **PSD Report** [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID: _____ [X] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] 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:_____

[X] Not Applicable

ATTACHMENT CR-EU5-J2

FUEL ANALYSIS

Attachment CR-EU5-J2

GTSP Plant
Fuel Analysis

Fuel	Density (lb/scf)/ (lb/gal)	Moisture (%)	Weight % Sulfur	Weight % Nitrogen	Weight % Ash	Heat Capacity
Natural Gas	0.048	<0.01	<0.001	0.62	–	1,000 Btu/scf
No. 2 Fuel Oil	6.83	<0.01	0.5	0.006	<0.01	140,000 Btu/gal

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)

[ ] 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).

[X] 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.

[ ] 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)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] 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):

Animal Feed Ingredient Plant No. 1

4. Emissions Unit Identification Number: [ ] No ID [ ] ID Unknown
ID: **78, 79, 80, 81**

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)

Requested minor changes to permit for the existing Animal Feed Ingredient Plant.

Emissions Unit Control Equipment

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

078 Common Stack for Acid Defluorination System - Wet Scrubber
Common Stack for No. 1 AFI Granulation Train - Venturi Scrubber

079 Diatomaceous Earth Storage and Delivery System - Baghouse

080 No. 1 Limestone Storage and Delivery System - Baghouse

081 Animal Feed Plant Loadout System - Baghouse

2. Control Device or Method Code(s): **18, 53, 75**

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:		**50**	mmBtu/hr
2. Maximum Incineration Rate:	lb/hr		tons/day
3. Maximum Process or Throughput Rate:			
4. Maximum Production Rate:		**1,080**	**TPD AFI**
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):			
Production rate refers to maximum 24-hr (daily) animal feed ingredient production rate.			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-212.400 PSD Preconstruction Review
62-296.403(1)(i) Phosphate Processing - BACT for Fluorides
62-296.403(3) Test Methods
62-296.320(4)(b) General VE Limitations
62-297.310 General Compliance Test Requirements

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? **AFI**	2. Emission Point Type Code:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **Limestone Silo Baghouse, Diatomaceous Earth Silo Baghouse, AFI Product Loadout Baghouse, Acid Defluorination System, milling, classification, and cooling equipment baghouse, and Granulation Train Stack.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **AFI Granulation Train**		
5. Discharge Type Code: **V**	6. Stack Height: **136** feet	7. Exit Diameter: **6** feet
8. Exit Temperature: **150** °F	9. Actual Volumetric Flow Rate: **109,400** acfm	10. Water Vapor: **5** %
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): **Parameters are for the common stack for the AFI Granulation Train. See PSD Report for the stack parameters for other sources in this emissions unit.**		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 3

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **AFI-Dryer** **In-Process Fuel Use, Natural Gas: General**		
2. Source Classification Code (SCC): **3-90-006-99**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.050**	5. Maximum Annual Rate: **438**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,000**
10. Segment Comment (limit to 200 characters): **Represents annual average fuel usage of 50 MMBtu/hr for the rotary dryer in the granulation area. No change is requested for this segment.**		

Segment Description and Rate: Segment 2 of 3

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **AFI-Dryer** **In-Process Fuel Use, Distillate Oil: General**		
2. Source Classification Code (SCC): **3-90-005-99**	3. SCC Units: **1,000 Gallons Burned**	
4. Maximum Hourly Rate: **0.357**	5. Maximum Annual Rate: **143**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.5%**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **140**
10. Segment Comment (limit to 200 characters): **Represents annual average fuel usage of 50 MMBtu/hr for the rotary dryer. Limited to 400 hr/yr of operation. No change is requested for this segment.**		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 3 of 3

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Mineral Products, Phosphate Rock**		
2. Source Classification Code (SCC): **3-05-019-99**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **45**	5. Maximum Annual Rate: **394,200**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Represents total Granular Animal Feed Phosphate Product for the existing No. 1 AFI Plant (1,080 TPD). Annual and hourly PM emissions from this segment will change due to requested modifications.**		

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
SO_2			EL
PM	018	075	EL
PM_{10}	018	075	EL
FL	053		EL
NO_X			NS
CO			NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **15.6** lb/hour **68.2** tons/year	4. Synthetically Limited? [X]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **See Table 2-7, PSD Report**	7. Emissions Method Code: **2**
8. Calculation of Emissions (limit to 600 characters): **Includes PM emissions from the AFI Granulation System Stack and PM emissions from the DE Silo Baghouse, Limestone Silo Baghouse, milling, classification, and cooling equipment baghouse, and AFI Product Loading Baghouse. See PSD Report, Table 2-7.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **15.6 lb/hr**	4. Equivalent Allowable Emissions: **15.6** lb/hour **68.2** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 5 for granulation stack.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **15.6** lb/hour **68.2** tons/year	4. Synthetically Limited? [X]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Table 2-7, PSD Report**	7. Emissions Method Code: **2**
8. Calculation of Emissions (limit to 600 characters): **Includes PM emissions from the AFI Granulation System Stack and PM emissions from the DE Silo Baghouse, Limestone Silo Baghouse, milling, classification, and cooling equipment baghouse, and AFI Product Loading Baghouse. See PSD Report, Table 2-7.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **15.6 lb/hr**	4. Equivalent Allowable Emissions: **15.6** lb/hour **68.2** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 5 for common stack**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **FL**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.0** lb/hour **4.4** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **BACT and Permit No. 0570008-014-AV**	7. Emissions Method Code: **2**
8. Calculation of Emissions (limit to 600 characters): **Short-term emission rate remains unchanged from that currently permitted.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: **1.0** lb/hour **4.4** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **25.4** lb/hour **5.1** tons/year	4. Synthetically Limited? [X]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **71 lb/1,000 gal** Reference: **AP-42**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **See PSD Report, Table 2-8.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.5 % S fuel oil**	4. Equivalent Allowable Emissions: **25.4** lb/hour **5.1** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel analysis and fuel usage records**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Based on permit limitation in Permit No. 0570008-014-AV.**	

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 3

1. Visible Emissions Subtype: **VE15**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **15** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **PSD-FL-234A, Specific Condition No. 6**	

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

Continuous Monitoring System: Continuous Monitor 1 of 1

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	[X] 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): **Rules 62-4.070, 62-296.800, and 62-212.410, F.A.C.**	

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

Visible Emissions Limitation: Visible Emissions Limitation 2 of 3

1. Visible Emissions Subtype: **VE5**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **5** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **Permit Condition accepted in lieu of PM Stack Test per Rule 62-297.620 for all baghouse stacks except the milling, classification, and cooling equipment baghouse..**	

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):	

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

Visible Emissions Limitation: Visible Emissions Limitation 3 of 3

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual VE test using EPA Method 9.**	
5. Visible Emissions Comment (limit to 200 characters): **Rule 62-296.320(4)(b). Applicable to milling, classification, and cooling baghouse only.**	

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 [X] Attached, Document ID: PSD Report [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: CF-EU6-J2 [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [X] Attached, Document ID: PSD Report [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID: _____ [ ] Previously submitted, Date: _____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: PSD Report [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID: _____ [X] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] 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:_____

[X] Not Applicable

ATTACHMENT CR-EU6-J2

FUEL ANALYSIS

Attachment CR-EU6-J2

Animal Feed Plant
Fuel Analysis

Fuel	Density (lb/scf)/ (lb/gal)	Moisture (%)	Weight % Sulfur	Weight % Nitrogen	Weight % Ash	Heat Capacity
Natural Gas	0.048	<0.01	<0.001	0.62	–	1,000 Btu/scf
No. 2 Fuel Oil	6.83	<0.01	0.5	0.006	<0.01	140,000 Btu/gal

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)

[X] 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).

[ ] 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.

[ ] 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)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] 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):

No. 5 DAP Plant (Diammonium Phosphate Manufacturing)

4. Emissions Unit Identification Number: [ ] No ID [ ] ID Unknown
ID: **055**

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)

Emissions Unit Control Equipment

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

050 Two Up-Flow Gas Scrubbers

053 Three Venturi Scrubbers (in parallel)

2. Control Device or Method Code(s): **050, 053**

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:		**40**	mmBtu/hr
2. Maximum Incineration Rate:	lb/hr		tons/day
3. Maximum Process or Throughput Rate:			
4. Maximum Production Rate:		**1,764**	**TPD (100% P_2O_5)**
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):			
Heat input is maximum monthly average.			

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(f)	
40 CFR 60.13(i)	
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)(b)26. NSPS for DAP	
62-212.400(7)(b) PSD	
62-297.310 Compliance Testing	
62-297.401 Compliance Test Methods	
62-296.320(b) General VE Standard	

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? **DAP 5**	2. Emission Point Type Code: **1**	
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: **V**	6. Stack Height: **133** feet	7. Exit Diameter: **7** feet
8. Exit Temperature: **132** °F	9. Actual Volumetric Flow Rate: **148,000** acfm	10. Water Vapor: %
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): **Stack Height = 132.4 (rounded to 133).**		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Chemical Manufacturing; Ammonium Phosphates; Ammoniator/Granulator.**		
2. Source Classification Code (SCC): **3-01-030-02**	3. SCC Units: **Tons P_2O_5 produced**	
4. Maximum Hourly Rate: **73.5**	5. Maximum Annual Rate: **643,860**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): **Maximum Hourly Rate based on a maximum P_2O_5 input rate of 1,764 TPD.**		

Segment Description and Rate: Segment 2 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **In-Process Fuel Use; Distillate Oil; Phosphate Fertilizer Dryer.**		
2. Source Classification Code (SCC): **3-90-005-99**	3. SCC Units: **1,000 Gallons Burned**	
4. Maximum Hourly Rate: **0.286**	5. Maximum Annual Rate: **114.28**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.31**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **140**
10. Segment Comment (limit to 200 characters): **Maximum Annual Rate = 114.28. Maximum Hourly Rate based on heat input rate of 40.0 MMBtu/hr (monthly average). Limited to 400 hr/yr on fuel oil.**		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 3 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **In-Process Fuel Use; Natural Gas; Phosphate Fertilizer Dryer.**		
2. Source Classification Code (SCC): **3-90-006-99**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **0.04**	5. Maximum Annual Rate: **350.4**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,000**
10. Segment Comment (limit to 200 characters): **Maximum hourly rate based on heat input rate of 40.0 MMBtu/hr (monthly average). Maximum Annual Rate = 350.4.**		

Segment Description and Rate: Segment 4 of 4

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Chemical Manufacturing; Flares - Natural Gas; Fuel Fired Equipment.**		
2. Source Classification Code (SCC): **3-01-900-23**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: **1**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,000**
10. Segment Comment (limit to 200 characters): **Maximum Hourly Rate = 0.0001. Maximum Annual Rate = .900 (rounded to 1).**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	062	050	EL
PM_{10}	062	050	EL
FL	050	053	EL
SO_2			EL

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **12.8** lb/hour **56.1** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Permit #: 0570008-014-AV**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **12.8 lb/hr x 8,760 hr/yr ÷ 2,000 lbs/ton = 56.1 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: **12.8** lb/hour **56.1** tons/year
5. Method of Compliance (limit to 60 characters): **Annual Stack Emission Test using EPA Method 5**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Permit Limit in Permit 0570008-014-AV**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **12.8** lb/hour **56.1** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Permit #: 0570008-014-AV**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **12.8 lb/hr x 8,760 hr/yr ÷ 2,000 lbs/ton = 56.1 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: **12.8** lb/hour **56.1** tons/year
5. Method of Compliance (limit to 60 characters): **Annual Stack Emission Test using EPA Method 5**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Permit Limit in Permit 0570008-014-AV**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **FL**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **3.3** lb/hour **14.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: Reference: **Permit #: 0570008-014-AV**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **3.3 lbs/hr x 8,760 hr/yr x 1 ton/2,000 lbs = 14.5 TPY**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.06 lb/ton P_2O_5**	4. Equivalent Allowable Emissions: **3.3** lb/hour **14.5** tons/year
5. Method of Compliance (limit to 60 characters): **Annual stack emissions test using EPA Method 13A or 13B.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Based on 40 CFR 60, Subpart V. Emissions limited to lesser of 0.6 lb/ton P_2O_5 input or 3.3 lb/hr.**	

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **12.6** lb/hour **2.5** tons/year	4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **142 S lb/Mgal** Reference: **AP-42**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **See Part B, PSD Report.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.31 % Sulfur**	4. Equivalent Allowable Emissions: **12.6** lb/hour **2.5** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel oil analysis and usage**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Permit limit in 0570008-014-AV. Based on 400 hr/yr fuel oil firing.**	

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [ ] Rule [X] Other
3. Requested Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual VE test using EPA Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **BACT Determination dated 11/25/91.**	

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

Continuous Monitoring System: Continuous Monitor 1 of 4

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information: Manufacturer: **Taylor** Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **Serial No. is T5DD1204B101A-70813. No. 5 DAP Dryer Tailgas Scrubber.**	

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 2 of 4

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	[**X**] Rule [ ] Other
4. Monitor Information: Manufacturer: **Taylor** Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **Serial No. is T5DD1204B101A-70811. No. 5 RGCV Tailgas Scrubber.**	

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 3 of 4

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[**X**] Rule [ ] Other
4. Monitor Information: Manufacturer: **Foxboro** Model Number: **M-2803-SABADBAG**	Serial Number: **95251529**
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **Monitoring required by 40 CFR 60, Subpart V, Acid Flow.**	

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 4 of 4

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	[**X**] Rule [ ] Other
4. Monitor Information: Manufacturer: **Foxboro** Model Number: **M-2804-ECB420C**	Serial Number: **95251530**
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters): **Monitoring required by 40 CFR 60, Subpart V, Acid Flow.**	

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

Supplemental Requirements

1. Process Flow Diagram [X] Attached, Document ID: **PSD Report** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [X] Attached, Document ID: **CR-EU7-J2** [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [X] Attached, Document ID: **PSD Report** [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID: _____ [ ] Previously submitted, Date: _____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: **PSD Report** [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID: _____ [X] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] 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:_____

[X] Not Applicable

ATTACHMENT CR-EU7-J2

FUEL ANALYSIS

Attachment CR-EU7-J2

No. 5 DAP Plant
Fuel Analysis

Fuel	Density (lb/scf)/ (lb/gal)	Moisture (%)	Weight % Sulfur	Weight % Nitrogen	Weight % Ash	Heat Capacity
Natural Gas	0.048	<0.01	<0.001	0.62	--	1,000 Btu/scf
No. 2 Fuel Oil	6.83	<0.01	0.31	0.006	<0.01	140,000 Btu/gal

PSD REPORT

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LIST OF ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
acfm	actual cubic feet per minute
AFI	Animal Feed Ingredient
BACT	Best Available Control Technology
CAA	Clean Air Act
Cargill	Cargill Fertilizer, Inc.
CFR	Code of Federal Regulations
CO	carbon monoxide
DAP	diammonium phosphate
DCP	dicalcium phosphate
DE	diatomaceous earth
dscfm	dry standard cubic feet per minute
EPA	U.S. Environmental Protection Agency
F	fluoride
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FGD	flue gas desulfurization
ft^2	square foot
ft^3	cubic foot
GEP	Good Engineering Practice
gpm	gallons per minute
gr/dscf	grains per dry standard cubic foot
GTSP	Granular Triple Super Phosphate
GPM	gallons per minute
H_2O	water
H_2S	hydrogen sulfide

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LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

H_2SO_4	sulfuric acid
hr/yr	hours per year
HSH	highest, second-highest
lb	pound
lb/hr	pounds per hour
lb/ton	pounds per ton
MAP	monoammonium phosphate
MCP	monocalcium phosphate
mg/m^3	milligrams per cubic meter
NO_x	nitrogen oxide
NSPS	New Source Performance Standards
NSR	New Source Review
NTU	number of transfer unit
P_2O_5	phosphorous pentoxide
PAP	Phosphoric Acid plant
PA	Phosphoric Acid
PFS	phosphatic fertilizer solution
PM	particulate matter
PM_{10}	particulate matter less than or equal to 10 micrometers
PSD	prevention of significant deterioration
RACT	Reasonably Available Control Technology
RGCV	reactor-granulator-cooler-equipment vents
SAM	sulfuric acid mist
SiF_4	silicon tetrafluoride
SIP	State Implementation Plan
SO_2	sulfur dioxide
TPD	tons per day
TPH	tons per hour
TPY	tons per year

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LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

TSP	triple super phosphate
$\mu g/m^3$	micrograms per cubic meter
VOC	volatile organic compound

1.0 INTRODUCTION

Cargill Fertilizer, Inc. is proposing to modify several existing emission units at its phosphate fertilizer manufacturing facility located in Riverview, Florida. The proposed changes will include increased molten sulfur through the molten sulfur handling system, additional digestion capacity associated with the Dorrco Reactor at the Phosphoric Acid plant (PAP), modification of the Granular Triple Super Phosphate (GTSP) plant, modification of the Animal Feed Ingredient (AFI) plant, and modification of the No. 5 Diammonium Phosphate (DAP) plant. Cargill is also requesting removal of the existing allowable production rate cap for the Nos. 8 and 9 Sulfuric Acid (H_2SO_4) plants, to allow these plants to simultaneously operate up to their maximum capacities with a reduction in allowable emissions.

Cargill is requesting a removal of the existing allowable production rate cap of 5,700 tons per day (TPD) of 100-percent H_2SO_4 for the Nos. 8 and 9 H_2SO_4 plants. The removal of this production rate cap will allow both plants to simultaneously operate up to their maximum individual capacities of 2,700 and 3,400 TPD, respectively, of 100-percent H_2SO_4. The plants will also be modified to allow for a reduction in allowable SO_2 emissions. As a result of the increased H_2SO_4 production, the actual and potential maximum molten sulfur through the molten sulfur handling and storage system will increase. However, with the reduction in allowable SO_2 emissions, the overall potential SO_2 emissions will decrease as a result of the project.

The proposed modifications to the PAP will add a digestion system downstream of the Dorrco reactor and, by allowing greater time for gypsum crystallization, will increase phosphoric acid production by up to 10,000 tons per year (TPY) as 100-percent phosphorous pentoxide (P_2O_5). Other downstream changes to the PAP will also be made.

The GTSP plant will be converted to allow for the production of enhanced phosphate fertilizers including GTSP, ammoniated phosphates [such as monoammonium phosphate (MAP) and DAP], and phosphate fertilizers with added nitrogen, sulfur and micronutrients. The modifications will also include work necessary to provide proper product granulation

and improve overall plant evacuation and pollution control. Upon implementation of the modifications, the plant will be renamed the Enhanced Phosphate Products (EPP) plant.

Cargill is proposing to modify the AFI plant to produce up to 394,200 TPY (1,080 TPD) of granular animal feed ingredients product, utilizing the additional 10,000 TPY of P_2O_5 produced in the PAP. The existing AFI granulation tram will continue to be used for all of the AFI production.

The existing No. 5 DAP plant will be modified to improve the energy efficiency of the plant by utilizing waste heat to vaporize some or all of the ammonia fed to the DAP plant and to the adjacent Nos. 3 and 4 MAP plants. The project also seeks to enhance the chemical and physical characteristics of the DAP product by improving the granulation/reaction conditions.

Based on the potential increase in emissions of fluoride (F), sulfur dioxide (SO_2), nitrogen oxides (NO_X), sulfuric acid mist (SAM), particulate matter (PM), and particulate matter less than or equal to 10 micrometers (PM_{10}) due to the proposed modifications, the proposed project will constitute a major modification to a major stationary source and, thus, trigger a New Source Review (NSR) under the provisions of the prevention of significant deterioration (PSD) regulations for these pollutants.

For each pollutant subject to PSD review, the following analyses are required:

1. Ambient monitoring analysis, unless the net increase in emissions due to the modification causes impacts that are below specified significant impact levels;
2. Application of best available control technology (BACT) for each new emissions unit;
3. Air quality impact analysis, unless the net increase in emissions due to the modification causes impacts which are below specified significant impact levels; and
4. Additional impact analysis (impact on soils, vegetation, visibility), including impacts on PSD Class I areas.

This PSD permit application addresses these requirements and is organized into six additional sections, followed by the appendices. A description of the project including air emission sources and pollution control equipment is presented in Section 2.0. A regulatory applicability analysis of the proposed project is presented in Section 3.0. An ambient air monitoring analysis is presented in Section 4.0. The BACT analysis is presented in Section 5.0. The air quality impact analysis and additional impact analysis are presented in Sections 6.0 and 7.0, respectively. Supporting documentation is presented in the appendices.

2.0 PROJECT DESCRIPTION

Cargill has proposed modifications to several emission units to expand the maximum production capacity of the phosphate fertilizer manufacturing plant located in Riverview, Florida. These emission units are as follows:

- Molten Sulfur Handling System,
- Nos. 8 and 9 H_2SO_4 plants,
- PAP,
- GTSP plant (to be renamed Enhanced Phosphate Products (EPP) plant),
- AFI plant, and
- No. 5 DAP plant.

The plant is located south of Tampa on Hillsborough Bay (Figure 2-1). A plot plan of the facility, showing stack locations, is presented in Figure 2-2. The following sections describe the project modifications to each plant in more detail.

2.1 MOLTEN SULFUR HANDLING SYSTEM

2.1.1 GENERAL

Cargill currently operates a molten sulfur handling facility with a maximum throughput of 1,478,020 TPY. In May 1999, Cargill proposed to install a new solid sulfur handling and storage system and to modify the existing molten sulfur handling and storage system by adding a truck loading station, and increasing the permitted molten sulfur ship unloading rate from 1,456 to 2,240 tons per hour (TPH). This modification included installation of a scrubber to control emissions from the molten sulfur tanks and proposed truck-loading station. Cargill is currently awaiting issuance of this construction permit. Cargill was previously issued construction Permit No. 0570008-029-AC to rebuild Molten Sulfur Tank No. 1 and is currently in the process of constructing this tank.

Cargill is now proposing to increase the combined H_2SO_4 production rates of the Nos. 8 and 9 H_2SO_4 plants and to install a molten sulfur tank at the EPP plant (formerly the GTSP plant). The molten sulfur will be transferred from the molten sulfur tanks (Nos. 1, 2, or 3) to the EPP

plant. The new tank will have a 50,000-gallon capacity and will be fed to the EPP plant as the sulfur source for the fertilizer products containing sulfur.

2.1.2 PROCESS DESCRIPTION

The molten sulfur handling and storage system currently consists of Molten Sulfur Tank Nos. 2 and 3, covered pits Nos. 7, 8, and 9, and associated transfer pumps and piping for storage and handling of molten sulfur. Molten sulfur is delivered by ship or truck and held in steam-heated tanks and pits (Nos. 7, 8, and 9 molten sulfur pits) prior to use in one of the several onsite sulfuric acid plants. Molten sulfur will also be transferred offsite upon the completion of the molten sulfur truck loading station. A flow diagram of the existing molten sulfur system is presented in Figure 2-3.

A new pump station will be installed to pump molten sulfur from the Molten Sulfur Tank Nos. 1, 2, and 3 to the EPP plant. The molten sulfur will be used as the sulfur source in production of dry products at the EPP plant. In addition, the changes described in Section 2.1.1 will be implemented. A flow diagram showing the revised system arrangement is presented in Figure 2-4.

2.1.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

As previously proposed by Cargill, a scrubber will be installed to control emissions from Molten Sulfur Tank Nos. 1, 2, and 3. The scrubber will control emissions of sulfur particulates from the tanks and the planned truck loading station.

Sources of air emissions from the molten sulfur system are summarized below:

1. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the stack for the scrubber controlling the molten sulfur storage tanks and truck loading station. Emissions from the two existing tanks are currently uncontrolled.
2. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the molten sulfur storage tank Nos. 1, 2 and 3 vents during periods of natural ventilation
3. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the molten sulfur pits. Emission rates from the molten sulfur pits will not be affected by the proposed project.

Historically, emission rates of sulfur particulate, H_2S, SO_2, and VOCs from the existing molten sulfur tanks have been calculated using emission factors developed from source testing. These emission factors are in terms of weight of pollutant per volume of ventilation gases. For particulate sulfur, separate emission factors have been used for molten sulfur storage and for transfer operations (tank loading and unloading). For H_2S, SO_2, and VOCs, the emission factors are the same for both storage and transfer operations.

Hourly emission rates are calculated by multiplying the emission factor by the exhaust flow rate for a given mode of operation (transfer or storage of molten sulfur). Annual emission rates are calculated by multiplying the hourly emission rates by the number of hours of operation in a given mode determined from the annual molten sulfur throughput and the maximum ship and tank unloading rates. Therefore, emission rates are a function of ventilation rate, transfer rates, and throughput, and not tank capacity. Actual emission rate calculations for 1999 and 2000 are presented in Appendix A. Future potential emissions are also calculated and presented in Appendix B.

2.1.4 STACK DATA

Vent geometry and operating data for the sources in the molten sulfur system are presented in Table 6-1.

2.2 NOS. 8 AND 9 SULFURIC ACID PLANTS

2.2.1 GENERAL

Phosphate fertilizers are manufactured at the Cargill facility. A raw material utilized in the manufacture of phosphate fertilizers is H_2SO_4. H_2SO_4 is used to react with phosphate rock to produce phosphoric acid. Cargill currently operates three H_2SO_4 plants (Nos. 7, 8, and 9) at its Riverview facility. In the manufacture of H_2SO_4, molten sulfur is burned in a combustion chamber and the gases are sent over a catalyst bed and then through absorbers. All of the H_2SO_4 plants at Cargill use double absorption technology to increase the efficiency of H_2SO_4 recovery and to minimize emissions.

The current allowable maximum individual production rates for the Nos. 8 and 9 H_2SO_4 plants are 2,700 and 3,400 TPD 100-percent H_2SO_4, respectively. However, there is also a combined maximum allowable production rate cap for Nos. 8 and 9 H_2SO_4 plants of 5,700 TPD 100-percent H_2SO_4. Cargill is requesting removal of this production rate cap to allow both plants to operate simultaneously up to their maximum capacities. However, the increased higher production rates will not require an increase in the current allowable daily emission limits for SO_2, as Cargill is proposing a lower SO_2 emission limit of 3.5 pounds per ton (lb/ton) of 100-percent H_2SO_4 (24-hour daily average). The current daily limit is 4 lb/ton of 100-percent H_2SO_4 for both the Nos. 8 and 9 H_2SO_4 plants. Cargill is requesting to retain the NSPS limit of 4 lb/ton of 100-percent H_2SO_4 along with the 24-hour average limit of 3.5 lb/ton of 100-percent H_2SO_4.

2.2.2 PROCESS DESCRIPTION

The H_2SO_4 plants utilize double absorption technology. In the H_2SO_4 plants, sulfur is burned with dried atmospheric oxygen to produce SO_2. The SO_2 is catalytically oxidized to sulfur trioxide (SO_3) over a catalyst bed. The SO_3 is then absorbed in H_2SO_4 to produce additional H_2SO_4. The remaining SO_2, not previously oxidized, is passed over a final converter bed of catalyst and the SO_3 produced is then absorbed in H_2SO_4. SO_2 and SAM emissions result from the process, as well as a small amount of NO_x. No changes to the process equipment will be made as part of the proposed project except as necessary to meet the reduced emission limit. Refer to Figure 2-5 for a flow diagram of the process.

2.2.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

The control equipment for the H_2SO_4 plants consists of two systems in series. The first system is integral to the H_2SO_4 production process and is the double contact process where the converted SO_3 emissions from the sulfur combustion are absorbed by water in a tower. This process is at least 99 percent efficient at absorbing SO_3. This system is considered process equipment and not considered control equipment. The second system is a high-velocity mist eliminator, which causes moisture (droplets containing sulfuric acid mist) from the double-contact process to be removed from the air stream by impingement. This process

is at least 90 percent efficient at removing SAM from the air stream and, therefore, recovering the product.

To achieve the proposed lower SO_2 emission limit of 3.5 lb/ton H_2SO_4 (24-hour average) for the two plants, Cargill will need to implement changes to each unit. These changes could include replacing a portion of the vanadium catalyst with cesium-promoted catalyst, increasing the catalyst volumes or other changes as necessary to achieve the reduced emissions while maintaining the permitted production capacity.

Table 2-1 summarizes the pollution control equipment and allowable emission rates for the Nos. 8 and 9 H_2SO_4 plants. The table includes existing permitted allowable emission rates and proposed allowable emission rates for SO_2 and SAM for both H_2SO_4 plants. Estimated NO_x emissions are also included. Table 2-2 summarizes the current actual average emissions for 1999-2000. Refer to Appendix A for supportive information.

2.2.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for the existing and modified H_2SO_4 plants. Each H_2SO_4 plant has a separate stack. The physical stacks for each plant will not be modified with the proposed project.

2.3 PHOSPHORIC ACID PLANT

2.3.1 GENERAL

Cargill is proposing to modify the reaction systems at the PAP to improve the efficiency of the downstream filtration system. The existing PAP is currently operating under Permit No. 0570008-014-AV, issued April 28, 1999. The PAP consists of two reactors (Dorrco and Prayon), three filtration units (Nos. 1, 2, and 3 filters and filtrate tanks), evaporators, clarifiers, and storage tanks. One packed-bed scrubber and two venturi/packed-bed scrubbers serve as fluoride emission control systems. Refer to the flow diagram in Figure 2-6. The proposed modifications will include installation of additional phosphoric acid digestion capacity downstream of the existing Dorrco Reactor. A new scrubber and stack will also be added to handle vapors from the new digestion compartments and the

existing Dorrco Reactor. Other changes will also be implemented. The changes will result in an increase of up to 10,000 TPY of P_2O_5 production without increasing the P_2O_5 feed rate to the PAP.

2.3.2 PROCESS DESCRIPTION

Additional digestion capacity is being added to improve the efficiency of the filtration system. The digester will be vented to a new scrubber system. A revised process flow diagram is presented in Figure 2-7.

Currently, the Dorrco system feeds phosphoric acid to three filter systems, one of which is the Prayon model 24 C filter (No. 1 filter). This filter will be replaced with a 24 D model, which will provide better efficiency by adding up to 50 percent more filter area than the 24 C model. The filter vent system will remain unchanged. There will be no new emission sources in this area. The filter system produces weak phosphoric acid, which is sent to storage. An additional weak acid storage tank will be added to provide more holdup time between plant operations. This new tank is not considered to be a regulated emission unit.

Weak acid is clarified and further processed in Evaporators 1 through 11 where the concentration is increased. Modifications on Evaporators 1 through 8 and their auxiliaries will be made to provide improved efficiency and increased capacity. There will be no new emission sources in this area.

The strong acid from the evaporators may be pumped to a new clarifier for further purification prior to use in downstream manufacturing. Emissions from the clarification systems and storage tanks are considered insignificant and, therefore, are not regulated.

The PAP is currently permitted for a maximum input rate of 170 TPH of P_2O_5. Cargill is not proposing to increase this maximum input rate. However, due to the improved efficiency, actual P_2O_5 recovery will increase by up to 10,000 TPY P_2O_5. This additional P_2O_5 will be fed primarily to the AFI plant for production of animal feed.

2.3.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

The vent gases from the new digester section will be vented to a new venturi/packed-bed scrubber [Phosphoric Acid (PA) Scrubber No. 4]. The vapors from the existing Dorrco reactor will also be diverted to this new scrubber. The scrubber system will consist of a low-pressure drop venturi scrubber followed by a multi-stage packed cross-flow scrubber. Pond water will be used to scrub fluorine in the venturi, at the packed scrubber inlet via spray nozzles, and on the packing within the scrubber itself. The exhaust gas from the scrubber will vent to the atmosphere via the existing Vescor scrubber (PA Scrubber No. 2) stack.

The existing Vescor scrubber (PA Scrubber No. 2) presently handles the fluorine vapors from the Dorrco reactor and the Nos. 1 and 2 filters. In the future, the fluorine load on this existing scrubber will be reduced by venting the Dorrco reactor vapors into the new PA Scrubber No. 4 described above. No changes will be made to the evacuation systems to the existing Teller Scrubber (PA Scrubber No. 1), which primarily serves the Prayon reactor, or to the existing Vescor replica scrubber (PA Scrubber No. 3), which serves the No. 3 filtration system.

The PAP is currently subject to a fluoride emission limit of 0.0135 lb/ton P_2O_5 feed, 2.29 pounds per hour (lb/hr) and 10.03 TPY, as specified in Operating Permit No. 0570008-014-AV. The current operating permit limits the production rate of the existing PAP to 170 TPH of P_2O_5. Although the proposed project will likely result in an increase in the amount of P_2O_5 produced, the increase will be due to better recovery of P_2O_5 and not an increase in the amount of P_2O_5 feed rate. While actual fluorine emissions may increase slightly, they are not expected to exceed the current allowable of 2.29 lb/hr of fluorine or 0.0135 lb/ton of P_2O_5 feed. Therefore, Cargill is not requesting to increase the F emission rate currently permitted for the PAP.

Table 2-4 summarizes the pollution control equipment and allowable fluoride emission rates for the PAP. The table includes information about the existing PAP and the proposed modifications to the PAP. Current actual emissions (1999-2000) from the PAP are shown in Table 2-2 (also refer to Appendix A).

2.3.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for each emission point located at the PAP. These sources include the existing Nos. 1, 2 and 3 PA scrubbers as well as the proposed PA Scrubber No. 4.

2.4 GRANULAR TRIPLE SUPER PHOSPHATE PLANT (ENHANCED PHOSPHATE PRODUCTS)

2.4.1 GENERAL

Cargill currently operates a GTSP plant at its Riverview facility under Operating Permit No. 0570008-014-AV. The existing GTSP plant consists of reactors, a granulator, a dryer, a cooler, and associated screening and material handling systems. This plant is also permitted for the production of DAP. However, it is not currently capable of DAP production without undergoing physical modifications.

The proposed modifications are intended to improve the quality of the existing GTSP product by providing additional cooling and screening, improve product granulation by modifying the existing burner unit and improve the overall plant evacuation system. In addition to the improvements, additional modifications will allow the opportunity to produce GTSP containing nitrogen and/or sulfur, ammoniated phosphates (such as MAP and DAP), and ammoniated phosphates containing sulfur. All products can additionally include micronutrients. Since the modified unit will be capable of producing products other than GTSP, it will be redesignated as the Enhanced Phosphate Products (EPP) plant.

2.4.2 PROCESS DESCRIPTION

Cargill is proposing to add additional EPP product cooling capacity. The cooling system will take in ambient air and, utilizing a system comprised of a chiller, compressor, condenser, and refrigerant, will provide chilled air to the existing rotary cooler while providing heated air to the burner in the dryer.

The proposed modifications will also include changes to the existing rotary cooler and product screening systems, addition of a transfer pump at the existing sulfur tanks in the molten sulfur handling system, addition of a sulfur feed tank (50,000 gal) at the EPP plant,

replacement of the existing reactor-granulator-cooler-equipment vents (RGCV) and dryer primary venturi scrubbers with new units and other miscellaneous modifications as necessary to achieve the production and product quality goals.

Cargill is proposing to additionally produce phosphate products containing sulfur and/or nitrogen and ammoniated phosphate products with and without sulfur. All products may include micronutrients. Up to 15 TPH of molten sulfur will be fed to the process for sulfur input. Sources of nitrogen may include urea, nitric acid, etc. Sources of ammonia can include gaseous or liquid ammonia and ammonium sulfate.

A flow diagram of the existing GTSP plant is presented in Figure 2-8. The flow diagram of the modified EPP plant is shown in Figure 2-9.

The GTSP plant is currently permitted for a maximum production rate of 92 TPH of GTSP, with a maximum annual average heat input rate for the rotary dryer of 60.0 million British thermal units (MMBtu) per hour. The proposed maximum production rate is 92 TPH for GTSP products and 100 TPH for phosphate products containing nitrogen (such as MAP and DAP). The new burner in the rotary dryer will have a maximum heat input rate of 80 MMBtu per hour (monthly average) and will continue to be fired primarily with natural gas with No. 2 fuel oil as a back-up. No. 2 fuel oil will be used for less than 400 hours per year (hr/yr).

2.4.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

A new RGCV venturi scrubber, followed by the existing RGCV tailgas scrubber, will control emissions from the reactors, granulator, cooler, and various other miscellaneous equipment vents. A new venturi scrubber, followed by the existing packed tower tailgas scrubber, will control emissions from the dryer. The new primary venturi scrubbers will utilize recirculating process water or phosphoric acid as the scrubbing liquid depending on the product being manufactured.

The proposed emission limits for the EPP plant in GTSP production mode are 0.13 lb/ton of product, 12.0 lb/hr, 52.56 TPY for PM/PM_{10}, and 0.058 lb/ton of P_2O_5 input, 2.45 lb/hr, and 10.75 TPY for F. The proposed emission limits for the EPP plant when manufacturing ammoniated phosphates are 0.08 lb/ton product, 8.0 lb/hr, 35.0 TPY for PM/PM_{10}, and 0.041 lb/ton of P_2O_5 input, 2.1 lb/hr, and 9.2 TPY for F. The proposed modifications will not result in emissions above the current allowable rates.

A summary of pollution control equipment and current and proposed allowable emission rates for the EPP plant are presented in Table 2-5. The table details the existing and proposed control equipment and allowable emission rates for PM, PM_{10}, and F. Maximum future emissions due to fuel combustion in the dryer are presented in Table 2-6. Maximum estimated emissions from the new molten sulfur storage tank are presented in Appendix B. Table 2-2 summarizes the actual emissions from the calendar years 1999-2000 (refer to Appendix A).

2.4.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for each emission source located at the existing and modified GTSP plant. All scrubber gases exhaust through a common stack.

2.5 ANIMAL FEED INGREDIENT PLANT

2.5.1 GENERAL

Cargill's AFI plant began operations in January 1996. The original AFI plant permit was issued on June 16, 1994 (Permit No. AC29-242897) and was amended on January 12, 1996, with the issuance of Air Construction Permit No. 0570008-002-AC. The purpose of this amendment was to update the design data for the plant. The original plant capacity was 480 TPD and 150,000 TPY of AFI, based on two acid defluorination batch tanks and one granulation area.

In early 1996, Cargill submitted an application to expand the AFI plant, consisting of adding a third acid defluorination batch tank and a second granulation train. This expansion,

permitted under Air Construction Permit No. 0570008-013-AC issued on June 12, 1997, increased the AFI production capacity to 1,160 TPD (580 TPD for each granulation area) and 300,000 TPY. Subsequently, Cargill installed a third acid defluorination tank, but did not construct the second granulation train.

In December 1998, Cargill submitted a construction permit application to increase the production rate of the existing granulation train from 580 to 770 TPD AFI. The requested increase in production was attained through implementing minor modifications to the existing granulation train (i.e., the second granulation train was not added). Air Construction Permit No. 0570008-028-AC for this modification was issued on June 9, 1999.

In April 2000, Cargill proposed to add a second AFI granulation train (dryer, pug mill, and cooler/classifier) with a production capacity of 281,050 TPY of AFI. Construction of the second AFI granulation train was never started and the permit application was withdrawn. The AFI plant is currently permitted to produce 770 TPD and 281,050 TPY of granular AFI. Cargill withdrew this permit application on January 24, 2001.

Cargill is now proposing to modify the existing AFI plant. The plant will be redesigned to produce 394,200 TPY or 1,080 TPD of granular AFI product.

2.5.2 PROCESS DESCRIPTION

The granulation plant can produce two types of animal feed phosphate: dicalcium phosphate (DCP) and monocalcium phosphate (MCP). PFS is defluorinated and mixed with limestone to produce DCP or MCP. The ratio of limestone to PFS determines which product is produced. After mixing, the products are combined with recycle material in a pug mill. The pug mill discharges into a dryer. The solids are discharged from the dryer to the solids handling section of the granulation plant where the product is classified, cooled, and de-dusted. Product material is then transferred to bulk storage where it is subsequently loaded into trucks or railcars. The defluorination process can be operated in either a continuous or batch process. The process operations of the existing and proposed modifications to the

plant are described in the following sections. Flow diagrams of the existing and modified plants are presented in Figures 2-10 and 2-11, respectively.

2.5.2.1 Acid Defluorination

The defluorination area produces PFS that is low in fluorine content. PFS is defluorinated in a continuous or batch air stripping process. Currently, when operating with the continuous defluorination process, phosphoric acid flows through a series of two or three tanks. The acid is defluorinated by adding a silica source [diatomaceous earth (DE)] and stripping silicon tetrafluoride (SiF_4). Prior to this process, the DE is pneumatically unloaded from truck or railcars and conveyed to the defluorination process. The defluorinated PFS is pumped to a storage tank and used in the granulation process or loaded into trucks as defluorinated PFS for animal feed. Cargill is proposing to add a fourth acid defluorination tank as part of this project.

2.5.2.2 Granulation Process

The granulation process consists of a reaction step and a drying step. The defluorinated PFS is reacted with limestone to produce calcium phosphate. Ground limestone is pneumatically unloaded from trucks into a bulk storage silo adjacent to the granulation plant area. A pneumatic conveyer transfers limestone to a bin in the granulation plant building. Limestone is metered into a mixer where it reacts with the PFS to form MCP or DCP. The PFS/limestone slurry mixture is fed into the pug mill with a stream of recycle material consisting of product and fines material. The pug mill discharges into the rotary dryer. Heated air is supplied from a separate combustion chamber fueled by natural gas. Provisions are made to use No. 2 fuel oil as a stand-by fuel in case of natural gas interruption. No. 2 fuel oil will be used for less than 400 hr/yr. Dry solids discharge from the dryer to the solids handling section.

2.5.2.3 Solids Handling

The solids handling section of the granulation plant receives the raw product discharged from the dryer and screen and classifies, cools, and de-dusts the materials. The dryer elevator discharges material onto screens that separate the material into oversize, product,

and fines streams. Oversize material is sent to milling equipment and undersized material is sent to recycle in the granulation process. Some product size material is fed to recycle to maintain a constant level of recycle. The balance of product size material discharges to a fluid bed classifier/cooler.

Material from the fluid bed cooler is sent by a covered belt conveyor to bulk storage. AFI will be stored in up to eight silos (five existing and up to three new). The products will be loaded out to both trucks and railcars. Railcar and truck loading facilities already exist, and an additional truck loading station will be added. The silos and load-out systems are equipped with ventilation systems and a baghouse to control particulate emissions.

Loaded railcars can be sent to the dock area and unloaded in an existing partially enclosed, bottom-dump railcar hopper. The unloaded material is then loaded onto ships via a ship loader.

2.5.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

Various scrubbers, cyclones, and baghouses control potential emissions from process equipment and product storage and handling operations. Cyclones and a wet scrubber are used to control PM emissions from the dryer and pug mill. Baghouses are used to control dust emissions from equipment in the plant and storage and handling operations. The pollution control equipment of the proposed plant is described in the following sections.

2.5.3.1 DE Hopper and Limestone Silo

The DE silo baghouse will not be modified as part of this project. The limestone silo will also not be modified; however, a new baghouse will replace the existing baghouse to increase loading rates.

2.5.3.2 Defluorination Area

Two new scrubbers will be added in the defluorination area to replace the existing packed cross-flow scrubber. Air from defluorination tanks and the defluorinated acid storage tank will be scrubbed in a venturi scrubber that removes PM and F. The gases will then pass

through a new packed cross-flow scrubber to remove additional F emissions. The packed scrubber contains three packed stages and a de-mister stage. Pond water is used as the scrubbing media and is returned to the existing plant process pond cooling system.

2.5.3.3 Granulation Plant

Equipment in the granulation plant will be vented through equipment designed to remove PM from the gas stream before venting to the atmosphere. During manufacture of the AFI, the only raw materials used are limestone and defluorinated acid; thus, fluorine emissions from the process equipment are insignificant. The granulation plant dryer gases are sent through a high-efficiency cyclone system to recover solids materials, and then through a venturi scrubber. Gases from the pug mill are also vented to the venturi scrubber. The exhaust gases from the granulation plant dryer and pug mill will be sent to the existing stack.

The screens, mills, cooler, classifier, and material-handling equipment evacuation will be sent through a high-efficiency cyclone system to recover solids materials and then through a new baghouse filter. This gas stream currently is sent through the venturi scrubber controlling the reactor, pug mill, granulator, and dryer. These gases will be sent to a new stack adjacent to the granulation plant building.

2.5.3.4 Materials Storage and Loading System

A ventilation system and baghouse filter is used to control PM emissions from the AFI product storage and loading operations. Currently, there are five storage silos. Up to three new AFI storage silos will be added. The existing storage and load-out baghouse will be used for these operations.

A truck loading station will be added adjacent to the existing truck loading station. The system will consist of an evacuated telescoping spout to minimize fugitive emissions.

The pollution control equipment for the proposed project will be equivalent in design to the existing control equipment. A summary of pollution control equipment and allowable

emission rates for the existing and proposed AFI plant are presented in Table 2-7. The table lists allowable emission rates for F, PM, and PM_{10}. Future potential combustion-related emissions are presented in Table 2-8. Future potential PM/PM_{10} emissions from the AFI railcar unloading operation are presented in Appendix B. Table 2-2 summarizes the actual emissions from the calendar years 1999-2000 (also refer to Appendix A).

2.5.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for each emission source located at the existing AFI plant. These sources include the new defluorination area venturi scrubber and new packed-cross flow scrubber, the existing granulation venturi scrubber, the equipment baghouse, the existing DE silo baghouse, the limestone silo baghouse, and the existing AFI product load-out baghouse.

2.6 NO. 5 DAP PLANT

2.6.1 GENERAL

Cargill operates the No. 5 DAP plant at its Riverview facility. The No. 5 DAP plant is currently operating under Operating Permit No. 0570008-014-AV, issued April 28, 1999. The No. 5 DAP plant consists of a reactor, granulator, dryer, screens and mills, a cooler, and associated equipment.

Cargill is proposing to modify the No. 5 DAP plant to improve the energy efficiency of the plant by utilizing waste heat to vaporize some or all of the ammonia fed to the DAP plant and the adjacent Nos. 3 and 4 MAP plants. The project also intends to enhance the chemical and physical characteristics of the product by improving the granulation/reaction conditions.

2.6.2 PROCESS DESCRIPTION

In the DAP manufacturing process, phosphoric acid and anhydrous ammonia are reacted in a sealed reaction tank. Ammonia is then further added to the ammoniated acid in a rotary reactor-granulator. The granulated, unsized DAP is then dried in a rotary dryer. The dryer is fired by natural gas as the primary fuel and by No. 2 fuel oil as the backup fuel.

The dried DAP material is sized and screened, and the oversized and undersized material is recycled back to the granulator. The product is then cooled, screened, and sent to storage.

The proposed project will include the addition of an ammonia vaporizer, a water circulation system to transfer heat from the evacuation duct gases to the vaporizer, a preneutralizer tank, an ammonia recovery spray duct and separator with associated pumps and tanks, a pipe reactor for all or a portion of the granulator feed slurry, and other miscellaneous changes as necessary to achieve the desired production and product quality goals. Excess ammonia vapor from the DAP vaporizer will be piped to the Nos. 3 and 4 MAP plants to displace ammonia vaporized there using steam.

The plant is currently permitted to produce 156.6 TPH of DAP (on a dry basis) with a maximum process input rate of 73.5 TPH of P_2O_5 (on a daily average basis). The proposed modifications to the No. 5 DAP plant will not result in an increase in the maximum production rates. Flow diagrams of the existing and future No. 5 DAP plant are presented in Figures 2-12 and 2-13.

2.6.3 POLLUTION CONTROL EQUIPMENT AND AIR EMISSIONS

The No. 5 DAP plant currently utilizes five scrubbers to control emissions. Evacuated air from the reactor and granulator is vented to the "RG" venturi scrubber. This air stream is then vented to the RG/cooler/equipment vents packed tailgas scrubber (the "RGCE" scrubber). Emissions from the cooler and equipment vents are evacuated through the cooler/equipment vents venturi scrubber, and then also through the RGCE tailgas scrubber. Emissions from the dryer are controlled by the dryer venturi scrubber and then the dryer tailgas scrubber. Both the RGCE tailgas scrubber and the dryer tailgas scrubber are routed to a common plant stack.

The proposed modifications to the No. 5 DAP plant will include an improved ammonia recovery system, the addition of a vaporizer for heat recovery located between the RG scrubber and the RGCE tailgas scrubber and other miscellaneous modifications necessary to achieve the desired production and product quality goals.

The current maximum allowable emission rates for the No. 5 DAP plant are 12.8 lb/hr or 56.0 TPY of PM/PM_{10}, 12.7 lb/hr or 2.6 TPY of SO_2, and 3.3 lb/hr or 14.5 TPY of F. The proposed modifications to the No. 5 DAP plant will not result in an increase in the allowable emission rates.

A summary of pollution control equipment and allowable emission rates for the No. 5 DAP plant are presented in Table 2-9. The table details the existing and proposed control equipment and the allowable emission rates for PM, PM_{10}, F, and SO_2. Maximum future emissions due to fuel combustion in the dryer are presented in Table 2-10. Table 2-2 summarizes the actual emissions from the calendar years 1999-2000 (refer to Appendix A).

2.6.4 STACK DATA

Stack geometry and operating data are presented in Table 2-3 for each emission source located at the existing and modified No. 5 DAP plant. All scrubber gases exhaust through a common stack.

2.7 AFFECTS ON OTHER EMISSION UNITS

Due to the proposed modifications to the existing facility, several other emission units will potentially be affected (i.e., increased production rates or actual emission rates). The following sections describe the other emission units at Cargill Riverview and the potential to be affected by the proposed modifications.

2.7.1 NO. 7 SULFURIC ACID PLANT

The No. 7 Sulfuric Acid plant will not be modified as part of the proposed project, nor will it be affected by this project.

2.7.2 NOS. 3 AND 4 MAP PLANTS

The Nos. 3 and 4 MAP plants have recently undergone permitting including PSD review and a BACT determination by the Department (DEP File No. 0570008-026-AC, PSD-FL-251).

No changes are planned for these units except as under that permit. Therefore, there is no expected effect on this emission unit as part of this project.

2.7.3 NOS. 5, 7, AND 9 ROCK MILL AND GTSP (EPP) GROUND ROCK HANDLING

The Nos. 5, 7, and 9 Rock Mill receive wet or dry phosphate rock, and dry and grind the rock for use in the EPP plant. The unit has four baghouses: one for each rock mill and one that controls the ground rock storage silo. The ground rock is then transferred to the EPP ground rock storage bin, which also has a baghouse dust collector. Since the EPP plant is affected by the proposed modification, the rock mills and the EPP ground rock bin will also be affected. Presented in Table 2-2 are the current actual emissions from the rock mills and storage bin (1999-2000 average; refer to Appendix A). Future potential emissions from the mills, ground rock storage silo, and EPP ground rock bin are presented in Appendix B.

2.7.4 MATERIAL HANDLING SYSTEM

The Material Handling System is used to convey DAP from the DAP storage building, MAP from the MAP storage building, and GTSP from the EPP storage buildings to the ship loader at the dock. AFI is currently sent to the material handling area on railcar and can be loaded onto ships. Since the proposed modifications may result in increased GTSP and ammoniated phosphate production (through the EPP plant), and will increase AFI production, potential throughput and subsequent PM/PM_{10} emissions for the Material Handling System may increase. Current actual emissions from the Material Handling System are presented in Table 2-2 (also refer to Appendix A). Future potential emissions from the Material Handling System are based on the current Title V permit: 34.62 TPY PM/PM_{10}.

2.7.5 GTSP (EPP) STORAGE BUILDINGS

The products from the EPP plant (GTSP, GTSP with sulfur and nitrogen, ammoniated phosphates, etc.) will be transferred to the EPP storage buildings. From there, the products will be transferred to the Material Handling System for ship or railcar loadout, or can be loaded out into trucks. Since the EPP plant will be producing non-GTSP the actual Fluoride emissions from the storage buildings can be expected to decrease. However, for worst-case

fluoride estimates, it is assumed that the EPP plant will produce only GTSP. Current actual F emissions from the storage buildings are shown in Table 2-2 (refer to Appendix A). Future potential F emissions are based on the current Title V permit and are as follows: 9.92 lb/hr and 43.45 TPY from the two buildings combined.

2.7.6 GTSP (EPP) TRUCK LOADING STATION

Following storage in the EPP storage buildings, the GTSP and ammoniated phosphate products may be loaded into trucks at the EPP truck loading station. The increase in production at the EPP plant may result in an increase in operation of the EPP truck load-out station. The station may operate up to 8,760 hr/yr in the future. Current actual emissions are presented in Table 2-2 (refer to Appendix A). Future potential emissions are presented in Appendix B (includes baghouse and fugitive emissions).

Table 2-1. Summary of Pollution Control Equipment and Emission Rates for the Nos. 8 and 9 Sulfuric Acid Plants

Source	EU ID	Control Equipment	Maximum Capacity (100% H_2SO_4)	Operating Hours	SO_2 Allowable Emission Rate				SAM Allowable Emission Rate			NO_X Average Emission Rate	
					lb/ton H_2SO_4	3-hr (lb/hr)	24-hr (lb/hr)	Annual (TPY)	lb/ton H_2SO_4	Hourly (lb/hr)	Annual (TPY)	lb/ton H_2SO_4	Annual (TPY)
Existing Plants													
No. 8 H_2SO_4	005	Double Absorption System, Mist Eliminator	2,700 TPD	8,760	4	450.0	450.0	1,971.0	0.15	16.88	73.91	0.12	59.13
No. 9 H_2SO_4	006	Double Absorption System, Mist Eliminator	3,400 TPD	8,760	4	566.7	566.7	2,482.0	0.15	21.25	93.08	0.12	74.46
		Combined Total=	5,700 TPD			950.0	950.0	4,161.0		35.63	156.04		124.83
Modified Plants													
No. 8 H_2SO_4	005	Double Absorption System, Mist Eliminator	2,700 TPD	8,760	4	450.0	--	--	0.12	13.50	59.13	0.12	59.13
					3.5	--	393.8	1,724.6					
No. 9 H_2SO_4	006	Double Absorption System, Mist Eliminator	3,400 TPD	8,760	4	566.7	--	--	0.12	17.00	74.46	0.12	74.46
					3.5	--	495.8	2,171.8					
		Combined Total=	6,100 TPD			1,016.7	889.6	3,896.4		30.50	133.59		133.59

Notes:
SO_2 = Sulfur Dioxide
SAM = Sulfuric Acid Mist
NO_X = Nitrogen Oxides

Table 2-2. Average Actual Emissions for 2000[b] and 1999[c]--Cargill Riverview

Source Description	EU ID	Pollutant Emission Rate (TPY)								
		SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage/Handling Facility										
Molten Sulfur Storage--Tank No. 1		[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Molten Sulfur Storage--Tank No. 2	064	0.56	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Tank No. 3	065	0.56	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Pit No. 7	066	0.03	--	--	0.22	0.22	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 8	067	0.03	--	--	0.21	0.21	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 9	068	0.03	--	--	0.23	0.23	0.02	0.01	--	--
Molten Sulfur Storage--Ship Unloading	069	0.34	--	--	0.44	0.44	0.24	0.17	--	--
Molten Sulfur Storage--Truck Loading Stn.	074	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Total		**1.55**	--	--	**1.74**	**1.74**	**1.10**	**0.74**	--	--
B. No. 8 Sulfuric Acid Plant	005	**1,250.74**	**44.05**	--	--	--	--	--	**14.68**	--
C. No. 9 Sulfuric Acid Plant	006	**1,525.82**	**51.23**	--	--	--	--	--	**13.43**	--
D. Rock Mills		--	--	--	--	--	--	--	--	--
No. 5 Rock Mill	100	0.03	4.80	4.03	2.29	2.29	0.27	--	--	--
No. 9 Rock Mill	101	0.03	4.75	3.99	1.64	1.64	0.26	--	--	--
No. 7 Rock Mill	106	0.01	1.61	1.35	0.09	0.09	0.09	--	--	--
Ground Rock Handling Storage System	034/102	--	--	--	0.09	0.09	--	--	--	--
Total		**0.07**	**11.15**	**9.37**	**4.10**	**4.10**	**0.62**	--	--	--
E. Phosphoric Acid Plant	073	--	--	--	--	--	--	--	--	**3.92**
F. GTSP Plant	007	0.11	18.05	15.16	16.66	16.66	0.99	--	--	3.62
GTSP Ground Rock Handling Baghouse	008	--	--	--	3.80	3.80	--	--	--	--
GTSP Storage Building No. 2	070	--	--	--	--	--	--	--	--	19.89
GTSP Storage Building No. 4	071	--	--	--	--	--	--	--	--	19.01
GTSP Truck Loadout Baghouse	072	--	--	--	0.01	0.00	--	--	--	--
GTSP Truck Loadout Fugitive Emissions		--	--	--	0.03	0.01	--	--	--	--
Total		**0.11**	**18.05**	**15.16**	**20.50**	**20.47**	**0.99**	--	--	**42.52**
G. AFI Plant No. 1	078	0.04	5.71	4.80	17.46	17.46	0.31	--	--	1.79
DE Hopper Baghouse	079	--	--	--	0.02	0.02	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	0.06	0.06	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	0.64	0.64	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.19	0.04	--	--	--	--
Total		**0.04**	**5.71**	**4.80**	**18.37**	**18.22**	**0.31**	--	--	**1.79**
H. No. 5 DAP Plant		**0.02**	**3.91**	**3.29**	**8.67**	**8.67**	**0.22**	--	--	**8.37**
I. Material Handling System										
West Baghouse Filter	051	--	--	--	0.64	0.64	--	--	--	--
South Baghouse	052	--	--	--	0.57	0.57	--	--	--	--
Vessel Ldg. System--Twr. Baghouse	053	--	--	--	0.60	0.60	--	--	--	--
Building No. 6 Belt to Conveyor No. 7	058	--	--	--	0.32	0.32	--	--	--	--
Conveyor No.7 to Conveyor No. 8	059	--	--	--	0.64	0.64	--	--	--	--
Conveyor No.8 to Conveyor No. 9	060	--	--	--	0.64	0.64	--	--	--	--
Railcar Unloading of AFI Product		--	--	--	0.17	0.03	--	--	--	--
E. Vessel Ldg. Facility-Shiphold/Chokefeed	061	--	--	--	0.25	0.25	--	--	--	--
Total		--	--	--	**3.83**	**3.69**	--	--	--	--
Total Avg. Actual Emission Rates--2000 & 1999		**2,778.35**	**134.11**	**32.61**	**57.21**	**56.89**	**3.24**	**0.74**	**28.11**	**56.60**

[a] Emission unit did not operate for these years.

[b] As calculated.

[c] Emissions from the Annual Operating Report.

Table 2-3. Stack and Vent Geometry and Operating Data for the Modified Emissions Units -- Cargill Riverview

Source	EU ID	Stack/Vent Release Height (ft)	Stack/Vent Diameter (ft)	Actual Exhaust Gas Flow Rate ACFM	SCFM	DSCFM	Exhaust Gas Exit Temperature (Deg. F)	Exhaust Gas Water Vapor Content (%)	Exhaust Gas Velocity (ft/sec)
EXISTING OPERATIONS									
No. 8 Sulfuric Acid Plant	005	150	8.00	118,900	100,400	100,400	165	0.00%	39.4
No. 9 Sulfuric Acid Plant	006	150	9.00	159,600	137,000	137,000	155	0.00%	41.4
Phosphoric Acid Plant--Prayon Reactor/No. 1 Filtration Unit[a]	073	110	4.00	18,300	17,102	16,200	105	5.13%	24.2
Phosphoric Acid Plant--No. 1 Filtration Unit[a]/No. 2 Filtration Unit/Dorrco Reactor	073	110	4.83	38,900	35,720	33,400	115	6.48%	35.3
Phosphoric Acid Plant--No. 3 Filtration Unit	073	115	4.92	57,100	54,816	52,700	90	3.92%	41.3
GTSP Plant Common Stack	007	126	8.00	171,700	153,138	138,900	132	9.30%	51.1
AFI Defluorination System/Granulation System	078	136	6.00	108,400	94,300	79,600	147	15.60%	63.9
AFI Diatomaceous Earth Hopper	079	64	1.50	600	580	518	90	10.00%	5.7
AFI Limestone Silo	080	85	1.50	800	770	691	90	10.00%	5.7
AFI Product Loadout	081	30	3.00	21,100	20,300	18,300	90	10.00%	49.5
No. 5 DAP Plant	055	133	7.00	140,600	125,400	109,600	132	12.60%	60.9
MODIFIED OPERATIONS									
No. 8 Sulfuric Acid Plant	005	150	8.00	129,400	109,300	109,300	165	0.00%	39.4
No. 9 Sulfuric Acid Plant	006	150	9.00	171,100	146,900	146,900	155	0.00%	41.8
Phosphoric Acid Plant--Prayon Reactor	073	110	4.00	20,900	19,531	18,500	105	5.13%	24.2
Phosphoric Acid Plant--Nos. 1 and 2 Filtration Units	073	110	4.83	45,000	41,322	38,600	115	6.48%	35.3
Phosphoric Acid Plant--Dorrco Reactor and New Digester	073	110	4.83	55,000	50,947	47,600	110	6.48%	50.0
Phosphoric Acid Plant--No. 3 Filtration Unit	073	115	4.92	57,100	54,816	52,700	90	3.92%	41.3
EPP Plant--Common Stack	007	126	8.00	237,000	211,378	179,700	132	15.00%	25.0
AFI Defluorination System	078	35	3.00	25,400	23,700	23,000	105	3.00%	61.0
AFI Granulation System (Reactor, Pug Mill, Granulator, Dryer)	--	136	6.00	109,400	94,700	90,000	150	5.00%	66.0
AFI Diatomaceous Earth Hopper	079	64	1.50	600	580	518	90	10.00%	5.7
AFI Milling Classification and Cooling Emission Equipment	--	85	5.00	56,000	51,000	50,000	120	2.00%	45.0
AFI Limestone Silo	080	85	3.00	3,500	3,400	3,100	90	10.00%	5.7
AFI Product Loadout	081	30	3.00	23,100	22,200	20,000	90	10.00%	49.5
No. 5 DAP Plant	055	133	7.00	148,000	132,000	115,400	132	12.60%	64.1

[a] No. 1 Filter can be vented to either the Teller scrubber or the Vescor scrubber.

Table 2-4. Summary of Pollution Control Equipment and Allowable Emission Rates for the Phosphoric Acid Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Maximum Process Rate (TPH P_2O_5)	Fluoride Allowable Emission Rate		
						lbs/ton P_2O_5 feed	lb/hr	TPY
Existing Phosphoric Acid Plant								
Prayon Reactor/No. 1 Filtration Unit[a]	073	Teller-Packed Scrubber	33,000 acfm	8,760	--	--	--	--
No. 1 Filtration Unit[a]/No. 2 Filtration Unit/ Dorrco Reactor	073	VESCOR Scrubber	57,000 acfm	8,760	--	--	--	--
No. 3 Filtration Unit	073	VESCOR Replica Scrubber	53,000 acfm	8,760	--	--	--	--
Total--Existing Plant	073			8,760	170[b]	0.0135	2.29	10.03
Modified Phosphoric Acid Plant								
Prayon Reactor	073	Teller-Packed Scrubber	33,000 acfm	8,760	--	--	--	--
Nos. 1 and 2 Filtration Units	073	VESCOR Scrubber (modified)	45,000 acfm	8,760	--	--	--	--
Dorrco Reactor and New Digester	073	Dorrco Scrubber (new)	55,000 acfm	8,760	--	--	--	--
No. 3 Filtration Unit	073	VESCOR Replica Scrubber	53,000 acfm	8,760	--	--	--	--
Total--Modified Plant	073			8,760	170[b]	0.0135	2.29	10.03

[a] No.1 Filter can be vented to either the Teller Scrubber on the Vescor scrubber.

[b] As maximum daily average.

Table 2-5. Summary of Pollution Control Equipment and Allowable Emission Rates for the GTSP/EPP Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Maximum Process Rate		PM/PM_{10} Allowable Emission Rate			Fluoride Allowable Emission Rate		
					TPH GTSP	TPH P_2O_5	lbs/ton Product	lb/hr	TPY	lb/ton P2O5 Input	lb/hr	TPY
Existing GTSP Plant												
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Venturi Scrubber	60,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Venturi Scrubber	100,000 acfm	8,760			--	--	--	--	--	--
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Tailgas Scrubber	60,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Tailgas Scrubber	100,000 acfm	8,760			--	--	--	--	--	--
Common Stack	007		160,000 acfm	8,760	92.00	42.32	0.24	21.60	94.60	--	3.45	15.10
Future EPP Plant												
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Venturi Scrubber (new)	110,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Venturi Scrubber (new)	115,000 acfm	8,760			--	--	--	--	--	--
Reactor, Granulator, Cooler, and Equipment Vents	007	RGCV Tailgas Scrubber	110,000 acfm	8,760			--	--	--	--	--	--
Dryer	007	Dryer Tailgas Scrubber	115,000 acfm	8,760			--	--	--	--	--	--
Common Stack --GTSP Mode	007		225,000 acfm	8,760	92.00	42.32	0.13	12.00	52.56	0.058	2.45	10.75
--MAP/DAP Mode	007		225,000 acfm	8,760	100.00	46.00	0.08	8.00	35.04	0.041	4.10	17.96

Table 2-6. Maximum Emission Rates Due to Fuel Combustion for the Dryer at the Future EPP Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	400	8,760
Maximum Heat Input Rate	10^6Btu/hr	80	80
Hourly Fuel Oil Usage[a]	10^3gal/hr	0.571	N/A
Annual Fuel Oil Usage	10^3gal/yr	228.400	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	scf/hr	N/A	80,000
Annual Natural Gas Usage	10^6scf/yr	N/A	701

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	40.54	8.11	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.048	0.21	--	--
Worse-Case Combination of Fuels		--	--	--	--	40.54	8.11
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	11.42	2.28	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	8.000	35.04	--	--
Worse-Case Combination of Fuels		--	--	--	--	11.42	35.04
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	2.855	0.571	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	6.720	29.43	--	--
Worse-Case Combination of Fuels		--	--	--	--	6.72	29.43
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.11	0.023	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.440	1.927	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.44	1.93

Footnotes:

Particulate matter emissions through the common plant stack are included in Table 2.5

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

Table 2-7. Summary of Pollution Control Equipment and Allowable Emission Rates for the AFI Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Fluoride Allowable Emission Rate lb/hr	Fluoride Allowable Emission Rate TPY	PM/PM_{10} PM/PM_{10} Allowable Emission Rate gr/dscf	PM/PM_{10} PM/PM_{10} Allowable Emission Rate lb/hr	PM/PM_{10} PM/PM_{10} Allowable Emission Rate TPY
Existing AFI Plant									
Defluorination System/AFI Granulation System (Reactor, Pug Mill, Granulator, and Dryer System)	078	Wet Scrubber/Venturi Scrubber	100,000 acfm	8,760	1.0	4.30	N/A	8.0	35.04
Diatomaceous Earth Hopper	079	Baghouse	518 dscfm	8,760	N/A	N/A	0.012	0.053	0.23
Limestone Silo	080	Baghouse	691 dscfm	8,760	N/A	N/A	0.012	0.071	0.31
AFI Product Loadout	081	Baghouse	18,280 dscfm	8,760	N/A	N/A	0.012	1.88	8.24
Total Emissions from the Exisiting AFI Plant					1.0	4.30		10.00	43.82
Modified AFI Plant									
Defluorination System	078	Packed Cross-Flow Scrubber (new)	25,400 acfm	8,760	1.0	4.38	N/A	N/A	N/A
AFI Granulation System (Reactor, Pug Mill, Granulator, and Dryer System)	--	Venturi Scrubber (new)	90,000 dscfm	8,760	N/A	N/A	N/A	8.00	35.04
Diatomaceous Earth Hopper	079	Baghouse	518 dscfm	8,760	N/A	N/A	0.012	0.053	0.23
Milling, Classification, and Cooling Equipment	--	Baghouse (new)	50,000 dscfm	8,760	N/A	N/A	0.012	5.14	22.53
Limestone Silo	080	Baghouse (new)	3,110 dscfm	8,760	N/A	N/A	0.012	0.32	1.40
AFI Product Loadout	081	Baghouse	20,000 dscfm	8,760	N/A	N/A	0.012	2.06	9.01
Total Emissions from the Modified AFI Plant					1.0	4.38		15.57	68.21

Table 2-8. Maximum Emission Rates Due to Fuel Combustion for the Dryer at the AFI Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	400	8,760
Maximum Heat Input Rate	10^6Btu/hr	50	50
Hourly Fuel Oil Usage[a]	10^3gal/hr	0.357	N/A
Annual Fuel Oil Usage	10^3gal/yr	143	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.050
Annual Natural Gas Usage	10^6scf/yr	N/A	438

		No. 2 Fuel Oil		Natural gas		Maximum Total Emission Rate	
Pollutant	AP-42 Emissions Factor[c]	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	25.357	5.071	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.030	0.131	--	--
Worse-Case Combination of Fuels		--	--	--	--	25.36	5.07
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	7.143	1.429	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	5.000	21.900	--	--
Worse-Case Combination of Fuels		--	--	--	--	7.14	21.90
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	1.786	0.357	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	4.200	18.396	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.20	18.40
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.071	0.014	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.275	1.205	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.28	1.20

Footnotes:

Particulate matter emissions rates through the common plant stack are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

Table 2-9. Summary of Pollution Control Equipment and Allowable Emission Rates for the No. 5 DAP Plant

Source	EU ID	Control Equipment	Design Capacity	Operating Hours	Maximum Process Rate (TPH P_2O_5)	Fluoride Emission Rate		PM/PM_{10} Emission Rate	
						lb/hr	TPY	lb/hr	TPY
Existing DAP Plant									
Reactor, Granulator, Cooler, and Equipment		RGCE Tailgas Scrubber	64,000 acfm	8,760	--	--	--	--	--
Dryer		Dryer Tailgas Scrubber	37,000 acfm	8,760	--	--	--	--	--
Reactor and Granulator		Venturi Scrubber	2,400 acfm	8,760	--	--	--	--	--
Cooler and Equipment		Venturi Scrubber	5,500 acfm	8,760	--	--	--	--	--
Dryer		Venturi Scrubber	4,900 acfm	8,760	--	--	--	--	--
Total--DAP Common Plant Stack	055		130,000 acfm	8,760	73.5	3.3	14.5	12.8	56.1
Modified DAP Plant									
Reactor, Granulator, Cooler, and Equipment		Tailgas Scrubber	126,000 acfm	8,760	--	--	--	--	--
Dryer		Tailgas Scrubber	55,000 acfm	8,760	--	--	--	--	--
Reactor and Granulator		Venturi Scrubber	acfm	8,760	--	--	--	--	--
Cooler and Equipment		Venturi Scrubber	acfm	8,760	--	--	--	--	--
Dryer		Venturi Scrubber	55,000 acfm	8,760	--	--	--	--	--
Total--DAP Common Plant Stack	055		172,000 acfm	8,760	73.5	3.3	14.5	12.8	56.1

Notes: DAP = Diammonium Phosphate

PM/PM_{10} = Particulate Matter/Particulate Matter with aerodynamic diameter less than or equal to 10 micrometers

Table 2-10. Maximum Emission Rates Due to Fuel Combustion for the Dryer at the No. 5 DAP Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	400	8,760
Maximum Heat Input Rate	10^6Btu/hr	40	40
Hourly Fuel Oil Usage[a]	10^3gal/hr	0.286	N/A
Annual Fuel Oil Usage	10^3gal/yr	114	N/A
Maximum Sulfur Content	Weight %	0.31	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.040
Annual Natural Gas Usage	10^6scf/yr	N/A	350

		No. 2 Fuel Oil		Natural gas		Maximum Total Emission Rate	
Pollutant	AP-42 Emissions Factor[c]	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	12.577	2.515	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.024	0.105	--	--
Worse-Case Combination of Fuels		--	--	--	--	12.58	2.52
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	5.714	1.143	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	4.000	17.520	--	--
Worse-Case Combination of Fuels		--	--	--	--	5.71	17.52
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	1.429	0.286	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	3.360	14.717	--	--
Worse-Case Combination of Fuels		--	--	--	--	3.36	14.72
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.057	0.011	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.220	0.964	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.22	0.96

Footnotes:

Particulate matter emissions rates through the common plant stack are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.31%.

[e] Based on methane comprised of 52% total VOC.

Figure 2-1
Site Location
Cargill Fertilizer, Inc. - Riverview Facility

Source: Golder, 2000.

0037650Y\F1\WP\Figure 2-1.doc (2/6/01)

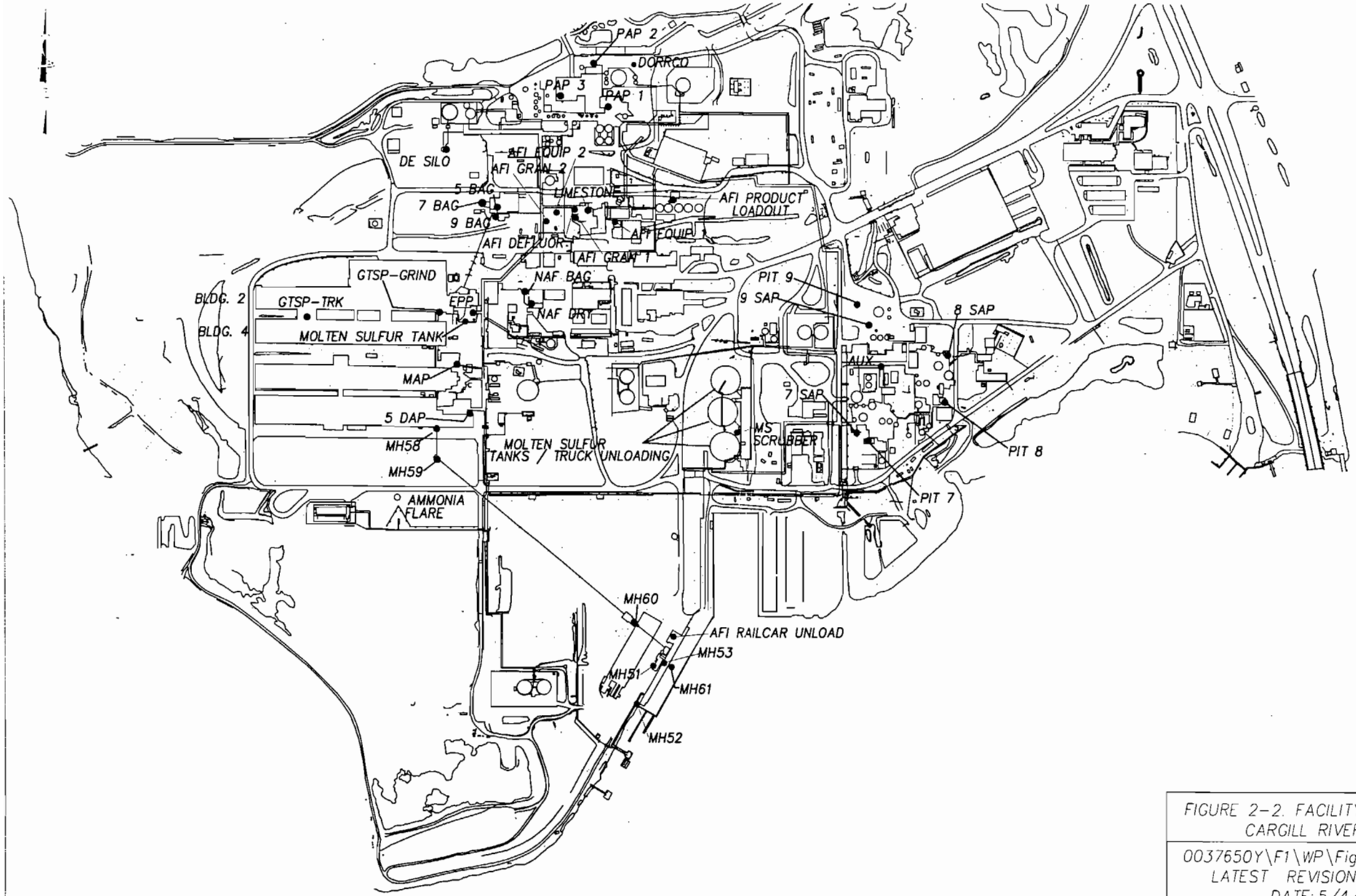
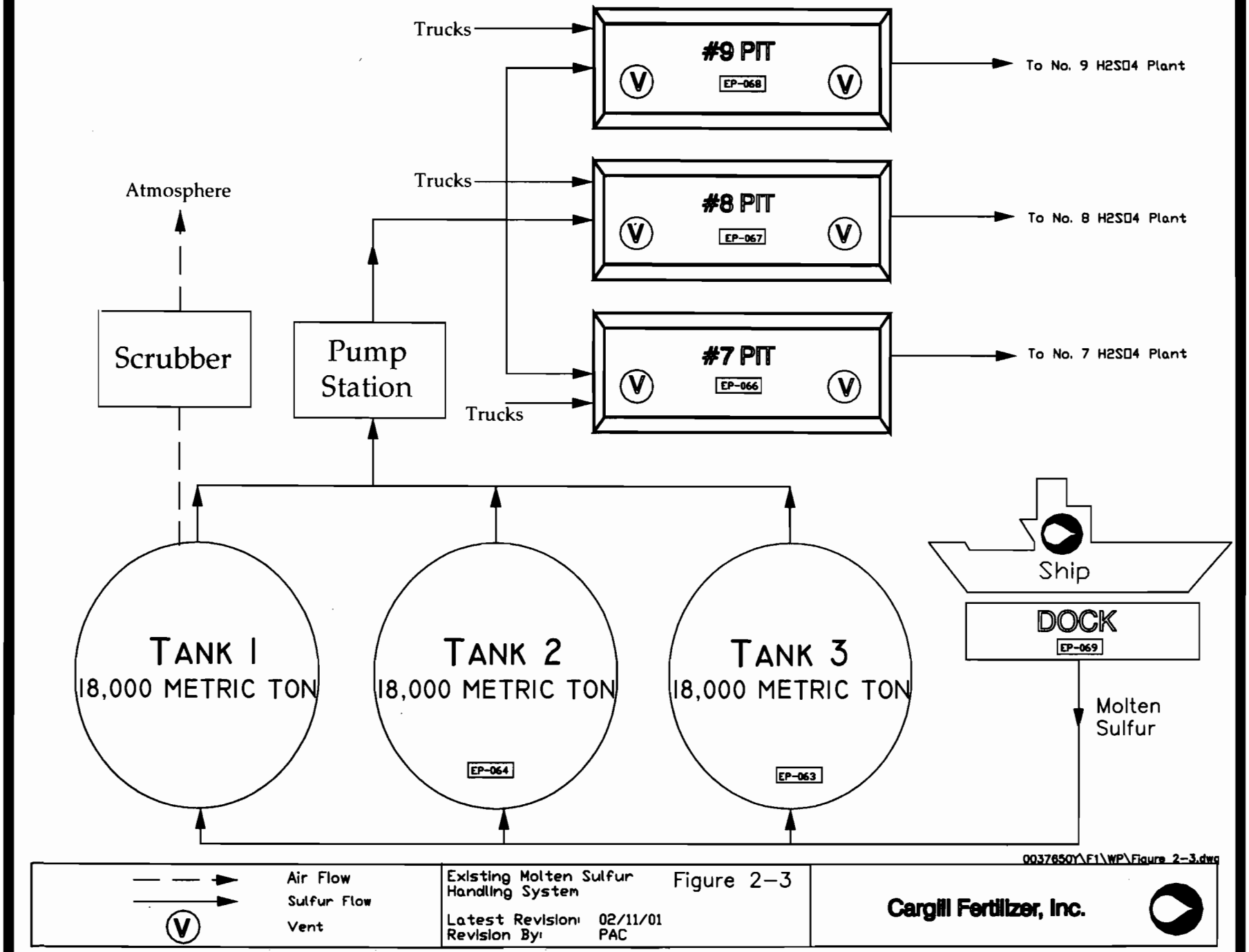
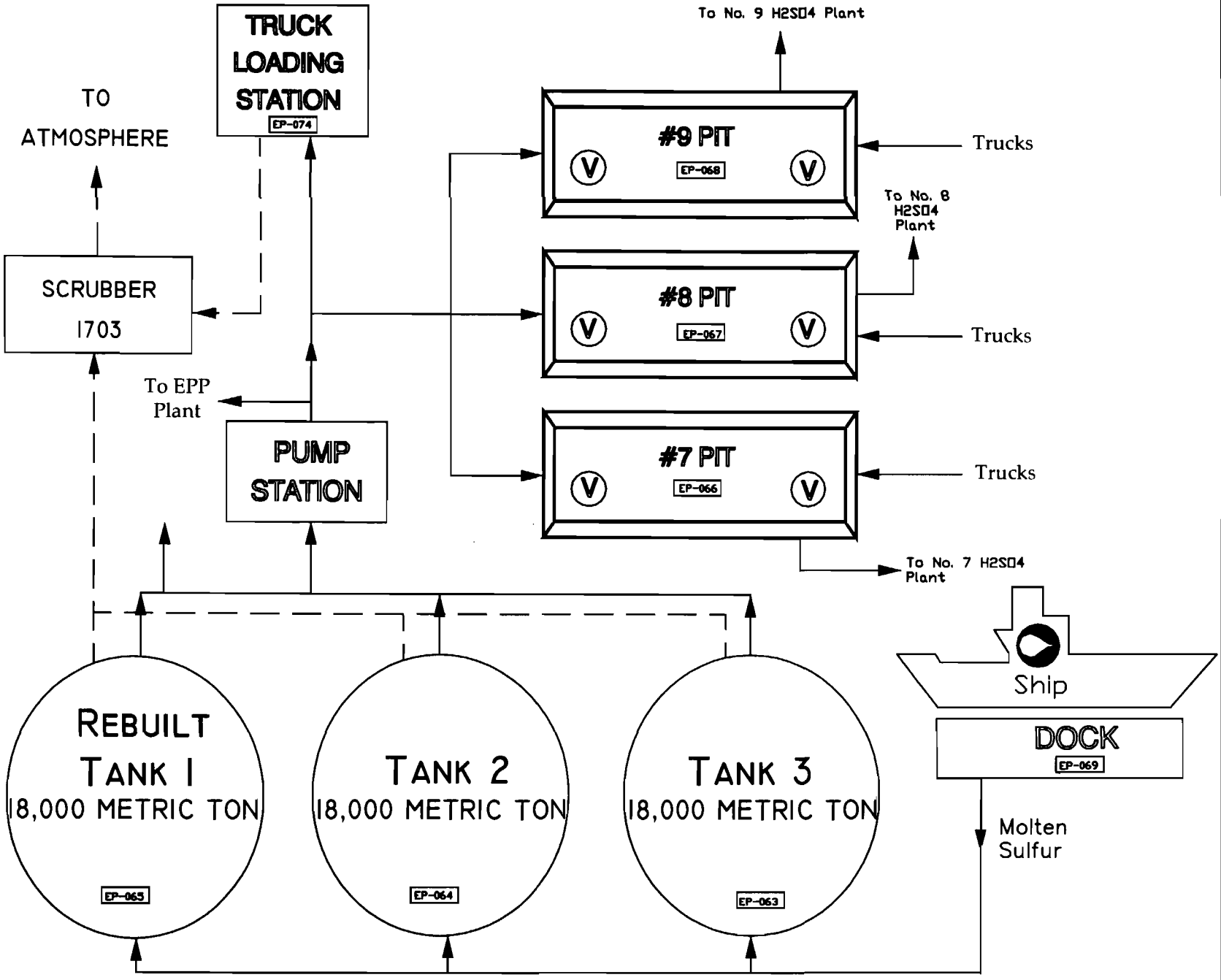
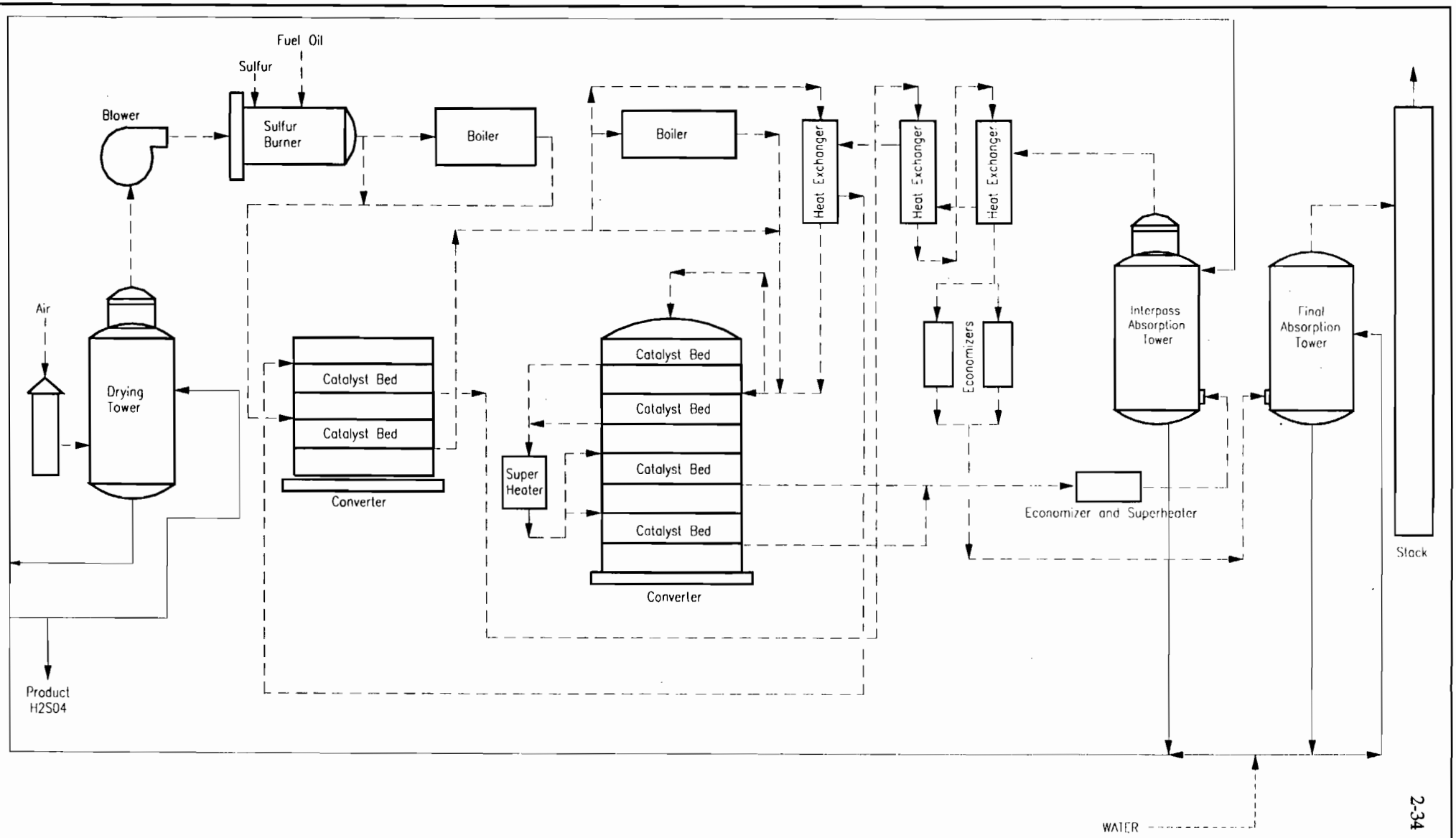


FIGURE 2-2. FACILITY PLOT PLAN
CARGILL RIVERVIEW

0037650Y\F1\WP\Figure 2-2.DWG
LATEST REVISION BY: FWH
DATE: 5/4/01


Trucks
#9 PIT
EP-068
To No. 9 H2SO4 Plant
Trucks
#8 PIT
EP-067
To No. 8 H2SO4 Plant
Atmosphere
Scrubber
Pump Station
Trucks
#7 PIT
EP-066
To No. 7 H2SO4 Plant
Ship
DOCK
EP-069
TANK 1
18,000 METRIC TON
TANK 2
18,000 METRIC TON
EP-064
TANK 3
18,000 METRIC TON
EP-063
Molten Sulfur
Air Flow
Sulfur Flow
Vent
Existing Molten Sulfur Handling System
Figure 2-3
Latest Revision 02/11/01
Revision By PAC
Cargill Fertilizer, Inc.
0037650Y\F1\WP\Figure 2-3.dwg


TRUCK LOADING STATION
EP-074
TO ATMOSPHERE
SCRUBBER 1703
To EPP Plant
PUMP STATION
To No. 9 H2SO4 Plant
#9 PIT
EP-068
Trucks
To No. 8 H2SO4 Plant
#8 PIT
EP-067
Trucks
#7 PIT
EP-066
Trucks
To No. 7 H2SO4 Plant
Ship
DOCK
EP-069
Molten Sulfur
REBUILT TANK 1
18,000 METRIC TON
EP-065
TANK 2
18,000 METRIC TON
EP-064
TANK 3
18,000 METRIC TON
EP-063
Air Flow
Sulfur Flow
Vent
Proposed Molten Sulfur Handling System
Figure 2-4
Latest Revision 2/11/01
Revision By PAC
Cargill Fertilizer, Inc. - Tampa, FL
0037650Y\F1\WP\Figure 2-4.dwg



2-34

Gas Flow

Sulfuric Acid Flow

Figure 2-5
Sulfuric Acid Plant
Process Flow Diagram
Cargill Riverview

EMISSION UNIT:	H_2SO_4 Plants
PROCESS AREA:	H_2SO_4 Production
FILENAME:	0037650Y\F1\WP\Figure 2-5.dwg
LATEST REVISION:	02/06/01 by MJA

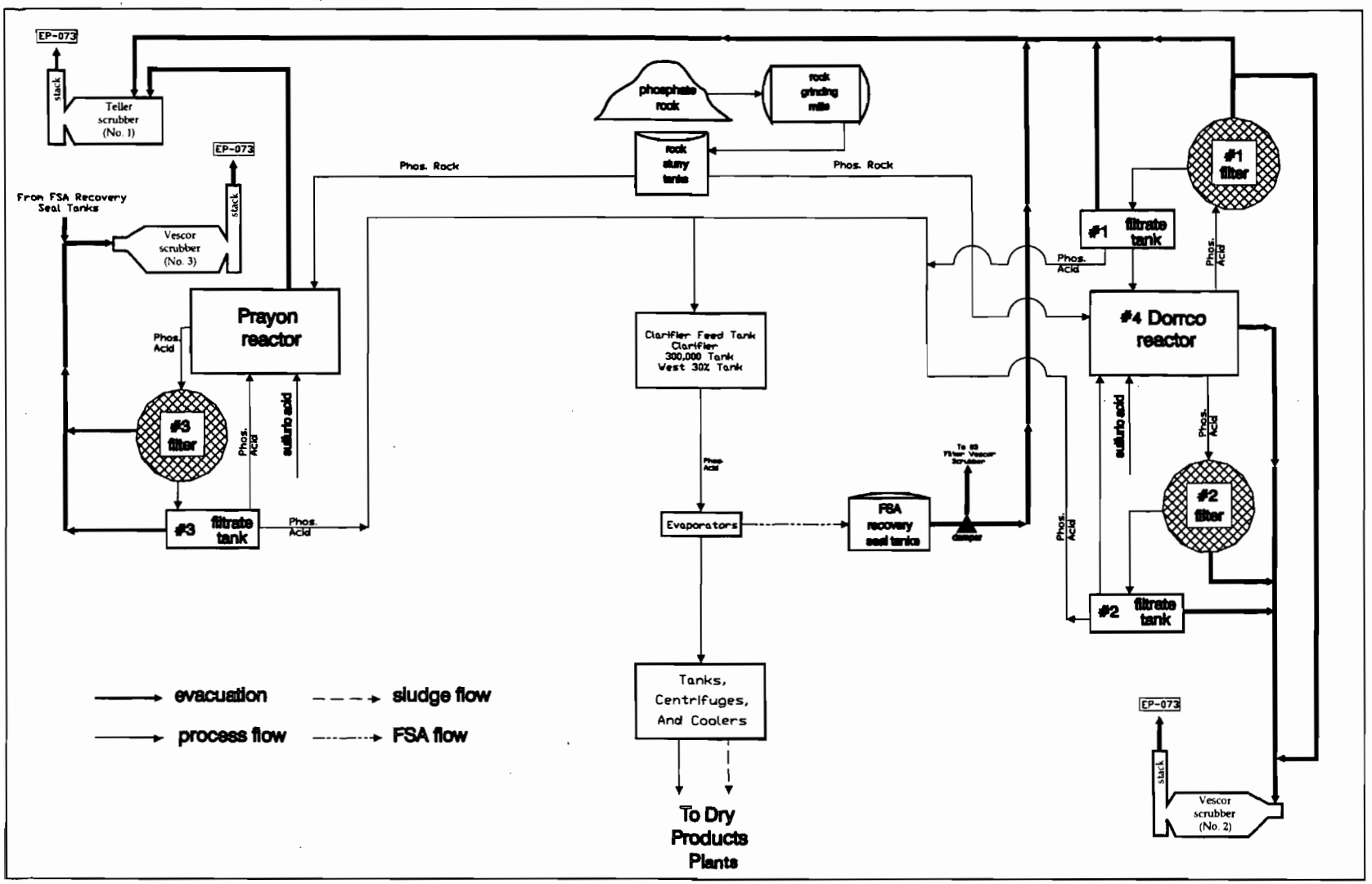


Figure 2–6. Existing Phosphoric Acid Plant Process Flow Diagram Cargill Riverview	EMISSION UNIT: PHOSPHORIC ACID PLANT
	PROCESS AREA: PHOSPHORIC ACID PRODUCTION
	FILENAME: 0037650Y\F1\WP\Figure 2–6.dwg
	LATEST REVISION: 02/11/01 by PAC

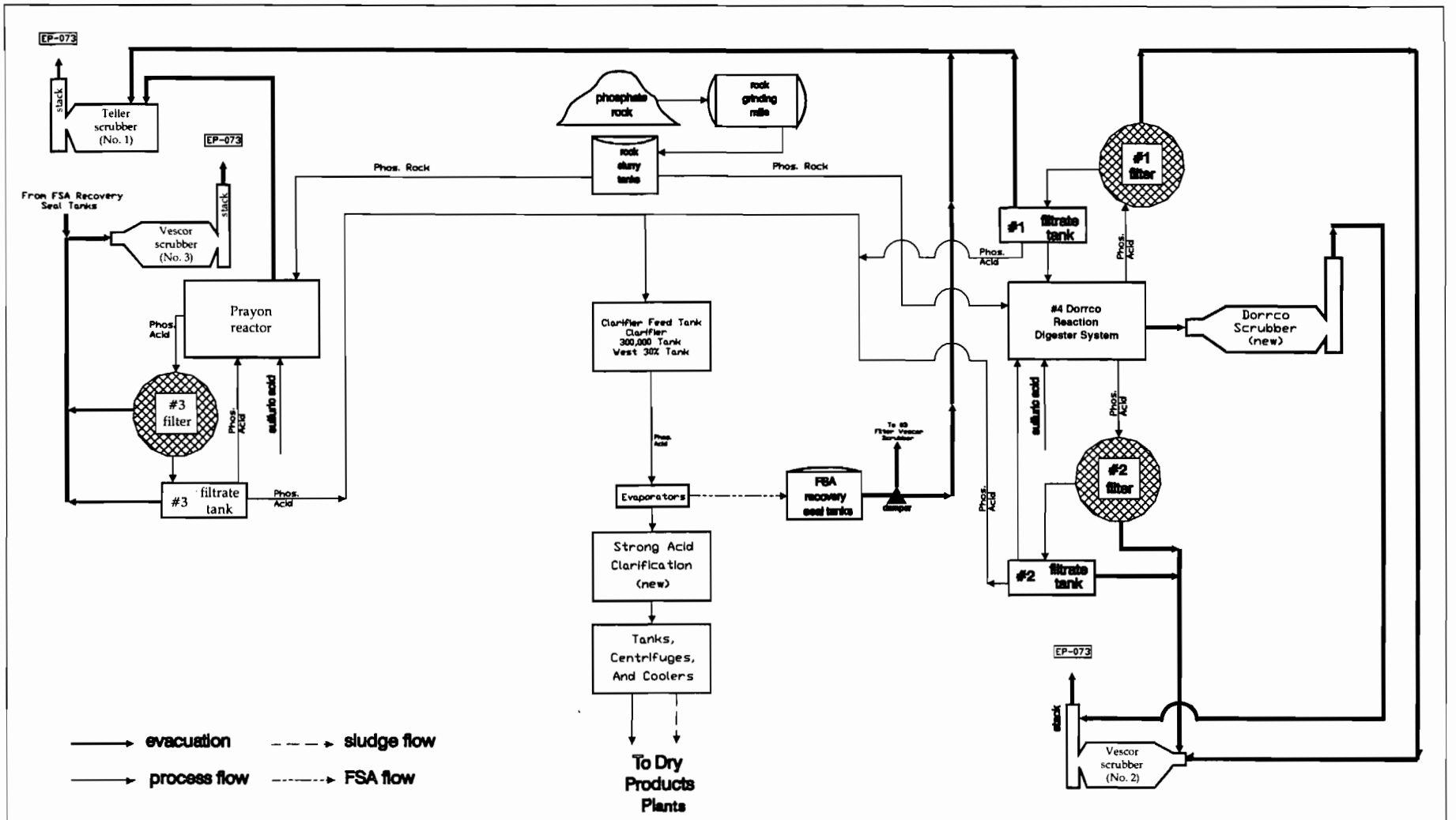


Figure 2–7 – Future Phosphoric Acid Plant Process Flow Diagram Cargill Riverview

EMISSION UNIT:	FACILITY WIDE
PROCESS AREA:	
FILENAME:	0037650Y\F1\WP\Figure 2–7.dwg
LATEST REVISION:	02/11/01 by PAC

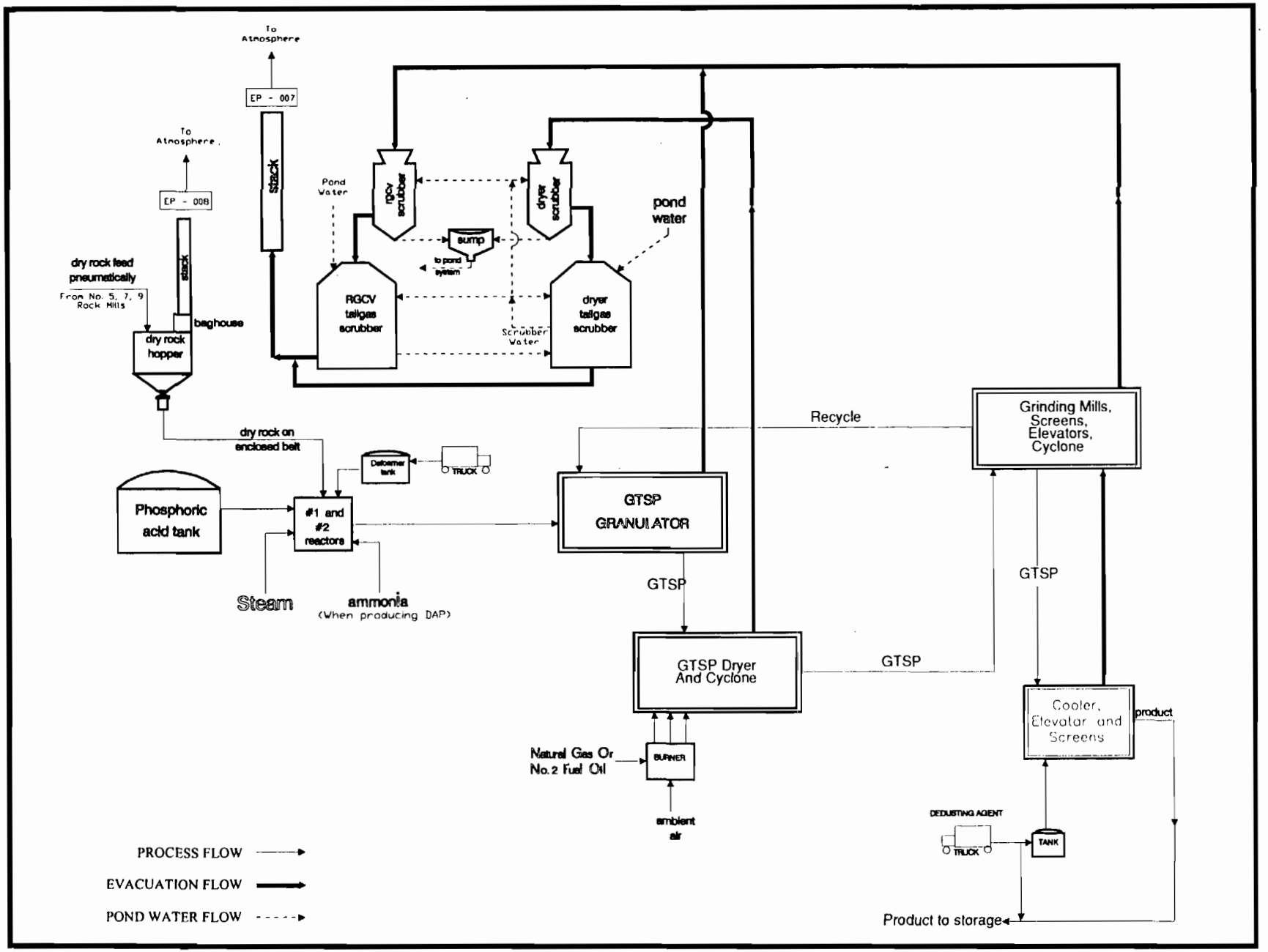


Figure 2–8. Existing GTSP Plant Process Flow Diagram Cargill Riverview	EMISSION UNIT: GTSP PLANT
	PROCESS AREA: GTSP / AP PRODUCTION
	FILENAME: 0037650Y\F1\WP\Figure 2-8.dwg
	LATEST REVISION: 02/06/01 by MJA

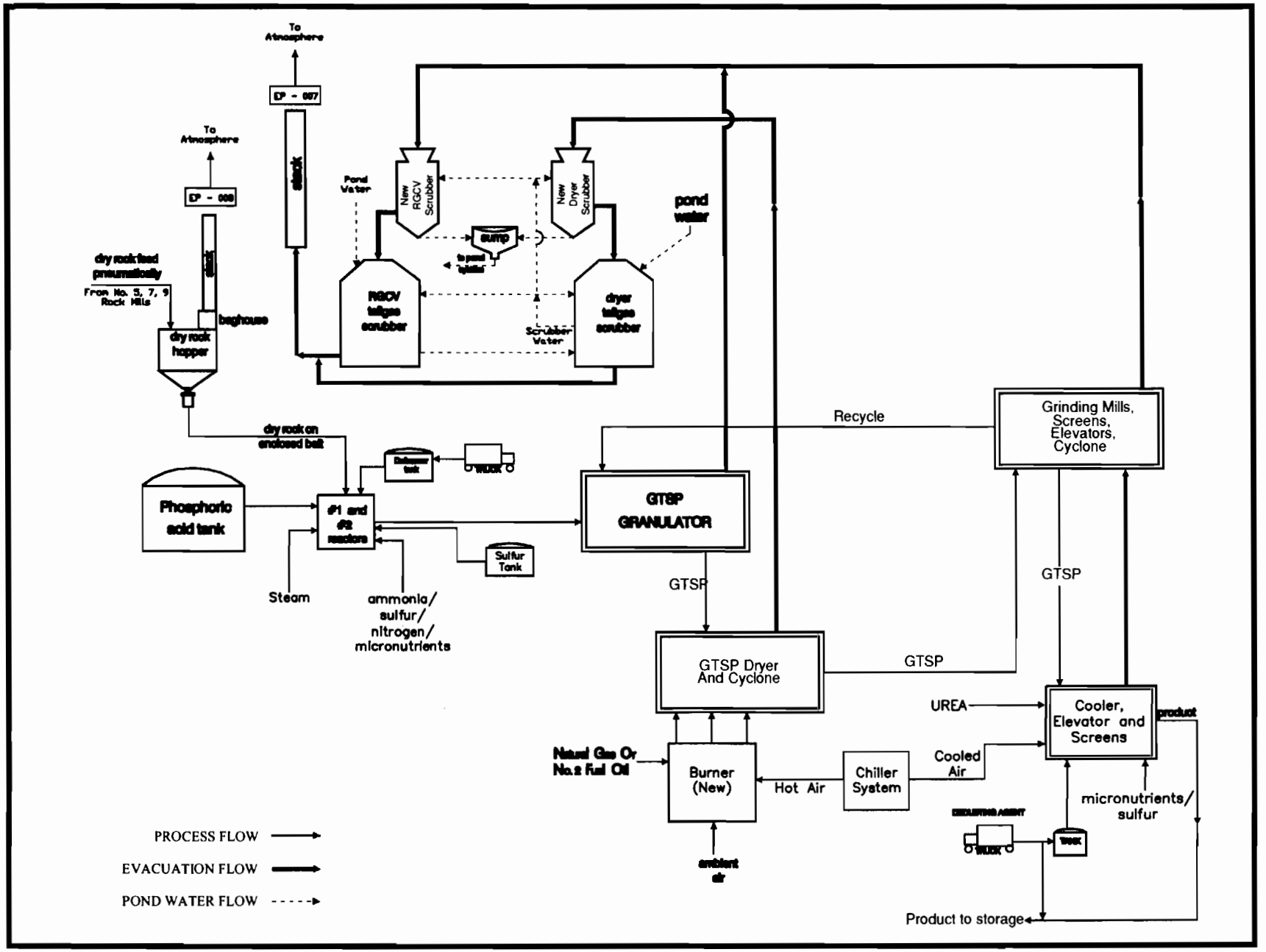


Figure 2–9. Future EPP Plant Process Flow Diagram Cargill Riverview	EMISSION UNIT: EPP PLANT
	PROCESS AREA: EP PRODUCTION
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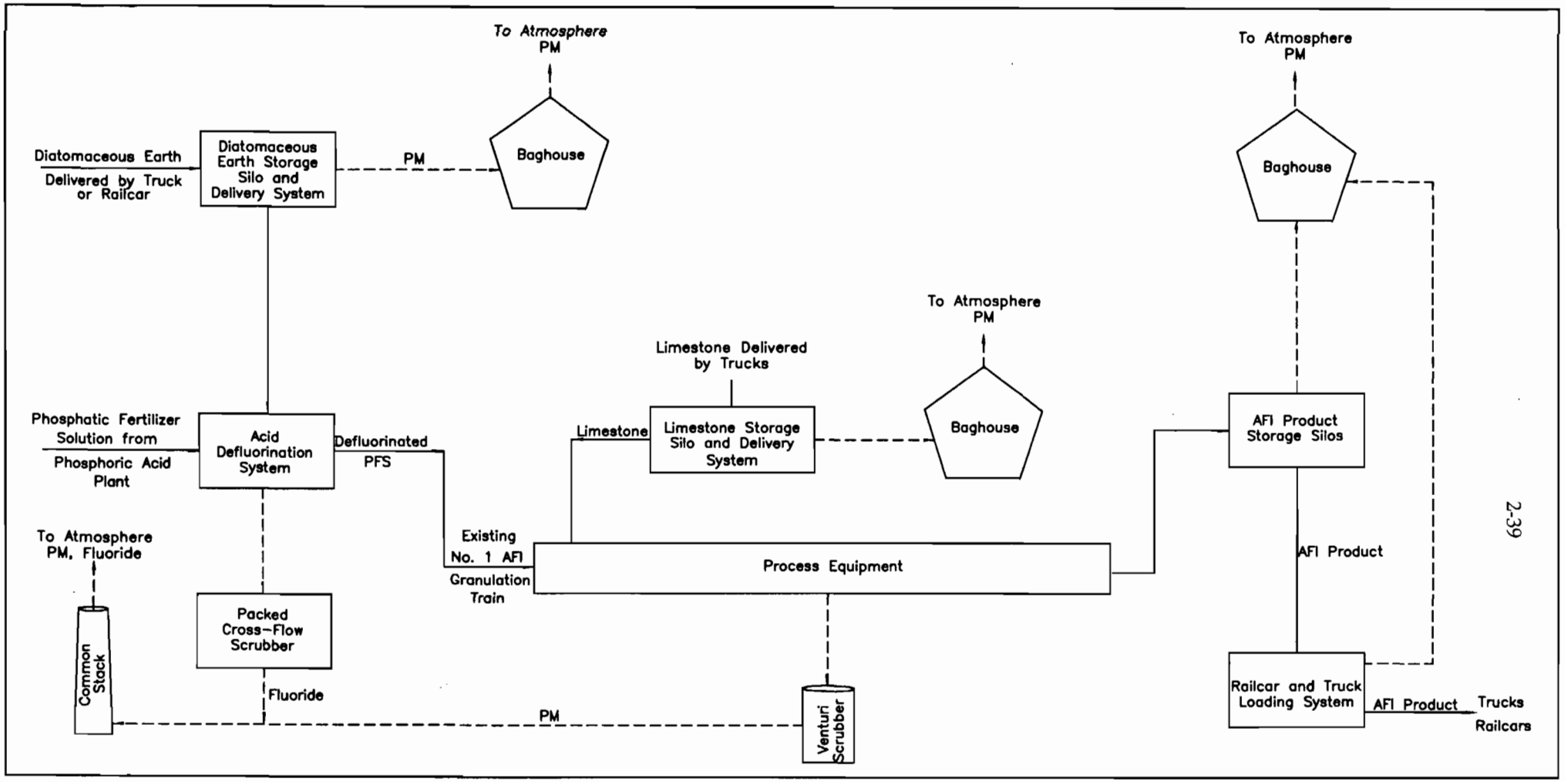
	LATEST REVISION: 02/11/01 by PAC

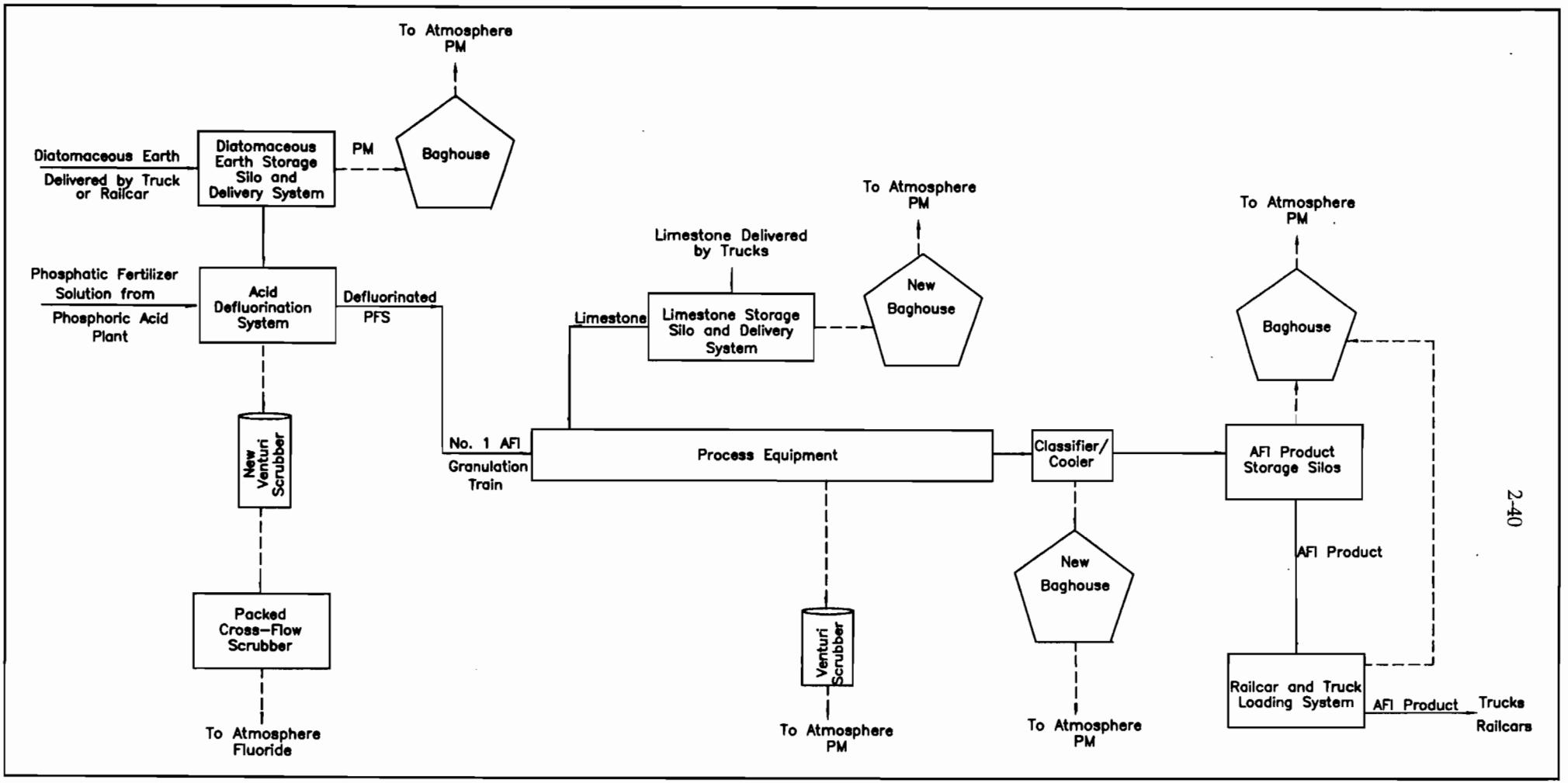


MATERIAL FLOW ——→

AIR FLOW - - - →

Figure 2–10.
Existing AFI Plant
Process Flow Diagram
Cargill Riverview

EMISSION UNIT: AFI PLANT
PROCESS AREA: AFI PRODUCTION
FILENAME: 0037650Y\F1\WP\FIGURE 2-10.DWG
LATEST REVISION: 02\11\01 by PAC

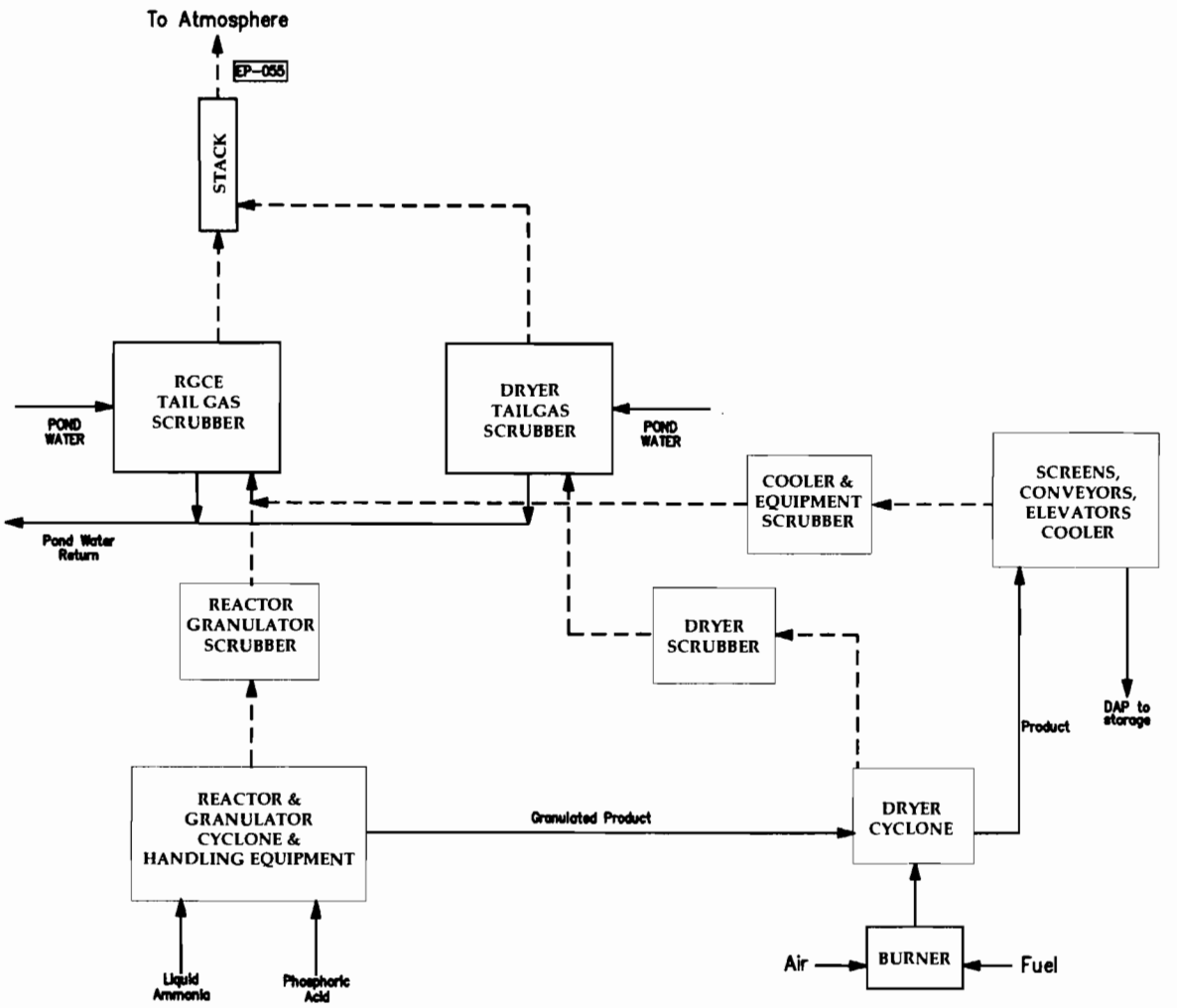


MATERIAL FLOW ——→

AIR FLOW - - - →

Figure 2-11.
Future AFI Plant
Process Flow Diagram
Cargill Riverview

EMISSION UNIT: AFI PLANT
PROCESS AREA: AFI PRODUCTION
FILENAME: 0037650Y\F1\WP\FIGURE 2-11.DWG
LATEST REVISION: 02/11/01 by PAC



MATERIAL FLOW

AIR FLOW

Figure 2-12.
EXISTING No. 5 DAP PLANT
PROCESS FLOW DIAGRAM
CARGILL RIVERVIEW

EMISSION UNIT:	No. 5 DAP PLANT
PROCESS AREA:	DAP PRODUCTION PLANT
FILENAME:	0037650Y\F1\WP\Figure 2-12.dwg
LATEST REVISION:	02/11/01 by PAC

3.0 AIR QUALITY REVIEW REQUIREMENTS

Federal and state air regulatory requirements for a major new or modified source of air pollution are discussed in Sections 3.1 through 3.4. The applicability of these regulations to the proposed Cargill modifications is presented in Section 3.5. These regulations must be satisfied before the proposed project can be approved.

3.1 NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS (AAQS)

The existing applicable national and Florida AAQS are presented in Table 3-1. Primary national AAQS were promulgated to protect the public health, and secondary national AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

Florida has adopted state AAQS in Rule 62-204.240. These standards are the same as the national AAQS, except in the case of SO_2. For SO_2, Florida has adopted the former 24-hour secondary standard of 260 micrograms per cubic meter ($\mu g/m^3$) and former annual average secondary standard of 60 $\mu g/m^3$.

3.2 PSD REQUIREMENTS

3.2.1 GENERAL REQUIREMENTS

Under Federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA; therefore, PSD approval authority has been granted to the Florida Department of Environmental Protection (FDEP).

A "major facility" is defined as any one of 28 named source categories that have the potential to emit 100 TPY or more or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control

equipment. Once a new source is determined to be a "major facility" for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review. For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The PSD significant emission rates are shown in Table 3-2.

The EPA class designation and allowable PSD increments are presented in Table 3-1. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications are designated based on criteria established in the Clean Air Act Amendments. Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. The State of Florida has adopted the EPA class designations and allowable PSD increments for SO_2, PM_{10}, and NO_2 increments.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 Code of Federal Regulations (CFR) 52.21, Prevention of Significant Deterioration of Air Quality. The State of Florida has adopted the federal PSD regulations by reference [Rule 62-212.400, Florida Administrative Code (F.A.C.)]. Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, a new facility must also be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 CONTROL TECHNOLOGY REVIEW

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission-limiting standards be met, and that BACT be applied to control emissions from the source. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility exceeds the significant emission rate (see Table 3-2).

BACT is defined in 40 CFR 52.21 (b)(12), as:

> *An emissions limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the Act which would be emitted by any proposed major stationary source of major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts, and other costs, determination is achievable through application of production processes and available methods, systems, and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant, which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means, which achieve equivalent results.*

BACT was promulgated within the framework of the PSD requirements in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's *Guidelines for Determining Best Available Control Technology (BACT)* (EPA, 1978) and in the PSD *Workshop Manual* (EPA, 1980). These guidelines were promulgated by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with New Source Performance Standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis required the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgement, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

3.2.3 SOURCE IMPACT ANALYSIS

A source impact analysis must be performed for a proposed major source or major modification subject to PSD review, and for each pollutant for which the increase in

emissions exceeds the PSD significant emission rate (Table 3-2). The PSD regulations specifically provide for the use of atmospheric dispersion models in performing impact analyses, estimating baseline and future air quality levels, and determining compliance with AAQS and allowable PSD increments. Designated EPA models normally must be used in performing the impact analysis. Specific applications for other than EPA-approved models require EPA's consultation and prior approval. Guidance for the use and application of dispersion models is presented in the EPA publication *Guideline on Air Quality Models* (EPA, 1980).

To address compliance with AAQS and PSD Class II increments, a source impact analysis must be performed for the criteria pollutants. However, this analysis is not required for a specific pollutant if the net increase in impacts as a result of the new source or modification is below significant impact levels, as presented in Table 3-1. The significant impact levels are threshold levels that are used to determine the level of air impact analyses needed for the project. If the new or modified source's impacts are predicted to be less than significant, then the source's impacts are assumed not to have a significant adverse affect on air quality and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance with AAQS and PSD increments.

EPA has proposed significant impact levels for Class I areas as follows:

SO_2	3-hour	1 $\mu g/m^3$
	24-hour	0.2 $\mu g/m^3$
	Annual	0.1 $\mu g/m^3$
PM_{10}	24-hour	0.3 $\mu g/m^3$
	Annual	0.2 $\mu g/m^3$
NO_2	Annual	0.1 $\mu g/m^3$

Although these levels have not been officially promulgated as part of the PSD review process and may not be binding for states in performing PSD review, the proposed levels serve as a guideline in assessing a source's impact in a Class I area. The EPA action to

incorporate Class I significant impact levels in the PSD process is part of implementing the NSR provisions of the 1990 CAA Amendments. Because the process of developing the regulations will be lengthy, EPA believes that the proposed rules concerning the significant impact levels is appropriate in order to assist states in implementing the PSD permit process.

Various lengths of record for meteorological data can be used for impact analysis. A 5-year period is normally used with corresponding evaluation of highest, second-highest short-term concentrations for comparison to AAQS or PSD increments. The meteorological data are selected base on an evaluation of measured weather data from a nearby weather station that represents weather conditions at the project site. The criteria used in this evaluation include determining the distance of the project site to the weather station; comparing topographical and land use features between the locations; and determining availability of necessary weather parameters.

The term "highest, second-highest" (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is important because short-term AAQS specify that the standard should not be exceeded at any location more than once a year. If fewer than 5 years of meteorological data are used in the modeling analysis, the highest concentration at each receptor normally must be used for comparison to air quality standards.

The term "baseline concentration" evolves from federal and state PSD regulations and refers to a concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition, in the PSD regulations as amended August 7, 1980, baseline concentration means the ambient concentration level that exists in the baseline area at the time of the applicable baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established and includes:

1. The actual emissions representative of facilities in existence on the applicable baseline date; and
2. The allowable emissions of major stationary facilities that commenced construction before January 6, 1975, for SO_2 and PM [triple super phosphate (TSP)]

concentrations, or February 8, 1988, for NO_2 concentrations, but that were not in operation by the applicable baseline date.

The following emissions are not included in the baseline concentration and therefore affect PSD increment consumption:

1. Actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO_2 and PM (TSP) concentrations, and after February 8, 1988, for NO_2 concentrations; and
2. Actual emission increases and decreases at any stationary facility occurring after the baseline date.

In reference to the baseline concentration, the term "baseline date" actually includes three different dates:

1. The major facility baseline date, which is January 6, 1975, in the cases of SO_2 and PM (TSP), and February 8, 1988, in the case of NO_2.
2. The minor facility baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application.
3. The trigger date, which is August 7, 1977, for SO_2 and PM (TSP), and February 8, 1988, for NO_2.

3.2.4 AIR QUALITY MONITORING REQUIREMENTS

In accordance with requirements of 40 CFR 52.21(m), 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 (see Table 3-2).

Ambient air monitoring for a period of up to 1 year generally is 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, 1987a).

The regulations include an exemption that excludes or limits the pollutants for which an air quality analysis must be conducted. This exemption states that FDEP may exempt a proposed major stationary facility or major modification from the monitoring requirements, with respect to a particular pollutant, if the emissions increase of the pollutant from the facility or modification would cause, in any area, air quality impacts less than the *de minimis* levels presented in Table 3-2.

3.2.5 SOURCE INFORMATION/GEP STACK HEIGHT

Source information must be provided to adequately describe the proposed project. The general type of information required for this project is presented in Section 2.0.

The 1977 CAA Amendments require that the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds GEP or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (EPA, 1985a). The FDEP has adopted identical regulations (Rule 62-210.550, F.A.C.). GEP stack height is defined as the highest of:

1. 65 meters (m); or
2. A height established by applying the formula:

$$Hg = H + 1.5L$$

where: Hg = GEP stack height,
H = Height of the structure or nearby structure, and
L = Lesser dimension (height or projected width) of nearby structure(s); or

3. A height demonstrated by a fluid model or field study.

"Nearby" is defined as a distance up to five times the lesser of the height or width dimensions of a structure or terrain feature, but not greater than 0.8 kilometer. Although GEP stack height regulations require that the stack height used in modeling for determining compliance with AAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater.

The stack height regulations also allow increased GEP stack height beyond that resulting from the above formula in cases where plume impaction occurs. Plume impaction is defined as concentrations measured or predicted to occur when the plume interacts with elevated terrain. Elevated terrain is defined as terrain that exceeds the height calculated by the GEP stack height formula.

3.2.6 ADDITIONAL IMPACT ANALYSIS

In addition to air quality impact analyses, federal and State of Florida regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [40 CFR 52.21(o) and Rule 62-212.400, F.A.C.]. These analyses are to be conducted primarily for PSD Class I areas. Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

3.3 NONATTAINMENT RULES

Based on the current nonattainment provisions, all major new facilities and modifications to existing major facilities located in a nonattainment area must undergo nonattainment review. A new major facility is required to undergo this review if the proposed pieces of equipment have the potential to emit 100 TPY or more of the nonattainment pollutant.

3.4 EMISSION STANDARDS

3.4.1 NEW SOURCE PERFORMANCE STANDARDS

The NSPS are a set of national emission standards that apply to specific categories of new sources. As stated in the CAA Amendments of 1977, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the

best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

Federal NSPS exist for facilities producing phosphoric acid and phosphate fertilizer products (40 CFR 60, Subparts T through X). Specifically, Subpart T applies to wet-process PAPs, Subpart V applies to DAP plants, and Subpart W applies to plants manufacturing TSP in any form. The NSPS apply to all facilities constructed or modified after October 22, 1974. Subparts T and W regulate F emissions from the plants.

Federal NSPS also exist for facilities producing H_2SO_4 (40 CFR 60, Subpart H). Subpart H applies to all newly constructed or modified H_2SO_4 plants that commenced construction after August 18, 1971. Subpart H regulates SO_2 and H_2SO_4 mist emissions.

3.4.2 FLORIDA RULES

The PAP and GTSP plant are subject to the emission limitations of Rule 62-296.403(1) F.A.C. pertaining to fluoride emissions from phosphate processing plants. The provisions of Rule 62-296.403(1)(a) apply to the PAP, the provisions of Rule 62-296.403(1)(f) apply to the DAP plant, and the provisions of 62-296.403(1)(d)2 apply to the GTSP (EPP) plant. Since the provisions of Rule 62-296.403(1)(a) through (h) do not apply to the AFI plant, the provisions of paragraph (i) would apply. This provision states that a BACT determination would apply to the source, as determined pursuant to Rule 62-212.400(6), F.A.C. Therefore, a BACT determination must be made regarding fluoride emissions from the AFI plant stack. The BACT analysis for the proposed project is presented in Section 5.0.

H_2SO_4 plants are subject to the emission limitations of Rule 62-296.402(2), F.A.C. pertaining to SO_2, H_2SO_4 mist, and visible emissions from H_2SO_4 plants.

3.5 SOURCE APPLICABILITY

3.5.1 AREA CLASSIFICATION

The project site is located in Hillsborough County, which has been designated by EPA and FDEP as an attainment or maintenance area for all criteria pollutants. Hillsborough County and surrounding counties are designated as PSD Class II areas for all criteria pollutants. The

site is located about 85 km from a PSD Class I area (Chassahowitzka National Wilderness Area).

3.5.2 PSD REVIEW

3.5.2.1 Pollutant Applicability

The Cargill facility is considered to be an existing major stationary facility because potential emissions of certain regulated pollutants exceed 100 TPY (for example, potential SO_2 emissions currently exceeds 100 TPY). Therefore, PSD review is required for any pollutant for which the increase in emissions due to the modification is greater than the PSD significant emission rates (see Table 3-2).

Presented in Table 3-3 are the future potential emissions from all emissions units at the facility that are being modified or otherwise affected by the proposed project. The future potential emissions are based on information from Section 2.0 and Appendix B. The current actual emissions were presented in Table 2-2. The net increase in emissions due to the proposed modification at the facility is shown in Table 3-4. As shown, the net increase exceeds the PSD significant emission rates for PM, PM_{10}, SO_2, NO_x, SAM, and F. As a result, PSD review applies for these pollutants.

3.5.2.2 Source Impact Analysis

A source impact analysis was performed for PM_{10}, NO_x, and SO_2 emissions resulting from the proposed modification. This analysis is presented in Section 6.0.

3.5.2.3 Ambient Monitoring

Based on the increase in emissions from the proposed modification (see Table 3-4), a pre-construction ambient monitoring analysis is required for PM_{10}, SO_2, NO_x, SAM, and F and monitoring data is required to be submitted as part of the application. However, if the net increase in impacts of a pollutant is less than the applicable *de minimis* monitoring concentration, then an exemption from submittal of pre-construction ambient monitoring data may be obtained [40 CFR 52.21(i)(8)]. In addition, if EPA has not established an acceptable ambient monitoring method for the pollutant, monitoring is not required.

Pre-construction monitoring data for NO_x may be exempted for this project because, as shown in Section 6.0, the proposed modification's impacts are predicted to be below the applicable *de minimis* monitoring concentration for NO_x. In addition, no acceptable air monitoring method has been established for SAM and F. A pre-construction ambient monitoring analysis is required for PM_{10} and SO_2. This analysis is presented in Section 4.0.

3.5.2.4 GEP Stack Height Impact Analysis

No existing stacks at the Cargill facility currently exceed the *de minimis* GEP stack height of 213 feet. In addition, none of the proposed new stacks will exceed this height. Therefore, the proposed modification will comply with the GEP stack height regulations.

3.5.3 EMISSION STANDARDS

3.5.3.1 New Source Performance Standards

The Nos. 8 and 9 H_2SO_4 plants are currently subject to the NSPS for H_2SO_4 plants, as contained in 40 CFR 60, Subpart H. These NSPS will continue to apply to the H_2SO_4 plants in the future.

Since the PAP produces phosphoric acid, the PAP is subject to NSPS requirements. Subpart V applies to DAP plants constructed or modified after October 22, 1974. Since the No. 5 DAP plant produces DAP, it is subject to NSPS requirements. Subpart W applies to triple super phosphate plants constructed or modified after October 22, 1974. The GTSP plant produces GTSP, but is not currently subject to NSPS since the plant was constructed prior to October 22, 1974, and has not been modified since that time. However, the proposed modification may result in an increase in actual F emissions and, therefore, the GTSP plant (EPP plant) will become subject to Subpart W.

The applicable federal NSPS for H_2SO_4 plants (40 CFR 60.80) are 0.15 lb/ton of 100-percent H_2SO_4 for SAM and 4 lb/ton of 100-percent H_2SO_4 for SO_2. The applicable NSPS for PAPs (40 CFR 60.202) is 0.020 lb/ton P_2O_5 for F. The applicable NSPS for GTSP plants (40 CFR 60.232) is 0.20 lb/ton P_2O_5 for F. The applicable NSPS for DAP plants (40 CFR 60.222) is 0.060 lb/ton P_2O_5 input for F.

The proposed SAM, SO_2, and F emission limits will comply with the applicable limits for the H_2SO_4, GTSP (EPP), PAP, and DAP plants at Cargill Riverview..

3.5.3.2 State of Florida Standards

The applicable State of Florida emission limits for new H_2SO_4 plants are 4 lb/ton of 100-percent acid for SO_2 and 0.15 lb/ton of 100-percent acid for SAM [Rule 62-296.402(2)]. The applicable State of Florida fluoride emissions limits for new phosphate processing plants or plant sections [Rule 62-296.403] are 0.02 lb/ton P_2O_5 for wet process phosphoric acid production, 0.06 lb/ton P_2O_5 for DAP production, and 0.15 lb/ton P_2O_5 for GTSP made from phosphoric acid and phosphate rock slurry. The subject sources at Cargill Riverview will comply with the Florida standards contained in Rules 62-296.402 and 62-296.403.

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels

Pollutant	Averaging Time	AAQS ($\mu g/m^3$)			PSD Increments ($\mu g/m^3$)		Significant Impact Levels ($\mu g/m^3$)[b]
		Primary Standard	Secondary Standard	Florida	Class I	Class II	
Particulate Matter[c] (PM_{10})	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum	150	150	150	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum	365	NA	260	5	91	5
	3-Hour Maximum	NA	1,300	1,300	25	512	25
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone[c]	8-Hour Maximum[d]	157[d]	157[d]	157	NA	NA	NA
	1-Hour Maximum	235	235	NA	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA

Note: Particulate matter (PM_{10}) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
NA = Not applicable, i.e., no standard exists.

[a] Short-term maximum concentrations are not to be exceeded more than once per year.

[b] Maximum concentrations are not to be exceeded.

[c] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, PM2.5 standards were introduced with a 24-hour standard of 65 g/m^3 (3-year average of 98th percentile) and an annual standard of 15 g/m^3 (3-year average at community monitors). A federal court has stayed these EPA standards and EPA is appealing. Implementation of these standards is many years away.

[d] 0.08 ppm; achieved when 3-year average of 99th percentile is 0.08 ppm or less. A federal court has stayed these EPA standards and EPA is appealing. FDEP still has the 0.12 ppm 1-hour standard and has not yet adopted the 8-hour standards.

Source: 40 CFR 50; 40 CFR 52.21. Chapter 62-204, F.A.C.

Table 3-2. PSD Significant Emission Rates and *De Minimis* Monitoring Concentrations

Pollutant	Regulated Under	Significant Emission Rate (TPY)	De Minimis Monitoring Concentration[a] (μg/m3)
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter [PM(TSP)]	NSPS	25	NA
Particulate Matter (PM_{10})	NAAQS	15	10, 24-hour
Nitrogen Dioxide	NAAQS, NSPS	40	14, annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY[b]
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	NM
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Mercury	NESHAP	0.1	0.25, 24-hour
Beryllium	NESHAP	0.0004	0.001, 24-hour
Asbestos	NESHAP	0.007	NM
Vinyl Chloride	NESHAP	1	15, 24-hour
MWC Organics	NSPS	3.5×10^{-6}	NM
MWC Metals	NSPS	15	NM
MWC Acid Gases	NSPS	40	NM
MSW Landfill Gases	NSPS	50	NM

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below de minimis monitoring concentrations.

NA = Not applicable.
NAAQS = National Ambient Air Quality Standards.
NM = No ambient measurement method established; therefore, no *de minimis* concentration has been established.
NSPS = New Source Performance Standards.
NESHAP = National Emission Standards for Hazardous Air Pollutants.
$\mu g/m^3$ = micrograms per cubic meter.
MWC = Municipal waste combustor
MSW = Municipal solid waste

[a] Short-term concentrations are not to be exceeded.
[b] No de minimis concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.

Sources: 40 CFR 52.21.
Rule 62-212.400

Table 3-3. Future Potential Emissions from Modified/New/Affected Sources

Source Description	EU ID	Pollutant Emission Rate (TPY)								
		SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage/Handling Facility										
Molten Sulfur Storage--Tank No. 1		2.59	--	--	0.31	0.31	1.84	1.24	--	--
Molten Sulfur Storage--Tank No. 2	064	2.59	--	--	0.31	0.31	1.84	1.24	--	--
Molten Sulfur Storage--Tank No. 3	065	2.59	--	--	0.31	0.31	1.84	1.24	--	--
Molten Sulfur Storage--Pit No. 7	066	0.04	--	--	0.37	0.37	0.03	0.02	--	--
Molten Sulfur Storage--Pit No. 8	067	0.04	--	--	0.37	0.37	0.03	0.02	--	--
Molten Sulfur Storage--Pit No. 9	068	0.04	--	--	0.37	0.37	0.03	0.02	--	--
Molten Sulfur Storage--Ship Unloading	069	1.07	--	--	0.06	0.06	0.76	0.51	--	--
Molten Sulfur Storage--Truck Loading Station	074	0.04	--	--	0.02	0.02	0.03	0.02	--	--
Total		**8.99**	**--**	**--**	**2.12**	**2.12**	**6.41**	**4.31**	**--**	**--**
B. No. 8 Sulfuric Acid Plant	005	**1,724.63**	**59.13**	--	--	--	--	--	**59.13**	--
C. No. 9 Sulfuric Acid Plant	006	**2,171.75**	**74.46**	--	--	--	--	--	**74.46**	--
D. Rock Mills		--	--	--	--	--	--	--	--	--
No. 5 Rock Mill	100	1.32	5.69	4.78	6.85	6.85	0.31	--	--	--
No. 9 Rock Mill	101	1.32	5.69	4.78	6.85	6.85	0.31	--	--	--
No. 7 Rock Mill	106	1.32	5.69	4.78	6.85	6.85	0.31	--	--	--
Ground Rock Handling and Storage System	034/102	--	--	--	1.78	1.78	--	--	--	--
Total		**3.96**	**17.07**	**14.34**	**22.33**	**22.33**	**0.93**	**--**	**--**	**--**
E. Phosphoric Acid Plant	073	--	--	--	--	--	--	--	--	**10.03**
F. EPP Plant	007	8.11	35.04	29.43	52.56	52.56	1.93	--	--	17.96
EPP Ground Rock Handling	008	--	--	--	4.16	4.16	--	--	--	--
EPP Storage Building No. 2	070	--	--	--	--	--	--	--	--	21.73
EPP Storage Building No. 4	071	--	--	--	--	--	--	--	--	21.73
EPP Truck Loadout Baghouse	072	--	--	--	2.30	2.30	--	--	--	--
EPP Truck Loadout Fugitive Emissions		--	--	--	2.00	0.40	--	--	--	--
New Molten Sulfur Tank		0.66	--	--	0.85	0.85	0.47	0.32	--	--
Total		**8.77**	**35.04**	**29.43**	**61.87**	**60.27**	**2.40**	**0.32**	**--**	**61.41**
G. AFI Plant Defluorination System	078	--	--	--	--	--	--	--	--	4.38
AFI Granulation System		5.07	21.90	18.40	35.04	35.04	1.20	--	--	--
DE Hopper Baghouse	079	--	--	--	0.23	0.23	--	--	--	--
Milling, Classification, & Cooling Equipment Baghouse		--	--	--	22.53	22.53	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	1.40	1.40	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	9.01	9.01	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.20	0.04	--	--	--	--
Total		**5.07**	**21.90**	**18.40**	**68.41**	**68.25**	**1.20**	**--**	**--**	**4.38**
H. No. 5 DAP Plant	055	**2.52**	**17.52**	**14.72**	**56.10**	**56.10**	**0.96**	--	--	**14.50**
I. Material Handling System										
West Baghouse Filter[a]	051	--	--	--	4.60	4.60	--	--	--	--
South Baghouse[a]	052	--	--	--	4.60	4.60	--	--	--	--
Vessel Loading System--Tower Baghouse Exhaust[a]	053	--	--	--	12.40	12.40	--	--	--	--
Building No. 6 Belt to Conveyor No. 7 [a]	058	--	--	--	1.20	1.20	--	--	--	--
Conveyor No.7 to Conveyor No. 8[a]	059	--	--	--	1.90	1.90	--	--	--	--
Conveyor No.8 to Conveyor No. 9[a]	060	--	--	--	3.60	3.60	--	--	--	--
Railcar Unloading of AFI Product[b]		--	--	--	1.97	0.39	--	--	--	--
East Vessel Loading Facility-Shiphold/Chokefeed[a]	061	--	--	--	0.42	0.42	--	--	--	--
Total		**--**	**--**	**--**	**30.69**	**29.11**	**--**	**--**	**--**	**--**
Total Future Potential Emission Rates		**3,925.69**	**225.12**	**76.89**	**241.52**	**238.18**	**11.90**	**4.63**	**133.59**	**90.32**

[a] Emission Rates based on Title V Permit No. 0570008-014-AV.
[b] See Appendix B for calculation of emission rate.

Table 3-4. Contemporaneous and Debottlenecking Emissions Analysis and PSD Applicability

Source Description	Pollutant Emission Rate (TPY)								
	SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
Potential Emissions From Modified/New/Affected Sources[a]									
A. Existing Molten Sulfur Storage/Handling Facility	8.99	--	--	2.12	2.12	6.41	4.31	--	--
B. Modified No. 8 Sulfuric Acid Plant	1,724.63	59.13	--	--	--	--	--	59.13	--
C. Modified No. 9 Sulfuric Acid Plant	2,171.75	74.46	--	--	--	--	--	74.46	--
D. Existing Nos. 5, 7, and 9 Rock Mills[b]	3.96	17.07	14.34	22.33	22.33	0.93	--	--	--
E. Modified Phosphoric Acid Plant	--	--	--	--	--	--	--	--	10.03
F. Modified EPP Plant	8.77	35.04	29.43	61.87	60.27	2.40	0.32	--	61.41
G. Modified AFI Plant No. 1	5.07	21.90	18.40	68.41	68.25	1.20	--	--	4.38
H. Modified No. 5 DAP Plant	2.52	17.52	14.72	56.10	56.10	0.96	--	--	14.50
I. Existing Material Handling System[b]	--	--	--	30.69	29.11	--	--	--	--
Total Potential Emission Rates	**3,925.69**	**225.12**	**76.89**	**241.52**	**238.18**	**11.90**	**4.63**	**133.59**	**90.32**
Actual Emissions from Current Operations[c]									
A. Molten Sulfur Storage/Handling Facility	1.55	--	--	1.74	1.74	1.10	0.74	--	--
B. No. 8 Sulfuric Acid Plant	1,250.74	44.05	--	--	--	--	--	14.68	--
C. No. 9 Sulfuric Acid Plant	1,525.82	51.23	--	--	--	--	--	13.43	--
D. Nos. 5, 7, and 9 Rock Mills	0.07	11.15	9.37	4.10	4.10	0.62	--	--	--
E. Phosphoric Acid Plant	--	--	--	--	--	--	--	--	3.92
F. GTSP Plant	0.11	18.05	15.16	20.50	20.47	0.99	--	--	42.52
G. AFI Plant No. 1	0.04	5.71	4.80	18.37	18.22	0.31	--	--	1.79
H. No. 5 DAP Plant	0.02	3.91	3.29	8.67	8.67	0.22	--	--	8.37
I. Material Handling System	--	--	--	3.83	3.69	--	--	--	--
Total Actual Emission Rates	**2,778.35**	**134.11**	**32.61**	**57.21**	**56.89**	**3.24**	**0.74**	**28.11**	**56.60**
TOTAL CHANGE DUE TO PROPOSED PROJECT	**1,147.34**	**91.01**	**44.28**	**184.32**	**181.29**	**8.66**	**3.89**	**105.48**	**33.72**
Contemporaneous Emission Changes									
A. Upgrade of Phosphate Rock Grinding System (June 1996)	2.70	--	3.99	--	--	0.31	0.00	0.00	--
B. AFI Plant Expansion (July 1996)	9.40	[e]	14.20	--	--	1.10	0.00	0.00	--
C. MAP Plant Expansion (May 1998)	0.61	2.23	0.56	[e]	[e]	0.04	0.00	0.00	[e]
D. DAP Plant Cooler Upgrade (August 1998)[d]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
E. Reconstruction of Molten Sulfur Tank No. 1 (February 1999)	2.82	0.00	0.00	3.40	3.40	2.01	1.35	0.00	0.00
F. Molten Sulfur Increase/Truck Loadout (pending)	0.32	0.00	0.00	1.25	1.25	0.23	0.15	0.00	0.00
Total Contemporaneous Emission Changes	**15.85**	**2.23**	**18.75**	**4.65**	**4.65**	**3.69**	**1.50**	**0.00**	**0.00**
TOTAL NET CHANGE	**1,163.19**	**93.24**	**63.03**	**188.97**	**185.94**	**12.35**	**5.39**	**105.48**	**33.72**
PSD SIGNIFICANT EMISSION RATE	40	40	100	25	15	40	10	7	3
PSD REVIEW TRIGGERED?	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes

Footnotes:
[a] Total future potential emissions from Table 3-3.
[b] Debottlenecking analysis revealed that emissions from this sources could potentially increase as part of this project.
[c] Based on actual emissions for 2000 and 1999 from Tables A-1 and A-2, respectively.
[d] Project was determined to not result in an increase in emissions of any pollutant.
[e] Denotes that PSD review was triggered for this pollutant; therefore any previous contemporaneous increases/decreases are wiped clean.

4.0 AMBIENT MONITORING ANALYSIS

4.1 MONITORING REQUIREMENTS

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 (see Table 3-1). As discussed in Section 3.1, PM/PM_{10}, SO_2, and F require an air quality analysis to meet PSD pre-construction monitoring requirements for the proposed Cargill expansion.

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* (1987).

An exemption from the pre-construction 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 pre-construction air monitoring requirements for that pollutant.

The PSD *de minimis* monitoring concentration for PM_{10} is 10 micrograms per cubic meter ($\mu g/m^3$), 24-hour average; for SO_2 is 13 $\mu g/m^3$, 24-hour average; for NO_x is 14 $\mu g/m^3$, annual average; and for F is 0.25 $\mu g/m^3$, 24-hour average. The predicted increase in PM_{10}, SO_2, and F concentrations due to the proposed modification only are presented in Section 6.0. Since the predicted increases of PM_{10}, SO_2, and F impacts due to the proposed modification are greater than the *de minimis* monitoring concentration levels, a pre-construction air monitoring analysis must be conducted for these three pollutants. A pre-construction air monitoring analysis is not required for NO_x.

4.2 PM_{10} AMBIENT MONITORING ANALYSIS

The PSD ambient monitoring guidelines allow the use of existing data to satisfy pre-construction review requirements. Presented in Table 4-1 is a summary of existing ambient PM_{10} data for monitors located in the vicinity of Cargill's Riverview facility. Data are presented for 1999 and January through September of 2000. As shown, several PM_{10} monitors were operational in the vicinity of Cargill's Riverview facility during this period. One of these stations, the Gardinier Park station, is located immediately adjacent to the Riverview facility.

The monitors show that ambient PM_{10} concentrations were well below the AAQS of 150 $\mu g/m^3$, maximum 24-hour average, and 50 $\mu g/m^3$, annual average. For purposes of an ambient PM_{10} background concentration for use in the modeling analysis, the annual and highest, second-highest 24-hour average concentrations of 26 and 39 $\mu g/m^3$, respectively, measured at Gardinier Park directly adjacent to Cargill's facility, were selected. This monitor is likely impacted by several existing point sources, such as Cargill and Tampa Electric's Big Bend power station, which are already included explicitly in the modeling dispersion analysis. As a result, this background concentration is conservatively high.

4.3 SO_2 AMBIENT MONITORING ANALYSIS

A background SO_2 concentration must be estimated to account for SO_2 sources, which are not explicitly included in the atmospheric dispersion modeling analysis. To estimate reasonable background SO_2 concentrations, a review of recent, available SO_2 monitoring data in the area of Cargill was performed. Presented in Table 4-2 is a summary of ambient SO_2 data available for 1999 and for January through September 2000, for all monitors located within 10 km of the Cargill site. A total of five stations are located within 10 km of Cargill, all of which have continuous SO_2 monitors. The monitors are operated by Hillsborough County Environmental Protection Commission. Data recoveries exceed 98 percent for all but one of the monitors.

Annual average, 24-hour maximums, and 3-hour maximums for SO_2 are shown in Table 4-1. Since all of the monitors are located in an area of multi-source emissions (refer to Section 6.0), these concentrations are expected to include substantial contributions from sources in the area, including the existing Cargill facility. These potential major contributing sources are explicitly included in the modeling analysis, as are almost all emissions from sources located within 50 km of the Cargill facility. As a result, these concentrations are not representative of actual background concentrations which would be expected to occur in conjunction with the worst-case meteorology.

To develop a representative background concentration for the modeling analysis, a review of SO_2 monitoring data from throughout Florida was performed. Since the vast majority of point source SO_2 emissions are accounted for in the dispersion modeling analysis, the background concentration should represent distant point sources, local and distant area sources, and natural sources. The monitoring data indicate that the minimum second-high SO_2 values recorded in urban areas during 1999 and 2000 in Florida were about 21 $\mu g/m^3$ for the 3-hour averaging time, 8 $\mu g/m^3$ for the 24-hour averaging time, and 5 $\mu g/m^3$ for the annual average, all recorded at a site in Miami. These values were used as background concentrations in the modeling analysis.

4.4 FLUORIDE AMBIENT MONITORING ANALYSIS

There are no known existing fluoride monitors in the vicinity of Cargill's Riverview facility. However, no AAQS for fluorides has been promulgated. Typically, pre-construction monitoring has not been required for pollutants for which no AAQS exists. However, potential effects of fluoride impacts are addressed in Section 7.0.

Table 4-1. Summary of PM_{10} Monitoring Data Collected Within 10 km of Cargill Fertilizer, Inc.

City	Site ID No. (Distance Away)	Monitoring Method	Year	Number of Observations	Percent of Data Recovery	Reported Concentration ($\mu g/m^3$) Highest 24-Hour	Second-Highest 24-Hour	Annual
Ruskin	12-057-0066 (3.7 km)	Hi-Volume Sampler	1999	60	95	82	81	35
			2000 (Jan-Sep)	46	96	112	65	33
Tampa	12-057-0085 (8.0 km)	Hi-Volume Sampler	1999	60	95	45	35	20
			2000 (Jan-Sep)	46	96	85	35	24
Riverview	12-057-0083 (0.8 km)	Hi-Volume Sampler	1999	59	94	55	39	24
			2000 (Jan-Sep)	46	96	45	38	26
Tampa	12-057-0095 (6.8 km)	Hi-Volume Sampler	1999	60	95	58	49	27
			2000 (Jan-Sep)	44	92	49	44	29
Tampa	12-057-1035 (9.6 km)	Continuous	1999	364	100	57	51	25
			2000 (Jan-Sep)	272	99	60	52	26

Note: $\mu g/m^3$ = micrograms per cubic meter.

Source: FDEP: Allsum Report; 1999, 2000.

Table 4-2. Summary of Ambient SO_2 Data for Sites Within 10 km of Cargill Fertilizer, Inc.

City	Site ID No. (Distance Away)	Monitoring Method	Year	Number of Observations	Percent of Data Recovery	Reported Concentration ($\mu g/m^3$)		
						3-Hour[a]	24-Hour[a]	Annual Average
Ruskin	12-057-0021[b] (8.2 km)	Continuous	1999	8,386	98.6	257	45	8
			2000 (Jan-Sep)	--	--	--	--	--
Tampa	12-057-0095[b] (6.8 km)	Continuous	1999	8,581	98.0	288	58	13
			2000 (Jan-Sep)	6,517	99.2	354	60	10
Tampa	12-057-1035[b] (9.6 km)	Continuous	1999	8,714	99.5	270	71	21
			2000 (Jan-Sep)	6,470	98.5	210	60	18
Tampa	12-057-0053[b] (9.2 km)	Continuous	1999	8,642	98.7	186	47	13
			2000 (Jan-Sep)	6,094	92.8	173	52	13
Riverview	12-057-0109[c] (1.1 km)	Continuous	1999	8,642	98.7	469	157	16
			2000 (Jan-Sep)	6,537	99.5	199	52	10

[a] Second-highest concentrations for calendar year are shown.
[b] Monitoring objective for this site is to measure the impact of a significant source.
[c] Monitoring objective for this site is to measure pollutant concentrations representative of areas of high population density.

Source: FDEP: Allsum Report; 1999, 2000.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

5.1 REQUIREMENTS

The 1977 CAA Amendments established requirements for the approval of pre-construction permit applications under the PSD program. One of these requirements is that the BACT be installed for applicable pollutants. 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. As mentioned previously, this approach has been challenged in court and a settlement agreement reached, which requires EPA to initiate formal rulemaking concerning the "top-down" 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 modification at Cargill, PM/PM_{10}, SO_2, SAM, and F are the only pollutants requiring BACT analysis. The BACT analysis is presented in the following sections.

5.2 MOLTEN SULFUR STORAGE AND HANDLING SYSTEM

The molten sulfur handling and storage system is not being physically modified as part of the proposed project. However, molten sulfur throughputs may increase as a result of the sulfur usage in the GTSP plant. Cargill was issued a construction permit in November 1999 to rebuild the No. 1 molten sulfur storage tank (permit No. 0570008-029-AC). Cargill also has a permit application pending for a new molten sulfur truck loading station. Neither of these

applications addressed BACT for the system since they were minor source applications. Since the proposed project is subject to BACT for PM/PM_{10} and SO_2, which are emitted from the molten sulfur system, this section presents a BACT analysis for these pollutants.

In the aforementioned permit application for a new molten sulfur truck loading station, Cargill proposed to use wet scrubbers to control PM/PM_{10} emissions from all three sulfur storage tanks. The sulfur pits at the H_2SO_4 plants were uncontrolled. The wet scrubbers are the first control devices known to be used on the molten sulfur storage tanks anywhere in Florida. Based on the very low PM/PM_{10} and SO_2 emissions from the entire sulfur handling system, the proposed BACT is the use of wet scrubbers to control PM/PM_{10} from the storage tanks and no controls for SO_2. Potential emissions from the system are presented in Section 2.0.

5.3 NOS. 8 AND 9 H_2SO_4 PLANTS

The source applicability analysis for the proposed expansion of Cargill Nos. 8 and 9 H_2SO_4 plants, presented in Section 3.0, identified SO_2, NO_x, and SAM as air pollutants requiring a BACT review. This section describes the proposed BACT and emission limits for these pollutants. An analysis of alternative control technologies is also presented.

5.3.1 SULFUR DIOXIDE

5.3.1.1 Proposed SO_2 BACT

The Nos. 8 and 9 H_2SO_4 plants at Cargill are double-absorption plants. The existing double-absorption technology is considered to be state-of-the-art in reducing SO_2 emissions from H_2SO_4 plants and is already in operation at the Nos. 8 and 9 H_2SO_4 plants. Therefore, this control technology is proposed as BACT for SO_2.

Although there will be no change in each plant's maximum permitted capacity, physical modifications may be needed to meet the proposed SO_2 emission limit. As described in Section 2.0, Cargill may need to replace the existing vanadium catalyst with cesium-promoted vanadium catalyst in the fourth pass of the No. 8 H_2SO_4 plant. This change has already been implemented in the No. 9 H_2SO_4 plant (with FDEP approval). As an

alternative, additional catalyst volume may be added to the plants. Additional physical changes may be needed.

The proposed BACT SO_2 emission limit for the Nos. 8 and 9 H_2SO_4 plants is 3.5 lb/ton of H_2SO_4 produced, 24-hour average, which is equal to the recent BACT determination for Cargill Riverview's No. 7 H_2SO_4 plant, and more stringent than the BACT emission rate recently determined by FDEP for Piney Point Phosphates proposed reconstructed sulfuric acid plant of 2,000 TPD capacity. The Piney Point determination was 3.5 lb/ton for a 48-hour average.

On a 3-hour average, the proposed BACT emission rate is 4.0 lb/ton, equivalent to the NSPS. This higher 3-hour average emission rate is necessary to account for plant process fluctuations and variability.

SO_2 compliance test data for the Nos. 8 and 9 H_2SO_4 plant for the last 3 years are presented in Table 5-1. As shown, tests indicate the average SO_2 emissions are between 3.1 and 3.8 lb/ton. These levels are above the proposed 3.5 lb/ton, 24-hour average limit, but less than the proposed 3-hour limit of 4.0 lb/ton. Variable emissions result from changing operating rates, process variables, and catalyst aging. An SO_2 emission level lower than 3.5 lb/ton, 24-hour average, may not be achievable on a continuous basis without significant changes to the catalyst system, particularly in light of the potential effects of higher production, catalyst aging, and other process variables.

5.3.1.2 Alternative SO_2 Control Technologies

EPA's latest review of NSPS for H_2SO_4 plants (MITRE Corp., 1979) presents a comprehensive assessment of alternative control technologies for removing SO_2 from H_2SO_4 plant tailgases. Alternative technologies identified included the double-absorption contact H_2SO_4 plant, sodium sulfite-bisulfite scrubbing, ammonia scrubbing, and molecular sieves. The study concluded that the best demonstrated control technology to reduce SO_2 emissions is the double-absorption H_2SO_4 plant. Nearly all the H_2SO_4 plants built in the United States since

1971 have used the double-absorption process, wherein two absorber stages are used. The SO_2 conversion efficiency for the double-absorption plant is 96 percent or greater.

A review of H_2SO_4 plant BACT determinations was conducted to determine control technologies and emission rates associated with plants constructed or modified since the EPA study was conducted in 1979. The results of the review are summarized in Table 5-2. This information was obtained from the EPA's BACT/LAER Clearinghouse. As indicated in the table, all BACT determinations since 1979 have resulted in allowable SO_2 levels equivalent to the NSPS of 4.0 lb/ton, except for the Cargill Riverview and the Piney Point plants. These plants have ranged in capacity from 700 to 3,200 TPD. All have used the double-absorption technology.

Mississippi Phosphates initially proposed an SO_2 emissions limit of 3.25 lb/ton of acid to avoid PSD and BACT. The final permitted limit for the Mississippi Phosphates project is 4.0 lb SO_2 per ton of acid. The annual emission cap (limiting future annual emissions after the production increase to past emissions) will necessitate that emissions at the plant be maintained between 3.0 and 4.0 lb/ton.

Reduction of SO_2 emissions below those proposed for the Nos. 8 and 9 H_2SO_4 double-absorption plants would require add-on control equipment, such as one of the flue gas desulfurization (FGD) processes described above. This would add considerable capital and operating costs to the present system and produce a waste disposal problem. The proposed Cargill expansion will increase the allowable SO_2 emissions from the two plants by 58.3 lb/hr based on a 24-hour average. This represents a 6-percent increase in total allowable SO_2 emissions from the two H_2SO_4 plants. The air quality impact analysis presented in Section 6.0 demonstrates that the proposed increase in emissions will have a very minor impact upon current air quality levels.

The EPA NSPS review analyzed the SO_2 control alternative of replacing the catalyst bed in the dual-absorption plant more frequently than is normally practiced. Complete replacement of the first three beds of a 4-stage converter at a frequency rate three times

greater than is normally practiced was estimated to result in a cost impact of $0.50/ton of H_2SO_4 produced. This was considered to be an unacceptable method because pretax profits to the plant could be reduced by 20 percent or more.

FGD systems have not been applied to sulfuric acid plants. This is because the double adsorption plants result in a high degree of reduction in potential SO_2 emissions (greater than 99 percent), resulting in rather low SO_2 flue gas concentrations.

A significant impediment to applying an FGD system to a sulfuric acid plant is the economic impact, reflected in an increase in capital costs, annual operating costs, and the cost per ton of H_2SO_4 manufactured. No sulfuric acid plant is known to have employed FGD as a control technology. In the recent PSD permits issued to Cargill Riverview and Piney Point Phosphates, FGD systems were dismissed as not being practical or economically feasible. As a result of these considerations, FGD systems were not considered further as BACT.

The FDEP, in its BACT determination for the No. 7 H_2SO_4 plant, indicated that the Centaur process, which uses low-temperature wet carbon catalysis/adsorption in place of the standard final pass and absorption tower, is feasible and was stated to be demonstrated on a pilot scale at a sulfur burning plant. It is licensed by Calgon Carbon and Monsanto Enviro-Chem. Emissions as low as 1 lb SO_2 per ton of acid are theoretically possible. However, the process has not yet been optimized and might result in a separate excess weak sulfuric acid stream (beyond plant water makeup needs), which might require treatment and disposal. Process optimization and building contingency treatment facilities would delay expansion of the plant. The FDEP did not recommend the Centaur process for Cargill at that time.

Use of a cesium-promoted vanadium catalyst in place of the conventional vanadium catalyst in the final converter pass was required as a specific condition of the Piney Point Phosphates, Inc. permit by FDEP, although it was not specifically required by the permit for the No. 7 H_2SO_4 plant at Cargill. A cesium-promoted vanadium catalyst can theoretically reduce SO_2 emissions by 20 to 40 percent. However, cesium catalyst is 2.5 times more expensive than vanadium, and therefore is normally used only where space limitations

prohibit the use of vanadium. Cargill proposes either an increase in volume of the conventional vanadium catalyst or use of cesium-promoted catalyst to achieve a more stringent emission rate compared to the Piney Point BACT limit (3.5 lb/ton H_2SO_4 48-hour average).

None of the alternative SO_2 control technologies is considered to be superior to the selected BACT, based on economic, energy, and environmental impacts. The chosen SO_2 BACT for the Nos. 8 and 9 H_2SO_4 plants is the currently operating double-absorption plant with catalyst enhancement, reflective of a maximum 24-hour SO_2 emission rate of 3.5 lb/ton.

5.3.2 SULFURIC ACID MIST

The Nos. 8 and 9 H_2SO_4 plants at Cargill are currently equipped with high-efficiency mist eliminators to control H_2SO_4 mist emissions. These are conventional mist eliminators. The current emission limit is 0.15 lb/ton for H_2SO_4 mist based upon the NSPS. The proposed BACT emission level for H_2SO_4 mist is equal to the current BACT limit for the No. 7 H_2SO_4 plant of 0.12 lb/ton.

Alternatives to the conventional mist eliminator are impaction based devices and brownian-type devices. The Monsanto CS-type eliminator is an impaction-based product which is stated to remove approximately 100 percent of particles above 3 microns in diameter, and 50 to 95 percent of particles between 0.5 and 3 microns. In order to implement this change, the final towers of each plant would need to be modified (enlarged) at considerable expense to Cargill. Based on the No. 7 H_2SO_4 plant, the total cost would be $350,000.

Cargill Riverview was recently required to meet an emission limit for H_2SO_4 mist of 0.12 lb/ton using impaction-based mist eliminators for the No. 7 H_2SO_4 plant. The brownian-type mist eliminators are much more expensive than the impaction type and the existing towers on the Nos. 8 and 9 H_2SO_4 plants at Cargill could not be modified; new towers would need to be built to accommodate the larger size requirements, structural support, etc. The brownian-type product (Monsanto ES, or equivalent) is estimated to cost an additional $500,000 for just the mist eliminator elements for each plant. This additional cost is

considered economically prohibitive, considering that a significant reduction in total mass emissions of mist would not be achieved. This is because the smaller particles controlled by the brownian-type elements constitute a small fraction of the total mass emissions.

H_2SO_4 mist source test data from the No. 8 and 9 plants operating near their current permitted rates are presented in Table 5-1. Review of the source test data presented in Table 5-1 shows that past H_2SO_4 mist compliance test values have ranged from 0.033 to 0.052 lb/ton for the two H_2SO_4 plants. These data indicate that emissions can fluctuate significantly, due to the factors discussed previously for SO_2. Based on the source test data, a reduction in the current allowable level is proposed for the Nos. 8 and 9 H_2SO_4 plants.

Previous BACT determinations for H_2SO_4 mist from sulfuric acid plants throughout the U.S. are summarized in Table 5-3. This information was obtained from the EPA's BACT/LAER Clearinghouse. The data show that all BACT determinations for H_2SO_4 plants constructed or modified since 1980 have resulted in allowable H_2SO_4 mist emission rates equivalent to the NSPS of 0.15 lb/ton, except for the No. 7 H_2SO_4 plant at Cargill. Based on these considerations, the selected BACT for control of H_2SO_4 mist emissions is the proposed impaction-type, high-efficiency mist eliminators to control mist emissions to 0.12 lb/ton.

The proposed Cargill H_2SO_4 expansion will not increase allowable H_2SO_4 mist emissions. Current allowable H_2SO_4 emissions from the No. 8 and 9 H_2SO_4 plants combined will decrease by 14 percent. A lower BACT emission limit would not result in significant benefits to the environment.

5.3.3 NITROGEN OXIDES

The NO_x emissions from the H_2SO_4 plants at Cargill are very low, estimated at about 0.12 lb/ton H_2SO_4 produced. Add-on NO_x control equipment is not known to be applied on any H_2SO_4 plant. Add-on technology would have a significant economic impact on Cargill and would not result in significant emission reductions. Therefore, the proposed BACT for NO_x is the existing combustion system and good combustion practices.

5.4 PHOSPHORIC ACID PLANT

Fluoride emissions from the existing PAP are currently controlled by three scrubbers. As described in Section 2.0, the proposed project will add a new scrubber as well as reduce the fluoride loading to one of the existing scrubbers. Operational parameters for the scrubbers are presented in Table 5-4.

Fluoride emissions from the entire PAP are currently limited by Operation Permit No. 0570008-014-AV to 0.0135 lb/ton of P_2O_5 and 10.01 TPY. This limit is based on a BACT determination issued for the PAP on August 27, 1996. Currently, the existing scrubber system is achieving lower fluoride emission rates than required by the operation permit. The results of the last four compliance tests for the facility (tests since the BACT determination was issued) are summarized in Table 5-5. As shown in Table 5-5, actual fluoride emission rates for the existing PAP measured during the compliance tests ranged from 0.0024 lb/ton of P_2O_5 to 0.0105 lb/ton of P_2O_5.

A summary of recent BACT determinations for fluoride emissions from phosphoric acid plants is presented in Table 5-6. The source of the BACT determinations presented in Table 5-6 is EPA's RACT/BACT/LAER Clearinghouse web site. The two most recent and stringent BACT determinations are for the Cargill Bartow PAP and the PAP at Riverview, which is the subject of this application. Note that the BACT determination presented in the RACT/BACT/LAER Clearinghouse document for the PAP at Bartow is incorrectly presented as 0.012 lb 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 lb of F per ton of P_2O_5, but BACT for an existing facility with both new and existing sources was 0.0135 lb 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 flouride emissions is anticipated. However, given the uncertainties associated with the proposed modification, 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 the current emission limits for the PAP, 0.0135 lb of F per ton of P_2O_5, as BACT. This limit is consistent with the previous BACT limit for the PAP, as well as the most stringent BACT determination to date for the PAP.

5.5 ENHANCED PHOSPHATE PRODUCTS (EPP) PLANT (FORMERLY GTSP PLANT)

5.5.1 EXISTING CONTROL TECHNOLOGY

The existing GTSP plant is currently equipped with two venturi scrubbers and two tailgas scrubbers. The two primary venturi scrubbers are of the same design, as are the two tailgas scrubbers. One venturi scrubber controls PM emissions and recovers ammonia from the exhaust gases of the reactor, granulator, cooler, and equipment vents (RGCV scrubber). The other venturi scrubber controls PM emissions from the dryer. Similarly, the two tailgas scrubbers are of the same design and control fluoride emissions from the RGCV and the dryer, respectively.

The RGCV venturi scrubber and RGCV tailgas scrubber are in series, as are the dryer venturi scrubber and dryer tailgas scrubber. Exhaust gases go to a common stack for the EPP plant. Control equipment data for these scrubbers are as follows.

	Venturi Scrubbers		Tailgas Scrubbers	
Parameter	RGCV	Dryer	RGCV	Dryer
Manufacturer/Type	Wellman Power Gas		Wellman Power Gas -- Packed Tower, Up-Flow	
Design Rates:				
Gas Flow Rate	60,000 acfm	100,000 acfm	60,000 acfm	100,000 acfm
Gas-to-Liquid Ratio	80 acf/gal	115 acf/gal	100 acf/gal	90 acf/gal
Efficiency Rating (at design capacity)	90%	90%	99%	99%
Design Pressure Drop	10 to 25" w.g.	10 to 25" w.g.	0.5" w.g.	0.1" w.g.
Scrubbing Liquor Composition	Pondwater	Pondwater	Pondwater	Pondwater

Note: acf/gal = actual cubic feet per gallon.
acfm = actual cubic feet per minute.
" w.g. =inches water gauge.

Currently, the scrubber systems are achieving lower emission rates than required by permit No. 0570008-006-AO. As shown in Table 5-7, emissions from the common stack range from 4.0 to 8.2 lb/hr for PM and 0.43 to 1.56 lb/hr for F. These are equivalent to 0.049 to 0.097 lb of PM per ton of GTSP product, and 0.011 to 0.041 lb of F per ton P_2O_5 input.

5.5.2 BACT ANALYSIS FOR PM/PM_{10}

BACT for PM/PM_{10} for the modified EPP plant is the proposed new RGCV and dryer venturi scrubbers, followed by the existing tailgas scrubbers. Operational parameters for the existing and proposed scrubbers are presented below:

Pollution Control Equipment	Parameter	Operating Rate[a]
RGCV Venturi Scrubber (new)	Flow	750 gpm[b]
	Pressure Drop	10-25 inches H_2O[b]
Dryer Venturi Scrubber (new)	Flow	870 gpm[b]
	Pressure Drop	10-25 inches H_2O[b]
RGCV Tailgas Scrubber (existing)	Flow	830 gpm
	Pressure Drop	0.5 inches H_2O
Dryer Tailgas Scrubber (existing)	Flow	720 gpm
	Pressure Drop	0.1 inches H_2O

[a] Based on 3-hour averaging times.
[b] Design rates; operational parameters will be established after compliance testing.

Note: gpm = gallons per minute.
H_2O = water.

A review of previous BACT determinations for PM emissions from GTSP and ammonium phosphate plants (MAP and DAP) was conducted. The results of this review are presented in Table 5-8. It is noted that determinations issued prior to 1991 are not included in Table 5-8.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the proposed combination of venturi scrubber followed by packed tower tailgas scrubbers, is the best control technology for application on the EPP plant. Previous BACT determinations have resulted in PM emission limits ranging from 0.19 to 0.41 lb of PM per ton of P_2O_5 input. Cargill's proposed PM/PM_{10} emission rate for the EPP plant of 12.0 lb/hr is equivalent to 0.28 lb/ton P_2O_5 input and 0.13 lb/ton EPP produced. This

proposed limit is higher than the previous determinations based on the actual emissions measured from the EPP plant. A higher limit is justified to provide certainty that the proposed emission level will be achievable on a continuous basis.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales; PSD-FL-241) addressed alternatives for PM/PM_{10} control. The alternatives addressed consisted of a high-energy (>30 in w.c.) venturi scrubber and a medium-energy (15 to 30 in w.c.) venturi scrubber. The IMC plant employs an existing medium-energy venturi scrubbing system. The high costs of adding a high-energy venturi scrubbing system was deemed economically infeasible with incremental cost effectiveness ranging from $50,000 to $75,000 per incremental ton of PM/PM_{10} removed. As a result, the high-energy venturi scrubber option was found to be infeasible, and the existing medium-energy venturi scrubber was selected as BACT.

Cargill also employs medium-energy wet scrubbers in its MAP plant and a medium energy venturi scrubber. Similar to the above analysis, replacing the existing scrubbers with high-energy venturi scrubbers would not be cost effective. Therefore, the existing medium-energy wet scrubbers (ARCO scrubbers and cooler scrubber) represent BACT for the Cargill EPP plant. Since actual PM/PM_{10} emissions from the EPP plant have been below the allowable emission rate of 21.6 lb/hr, Cargill is proposing to lower the allowable to 12.0 lb/hr, even considering the proposed modifications.

5.5.3 BACT ANALYSIS FOR FLUORIDES

BACT for fluorides for the modified EPP plant are the proposed venturi scrubbers followed by the existing tailgas scrubbers. A review of previous BACT determinations for F emissions from EPP, MAP, and DAP plants was conducted. The results of this review are presented in Table 5-9. It is noted that determinations issued prior to 1991 are not included in Table 5-9.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the currently existing packed tower tailgas scrubbers is the best control technology for application on the EPP plant. Previous BACT determinations resulted

in emission limits ranging from 0.0417 to 0.06 lb/ton P_2O_5 input for F. Cargill's proposed fluoride emission rate for the EPP plant is 2.45 lb/hr, equivalent to 0.058 lb/ton P_2O_5 input when making GTSP, and 4.1 lb/hr and 0.041 lb/ton P_2O_5 when making MAP or DAP. The proposed BACT limit for MAP/DAP is equal to the most stringent BACT issued to date for a MAP plant.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales) addressed alternatives for F control. The alternatives included a packed scrubber using either once-through fresh water, neutralized water from a dedicated pond (fresh water makeup), or process cooling pond water. The first option was dismissed due to concern over fresh water usage and plant water balance problems. The second option was dismissed based on economics, with the cost effectiveness estimated at $14,000 per ton of F removed. In Cargill's case, the first two options can be dismissed based on similar considerations. This leaves the third option, using process cooling pond water, as BACT.

5.5.4 BACT ANALYSIS FOR NITROGEN OXIDES

The EPP plant dryer is a small source of NO_x due to fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source.

5.6 ANIMAL FEED PLANT

5.6.1 BACT ANALYSIS FOR PM/PM_{10}

5.6.1.1 Material Handling Sources

The existing animal feed plant uses a combination of baghouses, cyclones, and wet scrubbers to control PM/PM_{10} emissions. Baghouses are used to control all raw material (DE and limestone) handling operations, as well as product loadout operations. Baghouse technology represents the state of the art in control of PM/PM_{10} emissions for material handling sources. Baghouses are highly efficient and allow collected PM to be recovered as product. Although wet PM controls (i.e., scrubbers) could be employed, an additional liquid waste stream would be generated.

The current PM/PM_{10} emission limit for the material handling sources at the existing AFI Plant is 0.012 grains per dry standard cubic feet (gr/dscf), based on FDEP's BACT

determination presented in Construction Permit No. 0570008-28-AC issued on June 8, 1999. Given this recent BACT determination by FDEP, that the material handling sources in the previous application are identical or similar to the proposed material handling sources in this application, and that no other technology is capable of achieving lower PM/PM_{10} levels than the proposed baghouse technology, Cargill is proposing an emission limit of 0.012 gr/dscf as BACT for these sources. This is also applicable to the proposed baghouse controlling PM emissions from the AFI milling, classification, and cooling equipment.

5.6.1.2 Process Equipment

PM emissions from the AFI reactor and dryer will be controlled by a new venturi scrubber. The venturi scrubber control is an efficient control device and is the most appropriate technology for gas streams that contain a significant amount of moisture or particulates that are "sticky." The exhaust gas stream from the animal feed dryers has these characteristics. This gas stream is combined with the gas stream from the reactor system prior to being scrubbed.

FDEP determined wet scrubber technology to be BACT in Construction Permit No. 0570008-028-AC issued on June 8, 1999 for modifications to the existing AFI Plant. The permitted PM/PM_{10} emission limits for the existing AFI granulation train are 8 lb/hr and 35.04 TPY. Again, given this recent BACT determination by FDEP for an identical source, Cargill is proposing equivalent control equipment, capable of attaining the same emission rates, as BACT for the modified AFI plant. Historic emissions tests on the AFI plant at Cargill are presented in Table 5-10.

5.6.2 BACT ANALYSIS FOR FLUORIDE

In June 1999, FDEP issued a final Air Construction Permit allowing Cargill to make the modifications necessary to increase production of the existing AFI plant from 580 to 770 TPD of AFI. For that permit, FDEP determined a fluoride emission rate of 0.5 pound per batch per hour (lb/batch-hr) to be BACT. Although Cargill is modifying the existing acid defluorination system with the addition of a fourth acid batch tank and production of defluorinated acid will increase, the hourly fluoride emission rate is not expected to increase

defluorination system with the addition of a fourth acid batch tank and production of defluorinated acid will increase, the hourly fluoride emission rate is not expected to increase above 1.0 lb/hr. The new packed scrubber is expected to provide equivalent or better F control. Given this recent BACT determination by FDEP and the increase in production afforded by the proposed modification, Cargill believes that a fluoride emission limit of 0.5 lb/batch-hr or 1 lb/hr still represents BACT. Historic test data from the AFI plant are presented in Table 5-10.

5.6.3 BACT ANALYSIS FOR NITROGEN OXIDES

The AFI plant dryer is a small source of NO_x due to fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source.

5.7 NO. 5 DAP PLANT

5.7.1 EXISTING CONTROL TECHNOLOGY

The No. 5 DAP plant is currently equipped with three venturi scrubbers and two tailgas scrubbers. The three primary venturi scrubbers are of different but similar design, as are the two tailgas scrubbers. One venturi scrubber controls PM emissions and recovers ammonia from the exhaust gases of the reactor and granulator, the second controls the cooler and equipment vents, and the third venturi scrubber controls PM emissions from the dryer. One tailgas scrubber controls fluoride emissions from the reactor, granulator, and cooler, while the second controls emissions from the dryer. Exhaust gases go to a common stack for the No. 5 DAP plant. Operations parameters for these scrubbers are as follows.

Pollution Control Equipment	Parameter	Minimum Limitations[a]
RGCE Tail Gas Scrubber	Pressure Drop	3" H_2O
Dryer Tail Gas Scrubber	Pressure Drop	3" H_2O
Total to RGCE and Dryer	Flow	3,400 gpm
RG Venturi Scrubber	Pressure Drop Flow	8" H_2O 780 gpm
CE Venturi Scrubber	Pressure Drop Flow	6" H_2O 590 gpm
Dryer Venturi Scrubber	Pressure Drop Flow	9" H_2O 580 gpm

[a] Based on 3-hour averaging times.

1.3 to 2.9 lb/hr for PM and 0.47 to 3.02 lb/hr for F. These are equivalent to 0.018 to 0.042 lb of PM per ton of P_2O_5 input, and 0.008 to 0.042 lb of F per ton P_2O_5 input.

5.7.2 BACT ANALYSIS FOR PM/PM_{10}

BACT for PM/PM_{10} for the modified No. 5 DAP plant is the existing venturi scrubbers, followed by the existing tailgas scrubbers.

A review of previous BACT determinations for PM emissions from GTSP and ammoniated phosphate plants (MAP and DAP) was conducted. The results of this review are presented in Table 5-8. It is noted that determinations issued prior to 1991 are not included in Table 5-8.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the proposed combination of venturi scrubber followed by packed tower tailgas scrubbers, is the best control technology for application on the No. 5 DAP plant. Previous BACT determinations have resulted in PM emission limits ranging from 0.19 to 0.41 lb of PM per ton of P_2O_5 input. Cargill's proposed PM/PM_{10} emission rate for the No. 5 DAP plant of 12.8 lb/hr is equivalent to 0.174 lb/ton P_2O_5 input and 0.082 lb/ton of DAP produced. This proposed limit is lower than the previous determinations, based on the actual emissions measured from the EPP plant. The proposed limit is justified to provide certainty that the proposed emission level will be achievable on a continuous basis.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales; PSD-FL-241) addressed alternatives for PM/PM_{10} control. The alternatives addressed consisted of a high-energy (>30 in w.c.) venturi scrubber and a medium-energy (15 to 30 in w.c.) venturi scrubber. The IMC plant employs an existing medium-energy venturi scrubbing system. The high costs of adding a high-energy venturi scrubbing system was deemed economically infeasible with incremental cost effectiveness ranging from $50,000 to $75,000 per incremental ton of PM/PM_{10} removed. As a result, the high-energy venturi scrubber option was found to be infeasible, and the existing medium-energy venturi scrubber was selected as BACT.

Cargill also employs medium-energy wet scrubbers and a medium-energy venturi scrubbers in its No. 5 DAP plant. Similar to the above analysis, replacing the existing scrubbers with high-energy venturi scrubbers would not be cost effective. Therefore, the existing medium-energy venturi scrubbers represent BACT for the Cargill No. 5 DAP plant. Cargill is proposing to retain the current allowable of 12.8 lb/hr, considering the proposed modifications and process variability.

5.7.3 BACT ANALYSIS FOR FLUORIDES

BACT for fluorides for the modified No. 5 DAP plant are the proposed venturi scrubbers followed by the existing tailgas scrubbers. A review of previous BACT determinations for F emissions from EPP, MAP, and DAP plants was conducted. The results of this review are presented in Table 5-9. It is noted that determinations issued prior to 1991 are not included in Table 5-9.

As shown, the previous BACT determinations were all based on wet scrubber technology. This demonstrates that the currently existing packed tower tailgas scrubbers is the best control technology for application on the No. 5 DAP plant. Previous BACT determinations resulted in emission limits ranging from 0.0417 to 0.06 lb/ton P_2O_5 input for F. Cargill's proposed fluoride emission rate for the No. 5 DAP plant is 3.3 lb/hr, equivalent to 0.045 lb/ton P_2O_5 input. The proposed BACT limit is equal to the most stringent BACT issued to date for a MAP or DAP plant.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales) addressed alternatives for F control. The alternatives included a packed scrubber using either once-through fresh water, neutralized water from a dedicated pond (fresh water makeup), or process cooling pond water. The first option was dismissed due to concern over fresh water usage and plant water balance problems. The second option was dismissed based on economics, with the cost effectiveness estimated at $14,000 per ton of F removed. In Cargill's case, the first two options can be dismissed based on similar considerations. This leaves the third option, using process cooling pond water, as BACT.

5.7.4 BACT ANALYSIS FOR NITROGEN OXIDES

The No. 5 DAP plant dryer is a small source of NO_x due to fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source.

Table 5-1. Summary of Recent Nos. 8 and 9 Plant Emission Tests at Cargill Riverview

Plant/Date	Average Production Rate[a] (tons/hr)	Sulfur Dioxide		Sulfuric Acid Mist	
		avg lb/hr	avg lb/ton	avg lb/hr	lb/ton
No. 8 H_2SO_4 Plant					
8/24/98	94.5	359.6	3.8	4.88	0.052
8/25/99	100.0	311.7	3.1	3.14	0.031
11/10/99	106.7	369.5	3.5	4.23	0.040
No. 9 H_2SO_4 Plant					
12/9/98	131.25	488.5	3.7	5.37	0.041
12/2/99	133.08	472.7	3.6	4.43	0.033

[a] As 100 percent sulfuric acid.

Note:
avg = average.
lb/hr = pounds per hour.
lb/ton = pounds per ton.
max = maximum.
H_2SO_4 = sulfuric acid.
SO_2 = sulfur dioxide
tons/hr = tons per hour.

Table 5-2. Summary of BACT Determinations for Sulfur Dioxide Emissions from Sulfuric Acid Plants

Company Name	State	Permit No.	Permit Issue Date	Throughput	Emission Limit	Control Equipment
CARGILL FERTILIZER	FL	0570008-014-AV	4/28/99	2,700 TPD	4 LB/TON (3-hr)	DOUBLE ABSORPTION
					3.5 LB/TON (24-hr)	DOUBLE ABSORPTION
FARMLAND HYDRO, L. P.	FL	1050053-019-AC	7/15/98	250 TPD	401 LB/HR	DOUBLE ABSORPTION SCRUBBER/MIST ELIMINATOR
PINEY POINT PHOSPHATES INC.			2/1/98	2,000 TPD	4 LB/TON (3-hr)	DOUBLE ABSORPTION
					3.5 LB/TON (48-hr)	DOUBLE ABSORPTION
CARGILL FERTILIZER	FL	AC53-271436 / PSD-FL/229	3/7/95	3,200 TPD	4 LB/TON	DOUBLE ABSORPTION CATALYST /MIST ELIMINATORS
SEMINOLE FERTILIZER CORPORATION	FL	FL-PSD-191	12/31/92	2,280 TPD	4 LB/TON H_2SO_4	DOUBLE ABSORPTION, DEMISTER
HESS OIL VIRGIN ISLAND CORP. - HOVIC	VI		12/14/90	225 TPD	4 LB/T ACID PRODUCED	DOUBLE ABSORPTION TOWERS AND CEM

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-3. Summary of BACT Determinations for Sulfuric Acid Mist Emissions from Sulfuric Acid Plants

Company Name	State	Permit No.	Permit Issue Date	Throughput	Emission Limits	Control Equipment
CARGILL FERTILIZER	FL	0570008-014-AV	4/28/99	2,700 TPD	0.15 LB/TON	MIST ELIMINATORS
FARMLAND HYDRO, L. P.	FL	1050053-019-AC	7/15/98	250 TPD	17.2 LB/HR	MIST ELIMINATORS
PINEY POINT PHOSPHATES INC			2/1/98	2,000 TPD	0.15 LB/TON	MIST ELIMINATORS (BROWNIAN DIFFUSION)
CARGILL FERTILIZER	FL	AC53-271436 / PSD-FL/229	3/7/95	3,200 TPD	0.15 LB/TON	MIST ELIMINATORS
SEMINOLE FERTILIZER CORPORATION	FL	FL-PSD-191	12/31/92	2,280 TPD	0.15 LB/TON H_2SO_4	DOUBLE ABSORPTION, DEMISTER
HESS OIL VIRGIN ISLAND CORP. - HOVIC	VI		12/14/90	225 TPD	0.15 LB/T ACID PROD.	MIST ELIMINATOR

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-4. Summary of Operational Parameters for Wet Scrubbers Within the Modified PAP

Scrubber/Make-Model No.	Sources Controlled (Future)	Type	Gas Flow Rate (acfm)	Operating Parameter	Minimum Limitation[a]
Teller Packed Bed	No. 3 Prayon Reactor	Packed Bed	33,000	Flow (sprays) Flow (packing) Pressure Drop	510 GPM 600 GPM 2 inches H_2O
VESCOR Model 2155RL	No. 1 Filter No. 2 Filtrate Tank No. 2 Filter No. 2 Filtrate Tank Gypsum Slurry Tank	Venturi/Packed Bed/ Demister	45,000	Flow (sprays) Flow (packing) Pressure Drop	130 GPM 1,200 GPM 2 inches H_2O
VESCOR Replica	No. 3 Filter West 30 Percent Acid Feed Tank[a] No. 3 Filtrate Tank Gypsum Slurry Tank 45-Percent Phosphoric Acid Tanks (2)[b] Nos. 1-8 Evaporators[a] Nos. 8 and 9 Evaporator Seal Tanks[a] PFS Shipping Tank[a]	Venturi/Demister	53,000	Flow Pressure Drop	1,100 GPM 2 inches H_2O
New Dorrco Scrubber	No. 4 Dorrco Reactor New Dorrco Digester	Multi-Stage Packed Cross-Flow Scrubber	55,000	Flow Pressure Drop	2,800 GPM 2-12 inches H_2O

[a] Based on a 3-hour averaging time, per permit No. 0570008-014-AV.
[b] When maintenance is being performed on the VESCOR replica scrubber, these sources are controlled by the Teller scrubber.

Note: gpm = gallons per minute.

Table 5-5. Summary of Recent Phosphoric Acid Plant Emission Tests at Cargill Riverview

Date	Unit	Average Process Rate (TPH P_2O_5)	Fluoride	
			avg lb/hr	avg lb/ton P_2O_5[a]
12/18/97	No. 3 Filter	142.0	0.0707	--
	Dorrco	142.0	0.2280	--
	Prayon	142.0	0.0654	--
	Total		0.3641	0.0026
1/7/99	No. 3 Filter	155.4	0.2900	--
	Dorrco	155.4	0.0500	--
	Prayon	155.4	0.0300	--
	Total		0.3700	0.0024
4/29/99	No. 3 Filter	155.1	0.4300	--
	Dorrco	155.1	1.0900	--
	Prayon	155.1	0.1200	--
	Total		1.6400	0.0106
2/24/00	No. 3 Filter	142.0	0.262	--
	Dorrco	142.0	1.143	--
	Prayon	142.0	0.086	--
	Total		1.4910	0.0105

[a] As calculated.

Table 5-6. Summary of BACT Determinations for Fluoride Emissions from Phosphoric Acid Plants

Company	State	Permit No.	Permit Issue Date	Throughput	Emission Limits	Control Equipment
CARGILL FERTILIZER	FL	0570008-004-AC	8/27/96	170 TONS P2O5/HR	0.0135 LB F/TON P_2O_5 (Confined New & Existing Plant)	PACKED SCRUBBER USING POND WATER
					0.016 LB F/TON P_2O_5 (Existing Plant)	PACKED SCRUBBER USING POND WATER
					0.012 LB F/TON P_2O_5 (New Plant)	PACKED SCRUBBER USING POND WATER
CARGILL FERTILIZER	FL	AC53-262532 / PSD-FL/224	8/24/95	170 TPH P2O5	0.0135 LB F/TON P_2O_5 (Confined New & Existing Plant)	PACKED SCRUBBER
					0.016 LB F/TON P_2O_5 (Existing Plant)	PACKED SCRUBBER
					0.012 LB F/TON P_2O_5 (New Plant)	PACKED SCRUBBER
IMC FERTILIZER, INC.	FL	PSD-FL-201	8/2/93	2500 TPD	0.02 LB/TON P_2O_5	CROSSFLOW SCRUBBER

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-7. Summary of Recent GTSP Plant Emission Tests at Cargill Riverview

Date	Average Production Rate (tons GTSP/hr)	Particulate Matter		Average P_2O_5 Input Rate (tons P_2O_5/hr)	Fluoride	
		avg lb/hr	avg lb/ton GTSP		avg lb/hr	avg lb/ton P_2O_5
4/2/98	84.8	8.2	0.097	39.0	0.43	0.011
5/13/99	82.1	4.0	0.049	37.8	1.16	0.031
6/29/00	83.1	7.6	0.092	38.2	1.55	0.041
		Average =	0.079			0.028
		Maximum =	0.097			0.041
		Standard Deviation =	0.026			0.015
		95% Confidence Level =	0.132			0.058

Table 5-8. Summary of BACT Determinations for Particulate Emissions from GTSP, MAP, and DAP Manufacturing Facilities

Company Name	State	Permit Number	Permit Issue Date	Throughput	Emissions Limits	Control Equipment
IMC-AGRICO	FL	PSD-FL-241	1/21/98	80 TPH	0.156 LB/TON P_2O_5	VENTURI/PACKED BED SCRUBBER
IMC-AGRO COMPANY	FL	AC53-230355, AC53-232681,FL204	4/18/94	100 TPH DAP	0.41 LB/TON 100% P_2O_5	VENTURI ACID SCRUBBER
CARGILL FERTILIZER	FL	AC53-246403 / PSD-FL/211	11/28/94	120 TPH 100% P2O5	0.19 LB/TON P_2O_5	VENTURI PRIMARY SCRUBBER/PACKED TOWER SECONDARY
CARGILL FERTILIZER, INC.	FL	PSD-FL-178	10/13/92	73.5 TPH P2O5	0.19 LB/TON P_2O_5	VENTURI SCRUBBER, PACKED TOWER SCRUBBER

Notes: GTSP = Granular Triple Super Phosphate.
MAP = Monoammonium Phosphate.
DAP = Diammonium Phosphate.

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-9. Summary of BACT Determinations for Fluoride Emissions from GTSP, MAP, and DAP Manufacturing Facilities

Company Name	State	Permit Number	Permit Issue Date	Throughput	Emission Limits	Control Equipment
IMC-AGRICO	FL	PSD-FL-241	1/21/98	80 TPH	0.0417 LB/TON P_2O_5	VENTURI SCRUBBER AND PACKED BED SCRUBBER
IMC-AGRO COMPANY	FL	AC53-230355, AC53-232681,FL204	4/18/94	100 TPH DAP	0.0417 LB/TON 100% P_2O_5	VENTURI ACID SCRUBBER
FARMLAND HYDRO, L.P.	FL	AC53-210886/PSD-FL-186	7/28/92	100 TPH	0.06 LBS/T P_2O_5	MULTI STAGE SCRUBBER, ADDITION OF COOLER
C F INDUSTRIES, INC.	FL	AC 29-210979	5/25/92	100 TPH	0.06 LBS/T P_2O_5	TWO STAGE SCRUBBER, ADDITION OF COOLER

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2001.

Table 5-10. Summary of Recent AFI Plant Emission Tests at Cargill Riverview

Date	Average Process Rate (tons/hr)	Particulate Matter		Fluoride		NO_X	
		lb/hr	lb/ton	lb/hr	lb/ton	lb/hr	lb/ton
7/2/98	21.5	5.85	0.272	--	--	2.24	0.104
10/1/98	--	--	--	0.96	--	--	--
8/24/00	23.0	3.50	0.152	0.16	0.007	--	--
11/13/00	23.6	7.10	0.301	0.17	0.007	--	--

Note: AFI = Animal Feed Ingredient Plant
NO_X = Nitrogen Oxides

Table 5-11. Summary of Recent No. 5 DAP Plant Emission Tests at Cargill Riverview

Plant/Date	Average Production Rate (tons/hr)	Average Process Rate[a] (tons/hr)	PM		Fluoride	
			avg lb/hr	avg lb/ton[a]	avg lb/hr	avg lb/ton[a]
12/23/98	135.1	60.9	2.6	0.040	0.47	0.008
6/25/99	146.9	68.4	2.9	0.042	2.83	0.041
6/13/00	155.2	71.3	1.3	0.018	3.02	0.042

[a] As P_2O_5.

Note: PM = Particulate matter.

APPENDIX A
BASIS OF CURRENT ACTUAL EMISSIONS

Table A-1. Actual Emissions for 2000--Cargill Riverview

Source Description	EU ID	Pollutant Emission Rate (TPY)								
		SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage/Handling Facility										
Molten Sulfur Storage--Tank No. 1		[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Molten Sulfur Storage--Tank No. 2	064	0.56	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Tank No. 3	065	0.56	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Pit No. 7	066	0.03	--	--	0.26	0.26	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 8	067	0.03	--	--	0.22	0.22	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 9	068	0.03	--	--	0.23	0.23	0.02	0.01	--	--
Molten Sulfur Storage--Ship Unloading	069	0.38	--	--	0.49	0.49	0.27	0.18	--	--
Molten Sulfur Storage--Truck Loading Stn	074	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Total		**1.59**	--	--	**1.84**	**1.84**	**1.13**	**0.76**	--	--
B. No. 8 Sulfuric Acid Plant	005	1,377.40	47.23	--	--	--	--	--	15.74	--
C. No. 9 Sulfuric Acid Plant	006	1,480.10	49.34	--	--	--	--	--	13.57	--
D. Rock Mills		--	--	--	--	--	--	--	--	--
No. 5 Rock Mill	100	0.03	4.48	3.77	1.78	1.78	0.25	--	--	--
No. 9 Rock Mill	101	0.03	4.63	3.89	0.61	0.61	0.26	--	--	--
No. 7 Rock Mill	106	0.02	3.21	2.70	0.18	0.18	0.18	--	--	--
Ground Rock Handling Storage System	034/102	--	--	--	0.09	0.09	--	--	--	--
Total		**0.08**	**12.32**	**10.36**	**2.66**	**2.66**	**0.68**	--	--	--
E. Phosphoric Acid Plant	073	--	--	--	--	--	--	--	--	4.66
F. GTSP Plant	007	0.09	14.82	12.45	20.84	20.84	0.82	--	--	4.27
GTSP Ground Rock Handling	008	--	--	--	3.83	3.83	--	--	--	--
GTSP Storage Building No. 2	070	--	--	--	--	--	--	--	--	20.41
GTSP Storage Building No. 4	071	--	--	--	--	--	--	--	--	20.41
GTSP Truck Loadout Baghouse	072	--	--	--	0.01	0.01	--	--	--	--
GTSP Truck Loadout Fugitive Emissions		--	--	--	0.03	0.01	--	--	--	--
Total		**0.09**	**14.82**	**12.45**	**24.71**	**24.68**	**0.82**	--	--	**45.09**
G. AFI Plant No. 1	078	0.04	6.02	5.05	17.77	17.77	0.33	--	--	1.93
DE Hopper Baghouse	079	--	--	--	0.02	0.02	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	0.06	0.06	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	0.66	0.66	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.20	0.04	--	--	--	--
Total		**0.04**	**6.02**	**5.05**	**18.71**	**18.55**	**0.33**	--	--	**1.93**
H. No. 5 DAP Plant	055	0.03	4.37	3.67	8.37	8.37	0.24	--	--	8.04
I. Material Handling System										
West Baghouse Filter	051	--	--	--	0.63	0.63	--	--	--	--
South Baghouse	052	--	--	--	0.58	0.58	--	--	--	--
Vessel Ldng. System--Twr. Baghouse	053	--	--	--	0.63	0.63	--	--	--	--
Building No. 6 Belt to Conveyor No. 7	058	--	--	--	0.31	0.31	--	--	--	--
Conveyor No.7 to Conveyor No. 8	059	--	--	--	0.63	0.63	--	--	--	--
Conveyor No.8 to Conveyor No. 9	060	--	--	--	0.63	0.63	--	--	--	--
Railcar Unloading of AFI Product		--	--	--	0.16	0.03	--	--	--	--
E. Vessel Ldg. Facility-	061	--	--	--	0.25	0.25	--	--	--	--
Total		--	--	--	**3.81**	**3.68**	--	--	--	--
Total Actual Emission Rates--2000		**2,859.32**	**134.10**	**31.53**	**60.09**	**59.77**	**3.20**	**0.76**	**29.31**	**59.72**

[a] Emission unit did not operate for this year.

Table A-2. Actual Emissions for 1999--Cargill Riverview

Source Description	EU ID	Pollutant Emission Rate (TPY)								
		SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Storage/Handling Facility [b]										
Molten Sulfur Storage--Tank No. 1		[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Molten Sulfur Storage--Tank No. 2	064	0.57	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Tank No. 3	065	0.57	--	--	0.32	0.32	0.40	0.27	--	--
Molten Sulfur Storage--Pit No. 7	066	0.02	--	--	0.17	0.17	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 8	067	0.02	--	--	0.20	0.20	0.02	0.01	--	--
Molten Sulfur Storage--Pit No. 9	068	0.03	--	--	0.24	0.24	0.02	0.01	--	--
Molten Sulfur Storage--Ship Unloading	069	0.31	--	--	0.40	0.40	0.22	0.15	--	--
Molten Sulfur Storage--Truck Loading Stn	074	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Total		**1.51**	**--**	**--**	**1.64**	**1.64**	**1.08**	**0.72**	**--**	**--**
B. No. 8 Sulfuric Acid Plant [c]	005	1,124.09	40.88	--	--	--	--	--	13.63	--
C. No. 9 Sulfuric Acid Plant [c]	006	1,571.54	53.12	--	--	--	--	--	13.28	--
D. Rock Mills [c]		--	--	--	--	--	--	--	--	--
No. 5 Rock Mill	100	0.03	5.12	4.30	2.80	2.80	0.28	--	--	--
No. 9 Rock Mill	101	0.03	4.86	4.08	2.66	2.66	0.27	--	--	--
No. 7 Rock Mill	106	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Ground Rock Handling Storage System	034/102	--	--	--	0.08	0.08	--	--	--	--
Total		**0.06**	**9.98**	**8.38**	**5.55**	**5.55**	**0.55**	**--**	**--**	**--**
E. Phosphoric Acid Plant [c]	073	--	--	--	--	--	--	--	--	3.18
F. GTSP Plant [c]	007	0.13	21.28	17.87	12.49	12.49	1.17	--	--	2.97
GTSP Ground Rock Handling	008	--	--	--	3.77	3.77	--	--	--	--
GTSP Storage Building No. 2	070	--	--	--	--	--	--	--	--	19.37
GTSP Storage Building No. 4	071	--	--	--	--	--	--	--	--	17.61
GTSP Truck Loadout Baghouse	072	--	--	--	0.01	0.00	--	--	--	--
GTSP Truck Loadout Fugitive Emissions		--	--	--	0.02	0.00	--	--	--	--
Total		**0.13**	**21.28**	**17.87**	**16.28**	**16.26**	**1.17**	**0.00**	**0.00**	**39.95**
G. AFI Plant No. 1 [c]	078	0.03	5.41	4.54	17.15	17.15	0.30	--	--	1.64
DE Hopper Baghouse	079	--	--	--	0.02	0.02	--	--	--	--
Limestone Silo Baghouse	080	--	--	--	0.06	0.06	--	--	--	--
AFI Product Loadout Baghouse	081	--	--	--	0.62	0.62	--	--	--	--
AFI Product Loadout Fugitive Emissions		--	--	--	0.19	0.04	--	--	--	--
Total		**0.03**	**5.41**	**4.54**	**18.03**	**17.88**	**0.30**	**--**	**--**	**1.64**
H. No. 5 DAP Plant [c]	055	0.02	3.45	2.90	8.96	8.96	0.19	--	--	8.70
I. Material Handling System [c]		--	--	--	--	--	--	--	--	--
West Baghouse Filter	051	--	--	--	0.65	0.65	--	--	--	--
South Baghouse	052	--	--	--	0.57	0.57	--	--	--	--
Vessel Ldng. System--Twr. Baghouse	053	--	--	--	0.57	0.57	--	--	--	--
Building No. 6 Belt to Conveyor No. 7	058	--	--	--	0.34	0.34	--	--	--	--
Conveyor No.7 to Conveyor No. 8	059	--	--	--	0.65	0.65	--	--	--	--
Conveyor No.8 to Conveyor No. 9	060	--	--	--	0.65	0.65	--	--	--	--
Railcar Unloading of AFI Product		--	--	--	0.18	0.04	--	--	--	--
E. Vessel Ldg. Facility-	061	--	--	--	0.24	0.24	--	--	--	--
Total		**--**	**--**	**--**	**3.85**	**3.71**	**--**	**--**	**--**	**--**
Total Actual Emission Rates--1999		**2,697.38**	**134.12**	**33.70**	**54.32**	**54.01**	**3.28**	**0.72**	**26.91**	**53.47**

[a] Emission unit did not operate for this year.
[b] See Tables A-3 and A-4 for emission calculations.
[c] Emissions from the 1999 AOR.

Table A-3. Current Actual Emissions For 1999 From the Molten Sulfur Handling System, Cargill Riverview

		Existing Tank No. 2				Existing Tank No. 3				Pit 7			Pit 8			Pit 9		
Parameters	Units	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions
SULFUR FLOW RATES																		
Maximum loading rate	TPH	2,240	338	0		2,240	336	0		336	0		336	0		338	0	
Annual loading rate	TPY	345,763	346,116	0		345,763	348,118	0		184,081	0		225,212	0		292,687	0	
VENTILATION RATES																		
Loading/Unloading	dscfm	454	0	0		454	0	0		95	0		95	0		95	0	
Natural Ventilation through vents	dscfm	0	30	30		0	30	30		5	5		5	5		5	5	
Total Ventilation	dscfm	454	30	30		454	30	30		100	5		100	5		100	5	
TRANSFER TIMES																		
Loading/Unloading	hr/yr	154	1,030	--		154	1,030	--		548	--		670	--		871	--	
Idle	hr/yr	--	--	7,576		--	--	7,576		--	8,212		--	8,090		--	7,889	
Operating	hr/yr	--	--	--		--	--	--		--	--		--	--		--	--	
EMISSION FACTORS																		
Sulfur particulate	grains/dscf	0.66	0.29	0.29		0.66	0.29	0.29		0.51	0.29		0.51	0.29		0.51	0.29	
TRS (as H_2S)	lb/dscf	3.50E-05	3.50E-05	3.50E-05		3.50E-05	3.50E-05	3.50E-05		3.50E-06	3.50E-06		3.50E-06	3.50E-06		3.50E-06	3.50E-06	
SO_2	lb/dscf	7.30E-05	7.30E-05	7.30E-05		7.30E-05	7.30E-05	7.30E-05		7.30E-06	7.30E-06		7.30E-06	7.30E-06		7.30E-06	7.30E-06	
VOC	lb/dscf	5.20E-05	5.20E-05	5.20E-05		5.20E-05	5.20E-05	5.20E-05		5.20E-06	5.20E-06		5.20E-06	5.20E-06		5.20E-06	5.20E-06	
					Maximum Hourly and Annual Emission Rates				Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates
EMISSION RATES																		
Sulfur Particulate	lb/hr	2.568	0.075	0.075	2.568	2.568	0.075	0.075	2.568	0.437	0.012	0.437	0.437	0.012	0.437	0.437	0.012	0.437
	TPY	0.198	0.038	0.282	0.519	0.198	0.038	0.282	0.519	0.120	0.051	0.171	0.147	0.050	0.197	0.190	0.049	0.239
TRS (as H_2S)	lb/hr	0.953	0.063	0.063	0.953	0.953	0.063	0.063	0.953	0.021	0.001	0.021	0.021	0.001	0.021	0.021	0.001	0.021
	TPY	0.074	0.032	0.239	0.345	0.074	0.032	0.239	0.345	0.006	0.004	0.010	0.007	0.004	0.011	0.009	0.004	0.013
Sulfur Dioxide	lb/hr	1.989	0.131	0.131	1.989	1.989	0.131	0.131	1.989	0.044	0.002	0.044	0.044	0.002	0.044	0.044	0.002	0.044
	TPY	0.153	0.066	0.498	0.719	0.153	0.066	0.498	0.719	0.012	0.009	0.021	0.015	0.009	0.024	0.019	0.009	0.028
Volatile Organic Compounds	lb/hr	1.416	0.094	0.094	1.416	1.416	0.094	0.094	1.416	0.031	0.002	0.031	0.031	0.002	0.031	0.031	0.002	0.031
	TPY	0.109	0.048	0.355	0.512	0.109	0.048	0.355	0.512	0.009	0.006	0.015	0.010	0.006	0.017	0.014	0.006	0.020

Notes:
Total Sulfur Transferred to Tanks by Ship = 691,525 tons/yr
Total Sulfur Transferred from Tanks to Pits = 692,232 tons/yr
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Table A-4. Current Actual Emissions For 2000 From the Molten Sulfur Handling System, Cargill Riverview

		Existing Tank No. 2				Existing Tank No. 3				Pit 7			Pit 8			Pit 9		
Parameters	Units	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Tank Loading from Ship	Unloading Into Pit	Storage/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions
SULFUR FLOW RATES																		
Maximum loading rate	TPH	2,240	336	0		2,240	336	0		336	0		336	0		336	0	
Annual loading rate	TPY	427,316	430,182	0		427,316	430,182	0		328,346	0		260,200	0		271,818	0	
VENTILATION RATES																		
Loading/Unloading	dscfm	454	0	0		454	0	0		95	0		95	0		95	0	
Natural Ventilation through vents	dscfm	0	30	30		0	30	30		5	5		5	5		5	5	
Total Ventilation	dscfm	454	30	30		454	30	30		100	5		100	5		100	5	
TRANSFER TIMES																		
Loading/Unloading	hr/yr	191	1,280	--		191	1,280	--		977	--		774	--		809	--	
Idle	hr/yr	--	--	7,289		--	--	7,289		--	7,783		--	7,986		--	7,951	
Operating	hr/yr	--	--	--		--	--	--		--	--		--	--		--	--	
EMISSION FACTORS																		
Sulfur particulate	grains/dscf	0.66	0.29	0.29		0.66	0.29	0.29		0.51	0.29		0.51	0.29		0.51	0.29	
TRS (as H_2S)	lb/dscf	3.50E-05	3.50E-05	3.50E-05		3.50E-05	3.50E-05	3.50E-05		3.50E-06	3.50E-06		3.50E-06	3.50E-06		3.50E-06	3.50E-06	
SO_2	lb/dscf	7.30E-05	7.30E-05	7.30E-05		7.30E-05	7.30E-05	7.30E-05		7.30E-06	7.30E-06		7.30E-06	7.30E-06		7.30E-06	7.30E-06	
VOC	lb/dscf	5.20E-05	5.20E-05	5.20E-05		5.20E-05	5.20E-05	5.20E-05		5.20E-06	5.20E-06		5.20E-06	5.20E-06		5.20E-06	5.20E-06	
					Maximum Hourly and Annual Emission Rates				Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates
EMISSION RATES																		
Sulfur Particulate	lb/hr	2.568	0.075	0.075	2.568	2.568	0.075	0.075	2.568	0.437	0.012	0.437	0.437	0.012	0.437	0.437	0.012	0.437
	TPY	0.245	0.048	0.272	0.564	0.245	0.048	0.272	0.564	0.214	0.048	0.262	0.169	0.050	0.219	0.177	0.049	0.226
TRS (as H_2S)	lb/hr	0.953	0.063	0.063	0.953	0.953	0.063	0.063	0.953	0.021	0.001	0.021	0.021	0.001	0.021	0.021	0.001	0.021
	TPY	0.091	0.040	0.230	0.361	0.091	0.040	0.230	0.361	0.010	0.004	0.014	0.008	0.004	0.012	0.008	0.004	0.013
Sulfur Dioxide	lb/hr	1.989	0.131	0.131	1.989	1.989	0.131	0.131	1.989	0.044	0.002	0.044	0.044	0.002	0.044	0.044	0.002	0.044
	TPY	0.190	0.084	0.479	0.753	0.190	0.084	0.479	0.753	0.021	0.009	0.030	0.017	0.009	0.026	0.018	0.009	0.026
Volatile Organic Compounds	lb/hr	1.416	0.094	0.094	1.416	1.416	0.094	0.094	1.416	0.031	0.002	0.031	0.031	0.002	0.031	0.031	0.002	0.031
	TPY	0.135	0.060	0.341	0.536	0.135	0.060	0.341	0.536	0.015	0.006	0.021	0.012	0.006	0.018	0.013	0.006	0.019

Notes:
Total Sulfur Transferred from Tanks to Ships = 854,631 tons/yr
Total Sulfur Transferred from Tanks to Pits = 851,156 tons/yr
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Table A-5. Summary of Actual Emission Rates for 2000 Due to Fuel Combustion, No. 5 Rock Mill

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	6,899
Maximum Heat Input Rate	10^6Btu/hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0130
Annual Natural Gas Usage	10^6scf/yr	N/A	89.69

		No. 2 Fuel Oil		Natural gas		Maximum Total Emission Rate	
Pollutant	AP-42 Emissions Factor[c]	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.00	0.00	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.008	0.03	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.01	0.03
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1.300	4.48	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.30	4.48
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	1.092	3.77	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.09	3.77
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.072	0.247	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.07	0.25

Footnotes:

Particulate matter emissions rates are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

Table A-6. Summary of Actual Emission Rates for 2000 Due to Fuel Combustion, No. 7 Rock Mill

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	4,940
Maximum Heat Input Rate	10^6Btu/hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0130
Annual Natural Gas Usage	10^6scf/yr	N/A	64.22

		No. 2 Fuel Oil		Natural gas		Maximum Total Emission Rate	
Pollutant	AP-42 Emissions Factor[c]	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.00	0.00	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.008	0.02	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.01	0.02
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1.300	3.21	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.30	3.21
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	1.092	2.70	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.09	2.70
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.072	0.177	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.07	0.18

Footnotes:

Particulate matter emissions rates through are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

Table A-7. Summary of Actual Emission Rates for 2000 Due to Fuel Combustion, No. 9 Rock Mill

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	7,127
Maximum Heat Input Rate	10^6Btu/hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0130
Annual Natural Gas Usage	10^6scf/yr	N/A	92.65

		No. 2 Fuel Oil		Natural gas		Maximum Total Emission Rate	
Pollutant	AP-42 Emissions Factor[c]	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.00	0.00	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.008	0.03	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.01	0.03
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1.300	4.63	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.30	4.63
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	1.092	3.89	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.09	3.89
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.072	0.255	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.07	0.25

Footnotes:

Particulate matter emissions rates through are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

Table A-8. Actual Emission Rates for 2000 Due to Fuel Combustion for the Dryer at the GTSP Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	6,802
Maximum Heat Input Rate	10^6Btu/hr	80	80
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	scf/hr	N/A	43,588
Annual Natural Gas Usage	10^6scf/yr	N/A	296.48

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.00	0.00	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.026	0.09	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.03	0.09
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	4.359	14.82	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.36	14.82
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	3.661	12.45	--	--
Worse-Case Combination of Fuels		--	--	--	--	3.66	12.45
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.00	0.00	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.240	0.82	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.24	0.82

Footnotes:

Particulate matter emissions through the common plant stack are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

PM AND PM_{10} EMISSION RATE CALCULATIONS FOR THE GTSP TRUCK LOADING STATION—CURRENT ACTUAL EMISSIONS

CARGILL FERTILIZER INC. - RIVERVIEW
PM AND PM_{10} 2000 ACTUAL EMISSION RATE CALCULATIONS FOR THE GTSP TRUCK LOADING STATION

Baghouse

Process Throughput of GTSP: 74.8 TPH, 13,014 TPY
Baghouse Efficiency: 99%

PM Emission Factor Calculation (from AP-42 8.5.2-1)
= 0.18 lbs/ton GTSP x (1-0.99) = 0.0018 lbs/ton GTSP

PM Emission Rate (TPY) = 0.0018 lbs/ton GTSP x 13,014 tons GTSP/yr x 1 ton/2,000 lb
= 0.0117 TPY

PM_{10} Emission Factor Calculation (from AP-42 8.5.2-1)
= 0.08 lbs/ton GTSP x (1-0.99) = 0.0008 lbs/ton

PM_{10} Emission Rate (TPY) = 0.0008 lbs/ton GTSP x 13,014 tons GTSP/yr x 1 ton/2,000 lb
= 0.0052 TPY

Maximum Hourly = 74.8 TPH x 0.0018 lb/ton = 0.13 lb/hr

Fugitive Dust

Screens:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 74.8 TPH, 13,014 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 74.8 TPH x (1-0.9) x (1-0.8)
= 0.0748 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 13,014 TPY x (1-0.9) x (1-0.8) x 1ton/2,000 lb
= 0.0065 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.0748 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0150 lb/hr

PM_{10} Emission Rate (TPY) = 0.0065 x 0.20 PM_{10}/lb PM
= 0.0013 TPY

Surge Bin:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 74.8 TPH, 13,014 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 74.8 TPH x (1-0.9) x (1-0.8)
= 0.0748 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 13,014 TPY x (1-0.9) x (1-0.8) x 1ton/2,000 lb
= 0.0065 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.0748 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0150 lb/hr

PM_{10} Emission Rate (TPY) = 0.0065 x 0.20 PM_{10}/lb PM
= 0.0013 TPY

Truck Loading:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 70%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 74.8 TPH, 13,014 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 74.8 TPH x (1-0.7) x (1-0.8)
= 0.2244 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 13,014 TPY x (1-0.7) x (1-0.8) x 1ton/2,000 lb
= 0.0195 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.2244 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0449 lb/hr

PM_{10} Emission Rate (TPY) = 0.0195 x 0.20 PM_{10}/lb PM
= 0.0039 TPY

Total Fugitive Emissions:

PM Emission Rate (lb/hr) = Screens + Surge Bin + Truck Loading
= 0.0748 lb/hr + 0.0748 lb/hr + 0.2244 lb/hr
= 0.374 lb/hr

PM Emission Rate (TPY) = Screens + Surge Bin + Truck Loading
= 0.0065 TPY + 0.0065 TPY + 0.0195 TPY
= 0.0325 TPY

PM_{10} Emission Rate (lb/hr) = Screens + Surge Bin + Truck Loading
= 0.0150 lb/hr + 0.0150 lb/hr + 0.0449 lb/hr
= 0.0749 lb/hr

PM_{10} Emission Rate (TPY) = Screens + Surge Bin + Truck Loading
= 0.0013 TPY + 0.0013 TPY + 0.0039 TPY
= 0.0065 TPY

CARGILL FERTILIZER INC. - RIVERVIEW
PM AND PM_{10} 1999 ACTUAL EMISSION RATE CALCULATIONS FOR THE GTSP TRUCK LOADING STATION

Baghouse

Maximum P_2O_5 produced = 91 TPH x 0.46 = 41.86 TPH P_2O_5
Annual P_2O_5 Produced: 3220 tons
Baghouse Efficiency: 99%

PM Emission Factor Calculation (from AP-42 8.5.2-1)
= 0.18 lbs/ton GTSP x 1 ton GTSP/0.46 tons P_2O_5 = 0.3913
= 0.3913 lbs/ton P_2O_5 x (1-0.99) = 0.003913 lbs/ton

PM Emission Rate (TPY) = 0.004 lbs/ton P_2O_5 x 3220 tons P_2O_5/yr x 1 ton/2,000 lb
= 0.00644 TPY

PM_{10} Emission Factor Calculation (from AP-42 8.5.2-1)
= 0.08 lbs/ton GTSP x 1 ton GTSP/0.46 tons P_2O_5 = 0.17391
= 0.17391 lbs/ton P_2O_5 x (1-0.99) = 0.0017391 lbs/ton

PM_{10} Emission Rate (TPY) = 0.002 lbs/ton P_2O_5 x 3220 tons P_2O_5/yr x 1 ton/2,000 lb
= 0.00322 TPY

Maximum hourly = 41.86 TPH P_2O_5 x 0.3913 lb/ton P_2O_5 x (1-0.99) = 0.16 lb/hr

Fugitive Dust

Screens:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 91 TPH, 7000 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 91 TPH x (1-0.9) x (1-0.8)
= 0.091 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 7000 TPY x (1-0.9) x (1-0.8)
x 1 ton/2,000 lb
= 0.0035 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.091 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0182 lb/hr

PM_{10} Emission Rate (TPY) = 0.0035 x 0.20 PM_{10}/lb PM
= 0.0007 TPY

Surge Bin:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 91 TPH, 7,000 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 91 TPH x (1-0.9) x (1-0.8)
= 0.091 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 7,000 TPY x (1-0.9) x (1-0.8) x 1 ton/2,000 lb
= 0.0035 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.091 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0182 lb/hr

PM_{10} Emission Rate (TPY) = 0.0035 x 0.20 PM_{10}/lb PM
= 0.0007 TPY

Truck Loading:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 70%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 91 TPH, 7,000 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 91 TPH x (1-0.7) x (1-0.8)
= 0.273 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 7,000 TPY x (1-0.7) x (1-0.8) x 1 ton/2,000 lb
= 0.0105 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.273 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.0546 lb/hr

PM_{10} Emission Rate (TPY) = 0.0105 x 0.20 PM_{10}/lb PM
= 0.0021 TPY

Total Fugitive Emissions:

PM Emission Rate (lb/hr) = Screens + Surge Bin + Truck Loading
= 0.091 lb/hr + 0.091 lb/hr + 0.273 lb/hr
= 0.455 lb/hr

PM Emission Rate (TPY) = Screens + Surge Bin + Truck Loading
= 0.0035 TPY + 0.0035 TPY + 0.0105 TPY
= 0.0175 TPY

PM_{10} Emission Rate (lb/hr) = Screens + Surge Bin + Truck Loading
= 0.0182 lb/hr + 0.0182 lb/hr + 0.0546 lb/hr
= 0.091 lb/hr

PM_{10} Emission Rate (TPY) = Screens + Surge Bin + Truck Loading
= 0.0007 TPY + 0.0007 TPY + 0.0021 TPY
= 0.0035 TPY

Table A-9. Actual Emission Rates for 2000 Due to Fuel Combustion for the Dryer at the AFI Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	2,407
Maximum Heat Input Rate	10^6Btu/hr	50	50
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0500
Annual Natural Gas Usage	10^6scf/yr	N/A	120.352

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.000	0.000	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.030	0.036	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.03	0.04
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.000	0.000	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	5.000	6.018	--	--
Worse-Case Combination of Fuels		--	--	--	--	5.00	6.02
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.000	0.000	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	4.200	5.055	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.20	5.05
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.000	0.000	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.275	0.331	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.28	0.33

Footnotes:

Particulate matter emissions rates through the common plant stack are included in Table 2.3.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

PM AND PM_{10} EMISSION RATE CALCULATIONS FOR THE AFI RAILCAR UNLOADING STATION—CURRENT ACTUAL EMISSIONS

CARGILL FERTILIZER INC. - RIVERVIEW
2000 PM AND PM_{10} EMISSION RATE CALCULATIONS
FOR THE AFI RAILCAR UNLOADING STATION

Fugitive Dust from Railcar Unloading

Uncontrolled Emission Factor: 0.05 lb/ton of AFI handled (Based on Emission Factor for GTSP)
Number of Transfer Points: 2
Capture and Control Efficiency of Enclosures: 90%
Process Throughput of AFI: 250 TPH, 31,896 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 2 transfer points x 250 TPH x (1-0.9)
= 2.5 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 2 transfer points x 31,896 TPY x (1-0.9) x 1 ton/2,000 lb
= 0.16 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (Based on Emission Factor for GTSP) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 2.5 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.5 lb/hr

PM_{10} Emission Rate (TPY) = 0.16 TPY x 0.20 lb PM_{10}/lb PM
= 0.03 TPY

CARGILL FERTILIZER INC. - RIVERVIEW
1999 PM AND PM_{10} EMISSION RATE CALCULATIONS FOR THE AFI RAILCAR UNLOADING STATION

Fugitive Dust from Railcar Unloading

Uncontrolled Emission Factor: 0.05 lb/ton of AFI handled (Based on Emission Factor for GTSP)
Number of Transfer Points: 2
Capture and Control Efficiency of Enclosures: 90%
Process Throughput of AFI: 250 TPH, 36,424 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 2 transfer points x 250 TPH x (1-0.9)
= 2.5 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 2 transfer points x 36,424 TPY x (1-0.9)
x 1 ton/2,000 lb
= 0.18 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (Based on Emission Factor for GTSP) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 2.5 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.5 lb/hr

PM_{10} Emission Rate (TPY) = 0.18 TPY x 0.20 lb PM_{10}/lb PM
= 0.04 TPY

Table A-10. Actual Emission Rates for 2000 Due to Fuel Combustion for the Dryer at the No. 5 DAP Plant

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	0	7,498
Maximum Heat Input Rate	10^6Btu/hr	0	40
Hourly Fuel Oil Usage[a]	10^3gal/hr	0	N/A
Annual Fuel Oil Usage	10^3gal/yr	0	N/A
Maximum Sulfur Content	Weight %	0.31	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.012
Annual Natural Gas Usage	10^6scf/yr	N/A	87.339

		No. 2 Fuel Oil		Natural gas		Maximum Total Emission Rate	
Pollutant	AP-42 Emissions Factor[c]	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	0.000	0.000	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.007	0.026	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.01	0.03
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	0.000	0.000	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1.165	4.367	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.16	4.37
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.000	0.000	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	0.978	3.668	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.98	3.67
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.000	0.000	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.064	0.240	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.06	0.24

Footnotes:

Particulate matter emissions rates through the common plant stack are included in Table A-1.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.31%.

[e] Based on methane comprised of 52% total VOC.

APPENDIX B
BASIS OF POTENTIAL EMISSIONS FOR OTHER AFFECTED SOURCES

Table B-1. Summary of Emission Rate Calculations for the New Molten Sulfur Storage Tank at GTSP

		New Molten Sulfur Tank				
Parameters	Units	Tank Loading from H_2SO_4 Plants	Unloading Into GTSP Plant	Storage/ Idle	Total Emissions (TPY)	Max Emissions (lb/hr)
SULFUR FLOW RATES						
Maximum loading rate	TPH	15	15	0		
Annual loading rate	TPY	131,400	131,400	0		
VENTILATION RATES						
Loading/Unloading	dscfm	4	0	0		
Natural Ventilation through vents	dscfm	30	30	30		
Total Ventilation	dscfm	34	30	30		
TRANSFER TIMES						
Loading/Unloading	hr/yr	8,760	8,760	--		
Idle	hr/yr	--	--	0		
UNCONTROLLED EMISSION FACTORS						
Sulfur particulate	grains/dscf	0.66	0.29	0.29		
TRS (as H_2S)	lb/dscf	3.50E-05	3.50E-05	3.50E-05		
SO_2	lb/dscf	7.30E-05	7.30E-05	7.30E-05		
VOC	lb/dscf	5.20E-05	5.20E-05	5.20E-05		
CONTROL EFFICIENCY						
Sulfur particulate	%	0	0	0		
TRS (as H_2S)	%	0	0	0		
SO_2	%	0	0	0		
VOC	%	0	0	0		
					Annual Emission Rate (TPY)	Maximum Hourly Emission Rate (lb/hr)
EMISSION RATES						
Sulfur Particulate	lb/hr	0.19	0.075	0.075	--	0.19
	TPY	0.854	0.327	0.00	0.85	--
TRS (as H_2S)	lb/hr	0.07	0.063	0.063	--	0.07
	TPY	0.317	0.276	0.00	0.32	--
Sulfur Dioxide	lb/hr	0.15	0.13	0.13	--	0.15
	TPY	0.661	0.576	0.00	0.66	--
Volatile Organic Compounds	lb/hr	0.11	0.094	0.094	--	0.11
	TPY	0.471	0.410	0.00	0.47	--

Notes:
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Table B-2. Summary of Emission Rate Calculations for the Future Molten Sulfur Handling System

		Retrofit Tank No. 1					Existing Tank No. 2					Existing Tank No. 3					Pit 7			Pit 8			Pit 9			Truck Loading Station	Total All Sources
Parameters	Units	Loading from Ship(d)	Tank No. 2 or 3 Loading from Ship(e)	Unloading Into Pit(f)	Storage/ Idle(g)	Maximum and Total Emissions	Loading from Ship(d)	Tank No. 1 or 3 Loading from Ship(e)	Unloading Into Pit(f)	Storage/ Idle(g)	Maximum and Total Emissions	Loading from Ship(d)	Tank No. 1 or 2 Loading from Ship(e)	Unloading Into Pit(f)	Storage/ Idle(g)	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Unloading/ Idle	Maximum and Total Emissions	Loading	Maximum and Total Emissions
SULFUR FLOW RATES																											
Maximum loading rate	TPH	2.240	0	336	0		2.240	0	336	0		2.240	0	336	0		336	0		336	0		336	0		336	
Annual loading rate	TPY	802,828	0	492,361	0		802,828	0	492,361	0		802,828	0	492,361	0		492,361	0		492,361	0		492,361	0		800,000	
VENTILATION RATES																											
Loading/Unloading	dscfm	454	0	151	151		454	0	151	151		454	0	151	151		100	0		100	0		100	0		68	
Natural Ventilation through vents	dscfm	0	30	30	30		0	30	30	30		0	30	30	30		0	5		0	5		0	5		0	
TRANSFER TIMES																											
Loading/Unloading	hr/yr	358	--	1,465	--		358	--	1,465	--		358	--	1,465	--		1,465	--		1,465	--		1,465	--		2,381	
Idle	hr/yr	--	717	--	6,219		--	717	--	6,219		--	717	--	6,219		--	7,295		--	7,295		--	7,295		--	
Operating	hr/yr	--	--	--	--		--	--	--	--		--	--	--	--		--	--		--	--		--	--		--	
EMISSION FACTORS																											
Sulfur particulate(s)	grains/dscf	0.03	0.29	0.29	0.29		0.03	0.29	0.29	0.29		0.03	0.29	0.29	0.29		0.51	0.29		0.51	0.29		0.51	0.29		0.03	
TRS (as H_2S)	lb/dscf	3.50E-05	3.50E-05	3.50E-05	3.50E-05		3.50E-05	3.50E-05	3.50E-05	3.50E-05		3.50E-05	3.50E-05	3.50E-05	3.50E-05		3.50E-06	3.50E-06		3.50E-06	3.50E-06		3.50E-06	3.50E-06		3.50E-06	
SO_2	lb/dscf	7.30E-05	7.30E-05	7.30E-05	7.30E-05		7.30E-05	7.30E-05	7.30E-05	7.30E-05		7.30E-05	7.30E-05	7.30E-05	7.30E-05		7.30E-06	7.30E-06		7.30E-06	7.30E-06		7.30E-06	7.30E-06		7.30E-06	
VOC	lb/dscf	5.20E-03	5.20E-05	5.20E-05	5.20E-05		5.20E-05	5.20E-05	5.20E-05	5.20E-05		5.20E-05	5.20E-05	5.20E-05	5.20E-05		5.20E-06	5.20E-06		5.20E-06	5.20E-06		5.20E-06	5.20E-06		5.20E-06	
CONTROL EFFICIENCY																											
Sulfur particulate	%	(b)	0	0	0		(b)	0	0	0		(b)	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		(b)	
TRS (as H_2S)	%	0	0	0	0		0	0	0	0		0	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		0	
SO_2	%	0	0	0	0		0	0	0	0		0	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		0	
VOC	%	0	0	0	0		0	0	0	0		0	0	0	0		(c)	(c)		(c)	(c)		(c)	(c)		0	
EMISSION RATES						Maximum Hourly and Annual Emission Rates					Maximum Hourly and Annual Emission Rates					Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates			Maximum Hourly and Annual Emission Rates		Maximum Hourly and Annual Emission Rates (h)
Sulfur Particulate	lb/hr	0.117	0.075	0.075	0.075	0.117	0.117	0.075	0.075	0.075	0.117	0.117	0.075	0.075	0.075	0.117	0.437	0.012	0.437	0.437	0.012	0.437	0.437	0.012	0.437	0.017	1.595
	TPY	0.021	0.027	0.055	0.232	0.334	0.021	0.027	0.055	0.232	0.334	0.021	0.027	0.055	0.232	0.334	0.320	0.045	0.366	0.320	0.045	0.366	0.320	0.045	0.366	0.021	2.120
TRS (as H_2S)	lb/hr	0.953	0.063	0.317	0.317	0.953	0.953	0.063	0.317	0.317	0.953	0.953	0.063	0.317	0.317	0.953	0.021	0.001	0.021	0.021	0.001	0.021	0.021	0.001	0.021	0.014	1.665
	TPY	0.171	0.023	0.232	0.986	1.412	0.171	0.023	0.232	0.986	1.412	0.171	0.023	0.232	0.986	1.412	0.015	0.004	0.019	0.015	0.004	0.019	0.015	0.004	0.019	0.017	4.310
Sulfur Dioxide	lb/hr	1.989	0.131	0.661	0.661	1.989	1.989	0.131	0.661	0.661	1.989	1.989	0.131	0.661	0.661	1.989	0.044	0.002	0.044	0.044	0.002	0.044	0.044	0.002	0.044	0.030	3.472
	TPY	0.356	0.047	0.485	2.057	2.945	0.356	0.047	0.485	2.057	2.945	0.356	0.047	0.485	2.057	2.945	0.032	0.008	0.040	0.032	0.008	0.040	0.032	0.008	0.040	0.035	8.990
Volatile Organic Compounds	lb/hr	1.416	0.094	0.471	0.471	1.416	1.416	0.094	0.471	0.471	1.416	1.416	0.094	0.471	0.471	1.416	0.031	0.002	0.031	0.031	0.002	0.031	0.031	0.002	0.031	0.021	2.474
	TPY	0.254	0.034	0.345	1.465	2.098	0.254	0.034	0.345	1.465	2.098	0.254	0.034	0.345	1.465	2.098	0.023	0.006	0.029	0.023	0.006	0.029	0.023	0.006	0.029	0.025	6.404

Note:
Total Sulfur Throughput = 2,408,483 tons/yr
Total Sulfur to Each Pit = 492,361 tons/yr (equivalent to current permit limit of 446,667 tonnes per year)
Total Sulfur to Truck Loading Station = 800,000 tons/yr
Total Sulfur to GTSP Plant = 15 TPH = 131,400 TPY
TPH = tons per hour
TPY = tons per year
Density of Sulfur (280°F) = 112 lb/cf

Footnote:
(a) Emission factor resulting in highest emission rate (worst case) depending on exhaust flow rate of given operation
(b) Emission rate based on an controlled grain loading of 0.03 grains per dscf.
(c) Scrubber does not control emissions from this source
(d) Operational scenario occurring when molten sulfur is loaded from a ship to a tank
(e) Operational scenario occurring when molten sulfur is being loaded to either of the other tanks and the given tank is vented naturally
(f) Operational scenario occurring when a tank is unloading to the pit and emissions may or may not be controlled by the scrubber. Worst-case PM emissions occur when the tank is naturally ventilated. Therefore, an exhaust flow rate of 30 dscfm was used to calculate PM emissions. Worst-case emissions rates for other pollutants occur when the scrubber is operating. Therefore,an exhaust flow rate of a third of the scrubber capacity designated to the tanks (151 dscfm) was used to calculate emissions for these pollutants.
(g) Operational scenario occurring when the tank is at idle and may or may not be controlled by the scrubber. Worst-case PM emissions occur when the tank is naturally ventilated. Therefore, an exhaust flow rate of 30 dscfm was used to calculate PM emissions. Worst-case emissions rates for other pollutants occur when the scrubber is operating. Therefore,an exhaust flow rate of a third of the scrubber capacity designated to the tanks (151 dscfm) was used to calculate emissions for these pollutants.
(h) Maximum hourly emissions reflect worst-case of shiploading into one tank, with the remaining tanks unloading into pit or at idle, plus truck loading station operating.

Table B-3. Future Maximum PM/PM_{10} Emissions From Nos. 5, 7, and 9 Rock Mills

Source	EU ID	Control Type	Design Capacity (dscfm)	Operating Hours	PM/PM_{10} Emissions			Reference
					Basis	lb/hr	TPY	
No. 5 Mill Dust Collector	100	Baghouse	15,206	8,760	0.012 gr/dscf	1.56	6.85	Permit No. 0570008-024-AC
No. 9 Mill Dust Collector	101	Baghouse	15,206	8,760	0.012 gr/dscf	1.56	6.85	Permit No. 0570008-024-AC
Ground Rock Silo Dust Collector	034/102	Baghouse	2,376	8,760	0.02 gr/dscf	0.41	1.78	Nos. 5, 7, 9 Application
No. 7 Mill Dust Collector	106	Baghouse	15,206	8,760	0.012 gr/dscf	1.56	6.85	Permit No. 0570008-024-AC
					Totals =	5.10	22.34	

Note: acfm = actual cubic feet per minute
dscfm = dry standard cubic feet per minute
gr/dscf = grains per dry standard cubic foot

Table B-4. Maximum Potential Emission Rates Due to Fuel Combustion, Nos. 5, 7, and 9 Rock Mills (each)

Parameter	Units	No. Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	400	8,760
Maximum Heat Input Rate	10^6Btu/hr	13	13
Hourly Fuel Oil Usage[a]	10^3gal/hr	92.9	N/A
Annual Fuel Oil Usage	10^3gal/yr	37,143	N/A
Maximum Sulfur Content	Weight %	0.5	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.0130
Annual Natural Gas Usage	10^6scf/yr	N/A	113.88

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Total Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Total Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S)lb/10^3gal[d]	6.593	1.319	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.008	0.034	--	--
Worse-Case Combination of Fuels		--	--	--	--	6.59	1.32
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	1.857	0.371	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	1.300	5.694	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.86	5.69
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	0.464	0.093	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	1.092	4.783	--	--
Worse-Case Combination of Fuels		--	--	--	--	1.09	4.78
Volatile Organic Compounds							
Fuel oil	0.2 lb/10^3gal	0.019	0.004	--	--	--	--
Natural gas	5.5 lb/10^6ft^3[e]	--	--	0.072	0.313	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.07	0.31

Footnotes:
Particulate matter emissions rates for each rock mill are included in Table B-2.

[a] Based on the heat content of fuel oil of 140,000 Btu/gallon.

[b] Based on the heat content of natural gas of 1,000 Btu/scf.

[c] Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.5%.

[e] Based on methane comprised of 52% total VOC.

GTSP Ground Rock Handling (EU008)

Future potential based on Title V Permit (Permit No. 0570008-014-AV).

PM Emissions: 0.95 lb/hr: 4.16 TPY

PM_{10} Emissions assumed to be the same as PM emissions.

PM AND PM_{10} EMISSION RATE CALCULATIONS FOR THE GTSP TRUCK LOADING STATION—FUTURE POTENTIAL EMISSIONS

CARGILL FERTILIZER INC. - RIVERVIEW
PM AND PM_{10} EMISSION RATE CALCULATIONS FOR
THE GTSP TRUCK LOADING STATION
FUTURE POTENTIAL EMISSIONS

Baghouse Evacuating Truck Loading
Exhaust Grain Loading: 0.03 grains per dry standard cubic foot
Exhaust Flow: 2,060 dry standard cubic feet per minute

PM Emission Rate (lb/hr) = 0.03 gr/dscf x 2,060 dscfm x lb/7,000 grains x 60 min/hr
= 0.53 lb/hr

PM Emission Rate (TPY) = 0.53 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb
= 2.3 TPY

Hourly and annual PM_{10} emission rates are assumed to be the same as PM emission rates for the baghouse.

Fugitive Dust

Screens:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled (see Attachment A)
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 200 TPH, 805,920 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 200 TPH x (1-0.9) x (1-0.8)
= 0.20 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 805,920 TPY x (1-0.9) x (1-0.8) x 1 ton/2,000 lb
= 0.40 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (see Attachment A) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.2 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.040 lb/hr

PM_{10} Emission Rate (TPY) = 0.4 x 0.20 PM_{10}/lb PM
= 0.080 TPY

Surge Bin:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled (see Attachment A)
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 90%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 200 TPH, 805,920 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 200 TPH x (1-0.9) x (1-0.8)
= 0.20 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 805,920 TPY x (1-0.9) x (1-0.8) x 1 ton/2,000 lb
= 0.40 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (see Attachment A) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.2 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.040 lb/hr

PM_{10} Emission Rate (TPY) = 0.4 x 0.20 PM_{10}/lb PM
= 0.080 TPY

Truck Loading:
Uncontrolled Emission Factor: 0.05 lb/ton of GTSP handled (see Attachment A)
Number of Transfer Points: 1
Capture and Control Efficiency of Enclosures: 70%
Control Efficiency of Oiling: 80%
Process Throughput of GTSP: 200 TPH, 805,920 TPY

PM Emission Rate (lb/hr) = 0.05 lb/ton x 1 transfer point x 200 TPH x (1-0.7) x (1-0.8)
= 0.60 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 1 transfer point x 805,920 TPY x (1-0.7) x (1-0.8) x 1 ton/2,000 lb
= 1.2 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (see Attachment A) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 0.6 lb/hr x 0.20 lb PM_{10}/lb PM
= 0.12 lb/hr

PM_{10} Emission Rate (TPY) = 1.2 x 0.20 PM_{10}/lb PM
= 0.24 TPY

Total Emissions:

PM Emission Rate (lb/hr) = Baghouse + Screens + Surge Bin + Truck Loading
= 0.53 lb/hr + 0.20 lb/hr + 0.20 lb/hr + 0.60 lb/hr
= 1.53 lb/hr

PM Emission Rate (TPY) = Baghouse + Screens + Surge Bin + Truck Loading
= 2.3 TPY + 0.4 TPY + 0.4 TPY + 1.2 TPY
= 4.3 TPY

PM_{10} Emission Rate (lb/hr) = Baghouse + Screens + Surge Bin + Truck Loading
= 0.53 lb/hr + 0.04 lb/hr + 0.04 lb/hr + 0.12 lb/hr
= 0.73 lb/hr

PM_{10} Emission Rate (TPY) = Baghouse + Screens + Surge Bin + Truck Loading
= 2.3 TPY + 0.08 TPY + 0.08 TPY + 0.24 TPY
= 2.7 TPY

PM AND PM_{10} EMISSION RATE CALCULATIONS FOR THE AFI RAILCAR UNLOADING STATION—FUTURE POTENTIAL EMISSIONS

CARGILL FERTILIZER INC. - RIVERVIEW
POTENTIAL FUTURE PM AND PM_{10} EMISSION RATE CALCULATIONS
FOR THE AFI RAILCAR UNLOADING STATION

Fugitive Dust from Railcar Unloading

Uncontrolled Emission Factor: 0.05 lb/ton of AFI handled (Based on Emission Factor for GTSP)
Number of Transfer Points: 2
Capture and Control Efficiency of Enclosures: 90%
Process Throughput of AFI: 500 TPH, 394,200 TPY

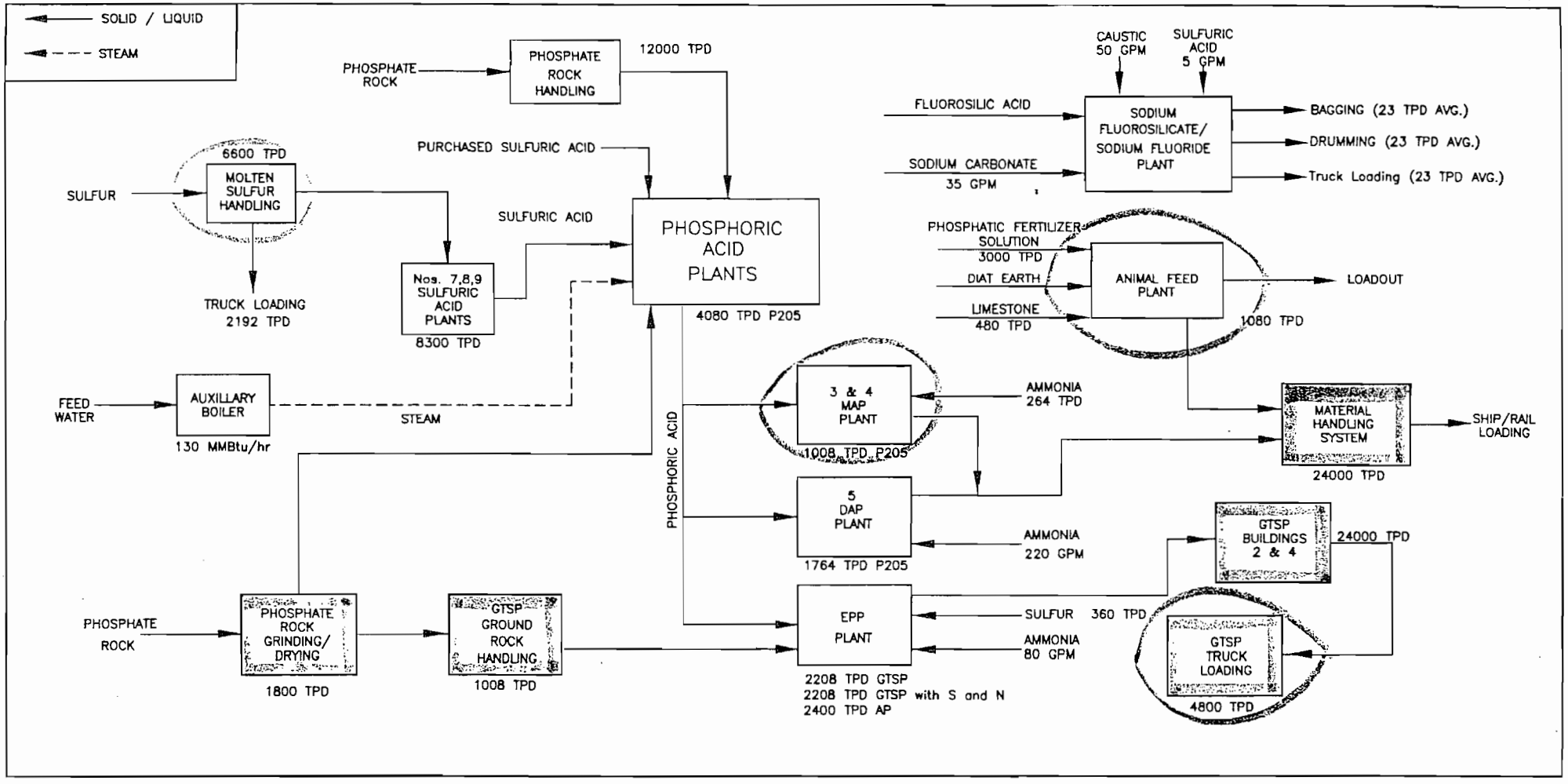
PM Emission Rate (lb/hr) = 0.05 lb/ton x 2 transfer points x 500 TPH x (1-0.9)
= 5.0 lb/hr

PM Emission Rate (TPY) = 0.05 lb/ton x 2 transfer points x 394,200 TPY x (1-0.9)
x 1 ton/2,000 lb
= 1.97 TPY

Hourly and annual PM_{10} emission rates are assumed to be 20% of PM emission rates (Based on Emission Factor for GTSP) for fugitive dust.

PM_{10} Emission Rate (lb/hr) = 5.0 lb/hr x 0.20 lb PM_{10}/lb PM
= 1.0 lb/hr

PM_{10} Emission Rate (TPY) = 1.97 TPY x 0.20 lb PM_{10}/lb PM
= 0.39 TPY



Attachment CR-FI-C3 – Future
Facility Flow Diagram
Cargill Riverview

EMISSION UNIT:	FACILITY WIDE
PROCESS AREA:	
FILENAME:	0037650Y\F1\WP\CR-FI-C3.dwg
LATEST REVISION:	02/11/01 by PAC