CARGILL
FERTILIZER, INC.

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

Certified Mail:P 013 142 287

April 1, 1998

Mr. Clair H. Fancy, Bureau Chief
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399

Dear Mr. Fancy:

PSD-FL-247

Re: Cargill Fertilizer, Inc. - Tampa Plant
No. 7 Phosphate Rock Drying/Grinding Construction Permit Application
AIRS No. 0570008

0570008-024-AC

Please find enclosed three copies of a construction permit application for the No. 7 Phosphate Rock Drying/Grinding Mill. A copy of this application has been sent to the Hillsborough County Environmental Protection Commission. Included with these applications is a check in the amount of $7,500 (check # 301058721) for the Florida Department of Environmental Protection.

If you have any questions or require additional information, please call me at (813) 671-6369.

Sincerely,

Kathleen Edgemon
Environmental Engineer

cc: Morris
Jellerson
File P-30-32-3

cc: J. Reynolds, BAR
EPA
NPS
SWD
C. Holladay, BAR

PSD PERMIT APPLICATION FOR
NO. 7 ROCK GRINDING/DRYING SYSTEM
CARGILL FERTILIZER, INC.
RIVERVIEW, FLORIDA

Prepared For:

Cargill Fertilizer, Inc.
8813 Highway 41 South
Riverview, Florida 33569

Prepared By:

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

March 1998
9737578Y/F1

TABLE OF CONTENTS
(Page 1 of 3)

TABLE OF CONTENTS
(Page 2 of 3)

CARGILL INCORPORATED
Financial Service Center
Fargo, ND

First Bank East Grand Forks
East Grand Forks, MN 56721

75-1592
912

MM/DD/YY	Number
03/26/98	301058721

Amount
$*********$7,500.00

Seven Thousand Five Hundred and NO/100 Dollars

Pay to The order of
FLORIDA DEPT OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE RD
TALLAHASSEE FL 323992400

⑈301058721⑈ ⑆091215927⑆ 152100003085⑈

REMITTANCE STATEMENT

000009
364228 Financial Service Center

VENDOR	50220445

DATE	03/26/98

PAYMENT #	301058721

Vendor Ref#/Invoice #	Purchase Location	PO#/Ref#	Voucher#	Invoice Amount	Discount	Sales Tax	Net Amount	Description
1556	Fert-Tampa Chemical Plant	UM42049925	PX00048504	7,500.00			7,500.00	7 Mill PSD permit app

If you have any questions, please call the
Financial Service Center at 1-800-513-1098.

XA-1956

TABLE OF CONTENTS
(Page 3 of 3)

PART A

APPLICATION FOR AIR PERMIT

Department of
Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

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

I. APPLICATION INFORMATION

This section of the Application for Air Permit form identifies the facility and provides general information on the scope and purpose of this application. This section also includes information on the owner or authorized representative of the facility (or the responsible official in the case of a Title V source) and the necessary statements for the applicant and professional engineer, where required, to sign and date for formal submittal of the Application for Air Permit to the Department. If the application form is submitted to the Department using ELSA, this section of the Application for Air Permit must also be submitted in hard-copy.

Identification of Facility Addressed in This Application

Enter the name of the corporation, business, governmental entity, or individual that has ownership or control of the facility; the facility site name, if any; and the facility's physical location. If known, also enter the facility identification number.

1. Facility Owner/Company Name: **Cargill Fertilizer, Inc.**	
2. Site Name: **Tampa Plant**	
3. Facility Identification Number: **0570008**	[ ] Unknown
4. Facility Location Information: 8813 Street Address or Other Locator: ~~8133~~ **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 Processing Information (DEP Use)

1. Date of Receipt of Application:	April 3 1998
2. Permit Number:	0570008-024-AC
3. PSD Number (if applicable):	PSD-FL-247
4. Siting Number (if applicable):	

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:

David Jellerson, Environmental Superintendent

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) 671-6297** Fax: **(813) 671-6149**

4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., 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.*

David B. Jellerson 4-1-98

Signature Date

* Attach letter of authorization if not currently on file.

Scope of Application

This Application for Air Permit addresses the following emissions unit(s) at the facility. An Emissions Unit Information Section (a Section III of the form) must be included for each emissions unit listed.

Emissions Unit ID		Description of Emissions Unit	Permit Type
Unit #	Unit ID		
1R	---	No. 7 Phosphate Rock Grinding/Drying System	AC1A

See individual Emissions Unit (EU) sections for more detailed descriptions.
Multiple EU IDs indicated with an asterisk (*). Regulated EU indicated with an "R".

Purpose of Application and Category

Check one (except as otherwise indicated):

Category I: All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

[ ] Initial air operation permit under Chapter 62-213, F.A.C., 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: _____

[ ] Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit to be renewed: _____

[ ] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. Also check Category III.

Operation permit to be revised/corrected: _____

_____

[ ] Air operation permit revision for a Title V source 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 to be revised: _____

Reason for revision: _____

_____

Category II: All Air Construction Permit Applications Subject to Processing Under Rule 62-210.300(2)(b),F.A.C.

This Application for Air Permit is submitted to obtain:

[ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s): _____

_____

[ ] Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed: _____

[ ] Air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g.; to address one or more newly constructed or modified emissions units.

Operation permit to be revised: _____

Reason for revision: _____

_____

Category III: All Air Construction Permit Applications for All Facilities and Emissions Units.

This Application for Air Permit is submitted to obtain:

[X] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any: _____

N/A

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s): _____

_____

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one:

[x] Attached - Amount: **$ 7,500.00** [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

See PSD Report

2. Projected or Actual Date of Commencement of Construction :

1 Jun 1998

3. Projected Date of Completion of Construction :

1 Jun 1999

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's 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 (seal)

3/29/98 — Date

* Attach any exception to certification statement.

Application Contact

1. Name and Title of Application Contact:
   Kathy Edgemon, Environmental Engineer

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 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:	4. Facility Status Code:	5. Facility Major Group SIC Code:	6. Facility SIC(s):
0	**A**	**28**	**2874**

7. Facility Comment (limit to 500 characters):

Facility Contact

1. Name and Title of Facility Contact:
   David Jellerson, 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) 671-6297** Fax: **(813) 671-6149**

Facility Regulatory Classifications

1. Small Business Stationary Source? [ ] Yes [x] No [ ] Unknown
2. Title V Source? [x] Yes [ ] No
3. Synthetic Non-Title V Source? [ ] Yes [x] No
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? [x] Yes [ ] No
5. Synthetic Minor Source of Pollutants Other than HAPs? [ ] Yes [x] No
6. Major Source of Hazardous Air Pollutants (HAPs)? [x] Yes [ ] No
7. Synthetic Minor Source of HAPs? [ ] Yes [x] No
8. One or More Emissions Units Subject to NSPS? [x] Yes [ ] No
9. One or More Emissions Units Subject to NESHAP? [x] Yes [ ] No
10. Title V Source by EPA Designation? [ ] Yes [x] No
11. Facility Regulatory Classifications Comment (limit to 200 characters):

B. FACILITY REGULATIONS

Rule Applicability Analysis (Required for Category II applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

Not Applicable

C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted		2. Pollutant Classification
PM	Particulate Matter - Total	A
PM10	Particulate Matter - PM10	A
FL	Fluorides - Total	A
SO2	Sulfur Dioxide	A
NOx	Nitrogen Oxides	A
H107	Hydrogen fluoride	A
SAM	Sulfuric Acid Mist	A

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Detail Information:

1. Pollutant Emitted:		
2. Requested Emissions Cap:	(lb/hr)	(tons/yr)
3. Basis for Emissions Cap Code:		
4. Facility Pollutant Comment (limit to 400 characters):		

Facility Pollutant Detail Information:

1. Pollutant Emitted:		
2. Requested Emissions Cap:	(lb/hr)	(tons/yr)
3. Basis for Emissions Cap Code:		
4. Facility Pollutant Comment (limit to 400 characters):		

E. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

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(s): CR-FI-E3
   [ ] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [X] Attached, Document ID: PSD Report
   [ ] 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

Additional Supplemental Requirements for Category I Applications Only

7. List of Proposed Exempt Activities:
   [ ] Attached, Document ID: _____
   [ ] Not Applicable

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

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

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

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

12. Compliance Assurance Monitoring Plan:
[ ] Attached, Document ID: _____
[ ] Not Applicable

13. Risk Management Plan Verification:

[ ] Plan Submitted to Implementing Agency - Verification Attached
Document ID: _____

[ ] Plan to be Submitted to Implementing Agency by Required Date

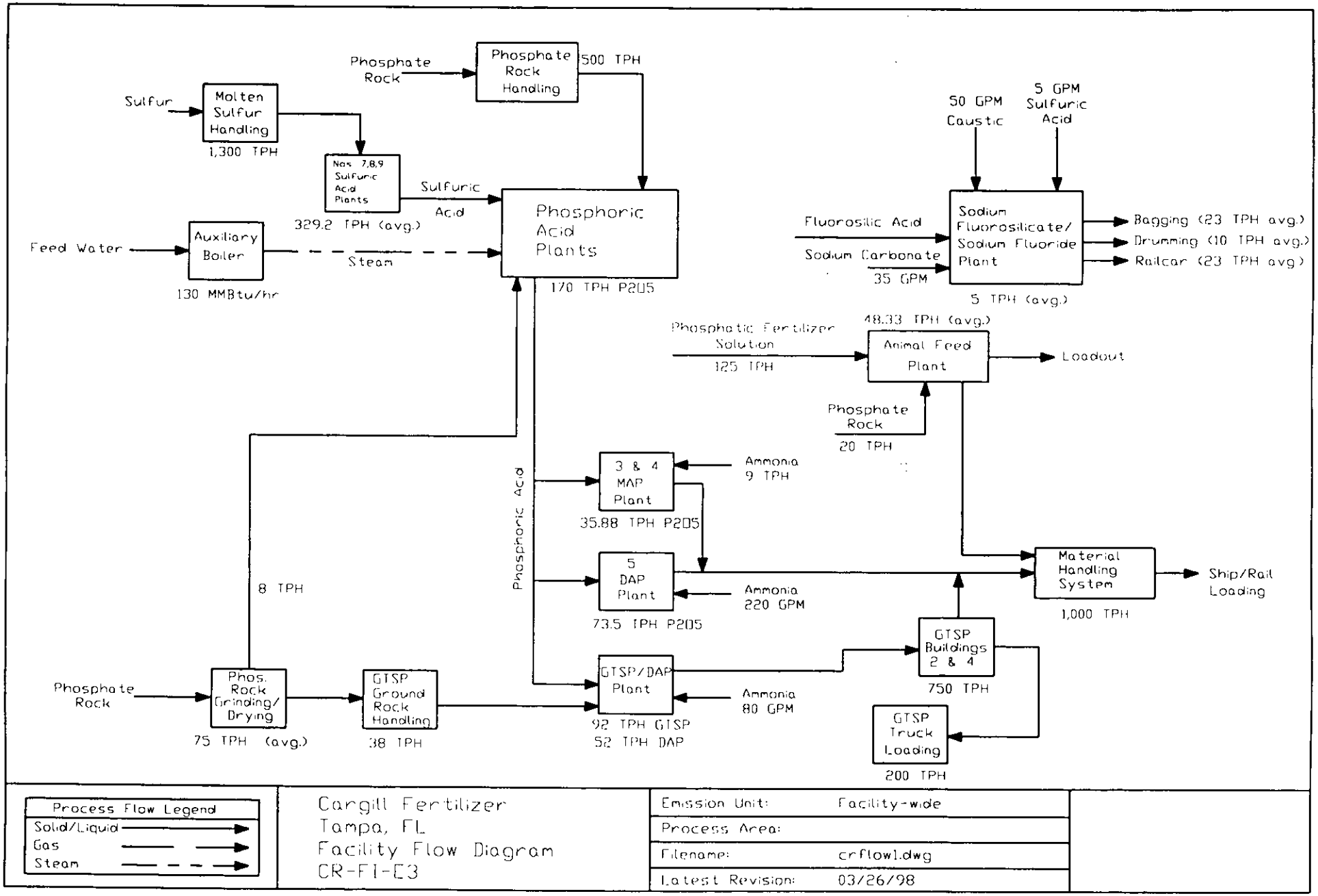
[ ] Not Applicable

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

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

ATTACHMENT CR-FI-E3

FACILITY FLOW DIAGRAM


Phosphate Rock
Phosphate Rock Handling
500 TPH
Sulfur
Molten Sulfur Handling
1,300 TPH
Nos. 7,8,9 Sulfuric Acid Plants
Sulfuric Acid
329.2 TPH (avg.)
Feed Water
Auxiliary Boiler
Steam
130 MMBtu/hr
Phosphoric Acid Plants
170 TPH P2O5
50 GPM Caustic
5 GPM Sulfuric Acid
Fluorosilic Acid
Sodium Carbonate
35 GPM
Sodium Fluorosilicate/ Sodium Fluoride Plant
5 TPH (avg.)
Bagging (23 TPH avg.)
Drumming (10 TPH avg.)
Railcar (23 TPH avg.)
48.33 TPH (avg.)
Phosphatic Fertilizer Solution
125 TPH
Animal Feed Plant
Loadout
Phosphate Rock
20 TPH
Phosphoric Acid
3 & 4 MAP Plant
Ammonia
9 TPH
35.88 TPH P2O5
5 DAP Plant
Ammonia
220 GPM
73.5 TPH P2O5
Material Handling System
1,000 TPH
Ship/Rail Loading
8 TPH
GTSP Buildings 2 & 4
750 TPH
Phosphate Rock
Phos. Rock Grinding/ Drying
75 TPH (avg.)
GTSP Ground Rock Handling
38 TPH
GTSP/DAP Plant
Ammonia
80 GPM
92 TPH GTSP
52 TPH DAP
GTSP Truck Loading
200 TPH
Process Flow Legend
Solid/Liquid
Gas
Steam
Cargill Fertilizer
Tampa, FL
Facility Flow Diagram
CR-F1-E3
Emission Unit: Facility-wide
Process Area:
Filename: crflow1.dwg
Latest Revision: 03/26/98

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through L 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. Some of the subsections comprising the Emissions Unit Information Section of the form are intended for regulated emissions units only. Others are intended for both regulated and unregulated emissions units. Each subsection is appropriately marked.

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Type of Emissions Unit Addressed in This Section

1. 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.

2. Single Process, Group of Processes, or Fugitive Only? 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.

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **No. 7 Phosphate Rock Grinding/Drying System**		
2. Emissions Unit Identification Number: [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: C	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: 28
6. Emissions Unit Comment (limit to 500 characters):		

Emissions Unit Control Equipment Information

A.

1. Description (limit to 200 characters):

   Fabric Filter

2. Control Device or Method Code: **18**

B.

1. Description (limit to 200 characters):

2. Control Device or Method Code:

C.

1. Description (limit to 200 characters):

2. Control Device or Method Code:

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Details

1. Initial Startup Date:	
2. Long-term Reserve Shutdown Date:	
3. Package Unit: Manufacturer:	Model Number:
4. Generator Nameplate Rating:	MW
5. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:		13	mmBtu/hr
2. Maximum Incineration Rate:	lbs/hr		tons/day
3. Maximum Process or Throughput Rate:		698	tons/day (wet)
4. Maximum Production Rate:	600	tons/day (dry)	

5. Operating Capacity Comment (limit to 200 characters):

Process and production rate as a daily average. The mill operates at rates up to 25 TPH, daily avg. (dry basis @ 1% moisture) (29.1 TPH, wet basis).

Emissions Unit Operating Schedule

1. Requested Maximum Operating Schedule:

24	hours/day	7	days/week
52	weeks/yr	8,760	hours/yr

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Rule Applicability Analysis (Required for Category II Applications and Category III applications involving non Title-V sources. See Instructions.)

List of Applicable Regulations (Required for Category I applications and Category III applications involving Title-V sources. See Instructions.)

40 CFR 60.11
40 CFR 60.12
40 CFR 60.13(a)
40 CFR 60.13(b)
40 CFR 60.13(c)
40 CFR 60.13(d)(2)
40 CFR 60.13(e)(1)
40 CFR 60.13(f)
40 CFR 60.13(h)
40 CFR 60.13(i)
40 CFR 60.19
40 CFR 60.400 Subpart NN, NSPS for Phosphate Rock plants
40 CFR 60.402(a)(1) PM standard for dryers
40 CFR 60.402(a)(2) PM Standard for Grinders
40 CFR 60.403(a)
40 CFR 60.403(d)
40 CFR 60.403(e)
40 CFR 60.404(a)
40 CFR 60.404(b)
40 CFR 60.7
40 CFR 60.8
62-204.800(7)(b)42. NSPS for Phosphate Rock Plants
62-296.320(c) Unconfined Particulate Matter Emissions
62-296.700 RACT for PM
62-296.705(2)(b) RACT for Phosphate Processing operations
62-296.711 RACT for Materials Handling operations
62-297.310 General Compliance Test Requirements
62-297.401 Compliance Test Methods

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:	7 Bag
2. Emission Point Type Code: [x] 1 [ ] 2 [ ] 3 [ ] 4	
3. Descriptions of Emissions 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: [ ] D [ ] F [ ] H [ ] P [ ] R [x] V [ ] W	
6. Stack Height:	70 feet
7. Exit Diameter:	3 feet
8. Exit Temperature:	165 °F

9. Actual Volumetric Flow Rate:	**20,000** acfm
10. Percent Water Vapor:	**10** %
11. Maximum Dry Standard Flow Rate:	**15,200** 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 the No. 7 Mill Baghouse.**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 1 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **Rock Dryer and Grinding System**	
2. Source Classification Code (SCC): **3-05-019-01**	
3. SCC Units: **Tons Phos. Rock**	
4. Maximum Hourly Rate: **29.1**	5. Maximum Annual Rate: **254,916**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters): **Process rate = Max. input rate of wet rock to No. 7 Mill on a daily average basis. This equates to 25.0 TPH of dry rock @ 1% moisture.**	

Segment Description and Rate: Segment 2 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters): **In-Process Fuel Use, Natural Gas: General**	
2. Source Classification Code (SCC): **3-90-005-98**	
3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.013**	5. Maximum Annual Rate: **114**
6. Estimated Annual Activity Factor:	
7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit: **1,000**	
10. Segment Comment (limit to 200 characters): **Maximum natural gas to mill is 13,000 scf/hr as a daily average; max. operating hours are 8,760 hr/yr.**	

F. SEGMENT (PROCESS/FUEL) INFORMATION
(Regulated and Unregulated Emissions Units)

Segment Description and Rate: Segment 3 of 3

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (limit to 500 characters):

   In-Process Fuel Use, No.2 Fuel Oil: General

2. Source Classification Code (SCC):

   3-90-005-98

3. SCC Units:

   Thousand Gallons Burned

4. Maximum Hourly Rate:	5. Maximum Annual Rate:
0.09	**37**

6. Estimated Annual Activity Factor:

7. Maximum Percent Sulfur:	8. Maximum Percent Ash:
0.5	

9. Million Btu per SCC Unit:

   140

10. Segment Comment (limit to 200 characters):

    Maximum Hourly Rate = 0.0929 (rounded to 0.09). Maximum Annual Rate = 37.143 (rounded to 37), based on 400 hr/yr oil firing. Maximum fuel oil to mill is 92.86 gal/hr as a daily average.

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) (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 Percent Sulfur:	8. Maximum Percent Ash:
9. Million Btu per SCC Unit:	
10. Segment Comment (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	018		EL
SO2			EL
PM10	018		EL
NOx			NS
CO			NS

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **PM**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **2.1** lb/hour **9.2** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: **0.072 lb/ton** Reference: **NSPS**
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **29.1 tons/hr x 0.072 lb/ton = 2.10 lb/hr; 2.10 lb/hr x 8,760 hr/yr x ton/2,000 lb = 9.18 TPY**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Based on NSPS of 0.06 lb/ton of wet feed for dryer and 0.012 lb/ton wet feed for grinder.**

Emissions Unit Information Section 1 of 1
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.072 lb/ton**	
4. Equivalent Allowable Emissions:	**2.1** lb/hour **9.18** tons/year
5. Method of Compliance (limit to 60 characters): **Initial Stack Test using EPA Method 5**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Based on NSPS, 40 CFR 60, Subpart NN: 0.06 lb/ton wet feed for dryer; 0.012 lb/ton wet feed for grinder.**	

B.

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. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **SO2**

2. Total Percent Efficiency of Control: %

3. Potential Emissions: **6.59** lb/hour **1.4** tons/year

4. Synthetically Limited? [**x**] Yes [ ] No

5. Range of Estimated Fugitive/Other Emissions:

   [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr

6. Emission Factor: **See Comment**

   Reference: **AP-42**

7. Emissions Method Code:

   [**x**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

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

   92.9 gal/hr x 142(0.5) lb/1000 gal = 6.59 lb/hr; 37,143 gal/yr x 142(0.5) lb/1000 gal x ton/2000 lb = 1.35 TPY

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

   Emission Factor: 142*S lb/Mgal and 0.6 lbMM ft^3. No.2 Fuel Oil is limited to 400 hr/yr; Maximum Sulfur content is 0.5% wt.

Emissions Unit Information Section 1 of 1
Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.5 %S fuel oil**	
4. Equivalent Allowable Emissions:	**6.59** lb/hour **1.4** tons/year
5. Method of Compliance (limit to 60 characters): **Fuel Analysis**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Emissions based on firing at maximum rate on fuel oil at 400 hr/yr.**	

B.

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. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **PM10**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **2.1** lb/hour **9.2** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: **0.072 lb/ton** Reference: **NSPS**
7. Emissions Method Code: [**X**] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **29.1 tons/hr x 0.072 lb/ton = 2.10 lb/hr; 2.10 lb/hr x 8,760 hr/yr x ton/2,000 lb = 9.18 TPY**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **Based on NSPS of 0.06 lb/ton of wet feed for dryer and 0.012 lb/ton wet feed for grinder.**

Emissions Unit Information Section 1 of 1

Allowable Emissions (Pollutant identified on front page)

A.

1. Basis for Allowable Emissions Code: **RULE**	
2. Future Effective Date of Allowable Emissions:	
3. Requested Allowable Emissions and Units: **0.072 lb/ton**	
4. Equivalent Allowable Emissions:	**2.1** lb/hour **9.18** tons/year
5. Method of Compliance (limit to 60 characters): **Initial Stack Test using EPA Method 5**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **Based on NSPS, 40 CFR 60, Subpart NN: 0.06 lb/ton wet feed for dryer; 0.012 lb/ton wet feed for grinder.**	

B.

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. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):	

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **CO**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **0.46** lb/hour **1.99** tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: [ ]1 [ ]2 [ ]3 _____ to _____ tons/yr
6. Emission Factor: **See Comment** Reference: **AP-42**
7. Emissions Method Code: [ ]0 [ ]1 [ ]2 [X]3 [ ]4 [ ]5
8. Calculation of Emissions (limit to 600 characters): **92.9 gal/hr x 5 lb/1000 gal = 0.46 lb/hr; 113.88 MMscf/yr x 35 lb/MMscf x ton/2000 lb = 1.99 TPY**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **35 lb/MMscf for gas; 5 lb/1,000 gal for fuel oil.**

Emissions Unit Information Section 1 of 1
Allowable Emissions (Pollutant identified on front page)

A.

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. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

B.

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. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information:

1. Pollutant Emitted: **NOx**
2. Total Percent Efficiency of Control: %
3. Potential Emissions: **1.86** lb/hour **8** tons/year
4. Synthetically Limited? [**X**] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/yr
6. Emission Factor: **See Comment** Reference: **AP42**
7. Emissions Method Code: [ ] 0 [ ] 1 [ ] 2 [**X**] 3 [ ] 4 [ ] 5
8. Calculation of Emissions (limit to 600 characters): **92.9 gal/hr x 20 lb/1000 gal = 1.86 lb/hr; 113.88 MMscf/yr x 140 lb/MMscf x ton/2000 lb = 8.0 TPY**
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters): **140 lb/MMscf for gas; 20 lb/1,000 gal for fuel oil.**

Emissions Unit Information Section 1 **of** 1

Allowable Emissions (Pollutant identified on front page)

A.

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. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

B.

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. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Visible Emissions Limitations: 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: **Annual Testing using EPA Method 9**
5.	Visible Emissions Comment (limit to 200 characters): **40 CFR 60.402(a)(1)(ii). VE limit of 10% opacity applies to rock dryer.**

Visible Emissions Limitations: Visible Emissions Limitation 2 of 2

1.	Visible Emissions Subtype: **VE0**
2.	Basis for Allowable Opacity: [X] Rule [ ] Other
3.	Requested Allowable Opacity Normal Conditions: **0** % 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): **40 CFR 60.402(a)(4)(ii). VE limitation applies to rock grinder.**

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Continuous Monitoring System Continuous Monitor 1 of 1

1. Parameter Code: VE	2. Pollutant(s):
3. CMS Requirement: [X] Rule [ ] Other	
4. Monitor Information: Monitor Manufacturer: **Not yet selected** Model Number: Serial Number:	
5. Installation Date:	
6. Performance Specification Test Date:	
7. Continuous Monitor Comment (limit to 200 characters): **Opacity monitor on No. 7 Rock Grinder/Dryer required per 40 CFR 60.403.**	

Continuous Monitoring System Continuous Monitor _____ of _____

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

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION
(Regulated and Unregulated Emissions Units)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

   If the emissions unit addressed in this section emits particulate matter or sulfur dioxide, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for particulate matter or sulfur dioxide. Check the first statement, if any, that applies and skip remaining statements.

   [x] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and the emissions unit consumes increment.

   [ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

   [ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

If the emissions unit addressed in this section emits nitrogen oxides, answer the following series of questions to make a preliminary determination as to whether or not the emissions unit consumes PSD increment for nitrogen dioxide. Check first statement, if any, that applies and skip remaining statements.

[X] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and the source consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and the emissions unit consumes increment.

[ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3.	Increment Consuming/Expanding Code:			
	PM	[X] C	[ ] E	[ ] Unknown
	SO_2	[X] C	[ ] E	[ ] Unknown
	NO_2	[X] C	[ ] E	[ ] Unknown
4.	Baseline Emissions:			
	PM	0 lb/hour	0 tons/year	
	SO_2	0 lb/hour	0 tons/year	
	NO_2		0 tons/year	
5.	PSD Comment (limit to 200 characters):			

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

Supplemental Requirements for All Applications

1.	Process Flow Diagram	
	[X] Attached, Document ID: PSD Report	
	[ ] Not Applicable	[ ] Waiver Requested
2.	Fuel Analysis or Specification	
	[X] Attached, Document ID: CR-E01-L2	
	[ ] 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: _____	[X] Not Applicable
	[ ] Previously Submitted, Date: _____	
6.	Procedures for Startup and Shutdown	
	[ ] Attached, Document ID: _____	[X] Not Applicable
7.	Operation and Maintenance Plan	
	[ ] Attached, Document ID: _____	[X] Not Applicable
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

Additional Supplemental Requirements for Category I Applications Only

10.	Alternative Methods of Operation [ ] Attached, Document ID: _____ [ ] Not Applicable
11.	Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID: _____ [ ] Not Applicable
12.	Identification of Additional Applicable Requirements [ ] Attached, Document ID: _____ [ ] Not Applicable
13.	Compliance Assurance Monitoring Plan [ ] Attached, Document ID: _____ [ ] Not Applicable
14.	Acid Rain Permit 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: _____ [ ] Not Applicable

ATTACHMENT CR-E01-L2

FUEL ANALYSIS OR SPECIFICATION

Attachment CR-E01-L2

No. 7 Rock Mill
Fuel Analysis

Fuel	Density (lb/scf)	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

PART B

PSD REPORT

1.0 INTRODUCTION

Cargill Fertilizer, Inc., operates a phosphate fertilizer manufacturing facility located in Riverview, Florida, just south of Tampa (refer to Figure CR-FI-E1). As part of the overall manufacturing process, two existing phosphate rock dryers/grinders are operated. These two existing phosphate rock dryers/grinders are referred to as the No. 5 and No. 9 Raymond Mills. Wet or dry phosphate rock is dried and ground in the mills. The dried rock is then used to make GTSP in the GTSP plant.

Cargill was recently issued a construction permit for the modification of the No.5/No.9 Raymond Mills (Permit No. 0570008-017-AC issued November 18, 1996). Through this permit modification, Cargill changed the method of operation of this system to a system that allows for increased moisture removal. The fuel burner system on the No. 5 and No. 9 Raymond Mills was upgraded to provide additional heat for drying. The phosphate elevator and rock bin were modified to accommodate wet phosphate rock. A new rock bin and transfer conveyor was installed to feed one of the mills. Two new baghouses were installed, one serving each mill, which replaced the existing single baghouse serving both mills. In addition, a new ground rock pneumatic transfer system and storage bin was added, equipped with a baghouse for particulate control.

Based on the actual operation of the modified No. 5/No. 9 Raymond Mills, Cargill has not been able to achieve the permitted production rate of 25 TPH, daily average (dry basis @ 1% moisture) for each mill. The production rate of the mills has been limited due to the moisture content of the incoming phosphate rock, coarse quality of the rock, and other factors. The highest production rate Cargill has been able to achieve to date for the modified mills during a compliance test, on a daily average basis, is 19.8 TPH.

Cargill is proposing to install a third wet phosphate rock mill (No. 7 Rock Mill) to supplement ground rock transfer from the existing two mills to the GTSP plant and provide for acid desulfation. The new mill will have a production capacity of 25 TPH, daily average (dry basis @ 1% moisture). The mill will operate in conjunction with the existing mills, i.e., will utilize the same wet rock delivery systems and dry rock storage system.

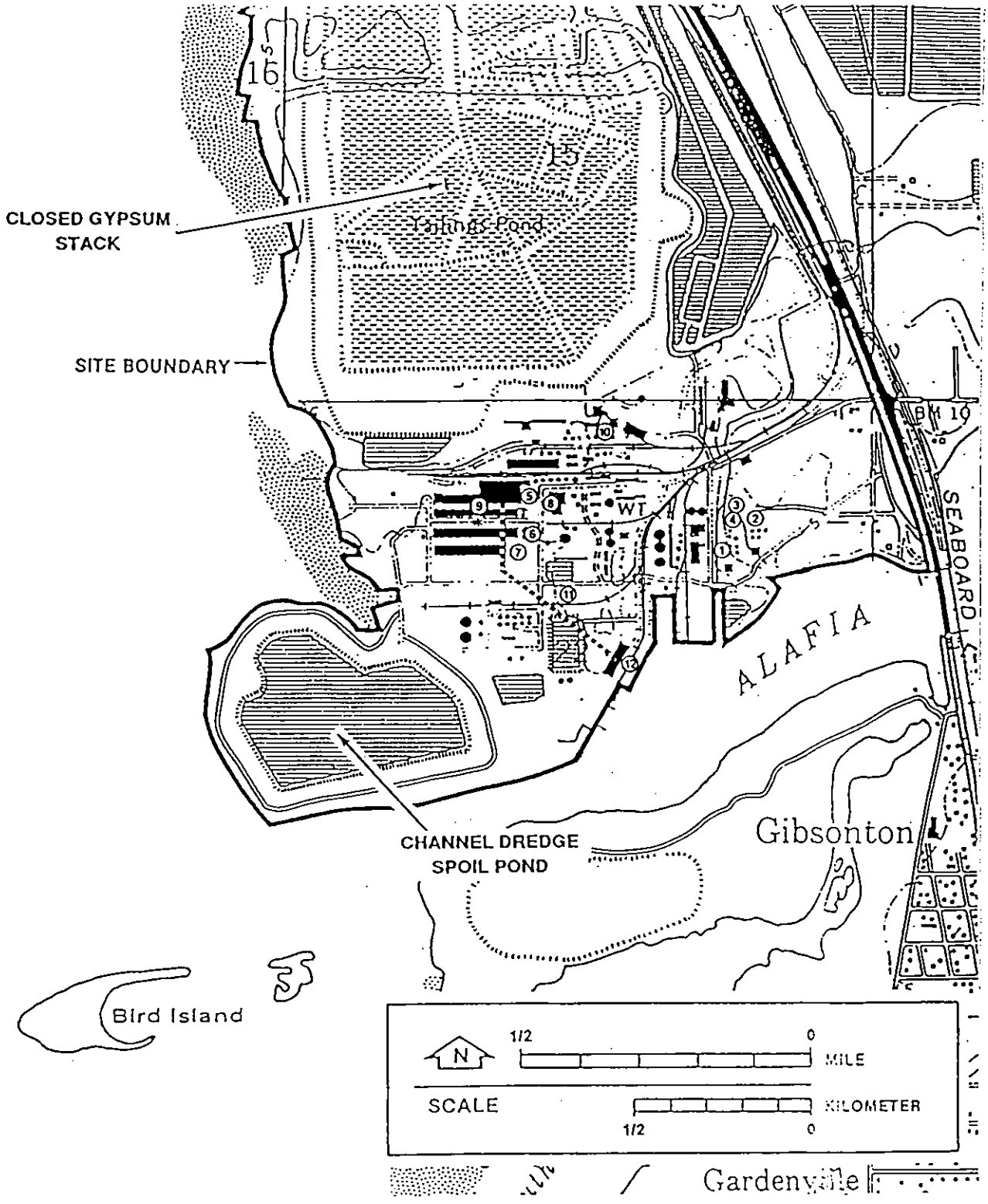


Figure CR-FI-E1
Site Location
Cargill Fertilizer, Inc.
Riverview Facility
Source: USGS, 1981.

Golder Associates

The installation of the new No. 7 Rock Mill at Cargill, in conjunction with the previous modification of the No. 5/No. 9 Raymond Mills, will require a prevention of significant deterioration (PSD) permit review. This attachment presents the PSD report, including a detailed project description, proposed maximum emission rates, and source applicability for the proposed project. The required PSD reviews, including ambient monitoring analysis, best available control technology (BACT) analysis, air quality impact analysis, additional impact analysis on soils, vegetation and visibility, and impacts on PSD Class I areas, are presented herein. Supportive information is presented in additional attachments.

2.0 PROJECT DESCRIPTION

2.1 PROPOSED NO. 7 ROCK MILL

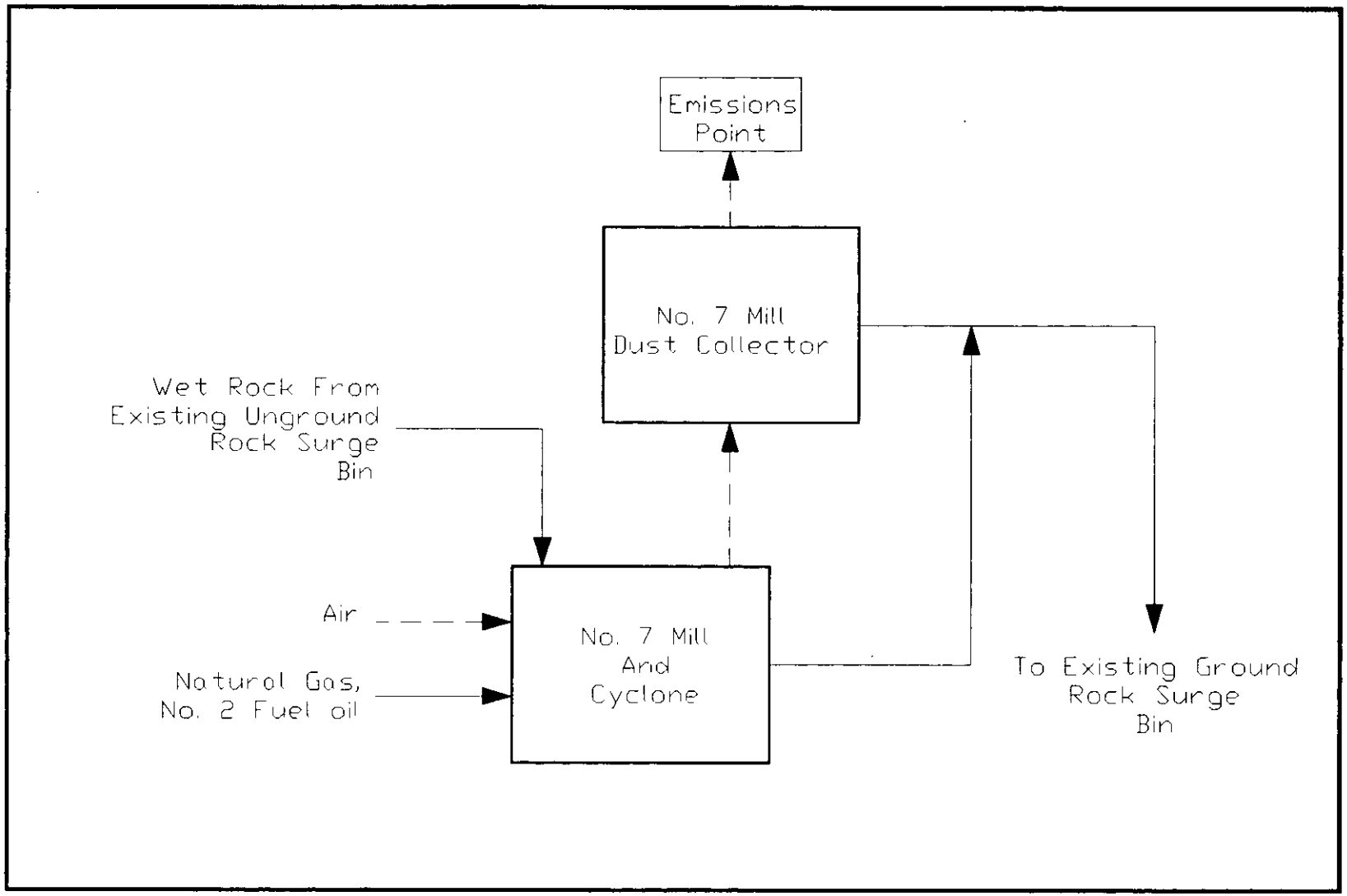
The proposed No. 7 Rock Mill system is depicted in the flow diagram shown in Figure 2-1. Wet phosphate rock with moisture content ranging up to 15 percent moisture is transferred from the existing unground rock silo at the No.5/No. 9 Raymond Mills. The phosphate rock is introduced into the dryer/grinder unit by means of feed chutes.

The moisture content of the wet phosphate rock received by Cargill varies, and can range from 10 percent to 15 percent moisture. The moisture content of dry phosphate rock received can also vary, and ranges from 1 percent to 3 percent moisture. The equipment will be capable of processing both dry rock and wet rock. There are no plans to formally document or routinely measure the moisture content of wet or dry rock. There is no regulatory requirement or basis for regulating the moisture content, and the proposed maximum emissions are not dependent upon the moisture content. The emission sources are all enclosed and/or controlled (the rock unloading pit is partially enclosed).

The dryer/grinder unit is an integral device which provides heated air for drying as the phosphate rock is ground in the grinder. The moisture content of the rock is reduced to 1 percent or less in the dryer/grinder. A burner with a maximum heat input of 13 MMBtu/hr supplies the dryer/grinder unit with heated air for drying. Natural gas will be used as the primary fuel, while No. 2 distillate fuel oil with a maximum sulfur content of 0.5 percent is used as a backup fuel.

As the mill grinds and drys the rock, air will be swept through the mill by the recirculation air fans. This air will carry the ground rock to the cyclone, which will separate the majority of the ground rock from the air stream and discharge the ground rock directly to the existing ground rock surge bin at the No. 5/No. 9 Raymond Mills. The cyclone discharge air then will return to the main recirculation fan and will be sent through the mill again.

The entire mill circuit will be maintained under negative pressure by the exhaust fan. This will keep a negative pressure on the entire system, thus minimizing fugitive dust emissions, and exhaust the water vapor produced by drying the wet rock.


Emissions Point
No. 7 Mill Dust Collector
Wet Rock From Existing Unground Rock Surge Bin
Air
Natural Gas, No. 2 Fuel oil
No. 7 Mill And Cyclone
To Existing Ground Rock Surge Bin
Process Flow Legend
Matetial Flow
Air Flow
Figure 2-1
Emission Unit:
Revision Date: 03/26/98
File Name: 7RM_TAMP.DWG
Revision By: Golder Associates
Cargill Fertilizer, Inc.
Tampa, FL
No. 7 Rock Mill System
Process Flow Diagram

The exhaust gases will pass through the new dust collector, which will filter the gases through fabric bags to remove dust that is entrained in this air stream. The dust collected in the bottom of the dust collector will be conveyed to the existing ground rock surge bin at the No. 5/No. 9 Raymond Mills.

The No. 7 Rock Mill will be designed to allow drying and grinding of high grade wet phosphate rock at a total design rate of 25 TPH (dry basis @ 1% moisture). The wet phosphate rock feed will contain up to 15 percent moisture by weight. The ground phosphate rock product will be dried to approximately 1 percent moisture and ground to finer than 90 percent minus 200 mesh. The equivalent maximum wet rock feed at 15 percent moisture is 29.1 TPH.

The No. 7 Rock Mill will be located adjacent to the existing No 5/No. 9 Raymond Mills, as shown in Figure 2-2. The new mill building will be immediately to the east of the existing mills building. The cyclone collector will be located immediately to the south of the existing cyclones, and the new baghouse dust collector will be located immediately south of the existing dust collectors, which are located atop the ground rock storage silo. A plot plan of the Cargill facility, depicting the location of the rock mills, is presented in Figure CR-FE-2.

2.2 AIR POLLUTION CONTROL EQUIPMENT

The air pollution control equipment for the No. 7 Rock Mill will consist of one baghouse. The mill baghouse will have approximately 6,400 sq. ft. of filter area. The baghouse will be equipped with an automatic air pulse system which will continuously remove the dust from the bags. The mill baghouse will have a capacity of 20,000 acfm and be designed to achieve an outlet dust loading equivalent to the federal new source performance standards (NSPS) for phosphate rock dryers/grinders (refer to Section 2.5). Additional information regarding the dust collectors is provided in Section 2.5.

2.3 FUEL USAGE RATES

The air heater for the No. 7 Rock Mill each will be rated at 13 million Btu per hour. The maximum gas usage per mill will be approximately 13,000 scf/hr of natural gas. Natural gas is the primary fuel source and will be used most of the time. Provisions are made to use No. 2 fuel oil as a stand-by fuel in case of natural gas interruption. No. 2 fuel oil with a maximum sulfur content of 0.5 percent may be used for up to 400 hours per year.

2.4 EFFECTS UPON OTHER EMISSION UNITS

Other emission units at the Riverview plant will not be affected by the new No. 7 Rock Mill. As described previously, the No. 7 Rock Mill is being proposed primarily because of the lower than anticipated production rates achievable with the modified No. 5/No. 9 Raymond Mills. Based on the actual operation of the modified No. 5/No. 9 Raymond Mills, Cargill has not been able to achieve the permitted production rate of 25 TPH, daily average (dry basis @ 1% moisture) for each mill. The production rate of the mills has been limited due to the moisture content of the incoming phosphate rock, coarse quality of the rock, and other factors. The highest production rate Cargill has been able to achieve to date for the modified mills during a compliance test, on a daily average basis, is 19.8 TPH.

Phosphate rock processed through the new mill will be used primarily in the existing granular triple super phosphate (GTSP) plant at Cargill. No increase in the permitted production capacity of the GTSP plant is being requested.

Phosphate rock will also be used in a new desulfation process in the phosphoric acid plant to improve phosphoric acid quality. Phosphate rock from the No. 5/No. 7/No. 9 Rock Mills ground rock storage bin will be pneumatically conveyed from the bin to a new venturi mixer device. The mixer device will be located atop the clarifier feed tank. The air/rock mixture will discharge into the venturi, where phosphoric acid from the feed tank will be fed and will "scrub" out the rock. The air/rock/acid mixture then discharges to the feed tank. The feed tank is currently controlled by an unregulated venturi scrubber (unregulated since the scrubber is not required for regulatory purposes). Cargill believes that PM emissions from the feed tank as a result of this operation will be minimal.

2.5 EMISSION RATES

Air emissions due to fuel combustion are presented for nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), and volatile organic compounds (VOC) in Table 2-1. Estimated emissions from fuel combustion were developed using factors specified in the Environmental Protection Agency's (EPA) Compilation of Air Pollution Emission Factors (AP-42) (see Attachment A). Emissions are presented for natural gas and No. 2 fuel oil use. Fuel oil use will be limited to 400 hr/yr. Maximum operating hours for the No. 7 Rock Mill will be 8,760 hr/yr.

Table 2-1. Summary of Emissions from Fuel Combustion, No. 7 Rock Mill

Parameter	No. 2 Fuel Oil	Natural Gas
OPERATING DATA		
Operating Time (hr/yr)	400	8,760
Heat Input Rate (MMBtu/hr)	13.0	13.0
Fuel Oil Use (gal/hr)[a]	92.9	NA
Fuel Oil Use (gal/yr)	37,143	NA
Maximum Sulfur Content (Wt %)	0.5	NA
Natural Gas Use (scf/hr)	NA	13,000
Natural Gas Use (MMscf/yr)	NA	113.88

Pollutant	Emission Factor [b]	No. 2 Fue Oil lb/hr	Natural Gas lb/hr	Maximum Annual Emissions (TPY) 400 hr/yr fuel oil and Natural Gas	100% Natural Gas
EMISSIONS DATA					
SO2: Fuel Oil	142*S lb/Mgal [c]	6.59	0.008	1.35	0.03
Natural Gas	0.6 lb/MMft³				
NOx: Fuel Oil	20 lb/Mgal	1.86	1.82	7.98	7.97
Natural Gas	140 lb/MMft³				
CO: Fuel Oil	5 lb/Mgal	0.46	0.46	1.99	1.99
Natural Gas	35 lb/MMft³				
NMVOC: Fuel Oil	0.2 lb/Mgal	0.019	0.04	0.16	0.16
Natural Gas	2.8 lb/MMft³ [d]				

Note: NA = not applicable.
These emissions are discharged through the mill stacks.
PM emission data from both stacks is presented in Table 3-2.

a Based on 140,000 Btu/gal for 0.5% S oil; 1000 BTU/SCF for Natural Gas.
b Emission factors based on AP-42.
c "S" denotes the weight % sulfur in fuel oil; max sulfur content = 0.5%
d Methane comprises 52% of total VOC

PM/PM10 emissions, as well as control equipment data for the proposed baghouse, are presented in Table 2-2. The PM emissions from the mill baghouse will be required to meet the federal NSPS for phosphate rock plants, promulgated under 40 CFR 60, Subpart NN. The NSPS limits PM emissions form both phosphate rock dryers and grinders. The PM limit for dryers is 0.06 lb/ton of phosphate rock feed, and the limit for grinders is 0.012 lb/ton of phosphate rock feed. Since Cargill will utilize an integral dryer/grinder for the No. 7 Rock Mill, the baghouse emissions will be limited to a combined 0.072 lb/ton of phosphate rock feed.

Based on the maximum wet phosphate rock input rate of 29.1 TPH, the maximum PM emissions based on the NSPS are 2.10 lb/hr and 9.18 TPY. Cargill will utilize a baghouse capable of achieving this emission rate. This emission rate corresponds to an outlet dust loading of approximately 0.016 gr/dscf.

Table 2-2. Summary of Pollution Control Equipment and PM/PM10 Emissions, No. 7 Rock Mill

Source	Control Type	Air/Cloth Ratio	Design Capacity acfm	Design Capacity dscfm	Control Efficiency (percent)	Operating Hours	Wet Rock Feed Rate (TPH) (a)	PM/PM10 Emissions Basis	PM/PM10 Emissions lb/hr	PM/PM10 Emissions TPY
No. 7 Mill Dust Collector	Baghouse	3.1	20,000	15,206	99.9	8,760	29.1	0.072 lb/ton feed	2.10	9.18

Note: acfm = actual cubic feet per minute
dscfm = dry standard cubic foot per minute.

(a) Wet phosphate rock at 15% moisture.

3.0 SOURCE APPLICABILITY

3.1 NEW SOURCE PERFORMANCE STANDARDS

Federal new source performance standards (NSPS) have been promulgated for phosphate rock plants. The NSPS, contained in 40 CFR 60, Subpart NN, apply to all phosphate rock plants that have a maximum production capacity greater than 4 TPH and that were constructed, modified, or reconstructed after September 21, 1979. The NSPS covers several pieces of equipment at phosphate rock plants, including dryers, grinders, calciners, and ground phosphate rock handling and storage systems. A copy of Subpart NN is contained in Attachment A.

The NSPS, Subpart NN, covers "drying" and "grinding" of phosphate rock, as well as ground rock handling systems. There are separate PM and opacity standards for each of these operations. Therefore, they are considered as separate facilities for NSPS purposes. A "dryer" is defined as a unit in which the moisture content of phosphate rock is reduced by contact with a heated gas stream. A "grinder" is defined as a unit which is used to pulverize dry phosphate rock to the final product size used in the manufacture of phosphate fertilizer and does not include crushing devices used in mining.

Based on the NSPS definitions, Cargill's proposed No. 7 Rock Mill will constitute a rock dryer and a rock grinder combined within a single piece of equipment. The NSPS for rock dryers limits PM emissions to 0.06 lb/ton of phosphate rock feed and 10% opacity [40 CFR 60.402(1)]. The NSPS for rock grinders limits PM emissions to 0.012 lb/ton of phosphate rock feed and zero percent opacity [40 CFR 60.402(4)].

The NSPS also limits visible emissions from ground phosphate rock storage and handling systems to zero-percent opacity [40 CFR 60.402(5)]. Cargill will be utilizing the existing ground rock surge bin, and storage silo and pneumatic transfer system associated with the No. 5/No. 9 Raymond Mills. These sources, controlled by the ground rock bin baghouse, are already subject to the Subpart NN NSPS, and visible emissions from the storage/handling system are limited to zero-percent opacity.

The NSPS requires that a continuous opacity monitoring system (COMS) be installed on rock dryers and grinders subject to the NSPS [40 CFR 60.403(a)]. The NSPS also require that a

device for measuring the phosphate rock feed to the dryer or grinder be installed, calibrated and operated. This measurement device is only required for the initial performance tests under 40 CFR 60.8 [40 CFR 60.403(d)]. Cargill now measures the weight of phosphate rock feed to the mills by weighing the incoming railcars. Therefore, there are records of daily phosphate rock feed to the wet rock bin and the mills. The measurement device that Cargill uses is a state certified scale, and is accurate within 0.5 percent. This meets the requirement of the NSPS.

3.2 PREVENTION OF SIGNIFICANT DETERIORATION

The new No. 7 Rock Mill will represent a modification of the Cargill Riverview facility by virtue of a physical change which increases actual emissions of a regulated air pollutant. Federal and state PSD regulations require that the change in emissions due to the proposed project, as well as any contemporaneous emission increases or decreases occurring within the facility in the last 5 years, be accounted for to determine the total net change of the project. If the total net change exceeds the PSD significant emission rate for any pollutant, then PSD review is required for that pollutant. The PSD significant emission rate for PM is 25 TPY, and for PM10 is 15 TPY.

Cargill previously received a non-PSD minor source construction permit to modify the existing No. 5/No. 9 Raymond Mills Permit No. 0570008-017-AC, issued November 18, 1996). However, the No. 5/No. 9 Raymond Mills have not been able to achieve the permitted production rates under this construction permit. As a result, the new No. 7 Rock Mill is being constructed, and the new mill project is therefore tied to the previous No. 5/No. 9 Raymond Mills project. Therefore, any emission changes associated with this previous project are contemporaneous changes, and must be aggregated with the currently proposed project. As discussed previously, no other changes at the facility will be associated with the new No. 7 Rock Mill project.

Based on the above discussion, the starting point or "baseline" emissions for determining PSD applicability for the project are the actual PM/PM10 emissions from the No. 5/No. 9 Raymond Mills prior to the recent construction permit in 1996. At that time, the existing mill was served by a single baghouse. Cargill has reported PM emissions from the Nos. 5 and 9 Raymond mills for 1994-1995 as 22.78 TPY total. However, stack test data to support this level of emissions could not be located. One historic test was found in Cargill's files for the No. 5 and No. 9 mills. These test data, provided in Attachment A, showed an average PM emission rate of 1.93 lb/hr at a production rate of 51.4 TPH.

The No. 5 and No. 9 mills at Cargill operate independently of each other. Total operating hours for each mill are recorded. However, the total operating hours for the single baghouse are not known, but as a minimum, the operating hours would equal the total operating hours of the GTSP plant, which receives the ground rock from the Nos. 5 and 9 mills. Therefore, for estimating baseline PM/PM10 emissions, the GTSP operating hours for the last two years prior to the modification (1994-1995) were used:

$$(7{,}673 \text{ hr/yr} + 7{,}102 \text{ hr/yr}) / 2 \quad \text{x} \quad 1.93 \text{ lb/hr} = 7.13 \text{ TPY}$$

The total future PM/PM10 emissions from the No. 5/No. 7/No. 9 mills and associated baghouses are shown in Table 3-1. Based on the future total PM/PM10 emissions of 31.15 TPY, the net increase in PM/PM10 emissions due to the proposed project is 24.02 TPY. This increase is greater than the PSD significant emission rate for PM10 of 15 TPY, but less than the PSD criteria for PM of 25 TPY. Therefore, PSD review for PM10 is required for this modification.

Under PSD new source review requirements, a proposed modification that results in a significant net emissions increase must undergo the following reviews:

1. Best Available Control Technology (BACT) evaluation,
2. Air quality impact analysis,
3. Ambient monitoring analysis, and
4. Additional impact analysis.

These requirements are addressed in the following sections.

Table 3-1. Future Maximum PM/PM10 Emissons From No. 5/No. 7/No. 9 Rock Mills

Source	Control Type	Design Capacity acfm	Design Capacity dscfm	Operating Hours	PM/PM10 Emissions Basis	PM/PM10 Emissions lb/hr	PM/PM10 Emissions TPY
No. 5 Mill Dust Collector	Baghouse	19,000	15,100	7,800	0.02 gr/dscf	2.59	10.10
No. 9 Mill Dust Collector	Baghouse	19,000	15,100	7,800	0.02 gr/dscf	2.59	10.10
Ground Rock Silo Dust Collector	Baghouse	2,500	2,376	8,760	0.02 gr/dscf	0.41	1.78
No. 7 Mill Dust Collector	Baghouse	20,000	15,206	8,760	0.072 lb/ton feed	2.10	9.18
					Totals =	7.68	31.15

Note: acfm = actual cubic feet per minute
dscfm = dry standard cubic foot per minute.
gr/dscf = grains per dry standard cubic foot

4.0 AMBIENT MONITORING ANALYSIS

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

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

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

The PSD *de minimis* monitoring concentration for PM/PM10 is 10 $\mu g/m^3$, 24-hour average. The predicted increase in PM10 concentrations due to the proposed modification only are presented in Section 6.0. The predicted PM10 increase is 6.3 $\mu g/m^3$, 24-hour average. Since the predicted increases in PM/PM10 impacts due to the proposed modification are less than the *de minimis* monitoring concentration level, a preconstruction air monitoring analysis is not required for PM10. However, to provide information for the establishment of a background PM10 concentration, an ambient monitoring analysis is provided for PM10. This analysis is presented in the following section.

4.1 PM/PM10 AMBIENT BACKGROUND CONCENTRATIONS

4.1.1 VICINITY OF CARGILL

The PSD ambient monitoring guidelines allow the use of existing data to satisfy preconstruction review requirements and to develop background concentrations. "Background concentrations" are defined as concentrations due to sources other than those specifically included in the modeling analysis. For PM10, background would include other point sources not included in the modeling (i.e., faraway sources or small sources), fugitive emission sources, and natural background sources.

Presented in Table 4-1 is a summary of existing ambient PM/PM10 data for monitors located in the vicinity of Cargill's Riverview facility. Data are presented for the last 18 months of record, 1996- June 1997. As shown, several PM and PM10 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 PM10 concentrations were well below the ambient air quality standards of 150 $\mu g/m^3$, maximum 24-hour average, and 50 $\mu g/m^3$, annual average. For purposes of an ambient PM10 background concentration for use in the modeling analysis, the annual average PM10 concentration of 21 $\mu g/m^3$ recorded at the Gardinier Park monitor during 1996 was selected. This concentration was utilized for both the 24-hour and annual average background PM10 concentrations in the air quality impact analysis since this monitor is impacted by several existing point sources, such as Cargill and Tampa Electric's Big Bend station, which are included explicitly in the modeling analysis. Therefore, this monitor would be influenced significantly by point sources.

4.1.2 CHASSAHOWITZKA CLASS I AREA

Presented in Table 4-2 is a summary of existing ambient PM/PM10 data for monitors located in the vicinity of the Chassahowitzka Class I area. One PM monitor was located adjacent to Chassahowitzka in Crystal River during 1996, and one PM10 monitor was located directly in Chassahowitzka in 1996.

The monitors show that ambient PM10 concentrations were well below the ambient air quality standards of 150 $\mu g/m^3$, maximum 24-hour average, and 50 $\mu g/m^3$, annual average. For purposes

Table 4-1. Summary of PM/PM10 Monitoring Data Collected Near Cargill's Riverview Facility

County	Station ID	Monitor Location	Distance to Cargill (km)	Year	Number of Observations	Maximum Concentrations Reported ($\mu g/m^3$) Highest 24-Hour	Second-Highest 24-Hour	Annual[a]
		Particulate Matter - Total						
Hillsborough	1800-106-J02	North Ruskin; Big Bend Road	8.04	1997 (JAN-MAR)	15	55	49	36
				1996	44	55	52	32
Hillsborough	1800-107-J02	North Ruskin; Bullfrog Creek County Park	8.47	1997 (JAN-MAR)	14	52	50	36
				1996	45	70	65	29
		PM10						
Hillsborough	1800-066-G02	Gibsonton; ICWU Building; HWY 41 North	3.69	1997 (JAN-JUN)	28	83	69	35
				1996	58	89	81	32
Hillsborough	1800-083-G02	Gardinier Park, US 41	0.81	1997 (JAN-JUN)	29	50	36	24
				1996	53	74	46	21
Hillsborough	1800-085-G02	Eisenhower Jr HS; Big Bend Road	8.03	1997 (JAN-JUN)	26	44	33	20
				1996	56	72	42	18

[a] Geometric mean concentration.

Table 4-2. Summary of PM/PM10 Monitoring Data Collected Near the Chassahowitzka NWA

Year	County	Station ID	Monitor Location	Number of Observations	Maximum Concentrations Reported ($\mu g/m^3$)	
					24-Hour	Annual
PM Data						
1996	Citrus	0580-003-J09	Crystal River; Twin Rivers Marina	58	75	30[a]
PM10 Data						
1996	Citrus	National Park Service	Within Chassahawitzka NWA	104	49	19.5

[a] Geometric mean concentration.

of an ambient PM10 background concentration for use in the modeling analysis for the Class I area, the annual average PM10 concentration of 20 $\mu g/m^3$ and the maximum 24-hour concentration of 49 $\mu g/m^3$ recorded at the Chassahowitzka monitor during 1996 was selected. This would represent a very conservative background concentration since this monitor would be influenced somewhat by point sources.

5.0 BACT ANALYSIS FOR PARTICULATE MATTER EMISSIONS

5.1 REQUIREMENTS

The 1977 Clean Air Act Amendments established requirements for the approval of preconstruction permit applications under the PSD program. One of these requirements is that the best available control technology (BACT) be installed for 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. This approach has been challenged in court and a settlement agreement reached that requires EPA to initiate formal rulemaking on the "top-down" approach. However, EPA has not yet promulgated rules which address this approach. Nonetheless, in the absence of formal rules related to this approach, the "top-down" approach is followed in the Cargill BACT analysis.

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

In the case of the proposed modification at Cargill, only PM10 requires BACT analysis. The following section presents the BACT analysis.

5.2 BACT ANALYSIS

The proposed phosphate rock grinding/drying system will use a baghouse to control PM10 emissions. The baghouse will have a low air-to-cloth ratio (approximately 3.1:1). Baghouse technology represents the state of the art in control of PM10 emissions for phosphate rock grinders and dryers. Baghouses are highly efficient and allow collected material to be recovered as product. Although wet PM controls (i.e., scrubbers) could be employed, these would not be as efficient as a baghouse, and an additional liquid waste stream would be generated.

A review of previous BACT determinations for PM emissions from phosphate rock dryers, asphaltic dryers, and similar materials dryers was conducted. The results of this review is presented in Table 5-1. It is noted that determinations issued prior to 1991 are not included in Table 5-1.

There were no other phosphate rock dryer BACTs listed on the Clearinghouse. A number of determinations were found in the BACT Clearinghouse for crushers, grinders, and various material dryers. As shown, the previous BACT determinations all were based on baghouse control technology, except where only wet suppression was required. This demonstrates that baghouse technology is the best technology for application on crushers, grinders, and similar materials dryers.

The most recent BACT determination was for a slag dryer at a recent plant (Tarmac America, Inc.). BACT in this case was 0.02 gr/dscf, which is above Cargill's proposed limit (equivalent to approximately 0.016 gr/dscf).

Cargill's proposed PM10 emission rate for the baghouse of 0.072 lb/ton of phosphate rock feed is equivalent to 2.10 lb/hr and 50.4 lb/day (approximately 0.016 gr/dscf). It is recognized that the proposed phosphate rock drying/grinding operation has the potential to generate finer dust particles, which are more difficult to capture; than dust generated from typical dryers and crushers. Considering this factor, the proposed level of PM emissions is consistent with or below those levels previously determined as BACT.

Table 5-1. Summary of BACT Determinations for PM Emissions from Dryers of Aggregates/Non-Metalic Minerals

Company	Process	State	Permit #	Permit Issue Date	Throughput	Emission Limit	Control Equipment
AGGREGATE							
CALMAT COMPANY	Crushing	CA	A/N 241927	09/12/91	3,000 TPH	150 lb/day	BAGHOUSE
CALMAT COMPANY	Crushing	CA	233351	09/12/91	3,000 TPH	150 lb/day	BAGHOUSE
CALMAT COMPANY	Crushing	CA	241926	09/12/91	3,000 TPH	150 lb/day	BAGHOUSE
HOROWITZ QUARRY	Rock Plant	CA	A/N 230546	02/25/91	1,000 TPH	150 lb/day	DUST COLLECTORS, DCE
BLUESTONE AGGREGATE	Crushing	CA	S-0136-0001-00	07/15/92	200 tons/hr	13.77 lb/day	BAGHOUSE
RIO ROCK MATERIALS, INC.	Crushing	CA	S-0764-0001-00	02/09/93	480 tons/hr	68.7 lb/day	WATER SPRAYS
CALMAT COMPANY	Crushing	CA	A/N 233374	02/11/92	1,000 TPH	--	BAGHOUSE
CALMAT COMPANY	Crushing	CA	A/N 233373	02/11/92	1,000 TPH	--	BAGHOUSE
A & M PRODUCTS	Drying	CA	S-1233-2-0	04/13/95	15 tons aggregate/hr	27.1 lb/day	BAGHOUSE
SAND AND GRAVEL							
BASALITE BLOCK	Drying	CA	N-1051-13-0	06/21/96	18 MMBtu/hr	0.0085 lb/ton	BAGHOUSE
LIMESTONE							
GREAT STAR CEMENT CORP.	Crushing	NV	A139	10/24/95	--	0.05 lb/hr & 0.01 gr/dscf	BAGHOUSE
CEMENT							
TARMAC AMERICA, INC.	Slag Drying	FL	PSD-FL-236	04/01/97	125 tons/hr	0.02 gr/dscf	BAGHOUSE
MISCELLANEOUS							
DAN COPP CRUSHING CORP.	Crushing	CA	S-1926-1-0	09/08/93	450 tons/hr	68.2 lb/day	WATER SURPPRESSION, DUST COLLECTOR
CRITERION CATALYST CO.	Catalyst Grinding	CA	9450	11/04/92	--	0.006 gr/dscf	BAGHOUSE
MARK WEST QUARRY	Crushing	CA	10641	04/02/93	--	0.5 RINGLELMAN	ENCLOSURES, CURTAINS, WATER MIST FOGGERS
MESA MATERIALS, INC.	Crushing	AZ	9300450	08/14/93	400 tons/hr	15 % VE	WATER SPRAYS
MAYER POLLACK STEEL	Crushing	OH	04-677	03/27/91	350 tons/hr	15 % OPACITY	WET SUPPRESSION

Source: EPA's RACT/BACT/LAER Clearinghouse, 1998.

6.0 AIR QUALITY IMPACT ANALYSIS

6.1 SIGNIFICANT IMPACT ANALYSIS

The general modeling approach followed EPA and FDEP modeling guidelines for determining compliance with AAQS and PSD increments. For all criteria pollutants that will be emitted in excess of the PSD significant emission rate due to a proposed project, a significant impact analysis is performed to determine whether the emission and/or stack configuration changes due to the project alone will result in predicted impacts that are in excess of the EPA significant impact levels at any location beyond the plant property boundaries.

Generally, if the facility undergoing the modification also is within 200 kilometers of a PSD Class I area, then a significant impact analysis is also performed for the PSD Class I area. Currently, the National Park Service (NPS) has recommended significant impact levels for PSD Class I areas. The recommended levels have not been promulgated as rules.

If the project's impacts are above the significant impact levels, then a more detailed air modeling analysis that includes background sources is performed. Current FDEP policies stipulate that the highest annual average and highest short-term (i.e., 24 hours or less) concentrations are to be compared to the applicable significant impact levels. Based on the screening modeling analysis results, additional modeling refinements with a denser receptor grid are performed, as necessary, to obtain the maximum concentration. Modeling refinements are performed with a receptor grid spacing of 100 meters (m) or less.

6.2 AAQS/PSD MODELING ANALYSIS

For each pollutant for which a significant impact is predicted, a refined impact analysis is required. This analysis must consider other nearby sources and background concentrations and predict concentrations for comparison to ambient standards. In general, when 5 years of meteorological data are used in the analysis, the highest annual and the highest, second-highest (HSH) short-term concentrations are compared to the applicable AAQS and allowable PSD increments. The HSH concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with air quality standards and allowable PSD increments, which permit a short-term average concentration to be exceeded once per year at each receptor.

To develop the maximum short-term concentrations for the proposed project, the modeling approach was divided into screening and refined phases to reduce the computation time required to perform the modeling analysis. For this study, the only difference between the two modeling phases is the density of the receptor grid spacing employed when predicting concentrations. Concentrations are predicted for the screening phase using a coarse receptor grid and a 5-year meteorological data record.

If the original screening analysis indicates that the highest concentrations are occurring in a selected area(s) of the grid and, if the area's total coverage is too vast to directly apply a refined receptor grid, then an additional screening grid(s) will be used over that area. The additional screening grid(s) will employ a greater receptor density than the original screening grid, so refinements can be performed if necessary.

Refinements of the maximum predicted concentrations are typically performed for the receptors of the screening receptor grid at which the highest and/or HSH concentrations occurred over the 5-year period. Generally, if the maximum concentration from other years in the screening analysis are within 10 percent of the overall maximum concentration, then those other concentrations are refined as well. Typically, if the highest and HSH concentrations are in different locations, concentrations in both areas are refined.

Modeling refinements are performed for short-term averaging times by using a denser receptor grid, centered on the screening receptor to be refined. The angular spacing between radials is 2 degrees and the radial distance interval between receptors is 100 m. Annual modeling refinements employ an angular spacing between radials of 2 degrees and a distance interval from 100 to 300 m, depending on the concentration gradient in the vicinity of the screening receptor to be refined. If the maximum screening concentration is located on the plant property boundary, additional plant boundary receptors are input, spaced at a 2 degree angular interval and centered on the screening receptor. The domain of the refinement grid will extend to all adjacent screening receptors. The air dispersion model is then executed with the refined grid for the entire year of meteorology during which the screening concentration occurred. This approach is used to

ensure that a valid HSH concentration is obtained. A more detailed description of the model, along with the emission inventory, meteorological data, and screening receptor grids, is presented in the following sections.

6.2.1 MODEL SELECTION

The Industrial Source Complex Short-term (ISCST3, Version 97363) dispersion model (EPA, 1995) was used to evaluate the pollutant impacts due to the proposed modification to Cargill's No. 7 Rock Mill. This model is maintained on the EPA's Technical Transfer Network (TTN) bulletin board service. A listing of ISCST3 model features in presented in Table 6-1. The ISCST3 model is applicable to sources located in either flat or rolling terrain where terrain heights do not exceed stack heights. The ISCST3 model is designed to calculate hourly concentrations based on hourly meteorological parameters (i.e., wind direction, wind speed, atmospheric stability, ambient temperature, and mixing heights).

In this analysis, the EPA regulatory default options were used to predict all maximum impacts. Based on the land-use within a 3-km radius of the Cargill facility, the rural dispersion coefficients were used in the modeling analysis. The ISCST3 model was used to provide maximum concentrations for the annual and 24-hour averaging times.

6.2.2 METEOROLOGICAL DATA

Meteorological data used in the ISCST3 model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport and Ruskin, respectively. The 5-year period of meteorological data was from 1987 through 1991. The NWS station at Tampa International Airport, located approximately 18 km to the northwest of the Cargill plant site, was selected for use in the study because it is the closest primary weather station to the study area that is representative of the plant site.

6.2.3 EMISSION INVENTORY

The proposed No. 7 Rock Mill expansion will result in emission rate increases above the EPA significant emission rates for PM10. These increases are due solely to Nos. 5/7/9 Rock Mill sources.

Significant Impact Analysis

The PM10 emission rate increases and the physical and operational stack parameters for the rock mill sources are summarized in Table 6-2. This table is based on emission and stack parameter data presented in Tables 2-2 and 2-3. For the PM10 analysis, the modeled sources included the pre-modification No. 5/No. 9 rock mill stack, and the post-modification rock mill sources. All sources were modeled at locations relative to the No. 9 Sulfuric Acid Plant stack, which is the modeling origin.

AAQS Analysis

For PM10, an inventory of future Cargill sources and their locations relative to the origin is provided in Table 6-3. Other PM facilities that were considered in the modeling analysis are provided in Table 6-4. Facilities were evaluated against the North Carolina screening technique. Based on this technique, facilities whose maximum annual emissions in tons/year do not exceed the quantity 20 x (D-D1), where D1 is the proposed project's significant impact distance for PM/PM10, were eliminated from the modeling analysis.

Competing PM facility data were obtained from the Cargill Riverview Animal Feed Plant PSD Application (Golder, 1996) These competing sources were obtained from three primary sources. Most of the source data were obtained from a modeling analysis performed for a PSD application for US AgriChem, a source in Polk County. Additional PM10 source data were obtained from the recent modeling analysis performed for the FPL Manatee Plant site certification application (SCA). Lastly, FDEP provided the source inventory for several of the facilities.

A summary of the PM10 source data that was used for the AAQS analysis is presented in Attachment B, Tables B-1 and B-2. For PM10 emission sources only, sources were combined based on EPA's method for merging sources (EPA, 1992). In general, individual PM10 emission sources of 100 TPY or more within a facility were modeled separately (i.e., no merging was performed). Those PM10 emission sources of less than 100 TPY within a facility were all merged into one source based on the following approach. For each stack, the parameter M was computed:

$$M = \frac{h_s \, V \, T_s}{Q}$$

where: M = merged stack parameter which accounts for the relative influence of stack height, plume rise, and emission rate on concentrations

h_s = stack height (m)

V = $(\pi/4)\ d_s^2 v_s$ = stack gas volumetric flow rate (m^3/s)

d_s = inside stack diameter (m)

v_s = stack gas exit velocity (m/s)

T_s = stack gas exit temperature (K)

Q = pollutant emission rate (g/s)

The stack with the lowest value of M was used as the representative stack. Then, the sum of the emissions from all applicable sources was assumed to be emitted from the representative stack.

PSD Class II Analysis

A summary of Cargill's PM10 sources for the PSD baseline year (1974) are provided in Table 6-5. These sources were used with Cargill's future sources from Table 6-3 to determine the PSD increment consumption with the proposed project. Non-Cargill PSD sources were obtained from the US AgriChem PSD analysis. Additional PSD increment consuming sources in the vicinity of Cargill, obtained from FDEP, were included as well. These sources include the Hillsborough Co. Resource Recovery facility, the McKay Bay Refuse-to-Energy facility, and the Tropicana plant in Bradenton. The PSD source emission inventory is presented in Attachment B.

PSD Class I Analysis

Because the proposed No. 7 Rock Mill expansion maximum impacts do not exceed the recommended NPS significant impact levels for PM10 at the Chassahowitzka NWA PSD Class I area, a PSD Class I increment consumption modeling assessment is not required. However, impacts of each pollutant were evaluated for the Class I area in order to support the air quality related values (AQRV) analysis. Predicted maximum impacts of SO_2, H_2SO_4, and NO_x were determined for the No. 5/7/9 Rock Mills. The emissions used in the analysis, derived from Table 2-1 and other sources, are presented in Table 6-6. The AQRV analysis is presented in Section 7.0.

6.2.4 RECEPTOR LOCATIONS

For predicting maximum PM10 concentrations in the vicinity of the Cargill Riverview plant, a polar receptor grid comprised of 119 discrete receptors was used for the screening analysis. These receptors included 36 receptors located on the plant property boundary at 10-degree intervals, plus 83 additional off-property receptors at distances of 0.5, 0.8, 1.1, and 1.5 km from the No. 9 Sulfuric Acid Plant stack, which is the origin of the air modeling coordinate system. The 36 property boundary receptors used for the screening analysis are presented in Table 6-7.

Modeling refinements were performed by employing a polar receptor grid with a maximum spacing of 100 m along each radial and an angular spacing between radials of 2 degrees.

For predicting impacts at the Chassahowitzka National Wilderness Class I area, 13 discrete receptors located along the border of the PSD Class I area were used. A listing of the Class I receptors is presented in Table 6-8. Modeling refinements at the Chassahowitzka NWA were not performed due to the distance from the Cargill plant site to the Class I area.

6.2.5 BUILDING DOWNWASH EFFECTS

All significant building structures within Cargill's existing plant area were determined by a site plot plan (see Figure 1-2). The plot plan of the rock mills and expansion was presented in Figure CR-FE-2 in Section 2.0. A total of 21 building structures were evaluated. All building structures were processed in the EPA Building Input Profile (BPIP, Version 95086) program to determine direction-specific building heights and projected widths for each 10-degree azimuth direction for each source that was included in the modeling analysis. A listing of dimensions for each structure is presented in Table 6-9.

6.3 PM10 MODELING RESULTS FOR SIGNIFICANT IMPACT ANALYSIS

The modeling analysis results for the proposed project only in the vicinity of the plant are summarized in Table 6-10. Based on the screening modeling results, the maximum predicted PM10 impacts due to the proposed project only are 0.87 and 6.0 $\mu g/m^3$ for the annual and 24-hour average, respectively. Because the maximum predicted values are above the EPA significant impact level for PM10 of 5 $\mu g/m^3$, 24-hour average, additional AAQS and PSD Class II modeling analyses are required for this pollutant. The distance to which the PM10 impact is significant was determined to be 1.5 km.

The maximum PM10 concentrations predicted at the Chassahowitzka NWA are also presented in Table 6-10. The maximum predicted PM10 impacts are 0.0016 and 0.031 $\mu g/m^3$, for the annual and 24-hour average, respectively. These maximum predicted values are below the NPS recommended annual and 24-hour significant impact levels for PM10 of 0.1 and 0.33 $\mu g/m^3$, respectively. Therefore, a PSD Class I modeling analysis is not required for PM10 at the Chassahowitzka NWA.

6.4 PM10 AAQS ANALYSIS

A summary of the maximum PM10 concentrations predicted for all sources for the screening analysis is presented in Table 6-11. Based on the screening analysis results, modeling refinements were performed. The results of the refined modeling analysis are presented in Table 6-12. The maximum predicted annual and 24-hour PM10 concentrations are 44 and 114 $\mu g/m^3$, respectively, which includes an ambient non-modeled background concentration of 21 $\mu g/m^3$. The maximum PM10 concentrations are less than the AAQS of 50 and 150 $\mu g/m^3$, respectively.

6.5 PM10 PSD CLASS II ANALYSIS

A summary of the maximum PM10 PSD increment consumption predicted for all sources for the screening analysis is presented in Table 6-13. Based on the screening analysis results, modeling refinements were performed. The results of the refined modeling analysis are presented in Table 6-14. The maximum predicted PM10 annual and 24-hour PSD increment consumption of 0.2 and 10.7 $\mu g/m^3$, respectively, are less than the allowable PSD Class II increments of 17 and 30 $\mu g/m^3$, respectively.

6.6 CLASS I IMPACTS FOR ADDITIONAL IMPACT AND AQRV ANALYSIS

6.6.1 PM10

The maximum total PM10 air quality impacts predicted for all modeled sources at the Chassahowitzka NWA are summarized in Table 6-15. Impacts are presented for various averaging times to support the AQRV analysis. Background PM10 concentrations are based on the latest available PM ambient monitoring data for the monitoring station located closest to Chassahowitzka (see Table 4-2). Total cumulative impacts based on modeled sources' impacts and background are shown in Table 6-16.

6.6.2 OTHER POLLUTANTS

The maximum air quality impacts at the Chassahowitzka NWA for SO_2, NO_x, and H_2SO_4 mist, due to the proposed project, are summarized in Table 6-17. Impacts are presented for various averaging times to support the visibility analysis presented in Section 7.0.

Table 6-1. Major Features of the ISCST3 Model

ISCST3 Model Features
• Polar or Cartesian coordinate systems for receptor locations
• Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
• Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975; Bowers, et al., 1979).
• Procedures suggested by Huber and Snyder (1976); Huber (1977); and Schulman and Scire (1980) for evaluating building wake effects
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
• Separation of multiple emission sources
• Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
• Capability of simulating point, line, volume, area, and open pit sources
• Capability to calculate dry and wet deposition, including both gaseous and particulate precipitation scavenging for wet deposition
• Variation of wind speed with height (wind speed-profile exponent law)
• Concentration estimates for 1-hour to annual average times
• Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm for ISCST3; a built-in algorithm for predicting concentrations in complex terrain
• Consideration of time-dependent exponential decay of pollutants
• The method of Pasquill (1976) to account for buoyancy-induced dispersion
• A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
• Procedure for calm-wind processing including setting wind speeds less than 1 m/s to 1 m/s.

Note: ISCST3 = Industrial Source Complex Short-Term.

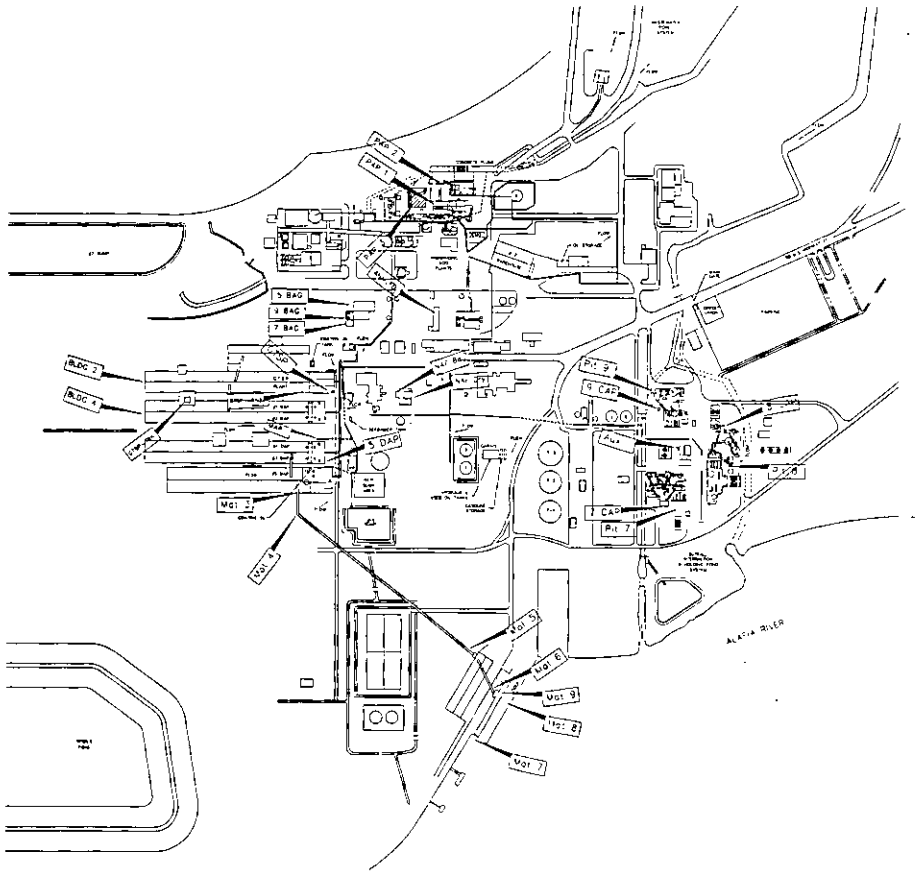
Source: EPA, 1995.

Table 6-2. Summary of Stack Parameters and PM10 Emissions for the Modified Rock Grinding/Drying System, Cargill Riverview

Source	Stack Height (ft)	Stack Height (m)	Stack Diameter (ft)	Stack Diameter (m)	Flowrate(a) (acfm)	Stack Velocity (a) (f/s)	Stack Velocity (a) (m/s)	Stack Temp. (a) (deg F)	Stack Temp. (a) (deg K)	PM10 Emissions (lb/hr)	PM10 Emissions (g/s)
Pre-Modification Sources											
No. 5 and 9 Mills Dust Collector	60	18.29	1.92	0.59	10,000	57.6	17.55	140	333.2	1.93	0.24
Post-Modification Sources											
No. 5 Mill Dust Collector	91	27.74	2.5	0.76	19,000	64.5	19.66	165	347.0	2.59	0.33
No. 9 Mill Dust Collector	91	27.74	2.5	0.76	19,000	64.5	19.66	165	347.0	2.59	0.33
Ground Rock Silo Dust Collector	67	20.42	0.8	0.24	1,200	39.8	12.13	80	299.8	0.41	0.05
No. 7 Mill Dust Collector	91	27.74	3.0	0.91	20,000	47.2	14.37	165	347.0	2.10	0.26
									Totals =	7.69	0.97

(a) Based on stack test data, except for No. 7 Rock Mill represents design data.

Legend
ft = feet
m = meters
acfm = actual cubic feet per minute
f/s = feet per second
m,/s = meters per second
deg F = degrees Fahrenheit
deg K = degrees Kelvin
lb/hr = pounds per hour
g/s = grams per second



Attachment CR-FE-2.
Facility Plot Plan

Facility:	Cargill Fertilizer Plant
Location:	Riverview, FL
Filename:	tpc-sit2.dwg
Date:	03/16/98

Table 6-3. Stack and Vent Geometry and Future Maximum PM and PM10 Emissions for Cargill Fertilizer, Riverview

Title V Emission Unit No.	AIRS Number	Source	PM Emissions (lb/hr)	PM Emissions (g/sec)	PM10 Emissions (lb/hr)	PM10 Emissions (g/sec)	Stack/Vent Release Height (ft)	Stack/Vent Release Height (m)	Stack/Vent Diameter (ft)	Stack/Vent Diameter (m)	Gas Flow Rate (acfm)	Gas Exit Temperature (F)	Gas Exit Temperature (K)	Velocity (a) (ft/sec)	Velocity (a) (m/sec)	Discharge Direction (Vert /Horiz.)	Location (b) X Coordinate (ft)	Location (b) X Coordinate (m)	Location (b) Y Coordinate (ft)	Location (b) Y Coordinate (m)
		No 7 Rock Mill (Proposed)																		
		No. 7 Rock Mill Dust Collector	2.10	0.26	2.10	0 26	91	27.74	3.0	0.91	20,000	165	347	47.20	14.37	V	-1636	-499	487	148
1	22,23,24	No. 3 and No 4 MAP Plants and South Cooler	22 00	2.77	22.00	2.77	133	40 54	7.0	2.13	116,500	133	329	50 45	15.38	V	-1795	-547	-157	-48
2	55	No. 5 DAP Plant	12 80	1.61	12.80	1.61	133	40.54	7.0	2.13	121,732	110	316	52 72	16.07	V	-1711	-521	-133	-40
3	7	GTSP/DAP Manufacturing Plant	21.60	2 72	21 60	2 72	126	38 40	8 0	2 44	140,400	125	325	46 55	14.19	V	-1647	-502	27	8
4	70,71	Two GTSP Storage Buildings	NA	NA	NA	NA	NA	NA	NA	NA	NA	77	298	NA	NA	–	NA	NA	NA	NA
5	72	GTSP Truck Loading Station	0.53	0 07	0.53	0.07	38	11 58	2.7	0 81	2,200	77	298	6.55	2.00	H	-2355	-718	27	8
6	8	GTSP Ground Rock Handling	0.95	0 12	0 95	0.12	87	26 52	1.2	0.37	4,400	138	332	64 84	19.76	H	-1775	-541	67	21
7		Material Handling Conveyor																		
	51	West Baghouse	1.16	0.15	1.16	0 15	30	9.14	3 5	1 07	33,000	80	300	57 17	17.42	V	-879	-268	-1373	-418
	52	South Baghouse	1.16	0.15	1 16	0.15	40	12.19	1 5	0 46	4,500	80	300	42 44	12.94	H	-964	-294	-1601	-488
	53	Tower East Baghouse	3.10	0.39	3 10	0 39	50	15 24	2.5	0 76	12,000	80	300	40.74	12.42	H	-803	-245	-1425	-434
	58	Building No.6 Baghouse	0 62	0.08	0 62	0 08	30	9 14	1.2	0.35	3,630	80	300	57 24	17 45	H	-1820	-555	-419	-128
	59	Belt 7 to 8 Baghouse	0.62	0 08	0.62	0 08	45	13.72	1 2	0 35	3,630	80	300	57.24	17.45	H	-1820	-555	-522	-159
	60	Belt 8 to 9 Baghouse	1.19	0 15	1.19	0.15	75	22.86	1 6	0 48	6,930	80	300	59.54	18 15	H	-1188	-362	-1178	-359
8		Phosphate Rock Grinding/Drying System																		
	100	No 5 Mill Dust Collector	2 59	0 33	2.59	0 33	91	27.74	2 5	0.76	19,000	165	347	64 50	19.66	V	-1636	-499	497	152
	101	No. 9 Mill Dust Collector	2.59	0.33	2.59	0.33	91	27 74	2.5	0.76	19,000	165	347	64.50	19.66	V	-1610	-491	519	158
	102	Ground Rock Silo Dust Collector	0.41	0 05	0.41	0 05	67	20 42	0 8	0 24	1,200	80	300	39 80	12.13	H	-1640	-499	526	160
9	73	Phosphoric Acid Production Facility	NA	NA	NA	NA	110	33 53	4 8	1 47	57,000	100	311	51 85	15 80	–	NA	NA	NA	NA
10	43	Auxiliary Steam Boiler	13.00	1.64	6 50	0 82	20	6 10	4.5	1.37	39,300	420	489	41.18	12 55	V	35	11	-191	-58
11	6	No. 9 Sulfuric Acid Plant	NA	NA	NA	NA	150	45 72	9.0	2.74	158,000	170	350	41.39	12 62	V	0	0	0	0
	5	No. 8 Sulfuric Acid Plant	NA	NA	NA	NA	150	45.72	8 0	2.44	153,700	150	339	50.96	15 53	V	255	78	-89	-27
	4	No. 7 Sulfuric Acid Plant	NA	NA	NA	NA	150	45.72	7.5	2 29	109,924	152	340	41.47	12.64	V	-60	-18	-422	-129
12		Sodium Silicofluoride/Sodium Fluoride Plant																		
	41	Dryer Scrubber	1.00	0.13	1.00	0.13	40	12.19	1.7	0 51	5,400	120	322	41 09	12.52	V	-1272	-388	35	11
	54	Material Handling Baghouse	0.69	0.09	0.69	0.09	30	9.14	1.3	0.41	4,000	90	305	47 99	14.63	V	-1350	-412	60	18
13	*	Molten Sulfur Handling																		
		Pits/Truck Loading (c)	0 44	0 06	0 44	0 06	8	2 44	0.3	0 10	135.00	240	389	26 31	8 02	V	78	24	-238	-73
		Tanks (d)	2 60	0.33	2 60	0 33	24	7 32	0 8	0 25	445	240	389	13 71	4.18	V	-586	-179	-362	-110
14		Animal Feed Plant																		
	79	DE Hopper Vent	0 09	0.01	0 09	0.01	64	19 51	1 5	0 46	600	90	305	5 66	1.72	–	-1689	-515	728	222
	78	AFI Plant No. 1 Stack	6 00	0 76	6 00	0.76	136	41 45	6 0	1.83	95,000	150	339	56 00	17 07	V	-1173	-358	413	126
	80	Limestone Silo	0 12	0 02	0.12	0.02	85	25.91	1.5	0 46	800	90	305	7.55	2 30	–	-1030	-314	522	159
	81	AFP Loadout System	2 22	0 28	2.22	0.28	15	4.57	2.1	0 64	15,000	90	305	71 43	21 77	V	-801	-244	528	161
	–	AFI Plant No. 2 Stack	6 00	0.76	6 00	0 76	136	41 45	6 0	1 83	95 000	150	339	56 00	17.07	V	-1293	-394	413	126
Total Emissions			105.58	13.30	99 08	12 48														

* AIRS Nos. 063, 064, 065, 066, 067, 068, 069, 074.
NA = No PM/PM10 or NOx emissions from this source
(a) For modeling purposes, horizontal discharges were modeled with a velocity of 0 01 m/s
(b) Relative to H2SO4 Plant No 9 stack location
(c) Assumes one pit being loaded for 24 hours/day
(d) Assumes one tank being loaded for 24 hours/day.

Table 6-4. Facility Screening Analysis for PM Emitting Facilities (>20 TPY) in the Vicinity of Proposed Cargill Project

Facility Name/Location	Facility Location UTMs E (km)	N (km)	Relative to Cargill X(m)	Y(m)	Distance (km)	20 X (D-3)	PM Emissions (TPY)	Include in Modeling?
APAC-Florida, Inc.	347.1	3027.3	-15800	-55200	57.4	1088.3	163	NO
Adams Packing Association	421.7	3104.2	58800	21700	62.7	1193.5	144	NO
Agrico Chemical	400.0	3061.0	37100	-21500	42.9	797.6	84	NO
Agrico Chemical Co	362.1	3076.1	-800	-6400	6.4	69.0	195	YES
Agrico Chemical Co Pierce	403.7	3079.0	40800	-3500	40.9	759.0	840	YES
Agrico Chemical Co South Pierce	407.5	3071.5	44600	-11000	45.9	858.7	1096	YES
Alcoa	416.8	3116.0	53900	33500	63.5	1209.2	446	NO
Alcoma Packing - Lake Wales	451.6	3085.5	88700	3000	88.8	1715.0	263	NO
Allsun Products	413.5	3093.8	50600	11300	51.8	976.9	318	NO
Alumax Extrusions	385.6	3097.0	22700	14500	26.9	478.7	172	NO
Amcon Concrete	364.0	3075.0	1100	-7500	7.6	91.6	39	NO
Amcon Concrete	358.4	3090.2	-4500	7700	8.9	118.4	3	NO
Amcon Products	364.6	3092.8	1700	10300	10.4	148.8	32	NO
American Orange Corp	429.8	3047.3	66900	-35200	75.6	1451.9	181	NO
Amoco Oil	357.8	3092.0	-5100	9500	10.8	155.6	9	NO
Aristrech Chemical Corp	411.7	3085.9	48800	3400	48.9	918.4	7	NO
Asgrow Florida Company	388.6	3104.6	25700	22100	33.9	617.9	5	NO
Auburndale Cogeneration	420.8	3103.3	57900	20800	61.5	1170.5	161	NO
Bay Concrete	365.0	3084.0	2100	1500	2.6	-8.4	3	YES
Bay Concrete	365.1	3093.8	2200	11300	11.5	170.2	37	NO
Bio-Medical Service Corp of GA	413.9	3081.3	51000	-1200	51.0	960.3	46	NO
Bordo Citrus Product Inc	427.8	3097.5	64900	15000	66.6	1272.2	13	NO
Brannen Prestress Co.	353.7	3016.5	-9200	-66000	66.6	1272.8	100	NO
Brannen Prestress Co.	353.7	3016.5	-9200	-66000	66.6	1272.8	100	NO
C & M Products Co	405.5	3079.1	42600	-3400	42.7	794.7	162	NO
C F Industries Bonnie Mine Rd	408.4	3082.4	45500	-100	45.5	850.0	1319	YES
C&M Products	405.5	3079.1	42600	-3400	42.7	794.7	37	NO
C-Cure of Florida	386.0	3098.7	23100	16200	28.2	504.3	21	NO
CF Industries	388.0	3116.0	25100	33500	41.9	777.2	84	NO
CF Industries - Bartow	408.4	3082.4	45500	-100	45.5	850.0	790	NO
CSX Transportation Inc.	361.0	3089.0	-1900	6500	6.8	75.4	404	YES
Cargill Terminal	358.1	3091.7	-4800	9200	10.4	147.5	22	NO
Cargill/Nutrena Feed Division	360.8	3095.8	-2100	13300	13.5	209.3	21	NO
Cast Metals Corp	368.8	3094.6	5900	12100	13.5	209.2	8	NO
Cast-Crete Corp of Florida	371.9	3099.2	9000	16700	19.0	319.4	11	NO
Central Florida Hot-Mix	412.5	3097.7	49600	15200	51.9	977.5	19	NO
Central Phosphates Inc.	359.1	3089.8	-3800	7300	8.2	104.6	26	NO
Chapman Contracting	356.8	3068.4	-6100	-14100	15.4	247.3	4	NO
Chevron Asphalt Inc.	358.2	3092.0	-4700	9500	10.6	152.0	4	NO
Citrus Hill Mfg	447.9	3068.3	85000	-14200	86.2	1663.6	66	NO
Citrus World	441.0	3087.3	78100	4800	78.2	1504.9	601	NO
City of Tampa Dept.	364.0	3089.5	1100	7000	7.1	81.7	48	NO
Coca Cola	421.6	3103.7	58700	21200	62.4	1188.2	387	NO
Comco of America	361.4	3086.9	-1500	4400	4.6	33.0	9	NO
Commercial Metals Inc	358.5	3088.3	-4400	5800	7.3	85.6	108	YES
Conserv Inc.	398.7	3084.2	35800	1700	35.8	656.8	1598	YES
Consolidated Minerals Inc. Plant City	393.8	3096.3	30900	13800	33.8	616.8	756	YES
Couch Construction Co	364.3	3098.1	1400	15600	15.7	253.3	45	NO
Couch Construction Company	362.1	3096.7	-800	14200	14.2	224.5	26	NO
Crown Door Company	362.1	3092.5	-800	10000	10.0	140.6	13	NO
David J. Joseph Co.	364.0	3092.9	1100	10400	10.5	149.2	123	NO
Delta Asphalt	372.1	3105.4	9200	22900	24.7	433.6	72	NO
Dravo Lime Co.	362.9	3084.7	-0	2200	2.2	-16.0	48	YES
Driggers Concrete	360.0	3065.9	-2900	-16600	16.9	277.0	21	NO
ER Carpenter	397.0	3131.5	34100	49000	59.7	1134.0	55	NO
Earl Massey	440.4	3103.4	77500	20900	80.3	1545.4	39	NO
Eastern Association Terminal	360.2	3088.9	-2700	6400	6.9	78.9	534	YES
Eastern Electric Apparatus Repair Co.	366.6	3092.0	3700	9500	10.2	143.9	21	NO
Eger Concrete Eastside Dr N	410.5	3102.5	47600	20000	51.6	972.6	11	NO
Eger Concrete Lake Ida & 5th St	428.1	3102.0	65200	19500	68.1	1301.1	49	NO
Ennis Drum Service Inc	422.5	3102.5	59600	20000	62.9	1197.3	4	NO
Erly Juice Inc	399.0	3101.8	36100	19300	40.9	758.7	117	NO

Table 6-4. Facility Screening Analysis for PM Emitting Facilities (>20 TPY) in the Vicinity of Proposed Cargill Project

Facility Name/Location	Facility Location UTMs E (km)	N (km)	Relative to Cargill X(m)	Y(m)	Distance (km)	20 X (D-3)	PM Emissions (TPY)	Include in Modeling?
Ero Industries	427.5	3095.6	64600	13100	65.9	1258.3	33	NO
Estech	411.5	3074.2	48600	-8300	49.3	926.1	311	NO
Estech-Duette Phosphate Mine	388.9	3047.2	26000	-35300	43.8	816.8	750	NO
Ewell Ind Bonnie Mine Rd	407.7	3080.9	44800	-1600	44.8	836.6	96	NO
Ewell Ind S Florida Ave	406.3	3092.9	43400	10400	44.6	832.6	348	NO
Ewell Industries	367.1	3092.7	4200	10200	11.0	160.6	19	NO
Ewell Industries	367.0	3092.8	4100	10300	11.1	161.7	13	NO
FMC Corp/Citrus Machinery Division	409.6	3102.6	46700	20100	50.8	956.8	9	NO
FPC Bayboro	338.8	3071.3	-24100	-11200	26.6	471.5	2526	YES
FPC Intercession City 7EA Turbine (#180)	446.3	3126.0	83400	43500	94.1	1821.3	108	NO
FPC-Bartow	342.4	3082.6	-20500	100	20.5	350.0	9244	YES
Farmland Industries Green Bay Plant	409.5	3080.1	46600	-2400	46.7	873.2	1486	YES
Florida Brick & Clay Co	384.9	3097.1	22000	14600	26.4	468.1	26	NO
Florida Crushed Stone	358.9	3088.4	-4000	5900	7.1	82.6	20	NO
Florida Distillers Company	421.4	3102.9	58500	20400	62.0	1179.1	2	NO
Florida Fence Post	409.2	3039.9	46300	-42600	62.9	1198.3	6	NO
Florida Institute of Phosphate Research	415.0	3085.8	52100	3300	52.2	984.1	4	NO
Florida M & M	362.2	3066.2	-700	-16300	16.3	266.3	21	NO
Florida Mega-Mix	364.5	3093.4	1600	10900	11.0	160.3	22	NO
Florida Mining & Materials Alabama Lane	420.8	3103.4	57900	20900	61.6	1171.1	40	NO
Florida Petroleum	360.9	3094.0	-2000	11500	11.7	173.5	16	NO
Florida Power & Light	367.2	3054.1	4300	-28400	28.7	514.5	40179	YES
Florida Precast Concrete	360.4	3094.2	-2500	11700	12.0	179.3	132	NO
Florida Privitization Inc	418.3	3048.0	55400	-34500	65.3	1245.3	281	NO
Florida Rock Industries	416.6	3085.8	53700	3300	53.8	1016.0	57	NO
Florida Rock Industries	363.9	3093.5	1000	11000	11.0	160.9	8	NO
Florida Rock Industries	428.0	3105.2	65100	22700	68.9	1318.9	55	NO
Florida Rock Industry	365.8	3085.0	2900	2500	3.8	16.6	21	YES
Florida Rock Industry	362.3	3097.5	-600	15000	15.0	240.2	20	NO
Florida Steel Corp	364.6	3092.8	1700	10300	10.4	148.8	144	NO
Florida Tile	405.4	3102.4	42500	19900	46.9	878.6	309	NO
GAF Building Materials Corp	362.2	3087.2	-700	4700	4.8	35.0	57	YES
GNB Inc. (PAC CHL)	361.8	3088.3	-1100	5800	5.9	58.1	25	NO
Garder Asphalt Corp	360.8	3093.3	-2100	10800	11.0	160.0	5	NO
Gardinier	415.3	3063.3	52400	-19200	55.8	1056.1	175	NO
Garrison Stevedoring	357.8	3091.7	-5100	9200	10.5	150.4	182	YES
Gaylord Container Corp	366.3	3092.3	3400	9800	10.4	147.5	108	NO
General Chemical Corp	359.9	3092.3	-3000	9800	10.2	145.0	30	NO
Glen-Mar Concrete Products	363.2	3093.3	300	10800	10.8	156.1	22	NO
Gold Bond Building Products	347.3	3082.7	-15600	200	15.6	252.0	117	NO
Gold Bond Building Products	347.3	3082.7	-15600	200	15.6	252.0	117	NO
Golden Triangle Asphalt	333.8	3086.1	-29100	3600	29.3	526.4	1274	YES
Graves Enterprises Riverview	363.1	3085.3	200	2800	2.8	-3.9	350	YES
Griffin Industries	364.1	3096.4	1200	13900	14.0	219.0	4	NO
Gulf Coast Lead Company	364.0	3093.5	1100	11000	11.1	161.1	17	NO
Gulf Coast Metals	364.7	3093.6	1800	11100	11.2	164.9	13	NO
H & S Properties	360.3	3093.2	-2600	10700	11.0	160.2	9	NO
Hardee Memorial Hospital	419.2	3046.7	56300	-35800	66.7	1274.4	1	NO
Hardee Power Station Ft. Green Springs	404.8	3057.4	41900	-25100	48.8	916.9	1251	YES
Haynes Funeral Home Plant City	388.1	3100.3	25200	17800	30.9	557.1	6	NO
High Performance Finishers	428.0	3096.0	65100	13500	66.5	1269.7	12	NO
Hillsborough Animal Control Center	368.5	3092.7	5600	10200	11.6	172.7	11	NO
Hillsborough Co Resource Recovery	368.2	3092.7	5300	10200	11.5	169.9	172	YES
Hillsborough Co. Animal Control Center	364.9	3093.5	2000	11000	11.2	163.6	16	NO
Holly Hill	441.0	3115.4	78100	32900	84.7	1634.9	145	NO
Holman Inc.	359.3	3087.1	-3600	4600	5.8	56.8	54	NO
Hull Materials, Inc.	399.4	3070.6	36500	-11900	38.4	707.8	13	NO
Humana Hospital	429.9	3076.7	67000	-5800	67.3	1285.0	1	NO
Humana Hospital	373.3	3093.4	10400	10900	15.1	241.3	4	NO
Hydro Conduit Corp	363.8	3093.5	900	11000	11.0	160.7	2	NO
IMC Ft. Lonesome	389.6	3067.9	26700	-14600	30.4	548.6	678	YES
IMC Kingsford	398.2	3075.7	35300	-6800	35.9	659.0	422	NO

Table 6-4. Facility Screening Analysis for PM Emitting Facilities (>20 TPY) in the Vicinity of Proposed Cargill Project

Facility Name/Location	Facility Location UTMs E (km)	N (km)	Relative to Cargill X(m)	Y(m)	Distance (km)	20 X (D-3)	PM Emissions (TPY)	Include in Modeling?
IMC Noralyn Mine	414.7	3080.3	51800	-2200	51.8	NA	NA	NO
IMC Port Sutton Terminal	360.1	3087.5	-2800	5000	5.7	54.6	442	YES
IMC Fertilizer New Wales	396.7	3079.4	33800	-3100	33.9	618.8	1430	YES
IMC Fertilizer Prairie	402.9	3087.0	40000	4500	40.3	745.0	288	NO
IMC Fertilizer Rainbow Division	402.3	3085.8	39400	3300	39.5	730.8	88	NO
IMC/Uranium Recovery C F Industries	408.4	3082.8	45500	300	45.5	850.0	1071	YES
Imperial Phosphate Ltd.	404.8	3069.5	41900	-13000	43.9	817.4	162	NO
International Paper Company	421.7	3104.3	58800	21800	62.7	1194.2	8	NO
International Salt Company	358.2	3090.2	-4700	7700	9.0	120.4	21	NO
John Carlos Florida	426.2	3104.1	63300	21600	66.9	1277.7	29	NO
Johnson Controls Battery Group, Inc.	359.9	3102.5	-3000	20000	20.2	344.5	156	NO
Kaiser Aluminum	408.3	3085.5	45400	3000	45.5	850.0	106	NO
Kaplan Industries	418.3	3079.3	55400	-3200	55.5	1049.8	53	NO
Kearney Development Company	368.7	3094.8	5800	12300	13.6	212.0	21	NO
Kimmins Recycling Corporation	360.4	3093.1	-2500	10600	10.9	157.8	66	NO
LaFarge Corp	357.7	3090.8	-5200	8300	9.8	135.9	1221	YES
LaFarge Corp.	356.3	3092.8	-6600	10300	12.2	184.7	51	NO
Laidlaw Environmental Services Inc	424.7	3091.9	61800	9400	62.5	1190.2	9	NO
Lakeland City Electric & Utilities	404.0	3105.3	41100	22800	47.0	880.0	8	NO
Lakeland City Power Larsen Power Station	409.3	3102.8	46400	20300	50.6	952.9	107	NO
Lakeland City Power McIntosh Power Station	409.2	3106.1	46300	23600	52.0	NA	NA	NO
Lehigh Portland Cement Co	361.3	3086.9	-1600	4400	4.7	33.6	7	NO
Lehigh Portland Cement Co Port Sutton	360.7	3086.8	-2200	4300	4.8	36.6	18	NO
Leisey Shell Corp	352.7	3064.8	-10200	-17700	20.4	348.6	20	NO
Lykes Pasco Packing	412.4	3096.5	49500	14000	51.4	968.8	48	NO
MacDill AFB	355.0	3080.6	-7900	-1900	8.1	102.5	2	NO
Macasphalt	423.1	3101.5	60200	19000	63.1	1202.5	70	NO
Manatee Scrap Processing	366.9	3053.8	4000	-28700	29.0	519.5	108	NO
Manna Pro Corporation	364.7	3092.6	1800	10100	10.3	145.2	16	NO
Marathon Petroleum Company	362.2	3087.2	-700	4700	4.8	35.0	13	NO
Metals & Materials Recycling	386.5	3097.4	23600	14900	27.9	498.2	1	NO
Mobil Mining & Minerals Big Four Mine	394.7	3069.6	31800	-12900	34.3	626.3	68	NO
Mobil Mining & Minerals SR 676	398.5	3085.1	35600	2600	35.7	653.9	990	YES
Mobil-Electrophos Division	405.6	3079.4	42700	-3100	42.8	796.2	544	NO
Monier Roof Tile	414.0	3102.5	51100	20000	54.9	1037.5	44	NO
National Portland Cement Co. of FL	346.4	3056.4	-16500	-26100	30.9	557.6	186	NO
Nitram	362.5	3089.0	-400	6500	6.5	70.2	218	YES
North American Salt Co	362.4	3065.7	-500	-16800	16.8	276.1	5	NO
Orange Co of Florida	418.7	3083.6	55800	1100	55.8	1056.2	119	NO
Orlando Utilities Station #1	463.5	3116.0	100600	33500	106.0	2060.6	84	NO
Orlando Utilities Station #2	483.5	3150.6	120600	68100	138.5	2710.0	375	NO
Ott-Laughlin	427.8	3099.7	64900	17200	67.1	1282.8	1	NO
Owens-Brockway Glass Container	423.4	3102.3	60500	19800	63.7	1213.2	189	NO
Packaging Corp of America	423.4	3102.8	60500	20300	63.8	1216.3	38	NO
Pakhoed Dry Bulk Terminals	360.8	3087.3	-2100	4800	5.2	44.8	483	YES
Paktank Florida	360.8	3087.3	-2100	4800	5.2	44.8	178	YES
Palm Harbor Homes	391.8	3101.5	28900	19000	34.6	631.7	22	NO
Pavers Incorporated	414.0	3098.2	51100	15700	53.5	1009.1	479	NO
Pavex Corp	413.0	3086.2	50100	3700	50.2	944.7	44	NO
Pembroke Materials Inc	420.4	3075.2	57500	-7300	58.0	1099.2	12	NO
Pinellas Co. Resource Recovery Facility	335.2	3084.1	-27700	1600	27.7	494.9	329	NO
Purina Mills	402.0	3087.0	39100	4500	39.4	727.2	88	NO
Quikrete of Florida	412.8	3099.0	49900	16500	52.6	991.1	253	NO
R & L Metals	363.6	3093.0	700	10500	10.5	150.5	5	NO
R C Martin Concrete Products	388.6	3092.1	25700	9600	27.4	488.7	28	NO
R V Shulnburg	362.5	3097.3	-400	14800	14.8	236.1	6	NO
Reed Minerals Division	362.2	3085.5	-700	3000	3.1	1.6	70	YES
Resource Recovery of America Inc	401.8	3085.8	38900	3300	39.0	720.8	10	NO
Reynolds Aluminum Recycling	362.7	3097.5	-200	15000	15.0	240.0	14	NO
Ridge Cogeneration	416.7	3100.4	53800	17900	56.7	1074.0	414	NO
Ridge Pallets Inc	419.1	3078.1	56200	-4400	56.4	1067.4	96	NO
Ridge Pallets Inc.	418.6	3084.1	55700	1600	55.7	1054.5	165	NO

Table 6-4. Facility Screening Analysis for PM Emitting Facilities (>20 TPY) in the Vicinity of Proposed Cargill Project

Facility Name/Location	Facility Location UTMs E (km)	N (km)	Relative to Cargill X(m)	Y(m)	Distance (km)	20 X (D-3)	PM Emissions (TPY)	Include in Modeling?
Rinker Cencon Corp	412.4	3099.0	49500	16500	52.2	983.6	159	NO
Rinker Materials Corp	364.9	3084.4	2000	1900	2.8	-4.8	8	YES
Rinker Materials Corp.	392.2	3100.0	29300	17500	34.1	622.6	14	NO
Rinker Materials Corporation	363.2	3098.1	300	15600	15.6	252.1	22	NO
Royster Co	362.6	3098.4	-300	15900	15.9	258.1	18	NO
Royster Company	406.8	3085.1	43900	2600	44.0	819.5	1393	YES
Sani-Med Inc.	359.8	3079.9	-3100	-2600	4.0	20.9	16	NO
Schering Berlin Polymers	410.7	3098.9	47800	16400	50.5	950.7	30	NO
Scrapall Inc.	359.4	3093.1	-3500	10600	11.2	163.3	31	NO
Cargill Fertilizer - Bartow (Seminole Fertilizer)	409.8	3086.7	46900	4200	47.1	881.8	2760	YES
South Bay Hospital	365.3	3065.1	2400	-17400	17.6	291.3	18	NO
Southeastern Galvanizing Division	368.5	3094.5	5600	12000	13.2	204.8	21	NO
Southeastern Wire	368.3	3094.5	5400	12000	13.2	203.2	21	NO
Southern Culvert	391.5	3095.0	28600	12500	31.2	564.2	17	NO
Southern Mill Creek Products Inc.	362.8	3097.7	-100	15200	15.2	244.0	6	NO
Southern Prestressed	363.2	3098.4	300	15900	15.9	258.1	2	NO
Southport Stevedore	358.5	3091.8	-4400	9300	10.3	145.8	30	NO
Speedling, Inc.	354.1	3062.2	-8800	-20300	22.1	382.5	19	NO
Standard Sand & Silica	441.5	3118.2	78600	35700	86.3	1666.6	286	NO
Stauffer Chemical Company	365.3	3093.6	2400	11100	11.4	167.1	9	NO
Stilwell Foods of Florida	389.8	3098.9	26900	16400	31.5	570.1	2	NO
Sulfur Terminals Co	358.0	3090.0	-4900	7500	9.0	119.2	9	NO
Sulfuric Acid Trading Company	349.0	3081.5	-13900	-1000	13.9	218.7	1204	YES
Sun Pac Foods	422.7	3092.6	59800	10100	60.6	1152.9	62	NO
Surfacing Products of America	347.5	3037.6	-15400	-44900	47.5	889.4	153	NO
TECO Big Bend	361.9	3075.0	-1000	-7500	7.6	91.3	7897	YES
TECO Gannon	360.0	3087.5	-2900	5000	5.8	55.6	5857	YES
TECO Hooker's Point	358.0	3091.0	-4900	8500	9.8	136.2	1231	YES
TECO Polk	402.5	3067.4	39600	-15100	42.4	787.6	438	NO
Tampa Armature Works	365.6	3091.7	2700	9200	9.6	131.8	13	NO
Tampa Bay Crematory	372.9	3090.7	10000	8200	12.9	198.6	10	NO
Tampa Bay Stevedores Inc	358.3	3088.6	-4600	6100	7.6	92.8	24	NO
Tampa City McKay Bay Refuse-to-Energy	360.0	3091.9	-2900	9400	9.8	136.7	344	YES
Tampa Sand & Material	360.1	3092.2	-2800	9700	10.1	141.9	17	NO
Tarmac Florida	362.8	3098.4	-100	15900	15.9	258.0	23	NO
Tarmac Florida Hialeah	362.8	3097.0	-100	14500	14.5	230.0	36	NO
The Florida Brewery	422.8	3104.7	59900	22200	63.9	1217.6	121	NO
The Gibson-Homans	365.5	3094.8	2600	12300	12.6	191.4	21	NO
The Mancini Packing Company	421.4	3040.8	58500	-41700	71.8	1376.8	1	NO
Treasure Isle Inc.	378.0	3096.9	15100	14400	20.9	357.3	11	NO
Triangle Pacific Corp	413.3	3098.8	50400	16300	53.0	999.4	6	NO
Tropicana Products, Inc.	346.8	3040.9	-16100	-41600	44.6	832.1	969	YES
US Agri-Chemicals Hwy 60	413.2	3086.3	50300	3800	50.4	948.9	443	NO
US Agri-Chemicals Hwy 630	416.0	3069.0	53100	-13500	54.8	NA	NA	NO
Union Camp Corp	402.0	3102.0	39100	19500	43.7	813.9	47	NO
Union Oil Company of California	358.0	3089.1	-4900	6600	8.2	104.4	14	NO
Universal Waste & Transit	384.9	3093.7	22000	11200	24.7	433.7	7	NO
Unocal Chemical Division	358.4	3088.4	-4500	5900	7.4	88.4	15	NO
Verlite Co	363.0	3098.1	100	15600	15.6	252.0	64	NO
Vigoro Industries Inc.	427.9	3097.4	65000	14900	66.7	1273.7	136	NO
W R Bonasal Co	363.6	3098.1	700	15600	15.6	252.3	19	NO
W R Grace & Co	380.2	3093.0	17300	10500	20.2	344.7	11	NO
Wachula City Power	418.4	3047.0	55500	-35500	65.9	1257.6	21	NO
Westcon	375.3	3092.8	12400	10300	16.1	262.4	21	NO
Weyerhaeuser Co	362.8	3098.3	-100	15800	15.8	256.0	25	NO
Zipperer S. Agape Mortuary Services	363.0	3064.7	100	-17800	17.8	296.0	21	NO

Note: The Cargill Riverview facility is located at UTM Coordinates 362.9 km E, 3082.5 km N

Table 6-5 Stack and Vent Geometry and Baseline (1974) Particulate Matter Emissions for Cargill Fertilizer, Riverview

Source	Particulate Matter Emissions (lb/hr)	(g/sec)	Stack/Vent Release Height (ft)	(m)	Stack/Vent Diameter (ft)	(m)	Gas Flow Rate Standard (dscfm)	Actual (acfm)	Moisture (% H20)	Gas Exit Temperature (C)	(F)	(K)	Velocity (ft/sec)	(m/sec)	Location (a) X Coordinate (ft)	(m)	Y Coordinate (ft)	(m)
Ammonia Plant	22.25	2.803	60	18.29	8.33	2.54	36,796	74,716	1	316	601	589	11.25	3.43	-2233	-681	-1028	-313
Auxiliary Steam Boiler	0.79	0.100	20	6.10	4.50	1.37	23,283	38,207	1	203	397	476	24.41	7.44	35	11	-191	-58
Sodium Silicofluoride/Sodium Fluoride Plant	2.43	0.307	28	8.53	2.50	0.76	2,337	2,584	5.3	35	95	308	7.95	2.42	-1272	-388	35	11
No. 2 and No. 3 Rock Silo Bag Filter	0.90	0.114	93	28.35	1.04	0.32	2,510	2,781	4.2	38	100	311	49.22	15.00	-1272	-388	35	11
Nos. 6, 7, and 8 Rock Mills	5.21	0.656	95	28.96	1.99	0.61	9,560	10,466	4.6	33	91	306	51.40	15.67	-1272	-388	35	11
No. 10 KVS Mill	3.67	0.462	87	26.52	1.60	0.49	6,870	8,154	7.7	48	118	321	57.25	17.45	-790	-241	664	202
No. 11 KVS Mill	3.00	0.378	70	21.34	1.60	0.49	6,075	7,364	8.5	52	126	325	50.63	15.43	-790	-241	664	202
No. 12 KVS Mill	1.33	0.168	71	21.64	1.60	0.49	5,480	6,833	9.4	58	136	331	45.67	13.92	-790	-241	664	202
No. 2 Air Slide North Bag Filter	0.58	0.072	85	25.91	0.92	0.28	1,450	1,606	4.8	36	97	309	36.62	11.16	-996	-303	1138	347
No. 2 Air Slide South Bag Filter	0.28	0.035	96	29.26	0.86	0.26	2,147	2,489	6.1	46	115	319	61.70	18.80	-996	-303	1247	380
No. 3 Air Slide North Bag Filter	0.15	0.019	82	24.99	1.24	0.38	520	623	9.4	45	113	318	7.22	2.20	-996	-303	1138	347
No. 3 Air Slide Center Bag Filter	0.50	0.063	115	35.05	1.60	0.49	1,343	1,569	6.5	47	117	320	11.19	3.41	-996	-303	1138	347
No. 3 Air Slide South Bag Filter	0.80	0.101	96	29.26	1.64	0.50	990	1,117	3.2	47	117	320	7.86	2.39	-790	-241	664	202
No. 3 Air Slide Bin Bag Filter	0.91	0.114	108	32.92	1.24	0.38	1,350	1,558	4.5	50	122	323	18.75	5.72	-996	-303	1247	380
No. 2 Phosphoric Acid System	7.46	0.940	109	33.22	4.01	1.22	19,973	28,517	20.4	60	140	333	26.42	8.05	-996	-303	1138	347
No. 3 Phosphoric Acid System	5.08	0.640	93	28.35	4.01	1.22	11,915	14,733	11.4	48	118	321	15.76	4.80	-996	-303	1247	380
No. 1 Horizontal Filter Scrubber	6.21	0.782	59	17.98	4.75	1.45	34,970	37,913	4.3	31	88	304	32.93	10.04	-1250	-381	1092	333
No. 2 Horizontal Filter Scrubber	6.00	0.756	51	15.54	4.01	1.22	31,915	34,897	4.8	32	90	305	42.22	12.87	-1250	-381	1092	333
No. 2 Horizontal Filter Vacuum System	0.02	0.003	4.5	1.37	1.13	0.34	625	833	16.8	52	126	325	10.42	3.18	-1250	-381	1092	333
No. 3 Horizontal Filter Vacuum System	0.13	0.016	4.5	1.37	1.51	0.46	1,197	1,562	15.0	52	126	325	11.08	3.38	-1250	-381	1092	333
No. 7 Oil-Fired Concentrator	7.58	0.955	78	23.77	6.00	1.83	15,680	29,152	36.3	74	165	347	9.23	2.81	-1250	-381	1092	333
No. 8 Oil-Fired Concentrator	14.42	1.816	78	23.77	6.00	1.83	16,580	28,376	31.6	70	158	343	9.76	2.98	-1250	-381	1092	333
GTSP Bag Filter	0.35	0.044	88	26.82	1.29	0.39	1,475	1,782	3.95	67	153	340	18.91	5.76	-1775	-541	67	21
GTSP Plant	18.29	2.305	126	38.40	7.99	2.44	76,000	99,905	15.1	54	129	327	25.23	7.69	-1647	-502	27	8
No. 5 and No. 9 Mills Bag Filter	10.21	1.286	66	20.12	1.99	0.61	9,445	10,602	4.8	46	115	319	50.78	15.48	-1543	-470	482	147
No. 3 Triple Reactor Belt	6.21	0.782	65	19.81	4.01	1.22	32,170	33,949	3.3	26	79	299	42.55	12.97	-1250	-381	683	208
No. 4 Triple Reactor Belt	4.75	0.598	65	19.81	4.01	1.22	34,525	36,493	4.1	24	75	297	45.67	13.92	-1250	-381	683	208
No. 3 Continuous Triple Dryer	14.42	1.816	68	20.73	3.50	1.07	20,320	24,985	10.9	48	118	321	35.28	10.75	-1250	-381	683	208
No. 4 Continuous Triple Dryer	9.00	1.134	68	20.73	3.50	1.07	28,220	32,555	7.4	40	104	313	48.99	14.93	-1250	-381	683	208
Nos. 2 & 4 Sizing Units	4.09	0.516	74	22.56	4.01	1.22	20,165	21,187	3.2	25	77	298	26.67	8.13	-1250	-381	683	208
Normal Superphosphate	0.45	0.057	73	22.25	2.50	0.76	11,820	13,694	7.5	41	106	314	40.20	12.25	-1250	-381	683	208
No. 1 Ammonium Phosphate Plant	9.38	1.181	90	27.43	4.01	1.22	26,060	37,349	20.7	60	140	333	34.47	10.51	-1696	-517	264	80
No. 2 Ammonium Phosphate Plant	11.67	1.470	90	27.43	3.50	1.07	27,190	36,608	16.6	56	133	329	47.20	14.39	-1696	-517	264	80
No. 3 Ammonium Phosphate Plant	13.08	1.648	90	27.43	3.50	1.07	24,530	35,865	21.8	62	144	335	42.59	12.98	-1660	-506	346	105
No. 4 Ammonium Phosphate Plant	6.96	0.877	90	27.43	3.50	1.07	21,290	32,834	25.2	65	149	338	36.96	11.27	-1660	-506	346	105
North Ammonium Phosphate Cooler	47.00	5.922	54	16.46	4.34	1.32	40,400	48,418	4.6	62	144	335	45.50	13.87	-1696	-517	264	80
South Ammonium Phosphate Cooler	37.17	4.683	54	16.46	4.34	1.32	42,660	49,137	3.7	52	126	325	48.04	14.64	-1660	-506	346	105
Material Handling- West Baghouse	1.16	0.150	30	9.14	3.50	1.07	--	33,000	--	--	80	300	57.17	17.42	-879	-268	-1373	-418
Material Handling- South Baghouse	1.16	0.150	40	12.19	1.50	0.46	--	4,500	--	--	80	300	42.44	12.94	-964	-294	-1601	-488
Material Handling- Tower Baghouse	3.10	0.390	50	15.24	2.50	0.76	--	12,000	--	--	80	300	40.74	12.42	-803	-245	-1425	-434
Molten Sulfur Handling- Pits	0.44	0.060	8	2.44	0.30	0.10	--	135	--	--	240	389	26.31	8.02	78	24	-238	-73
Molten Sulfur Handling- Tanks	2.43	0.310	24	7.32	0.80	0.25	--	445	--	--	240	389	13.71	4.18	-586	-179	-362	-110
Total Particulate	291.01	36.682																

(a) Relative to H2SO4 No. 9 stack location

Source: 1974 Annual Air Operating Report to Hillsborough County.

Table 6-6. Emissions of SO2, NOx and H2SO4 for the Modified Rock Grinding/Drying System, Cargill Riverview

Source	SO2 Emissions (lb/hr)	SO2 Emissions (g/s)	NOx Emissions (lb/hr)	NOx Emissions (g/s)	H2SO4 Emissions (a) (lb/hr)	H2SO4 Emissions (a) (g/s)
Post-Modification Sources						
No. 5 Mill Dust Collector (b)	6.60	0.83	1.86	0.23	0.30	0.04
No. 9 Mill Dust Collector (b)	6.60	0.83	1.86	0.23	0.30	0.04
Ground Rock Silo Dust Collector	--	--	--	--	--	--
No. 7 Mill Dust Collector	6.60	0.83	1.86	0.23	0.30	0.04

(a) From AP-42, based on 3% of sulfur emitted as acid mist.
(b) From application for Phosphate Rock Grinding/Drying System, submitted to FDEP in 1996.

Legend
ft = feet
m = meters
acfm = actual cubic feet per minute
f/s = feet per second
m,/s = meters per second
deg F = degrees Fahrenheit
deg K = degrees Kelvin
lb/hr = pounds per hour
g/s = grams per second

Table 6-7. Cargill Property Boundary Receptors Used in the Modeling Analysis

Direction (deg)	Distance (m)	Direction (deg)	Distance (m)
10	965	190	362
20	805	200	390
30	675	210	796
40	597	220	971
50	550	230	1,296
60	525	240	1,512
70	517	250	1,494
80	524	260	1,019
90	550	270	1,064
100	596	280	1,151
110	414	290	1,296
120	338	300	1,421
130	294	310	1,623
140	285	320	1,962
150	293	330	2,000
160	311	340	1,843
170	343	350	1,759
180	347	360	1,245

Note: Distances are relative to the H_2SO_4 No. 9 plant stack location.
deg = degree.
m = meter.

Table 6-8. Chassahowitzka Wilderness Area Receptors Used in the Modeling Analysis

UTM Coordinates		Relative to Cargill[a]	
East (km)	North (km)	X (m)	Y (m)
340.3	3165.7	-22600	83200
340.3	3167.7	-22600	85200
340.3	3169.8	-22600	87300
340.7	3171.9	-22200	89400
342.0	3174.0	-20900	91500
343.0	3176.2	-19900	93700
343.7	3178.3	-19200	95800
342.4	3180.6	-20500	98100
341.1	3183.4	-21800	100900
339.0	3183.4	-23900	100900
336.5	3183.4	-26400	100900
334.0	3183.4	-28900	100900
331.5	3183.4	-31400	100900

[a] Used for AQRV Analysis.

Table 6-9. Building Dimensions for Cargill Riverview Plant Structures Used in the Modeling Analysis

Structure	Height		Length		Width	
	(ft)	(m)	(ft)	(m)	(ft)	(m)
Phosphoric Acid Plant						
South Building	100	30.48	73	22.25	33	10.06
North Building	100	30.48	76	23.16	46	14.02
Dry Rock Processing Plant						
No 5/9 Mills Building	35	10.67	40	12.19	30	9.14
No. 7 Rock Mill Building	35	10.67	26	7.92	30	9.14
Ground Rock Silo	63	19.20	32	9.75	32	9.75
No. 5/9 Dust Collectors	84	25.60	9	2.74	9	2.74
Animal Feed Proc. Plant						
AFI Building	120	36.58	120	36.58	30	9.14
AFI Loadout Silos	100	30.48	298	90.83	37	11.28
Material Storage Area						
Building No. 6	74	22.56	812	247.50	122	37.19
Building No. 5	54.7	16.67	879	267.92	174	53.04
Building No. 4	54.7	16.67	799	243.54	105	32.00
Building No. 2 (Bottom)	62	18.90	919	280.11	102	31.09
Building No. 2 (Top)	70.1	21.37	402	122.53	126	38.40
GTSP Building	127	38.71	127	38.71	64	19.51
DAP 5 Building Tier A	86.5	26.37	100	30.48	46	14.02
DAP 5 Building Tier B	126.5	38.56	37	11.28	27	8.23
Map 3/4 Building	90	27.43	109	33.22	54	16.46
Docks						
West Building	30	9.14	126	38.40	100	30.48
East Building Tier A	30	9.14	130	39.62	80	24.38
East Building Tier B	50	15.24	60	18.29	50	15.24
Sulfuric Acid Plant						
Auxiliary Boiler Building	18	5.49	46	14.02	45	13.72

Table 6-10. Maximum Predicted PM10 Impacts Due to the Proposed Project Only - Screening Analysis

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a]		Period Ending (YYMMDDHH)
		Direction (degrees)	Distance (m)	
Site Vicinity				
Annual	0.87	280	1151	87123124
	0.57	280	1151	88123124
	0.39	280	1151	89123124
	0.79	280	1151	90123124
	0.73	280	1151	91123124
24-Hour	5.6	270	1064	87110324
	4.3	280	1151	88010224
	3.7	200	1100	89030724
	5.1	280	1151	90120224
	6.0	280	1151	91052324
Chassahowitzka NWA		UTM-E (m)	UTM-N (m)	
Annual	0.0005	343000	3176200	87123124
	0.0009	340300	3165700	88123124
	0.0016	342000	3174000	89123124
	0.0009	340700	3171900	90123124
	0.0006	343000	3176200	91123124
24-Hour	0.017	343000	3176200	87121224
	0.024	340300	3165700	88072524
	0.029	342000	3174000	89062824
	0.031	343700	3178300	90021924
	0.020	340300	3167700	91012024

Note: Impacts reported are highest predicted.
YY = Year, MM = Month, DD = Day, HH = Hour.

[a] Relative to H_2SO_4 Plant No. 9 stack location. Impacts reported are highest predicted.

Table 6-11. Maximum Predicted PM10 Concentrations for All Sources - AAQS Screening Analysis

Averaging Time	Modeled Sources' Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (degrees)	Receptor Location[a] Distance (m)	Period Ending (YYMMDDHH)
Annual				
	18.7	260.	1019.	87123124
	18.7	220.	971.	88123124
	22.7	210.	796.	89123124
	19.6	260.	1019.	90123124
	17.7	260.	1019.	91123124
HIGH 24-Hour				
	71	30.	1500.	87050824
	70	200.	800.	88121724
	89	200.	800.	89030724
	66	260.	1019.	90071924
	58	340.	1843.	91020924
HSH 24-Hour				
	63	190.	800.	87102124
	68	200.	800.	88120424
	85	200.	800.	89050724
	63	260.	1019.	90032724
	56	200.	800.	91120424

Note: YY=Year, MM=Month, DD=Day, HH=Hour.

[a] Relative to H_2SO_4 Plant No. 9 stack location.

Table 6-12. Maximum Predicted PM10 Concentrations for All Sources Compared With AAQS--Refined Analysis

Averaging Time	Concentration ($\mu g/m^3$)			Receptor Location[a]		Period Ending (YYMMDDHH)	Florida AAQS ($\mu g/m^3$)
	Total	Modeled Sources	Background	Direction (degrees)	Distance (m)		
Annual	44	23	21	216	890	89123124	50
HSH 24-Hour	114	93	21	198	700	89030724	150

Note: YY = year.
MM = month.
DD = day.
HH = hour.
HSH = highest, second-highest.

[a] Relative to H_2SO_4 Plant No. 9 stack location.

Source: Golder Associates Inc., 1998.

Table 6-13. Maximum Predicted PM10 Increment Consumption - PSD Class II Screening Analysis

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (degrees)	Receptor Location[a] Distance (m)	Period Ending (YYMMDDHH)
Annual				
	<0	—	—	87123124
	<0	—	—	88123124
	0.21	120	1500	89123124
	<0	—	—	90123124
	<0	—	—	91123124
HIGH 24-Hour				
	11.5	120	338	87041324
	10.9	260	1019	88020424
	11.1	260	1019	89091624
	11.7	260	1019	90083124
	11.5	260	1019	91052124
HSH 24-Hour				
	10.7	140	285	87031724
	7.7	40	1100	88082124
	9.9	210	1500	89092624
	9.9	260	1019	90031124
	10.0	260	1019	91031224

Note: YY=Year, MM=Month, DD=Day, HH=Hour.

[a] Relative to H_2SO_4 Plant No. 9 stack location.

Table 6-14. Maximum Predicted PM10 PSD Increment Consumption Compared with PSD Class II Increments -- Refined Analysis

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a] Direction (degrees)	Receptor Location[a] Distance (m)	Period Ending (YYMMDDHH)	Allowable PSD Increment ($\mu g/m^3$)
Annual					
	0.2	120	1,500	89123124	17
HSH 24-Hour					
	10.7	148	291	87031724	30
	10.4	252	1,006	91072024	

Note: YY = Year, MM = Month, DD = Day, HH = Hour.

[a] Relative to H_2SO_4 Plant No. 9 stack location.

Table 6-15. Predicted Total PM10 Concentrations for All Modeled Sources at the Chassahowitzka NWA

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a] X (m)	Receptor Location[a] Y (m)	Period Ending (YYMMDDHH)
Annual	0.000	343000.	3176200.	87123124
	0.001	340300.	3165700.	88123124
	0.002	342000.	3174000.	89123124
	0.001	340700.	3171900.	90123124
	0.001	343000.	3176200.	91123124
High 24-Hour	0.017	343000.	3176200.	87121224
	0.024	340300.	3165700.	88072524
	0.029	342000.	3174000.	89062824
	0.031	343700.	3178300.	90021924
	0.020	340300.	3167700.	91012024
High 8-Hour	0.049	342000.	3174000.	87072708
	0.061	340300.	3165700.	88072508
	0.071	331500.	3183400.	89072908
	0.093	343700.	3178300.	90021908
	0.061	340300.	3167700.	91012008
High 3-Hour	0.108	342000.	3174000.	87011424
	0.122	340300.	3165700.	88072503
	0.147	342000.	3174000.	89100203
	0.152	343700.	3178300.	90021906
	0.130	343000.	3176200.	91060506
High 1-Hour	0.323	342000.	3174000.	87011423
	0.327	340700.	3171900.	88122824
	0.438	343000.	3176200.	89062806
	0.328	340700.	3171900.	90080606
	0.390	343000.	3176200.	91060506

Note: YY=Year, MM=Month, DD=Day, HH=Hour.

[a] Relative to H_2SO_4 Plant No. 9 stack location.

Table 6-16. Incremental and Cumulative PM10 Impacts at the Class I Area Due to the Proposed Project

Averaging Time	Background PM Concentration ($\mu g/m^3$)	Increase Due to Proposed Project ($\mu g/m^3$)	Cumulative PM10 Concentration with Proposed Project ($\mu g/m^3$)	Primary/Secondary Ambient Air Quality Standard ($\mu g/m^3$)
Annual	20[a]	0.002	20	50
24-hour	49[a]	0.031	49	150
8-hour	33.4[b]	0.093	33.5	—
3-hour	110.5[b]	0.15	110.7	—
1-hour	122.8[b]	0.44	123.2	—

[a] Based on 1996 data collected at National Park Services IMPROVE monitoring station in Chassahowitzka.

[b] Based on the following factors:
1-hour/24-hour = 1/0.4
3-hour/24-hour = 0.9/0.4
8-hour/24-hour = 0.7/0.4

Table 6-17. Maximum Predicted 24-Hour SO_2, NO_x, and H_2SO_4 Impacts Due to the Proposed Project Only at the Chassahowitzka Class I Area

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[a]		Period Ending (YYMMDDHH)
		UTM-E (m)	UTM-N (m)	
SO_2	0.064	343000.	3176200.	87121224
	0.088	340300.	3165700.	88072524
	0.104	342000.	3174000.	89062824
	0.114	343700.	3178300.	90021924
	0.075	340300.	3167700.	91012024
NO_x	0.018	343000.	3176200.	87121224
	0.024	340300.	3165700.	88072524
	0.029	342000.	3174000.	89062824
	0.032	343700.	3178300.	90021924
	0.021	340300.	3167700.	91012024
H_2SO_4 Mist	0.003	343000.	3176200.	87121224
	0.004	340300.	3165700.	88072524
	0.005	342000.	3174000.	89062824
	0.005	343700.	3178300.	90021924
	0.004	340300.	3167700.	91012024

Note: Impacts reported are highest predicted.
YY = Year, MM = Month, DD = Day, HH = Hour.

[a] Relative to H_2SO_4 Plant No. 9 stack location. Impacts reported are highest predicted.

7.0 ADDITIONAL IMPACT ANALYSIS

7.1 INTRODUCTION

Cargill is proposing to modify its existing facility in Riverview, Florida. The facility is subject to the PSD new source review requirements for PM10. The additional impact analysis and the Class I area analysis addresses this pollutant.

The analysis addresses the potential impacts on vegetation, soils, and wildlife of the surrounding area and the nearest Class I area due to Cargill's proposed modification. The nearest Class I area is the Chassahowitzka National Wilderness Area (NWA), located approximately 86 kilometers (km) north-northwest of the Cargill Riverview plant. In addition, potential impacts upon visibility resulting from the proposal modification are assessed.

The analysis will demonstrate that the increase in impacts due to the proposed increase in emissions is extremely low. Regardless of the existing conditions in the vicinity of the site or in the Class I areas, the proposed project will not cause any significant adverse effects due to the predicted low impacts upon these areas.

7.2 SOIL, VEGETATION, AND AQRV ANALYSIS METHODOLOGY

In the foregoing analysis, the maximum air quality impacts predicted to occur in the vicinity of the Cargill plant and in the Class I area due to the increase in emissions are used. These impacts were presented in Section 6.0. The analysis involved predicting worst-case maximum short- and long-term concentrations of pollutants in the vicinity of the plant and in the Class I areas and comparing the maximum predicted concentrations to lowest observed effect levels for AQRVs or analogous organisms. In conducting the assessment, several assumptions were made as to how pollutants interact with the different matrices, i.e., vegetation, soils, wildlife, and aquatic environment.

A screening approach was used to evaluate potential effects which compared the maximum predicted ambient concentrations of air pollutants of concern with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted which specifically addressed the effects of air contaminants on plant species reported to occur in the vicinity of the plant and the Class I area. It was recognized that effects threshold information

is not available for all species found in the Chassahowitzka NWA, although studies have been performed on a few of the common species and on other similar species which can be used as models.

7.3 IMPACTS TO SOILS, VEGETATION, AND VISIBILITY IN THE VICINITY OF THE CARGILL PLANT

7.3.1 IMPACTS TO SOILS

Soils in the vicinity of the Cargill site consist primarily of tidal lands and poorly drained sands with organic pans. These tidal lands occur along the coast between the tidal swamps and the flatwoods. The tidal lands consist of mucky fine sand to dark-gray fine sand overlying gray fine sand, mixed with broken and whole shells. Many of the soils in the region and a large portion of the site have been disturbed and altered by industrial activities.

These soils will not be affected by the additional PM10 concentrations resulting from the proposed modification, because both the underlying substrate and the sea spray from the nearby Hillsborough bay are neutral to alkaline and would neutralize any acidifying effects of deposition. The PM10 emissions are composed primarily of limestone, which is a naturally occurring substance in the area.

The poorly drained sands in the area are already strongly acidic. Normal liming practices currently used on soils in the vicinity of Cargill by agricultural interests will effectively mitigate the small effects of any increased deposition resulting from the increased PM10 emissions from the proposed project.

7.3.2 IMPACTS TO VEGETATION

Vegetation Analysis

In general, the effects of air pollutants on vegetation occur primarily from SO_2, NO_2, O_3, and PM. Effects from minor air contaminants such as fluoride, chlorine, hydrogen chloride, ethylene, ammonia, hydrogen sulfide, CO, and pesticides have also been reported in the literature. The effects of air pollutants are dependent both on the concentration of the contaminant and the duration of the exposure. The term "injury," as opposed to damage, is commonly used to describe all plant responses to air contaminants and will be used in the context of this analysis. Air contaminants are thought to interact primarily with plant foliage, which is considered to be

the major pathway of exposure. For purposes of this analysis, it was assumed that 100 percent of each air contaminant of concern is accessible to the plants.

Injury to vegetation from exposure to various levels or air contaminants can be termed acute, physiological, or chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms. Chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms, but with some effect on the overall growth and productivity of the plant. In this assessment, 100 percent of the particular air pollutant in the ambient air was assumed to interact with the vegetation. This is a conservative approach.

The response of vegetation and wildlife to atmospheric pollutants is influenced by the concentration of the pollutant, duration of exposure, and frequency of exposures. The pattern of pollutant exposure expected from the facility is that of a few episodes of relatively high ground-level concentration which occur during certain meteorological conditions interspersed with long periods of extremely low ground-level concentrations. If there are any effects of stack emissions on plants and animals they will be from the short-term, higher doses. A dose is the product of the concentration of the pollutant and duration of the exposure.

Vegetation in the Vicinity of Cargill

Cut-over pine flatwoods and mixed forest comprise the natural vegetation in the vicinity of the Cargill site. Mangrove trees and salt-tolerant plants are found near the coast. Winter vegetables and pasture grasses are cultivated inland from the facility.

Particulate Matter

The maximum predicted concentrations of PM (in the form of PM10) due to operation of all sources, including the proposed modification, are 114 $\mu g/m^3$ for 24-hour average and 44 $\mu g/m^3$ for annual average (see Table 6-12). By comparing predicted concentrations with the few injury threshold values reported in the literature (Darley and Middleton, 1966; Krause and Kaiser,

1977), no potential effects on vegetation are predicted, because these concentrations are below the values reported to adversely affect plants.

7.3.3 IMPACTS UPON VISIBILITY

One new emission source will be created by the proposed No. 7 Rock Mill expansion. This source will be controlled by a baghouse and, therefore, a visible emission plume from this source will generally not occur. Cargill has a number of similar type sources already in operation at Riverview. All these sources are in compliance with opacity regulations and should remain in compliance after the modification. As a result, no adverse impacts upon visibility are expected.

7.3.4 IMPACTS DUE TO ASSOCIATED POPULATION GROWTH

There will be a small, temporary increase in the number of workers during the construction period. There will be no significant increase in permanent employment at Cargill as a result of the proposed project. Therefore, there will be no anticipated permanent impacts on air quality caused by associated population growth.

7.4 CLASS I AREA IMPACT ANALYSIS

7.4.1 IDENTIFICATION OF AQRVS AND METHODOLOGY

An AQRV analysis was conducted to assess the potential risk to AQRVs of the Chassahowitzka NWA due to the proposed increase from the Cargill Riverview facility. The U.S. Department of the Interior in 1978 administratively defined AQRVs to be:

> All those values possessed by an area except those that are not affected by changes in air quality and include all those assets of an area whose vitality, significance, or integrity is dependent in some way upon the air environment. These values include visibility and those scenic, cultural, biological, and recreational resources of an area that are affected by air quality.
>
> Important attributes of an area are those values or assets that make an area significant as a national monument, preserve, or primitive area. They are the assets that are to be preserved if the area is to achieve the purposes for which it was set aside (Federal Register 1978).

Except for visibility, AQRVs were not specifically defined. However, odor, soil, flora, fauna, cultural resources, geological features, water, and climate generally have been identified by land managers as AQRVs. Since specific AQRVs have not been identified for the Chassahowitzka

NWA, this AQRV analysis evaluates the effects of air quality on general vegetation types and wildlife found in the Chassahowitzka NWA.

Vegetation type AQRVs and their representative species types have been defined as:

Marshlands - black needlerush, saw grass, salt grass, and salt marsh cordgrass

Marsh Islands - cabbage palm and eastern red cedar

Estuarine Habitat - black needlerush, salt marsh cordgrass, and wax myrtle

Hardwood Swamp - red maple, red bay, sweet bay, and cabbage palm

Upland Forests - live oak, scrub oak, longleaf pine, slash pine, wax myrtle, and saw palmetto

Mangrove Swamp - red, white, and black mangrove

Wildlife AQRVs have been identified as endangered species, waterfowl, marsh and waterbirds, shorebirds, reptiles, and mammals.

A screening approach was used that compared the maximum predicted ambient concentration of air pollutants of concern in the Chassahowitzka NWA with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted that specifically addressed the effects of air contaminants on plant species reported to occur in the NWA. While the literature search focused on such species as cabbage palm, eastern red cedar, lichens, and species of the hardwood swamplands and mangrove forest, no specific citations that addressed these species were found. It is recognized that effect threshold information is not available for all species found in the Chassahowitzka NWA, although studies have been performed on a few of the common species and on other similar species that can be used as indicators of effects.

7.4.2 VEGETATION

General

As stated earlier, the effects of contaminants are dependent both on the concentration of the contaminant and the duration of the exposure. The term "injury," as opposed to damage, is commonly used to describe all plant responses to air contaminants and will be used in the context of this analysis. Air contaminants are thought to interact primarily with plant foliage, which is

considered to be the major pathway of exposure. For purposes of this analysis, it is assumed that 100 percent of each air contaminant of concern is accessible to the plants.

Injury to vegetation from exposure to various levels of air contaminants can be termed acute, physiological, and chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms. Chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms but with some effect on the overall growth and productivity of the plant.

Particulate Matter Exposure

Although information pertaining to the effects of particulate matter on plants is scarce, some concentrations are available (Mandoli and Dubey, 1988). Ten species of native Indian plants were exposed to levels of particulate matter that ranged from 210 to 366 $\mu g/m^3$ for an 8-hour averaging period. Damage in the form of a higher leaf area/dry weight ratio was observed at varying degrees for most plants tested. Concentrations of particulate matter lower than 163 $\mu g/m^3$ did not appear to be injurious to the tested plants.

By comparison of these published toxicity values for particulate matter exposure (i.e., concentrations for an 8-hour averaging time), the possibility of plant damage in the Chassahowitzka NWA can be determined. The maximum predicted cumulative 8-hour PM10 concentration, including the Cargill No. 7 Rock Mill, is 33.4 $\mu g/m^3$ (see Table 6-16). This concentration is well below the lower threshold value that reportedly affects plant foliage. In any event, since the project contributes only 0.1 $\mu g/m^3$, 8-hour average impact, to the total predicted impacts, no effects to vegetative AQRVs are expected from the No. 7 Rock Mill project.

7.4.3 WILDLIFE

Particulate Matter Exposure

A wide range of physiological and ecological effects to fauna has been reported for particulate pollutants (Newman, 1980; Newman and Schreiber, 1988). The most severe of these effects have been observed at concentrations above the PM10 secondary ambient air quality standards

(150 $\mu g/m^3$, 24-hour average, and 50 $\mu g/m^3$, annual average). Physiological and behavioral effects have also been observed in experimental animals at or below these standards. However, no observable effects to fauna are expected at concentrations below the values reported in Table 7-1. As shown in Table 6-16, the cumulative concentrations of PM10 in the Class I area with the proposed project are well below those that would cause respiratory stress in wildlife. The proposed project's contribution to cumulative impacts is negligible.

7.4.4 SOILS

Particulate Matter Exposure

The majority of the soil in the Class I area is classified as Weekiwachee-Durbin muck. This is an euic, hyperthermic type sufihemist that is characterized by high levels of sulfur and organic matter. This soil is flooded daily with the advent of high tide and the pH ranges between 6.1 and 7.8. The upper level of this soil may contain as much as 4 percent sulfur (USDA, 1991).

Any particulate deposition from the proposed project would be neutral or alkaline in nature. Although ground deposition was not calculated, it is evident that the effect of any dust deposited would be inconsequential in light of the existing soil pH. The regular flooding of these soils by the Gulf of Mexico regulates the pH and any change in acidity in the soil would be buffered by this activity.

7.4.5 IMPACTS UPON VISIBILITY

General

A regional haze analysis was conducted to determine if the proposed Cargill modification would cause a perceptible degradation in visibility at the Chassahowitzka NWR. The CNWR is located approximately 86 kilometers (km) north-northwest of the Cargill plant. Visibility is an Air Quality Related Value at the CNWR. The visibility of an area is generally characterized by either its visual range, V_r (i.e., the greatest distance that a dark object can be seen) or its extinction coefficient, b_{ext} (i.e., the attenuation of light over a distance due to particle scattering and/or gaseous absorption). The visual range and extinction coefficient are related to one another by the following equation[a]:

$$b_{ext} = 3.912 / V_r \quad (km^{-1}) \qquad (1)$$

The National Park Service (NPS) in coordination with the Fish and Wildlife Service (FWS) uses the Deciview index (NPS, 1992), d_v, to describe an area's change in extinction coefficient. The deciview is defined as:

$$d_v = 10 \ln (b_{ext}/0.01) \quad (2)$$

where ln represents the natural logarithm of the quantity in parentheses. A change in an area's deciview (NPS, 1995, 1997), Δd_v, of 0.5 corresponds to an approximate 5 percent changed in extinction, which is considered as a noticeable change in regional haze. The deciview change is defined by:

$$\Delta d_v = 10 \ln (1 + b_{exts}/b_{extb}) \quad (3)$$

where b_{exts} and b_{extb} represent the extinction coefficients due to the source (i.e., the proposed expansion) and for the CNWR background visual range, respectively. Based on recent communications with the NPS, the background visual range for the CNWR is 65 km based on air monitoring data (USFWS, 1995).

Calculation of Source Extinction

The source extinction due to the proposed plant expansion is calculated according to interim recommendations that are provided in the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase I Report, Appendix B. The report states that the primary sources of regional visibility degradation are mostly fine particles with diameters ≤ 2.5 μm, ammonium bi-sulfate $[(NH_4)_2SO_4]$ and ammonium nitrate (NH_4NO_3). The procedures for determining the ambient concentration levels of these compounds due to the proposed project are:

1. Obtain the maximum hourly sulfur dioxide (SO_2), nitrogen oxides (NO_x), and sulfuric acid (H_2SO_4) mist impacts due to the proposed expansion from air quality dispersion models such as the Industrial Source Complex Short Term (ISCST3) or the MESOPUFF II model. For the present analysis, the maximum impacts were provided from the ISCST3 model, a steady state model that was used for the modeling analysis for the Prevention of Significant Deterioration (PSD) application. Based on verbal communications with Bud Rolofson of the NPS, the NPS had changed it's policy of using the hourly maximum impacts to using the highest 24-hour impacts for these pollutants. The maximum 24-hour impacts are based on the highest predicted concentrations from the ISCST3 model for the 5-year period, 1987 to 1991. The

maximum 24-hour impacts at the CNWR due to the proposed project only are 0.114, 0.032, and 0.005 $\mu g/m^3$ for SO_2, NO_x, and H_2SO_4 mist (as PM), respectively (see Table 6-17).

2. Assume a 100 percent conversion of SO_2 to SO_4^{2-} and NO_x to NO_3. Multiplicative factors for this conversion are presented in IWAQM Inset 1, as 1.5 and 1.35, respectively, which are based on the ratios of the molecular weights of the compounds. Based on further discussions with the NPS, a 3 percent per hour conversion rate for SO_2 to SO_4^{2-} was used instead of assuming a 100 percent conversion for SO_2 to SO_4^{2-}. Table 7-2 shows the hourly conversion of SO_2 to SO_4^{2-} for a maximum 24-hour SO_2 concentration of 0.114 $\mu g/m^3$. For the worst-case 24-hour period, a 24-hour cumulative SO_4^{2-} concentration was calculated to be 0.0887 $\mu g/m^3$. Concentrations of PM10 mist were assumed to exist as primary fine particulates.
3. Calculate maximum concentrations of ammonium sulfate and ammonium nitrate from multiplicative factors 1.375 and 1.29, respectively, from IWAQM, Appendix B.
4. Obtain hourly values of relative humidity (RH). The maximum predicted 24-hour impacts from the ISCST3 model occurred on 2/19/90. The Tampa National Weather Service hourly surface observations for this day were obtained.
5. Calculate the extinction coefficients of ammonium sulfate, ammonium nitrate, and primary fine particulate. The extinction coefficients for each compound are defined by:

$$b_{exts} = 0.003 \text{ (comp) } f(RH)$$

where (comp) represents the ambient concentration of the compound in question, and f(RH) is the relative humidity factor. Based on hourly relative humidity factors for 2/19/90, an average daily RH factor of 5.4 was computed. For H_2SO_4 mist (as fine particulate matter), an RH factor of unity was used per IWAQM recommendations. The total source extinction coefficient value is equal to the sum of the calculated extinction coefficients for each compound.

A summary of the calculations is provided in Table 7-3. The total source extinction coefficient due to the proposed project was determined to be 0.0030. From equation (3), above, the total deciview change due to the proposed project is 0.48.

Based on this analysis, the proposed project will result in less that a 5 percent decrease in visibility to the clearest days observed at the CNWR. Therefore, no adverse impacts upon regional haze is expected to occur due to the proposed Cargill project.

Table 7-1. Examples of Reported Effects of Particulates at Concentrations Below National Ambient Air Quality Standards

Pollutant	Reported Effect	Concentration ($\mu g/m^3$)	Exposure
Particulates[a]	Respiratory stress, reduced respiratory disease defenses	120 PbO_3	continually for 2 months
	Decreased respiratory disease defenses in rats, same with hamsters	100 $NiCl_2$	2 hours

[a] Newman and Schreiber, 1988. Env. Tox. Chem. 7:381-390.

Table 7-2. Hourly Conversion Rate of 24-hour Average SO_2 Concentration to SO_4 Concentration at the Chassahowitzka National Wilderness Refuge due to SO_2 Emissions from the Proposed Cargill Riverview Project

Hour	Maximum Predicted Concentration (µg/m³) SO_2	SO_4
1	0.1140	0.0051
2	0.1106	0.0050
3	0.1073	0.0048
4	0.1040	0.0047
5	0.1009	0.0045
6	0.0979	0.0044
7	0.0950	0.0043
8	0.0921	0.0041
9	0.0893	0.0040
10	0.0867	0.0039
11	0.0841	0.0038
12	0.0815	0.0037
13	0.0791	0.0036
14	0.0767	0.0035
15	0.0744	0.0033
16	0.0722	0.0032
17	0.0700	0.0032
18	0.0679	0.0031
19	0.0659	0.0030
20	0.0639	0.0029
21	0.0620	0.0028
22	0.0601	0.0027
23	0.0583	0.0026
24	0.0566	0.0025
Total		0.0887

(1) Assumes hourly conversion rate of 0.03 per hour (3%)

Table 7-3. Estimated Change in Deciview Due to the Cargill Riverview Project

Pollutant	Value	Reference
Maximum Emission Rates (lb/hr)		
SO_2	19.80	
NOx	5.60	
PM10	5.80	
Highest Predicted 24-Hour Concentrations ($\mu g/m^3$)		
SO_2	0.114	(1)
NOx	0.032	(1)
PM10	0.031	(1)
SO_4	0.0887	(2)
NO_3	0.043	(3)
$(NH_4)_2\ SO_4$	0.1220	(4)
$NH_4\ NO_3$	0.0557	(5)
Average RH (percent)	82.5	(6)
RH factor, f(RH)	5.4	(7)
Extinction Coefficients (km^{-1})		
Background: (bextb)	0.0602	(8)
Source: (bexts)		
$(NH_4)_2\ SO_4$	0.0020	(9)
$NH_4\ NO_3$	0.0009	(9)
PM10	0.000093	(10)
Total (bexts)	0.0030	
Deciview Change		
total delta dv =	0.4819	(11)

(1) Highest predicted concentration due CT firing oil using the ISCST3 model with a 5-year meteorological data record from Tampa for 1987-91
(2) SO_4 concentrations based on 3 percent per hour conversion rate from SO_2
(3) NO_3 = NOx * 1.35 from IWAQM Inset No. 1 (model results- 31% of NO2 converted to NO3 over 24-hour period, 1986)
(4) $(NH_4)_2\ SO_4$ = SO_4 times 1.375 from IWAQM Appendix B
(5) $NH_4\ NO_3$ = NO_3 times 1.29 from IWAQM Appendix B
(6) Based on meteorological data collected at the National Weather Service station in Tampa for February 19, 1990.
(7) From IWAQM Figure B-1. Based on average relative humidity for day.
(8) bextb = 3.912 / 65 where background visual range is 65 km.
(9) values= 0.003 * compound concentration* f(RH) from IWAQM Appendix B
(10) PM10 = 0.003 * compound concentration. f(RH) set = 1 for fine PM
(11) Delta DV = 10 * ln (1 + bexts/bextb)

REFERENCES

(Page 1 of 2)

Darley, E.F. and Middleton, J.T. 1966. Problems in Air Pollution in Plant Pathology. Ann. Rev. Phytopath., 4:103-118.

Golder Associates Inc. 1996. PSD Application for Animal Feed Ingredient Plant, Cargill Fertilizer, Inc., Riverview, Florida.

Krause, G.H.M. and Kaiser, H. 1977. Plant Response to Heavy Metals and Sulphur Dioxide. Environ. Pollut., 12:63-71.

Mandoli, B.L. and P.S. Dubey. 1988. The Industrial Emission and Plant Response at Pithampur (M.P.). Int. J. Ecol. Environ. Sci. 14:75-79.

National Park Service (NPS). July 10, 1995. Regional Haze Analysis Calculation Worksheet, Facsimile from B. Rolofson, NPS to S. Marks, KBN.

NPS. Personal Communication between B. Nolofson and Robert McCann, Golder Associates Inc.

Newman, J.R. 1984. Fluoride Standards Predicting Wildlife Effects. Fluoride 17: 41-47.

Newman, J.R., and R.K. Schreiber. 1988. Air Pollution and Wildlife Toxicology: An Overlooked Problem. Environmental Toxicology and Chemistry, 7-381-390.

U.S. Department of Agriculture and Soil Conservation Service. 1991. Soil Survey of Hillsborough County, Florida.

U.S. Department of Agriculture, 1991. Surveys of Hernando and Citrus Counties, Florida. USDA Soil Conservation Service in cooperation with University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, and Soil Science Department.

U.S. Environmental Protection Agency. 1995. User's Guide for the Industrial Source Complex (ISC3) Models. EPA-454/3-95-003a.

U.S. Environmental Protection Agency. 1987. Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD).

U.S. Environmental Protection Agency. 1985. BACT/LAER Clearinghouse - A Compilation of Control Technology Determinations.

U.S. Environmental Protection Agency. 1980. Workbook for Estimating Visibility Impairment. Office of Air, Noise and Radiation, Office of Air Quality Planning and Standards.

U.S. Environmental Protection Agency. 1978. Diagnosing Vegetation Injury Caused by Air Pollution. Prepared by Applied Sciences Associates, Inc. EPA-450/3-78-005. Research Triangle Park, NC.

REFERENCES
(Page 2 of 2)

U.S. Fish and Wildlife Service (USFWS). 1995. Air Quality Branch, Technical Review of Cargill Fertilizer PSD Application June 26, 1995.

ATTACHMENT A:

CRITERIA POLLUTANT EMISSION FACTORS

Table 1.3-2 (English Units). CRITERIA POLLUTANT EMISSION FACTORS FOR UNCONTROLLED FUEL OIL COMBUSTION

Firing Configuration (SCC)[a]	SO_2[b]		SO_3[c]		NO_x[d]		CO[e,f]		Filterable PM[g]	
	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING
Utility boilers										
No. 6 oil fired, normal firing (1-01-004-01)	157S	A	5.7S	C	67	A	5	A	_[h]	A
No. 6 oil fired, tangential firing (1-01-004-04)	157S	A	5.7S	C	42	A	5	A	_[h]	A
No. 5 oil fired, normal firing (1-01-004-05)	157S	A	5.7S	C	67	A	5	A	_[h]	B
No. 5 oil fired, tangential firing (1-01-004-06)	157S	A	5.7S	C	42	A	5	A	_[h]	B
No. 4 oil fired, normal firing (1-01-005-04)	150S	A	5.7S	C	67	A	5	A	_[h]	B
No. 4 oil fired, tangential firing (1-01-005-05)	150S	A	5.7S	C	42	A	5	A	_[h]	B
Industrial boilers										
No. 6 oil fired (1-02-004-01/02/03)	157S	A	2S	A	55	A	5	A	_[h]	A
No. 5 oil fired (1-02-004-04)	157S	A	2S	A	55	A	5	A	_[h]	B
Distillate oil fired (1-02-005-01/02/03)	142S	A	2S	A	20	A	5	A	_[h]	A
No. 4 oil fired (1-02-005-04)	150S	A	2S	A	20	A	5	A	_[h]	B
Commercial/institutional/residential combustors										
No. 6 oil fired (1-03-004-01/02/03)	157S	A	2S	A	55	A	5	A	_[h]	A
No. 5 oil fired (1-03-004-04)	157S	A	2S	A	55	A	5	A	_[h]	B
Distillate oil fired (1-03-005-01/02/03)	142S	A	2S	A	20	A	5	A	_[h]	A
No. 4 oil fired (1-03-005-04)	150S	A	2S	A	20	A	5	A	_[h]	B
Residential furnace (No SCC)	142S	A	2S	A	18	A	5	A	3	A

Table 1.3-2 (cont.).

[a] SCC = Source Classification Code.

[b] References 1-6,23,42-46. S indicates that the weight % of sulfur in the oil should be multiplied by the value given.

[c] References 1-5,45-46,22.

[d] References 3-4,10,15,24,42-46,48-49. Expressed as NO_2. Test results indicate that at least 95% by weight of NO_x is NO for all boiler types except residential furnaces, where about 75% is NO. For utility vertical fired boilers use 105 lb/10^3 gal at full load and normal (> 15%) excess air. Nitrogen oxides emissions from residual oil combustion in industrial and commercial boilers are related to fuel nitrogen content, estimated by the following empirical relationship: lb NO_2 /10^3 gal = 20.54 + 104.39(N), where N is the weight percent of nitrogen in the oil.

[e] References 3-5,8-10,23,42-46,48. CO emissions may increase by factors of 10 to 100 if the unit is improperly operated or not well maintained.

[f] Emission factors for CO_2 from oil combustion should be calculated using lb CO_2/10^3 gal oil = 259 C (distillate) or 288 C (residual).

[g] References 3-5,7,21,23-24,42-46,47,49. Filterable PM is that particulate collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train. PM-10 values include the sum of that particulate collected on the PM-10 filter of an EPA Method 201 or 201A sampling train and condensable emissions as measured by EPA Method 202.

[h] Particulate emission factors for residual oil combustion are, on average, a function of fuel oil grade and sulfur content:
No. 6 oil: 9.19(S) + 3.22 lb/10^3 gal, where S is the weight % of sulfur in oil.
No. 5 oil: 10 lb/10^3 gal
No. 4 oil: 7 lb/10^3 gal
No. 2 oil: 2 lb/10^3 gal

Table 1.3-4 (English Units). EMISSION FACTORS FOR TOTAL ORGANIC COMPOUNDS (TOC), METHANE, AND NONMETHANE TOC (NMTOC) FROM UNCONTROLLED FUEL OIL COMBUSTION

Firing Configuration (SCC)[a]	TOC[b]		Methane[b]		NMTOC[b]	
	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING	lb/10^3 gal	EMISSION FACTOR RATING
Utility boilers						
No. 6 oil fired, normal firing (1-01-004-01)	1.04	A	0.28	A	0.76	A
No. 6 oil fired, tangential firing (1-01-004-04)	1.04	A	0.28	A	0.76	A
No. 5 oil fired, normal firing (1-01-004-05)	1.04	A	0.28	A	0.76	A
No. 5 oil fired, tangential firing (1-01-004-06)	1.04	A	0.28	A	0.76	A
No. 4 oil fired, normal firing (1-01-005-04)	1.04	A	0.28	A	0.76	A
No. 4 oil fired, tangential firing (1-01-005-05)	1.04	A	0.28	A	0.76	A
Industrial boilers						
No. 6 oil fired (1-02-004-01/02/03)	1.28	A	1	A	0.28	A
No. 5 oil fired (1-02-004-04)	1.28	A	1	A	0.28	A
Distillate oil fired (1-02-005-01/02/03)	0.252	A	0.052	A	0.2	A
No. 4 oil fired (1-02-005-04)	0.252	A	0.052	A	0.2	A
Commercial/institutional/ residential combustors						
No. 6 oil fired (1-03-004-01/02/03)	1.605	A	0.475	A	1.13	A
No. 5 oil fired (1-03-004-04)	1.605	A	0.475	A	1.13	A
Distillate oil fired (1-03-005-01/02/03)	0.556	A	0.216	A	0.34	A
No. 4 oil fired (1-03-005-04)	0.556	A	0.216	A	0.34	A
Residential furnace (No SCC)	2.493	A	1.78	A	0.713	A

[a] SCC = Source Classification Code.

[b] References 16-19. Volatile organic compound emissions can increase by several orders of magnitude if the boiler is improperly operated or is not well maintained.

Table 1.4-2 (Metric And English Units). EMISSION FACTORS FOR SULFUR DIOXIDE (SO_2), NITROGEN OXIDES (NO_x), AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (Size, 10^6 Btu/hr Heat Input) (SCC)[b]	SO_2[c]			NO_x[d]			CO[e]		
	kg/10^6 m^3	lb/10^6 ft^3	RATING	kg/10^6 m^3	lb/10^6 ft^3	RATING	kg/10^6 m^3	lb/10^6 ft^3	RATING
Utility/large Industrial Boilers (>100) (1-01-006-01, 1-01-006-04)									
Uncontrolled	9.6	0.6	A	8800	550[f]	A	640	40	A
Controlled - Low NO_x burners	9.6	0.6	A	1300	81[f]	D	ND	ND	NA
Controlled - Flue gas recirculation	9.6	0.6	A	850	53[f]	D	ND	ND	NA
Small Industrial Boilers (10 - 100) (1-02-006-02)									
Uncontrolled	9.6	0.6	A	2240	140	A	560	35	A
Controlled - Low NO_x burners	9.6	0.6	A	1300	81[f]	D	980	61	D
Controlled - Flue gas recirculation	9.6	0.6	A	480	30	C	590	37	C
Commercial Boilers (0.3 - <10) (1-03-006-03)									
Uncontrolled	9.6	0.6	A	1600	100	B	330	21	C
Controlled - Low NO_x burners	9.6	0.6	A	270	17	C	425	27	C
Controlled - Flue gas recirculation	9.6	0.6	A	580	36	D	ND	ND	NA
Residential Furnaces (<0.3) (No SCC)									
Uncontrolled	9.6	0.6	A	1500	94	B	640	40	B

[a] Units are kg of pollutant/10^6 cubic meters natural gas fired and lb of pollutant/10^6 cubic feet natural gas fired. Based on an average natural gas fired higher heating value of 8270 kcal/m^3 (1000 Btu/scf). The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. ND = no data. NA = not applicable.

[b] SCC = Source Classification Code.

[c] Reference 7. Based on average sulfur content of natural gas, 4600 g/10^6 Nm^3 (2000 gr/10^6 scf).

Table 1.4-2 (cont.).

[d] References 10,15-19. Expressed as NO_2. For tangentially fired units, use 4400 kg/10^6 m^3 (275 lb/10^6 ft^3). At reduced loads, multiply factor by load reduction coefficient in Figure 1.4-1. Note that NO_x emissions from controlled boilers will be reduced at low load conditions.

[e] References 9-10,16-18,20-21.

[f] Emission factors apply to packaged boilers only.

Table 1.4-3 (Metric And English Units). EMISSION FACTORS FOR CARBON DIOXIDE (CO_2) AND TOTAL ORGANIC COMPOUNDS (TOC) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (Size, 10^6 Btu/hr Heat Input) (SCC)[b]	CO_2[c]			TOC[d]		
	kg/10^6 m^3	lb/10^6 ft^3	RATING	kg/10^6 m^3	lb/10^6 ft^3	RATING
Utility/large industrial boilers (>100) (1-01-006-01, 1-01-006-04)	ND[e]	ND	NA	28[f]	1.7[f]	C
Small industrial boilers (10 - 100) (1-02-006-02)	1.9 E+06	1.2 E+05	D	92[g]	5.8[g]	C
Commercial boilers (0.3 - <10) (1-03-006-03)	1.9 E+06	1.2 E+05	C	128[h]	8.0[h]	C
Residential furnaces (No SCC)	2.0 E+06	1.3 E+05	D	180[h]	11[h]	D

[a] All factors represent uncontrolled emissions. Units are kg of pollutant/10^6 cubic meters and lb of pollutant/10^6 cubic feet. Based on an average natural gas higher heating value of 8270 kcal/m^3 (1000 Btu/scf). The emission factors in this table may be converted to other natural gas heating values by multiplying the given factor by the ratio of the specified heating value to this average heating value. NA = not applicable.

[b] SCC = Source Classification Code.

[c] References 10,22-23.

[d] References 9-10,18.

[e] ND = no data.

[f] Reference 8: methane comprises 17% of organic compounds.

[g] Reference 8: methane comprises 52% of organic compounds.

[h] Reference 8: methane comprises 34% of organic compounds.

ATTACHMENT A:

40 CFR 60, SUBPART NN

40 CFR 60, Subpart NN - NSPS for Phosphate Rock Plants

(BNA - Sept. 1995)

§60.400 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to the following affected facilities used in phosphate rock plants which have a maximum plant production capacity greater than 3.6 megagrams per hour (4 tons/hr): dryers, calciners, grinders, and ground rock handling and storage facilities, except those facilities producing or preparing phosphate rock solely for consumption in elemental phosphorus production.

(b) Any facility under paragraph (a) of this section which commences construction, modification, or reconstruction after September 21, 1979, is subject to the requirements of this part.

§60.401 Definitions.

(a) Phosphate rock plant means any plant which produces or prepares phosphate rock product by any or all of the following processes: Mining, beneficiation, crushing, screening, cleaning, drying, calcining, and grinding.

(b) Phosphate rock feed means all material entering the process unit including, moisture and extraneous material as well as the following ore minerals: Fluorapatite, hydroxylapatite, chlorapatite, and carbonateapatite.

(c) Dryer means a unit in which the moisture content of phosphate rock is reduced by contact with a heated gas stream.

(d) Calciner means a unit in which the moisture and organic matter of phosphate rock is reduced within a combustion chamber.

(e) Grinder means a unit which is used to pulverize dry phosphate rock to the final product size used in the manufacture of phosphate fertilizer and does not include crushing devices used in mining.

(f) Ground phosphate rock handling and storage system means a system which is used for the conveyance and storage of ground phosphate rock from grinders at phosphate rock plants.

(g) Beneficiation means the process of washing the rock to remove impurities or to separate size fractions.

§60.402 Standard for particulate matter.

(a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere:

(1) From any phosphate rock dryer any gases which:

(i) Contain particulate matter in excess of 0.030 kilogram per megagram of phosphate rock feed (0.06 lb/ton), or

(ii) Exhibit greater than 10-percent opacity.

(2) From any phosphate rock calciner processing unbeneficiated rock or blends of beneficiated and unbeneficiated rock, any gases which:

(i) Contains particulate matter in excess of 0.12 kilogram per megagram of phosphate rock feed (0.23 lb/ton), or

(ii) Exhibit greater than 10-percent opacity.

(3) From any phosphate rock calciner processing beneficiated rock any gases which:

(i) Contain particulate matter in excess of 0.055 kilogram per megagram of phosphate rock feed (0.11 lb/ton), or

(ii) Exhibit greater than 10-percent opacity.

(4) From any phosphate rock grinder any gases which:

(i) Contain particulate matter in excess of 0.006 kilogram per megagram of phosphate rock feed (0.012 lb/ton), or

(ii) Exhibit greater than zero-percent opacity.

(5) From any ground phosphate rock handling and storage system any gases which exhibit greater than zero-percent opacity.

§60.403 Monitoring of emissions and operations.

(a) Any owner or operator subject to the provisions of this subpart shall install, calibrate, maintain, and operate a continuous monitoring system, except as provided in paragraphs (b) and (c) of this section, to monitor and record the opacity of the gases discharged into the atmosphere from any phosphate rock dryer, calciner, or grinder. The span of this system shall be set at 40-percent opacity.

(b) For ground phosphate rock storage and handling systems, continuous monitoring systems for measuring opacity are not required.

(c) The owner or operator of any affected phosphate rock facility using a wet scrubbing emission control device shall not be subject to the requirements in paragraph (a) of this section, but shall install, calibrate, maintain, and operate the following continuous monitoring devices:

(1) A monitoring device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ± 250 pascals (± 1 inch water) gauge pressure.

(2) A monitoring device for the continuous measurement of the scrubbing liquid supply pressure to the control device. The monitoring device must be accurate within ± 5 percent of design scrubbing liquid supply pressure.

(d) For the purpose of conducting a performance test under §60.8, the owner or operator of any phosphate rock plant subject to the provisions of this subpart shall install, calibrate, maintain, and operate a device for measuring the phosphate rock feed to any affected dryer, calciner, or grinder. The measuring device used must be accurate to within ±5 percent of the mass rate over its operating range.

(e) For the purpose of reports required under §60.7(c), periods of excess emissions that shall be reported are defined as all 6-minute periods during which the average opacity of the plume from any phosphate rock dryer, calciner, or grinder subject to paragraph (a) of this section exceeds the applicable opacity limit.

(f) Any owner or operator subject to the requirements under paragraph (c) of this section shall report for each calendar quarter all measurement results that are less than 90 percent of the average levels maintained during the most recent performance test conducted under §60.8 in which the affected facility demonstrated compliance with the standard under §60.402.

§60.404 Test methods and procedures.

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided for in §60.8(b).

(b) The owner or operator shall determine compliance with the particulate matter standards in §60.402 as follows:

(1) The emission rate (E) of particulate matter shall be computed for each run using the following equation:

$$E=(c_s Q_{sd})/(P K)$$

where:
E=emission rate of particulate matter, kg/Mg (lb/ton) of phosphate rock feed.
c_s=concentration of particulate matter, g/dscm (g/dscf).
Q_{sd}=volumetric flow rate of effluent gas, dscm/hr (dscf/hr).
P=phosphate rock feed rate, Mg/hr (ton/hr).
K=conversion factor, 1000 g/kg (453.6 g/lb).

(2) Method 5 shall be used to determine the particulate matter concentration (c_s) and volumetric flow rate (Q_{sd}) of the effluent gas. The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf).

(3) The device of §60.403(d) shall be used to determine the phosphate rock feed rate (P) for each run.

(4) Method 9 and the procedures in §60.11 shall be used to determine opacity.

(c) To comply with §60.403(f), if applicable, the owner or operator shall use the monitoring devices in §60.403(c)(1) and (2) to determine the average pressure loss of the gas stream through the scrubber and the average scrubbing supply pressure during the particulate matter runs.

ATTACHMENT A:

STACK TEST RESULTS FOR EXISTING ROCK DRYERS/GRINDERS

PARTICULATE SOURCE TEST RESULTS

Company Name: Gardinier, Inc. - U. S. Phosphoric Products

Company Conducting Test: Gardinier, Inc. - U. S. Phosphoric Products

Source Identification: 72% BPL Rock Unloading and Grinding System - No. 5 and No. 9 Raymond Mills Bag Filter(Stack)

Date: 10/11/83

Run	Molecular Weight	ACF	ACFM	SCFM	% H_2O	T_s °F	Percent Isokinetic	Grains/SCF	Emissions Lbs./Hr.	Allowable Lbs./Hr.
#1	29.0	49.486	10,122	8,360	6.3	139	101	2.05×10^{-2}	1.5	
#2	29.0	49.775	10,014	8,204	6.5	142	101	2.96×10^{-2}	2.1	
#3	29.0	50.600	10,204	8,435	5.5	142	100	3.05×10^{-2}	2.2	
#4										
Mean	29.0	49.954	10,113	8,333	6.1	141	101	2.69×10^{-2}	1.93	10.3

Standard Conditions = Dry, 68°F, 29.92 in. Hg.

Dry Molecular Weight of gas assumed to be 28.967 when gas composition data not available.

ATTACHMENT B:

LIST OF PM/PM10 SOURCES USED FOR THE AAQS AND PSD MODELING ANALYSIS

Table B-1. PM Source Screening Analysis Using the EPA 'M' Factor

ISCST ID	Relative Coord (m) X	Relative Coord (m) Y	QS (g/s)	HS (m)	TS (K)	VS (m/s)	DS (m)	Flowrate (m^3/s)	Merged Stack Parameter "M"
Sources From US Agri-Chem PSD Application									
Agri1	40800	-3500	4.46	24.4	316.3	5.76	3.05	42.1	72763
Agri2	40800	-3500	5.04	24.4	320.8	21.25	2.44	99.4	154193
Agri3	40800	-3500	3.92	29.0	683.0	14.75	1.77	36.3	183131
Agri4	40800	-3500	1.9	10.4	298.0	5.92	0.70	2.3	3702
Agri5	40800	-3500	1.9	27.4	298.0	3.60	0.98	2.7	11682
Agri6	40800	-3500	1.9	27.4	298.0	4.79	0.70	1.8	7931
Agri7	40800	-3500	1.9	24.7	298.0	4.15	2.13	14.8	57264
Agri8	40800	-3500	3.17	24.7	298.0	3.69	2.13	13.1	30518
AGRIA	40800	-3500	24.19	10.4	298.0	5.92	0.70		
Agri9	44600	-11000	3.02	38.1	327.4	14.55	3.05	106.3	439086
Agri10	44600	-11000	4.12	30.5	306.3	6.87	1.22	8.0	18198
Agri11	44600	-11000	0.55	26.8	307.4	9.24	0.91	6.0	90083
Agri12	44600	-11000	0.43	38.1	319.1	15.84	1.07	14.2	402713
Agri13	44600	-11000	0.03	29.3	298.0	1.15	0.40	0.1	42003
Agri14	44600	-11000	0.03	20.7	298.0	2.87	0.46	0.5	98216
Agri15	44600	-11000	0.03	16.2	298.0	1.72	0.46	0.3	45857
Agri16	44600	-11000	0.26	19.8	310.2	5.48	0.49	1.0	24424
Agri17	44600	-11000	0.23	19.8	300.2	88.45	0.49	16.7	431268
Agri18	44600	-11000	4	3.1	344.1	20.69	0.55	4.9	1290
Agri19	44600	-11000	4.4	42.7	304.7	10.66	2.74	62.9	185734
Agri20	44600	-11000	5.07	24.4	296.9	7.80	3.35	68.8	98154
Agri21	44600	-11000	5.07	24.4	295.2	7.23	3.35	63.7	90461
Agri22	44600	-11000	4.32	18.3	323.0	9.70	0.30	0.7	938
AGRIB	44600	-11000	31.56	18.3	323.0	9.70	0.30		
CFIn23	45500	-100	15.27	42.7	298.0	21.60	0.80	10.9	9048
CFIn24	45500	-100	5.1	42.7	298.0	21.73	0.76	9.9	24578
CFIn25	45500	-100	0.83	62.8	338.6	6.51	2.13	23.2	594196
CFIn26	45500	-100	1.5	62.8	333.0	6.69	2.13	23.8	332291
CFIn27	45500	-100	5.1	36.9	338.6	18.76	1.83	49.3	120818
CFIn28	45500	-100	5.44	35.7	338.6	11.31	2.44	52.9	117382
CFIn29	45500	-100	2.45	36.6	333.0	17.17	2.29	70.7	351603
CFIn30	45500	-100	1.27	16.8	298.0	9.01	1.37	13.3	52233
CFIn31	45500	-100	4.95	41.5	333.0	18.05	2.83	113.5	316595
CFIn32	45500	-100	1.38	11.0	588.6	13.45	0.76	6.1	28549
CFIn33	45500	-100	5.12	41.2	298.0	7.92	1.52	14.4	34421
CFIn34	45500	-100	1.76	19.8	298.0	15.36	1.22	18.0	60227
CFIn35	45500	-100	0.12	30.5	299.7	5.95	0.76	2.7	205473
CFINDA	45500	-100	50.29	42.7	298.0	21.60	0.80		
Cons36	35800	1700	4.43	24.7	327.4	3.77	2.29	15.5	28333
Cons37	35800	1700	0.29	8.2	533.0	13.74	0.61	4.0	60739
Cons38	35800	1700	0.43	11.9	533.0	8.91	0.98	6.7	99051
Cons39	35800	1700	28.91	45.7	349.7	10.31	2.29	42.5	23484
Cons40	35800	1700	4.92	12.8	310.8	10.60	1.22	12.4	10019
Cons41	35800	1700	1.18	15.9	321.9	20.18	0.76	9.2	39583
Cons42	35800	1700	1.18	24.4	327.4	23.81	1.07	21.4	144826
Cons43	35800	1700	1.18	22.0	360.8	31.08	0.98	23.4	157341
Cons44	35800	1700	0.63	63.1	330.2	21.12	0.43	3.1	101419
Cons45	35800	1700	0.63	63.1	330.2	21.12	0.43	3.1	101419

Table B-1. PM Source Screening Analysis Using the EPA 'M' Factor

ISCST ID	Relative Coord (m) X	Relative Coord (m) Y	QS (g/s)	HS (m)	TS (K)	VS (m/s)	DS (m)	Flowrate (m^3/s)	Merged Stack Parameter "M"
Cons46	35800	1700	0.63	54.6	338.6	14.37	0.18	0.4	10723
Cons47	35800	1700	0.2	55.5	310.8	2.97	0.43	0.4	37179
Cons48	35800	1700	1.38	63.1	333.0	51.22	0.27	2.9	44646
CONSA	35800	1700	45.99	54.6	338.6	14.37	0.18		
Cons49	30900	13800	0.12	16.5	298.0	19.14	0.43	2.8	113614
Cons50	30900	13800	0.06	3.1	338.6	18.19	0.24	0.8	14164
Cons51	30900	13800	0.03	15.2	294.1	20.70	0.15	0.4	54651
Cons52	30900	13800	1.76	46.3	299.7	12.14	1.77	29.9	235663
Cons53	30900	13800	0.03	21.3	298.0	12.58	0.18	0.3	67859
Cons54	30900	13800	2.1	46.3	298.0	13.17	1.77	32.4	213050
Cons55	30900	13800	1.67	30.5	338.0	11.98	1.37	17.7	108944
Cons56	30900	13800	1.76	24.4	319.1	6.20	1.68	13.7	60750
Cons57	30900	13800	1.64	46.3	300.2	9.61	1.77	23.6	200534
Cons58	30900	13800	1.9	45.7	313.0	18.34	1.77	45.1	339886
Cons59	30900	13800	0.26	24.7	315.2	9.05	0.82	4.8	143054
Cons60	30900	13800	0.17	32.6	298.0	33.69	0.37	3.6	207068
Cons61	30900	13800	0.86	30.5	319.1	0.01	0.91	0.0	74
Cons62	30900	13800	0.06	29.6	298.0	13.58	0.30	1.0	140977
Cons63	30900	13800	0.12	15.9	298.0	19.14	0.43	2.8	109404
Cons64	30900	13800	0.09	14.0	298.0	17.97	0.18	0.5	21228
Cons65	30900	13800	0.26	18.9	298.0	24.95	0.55	5.9	128408
Cons66	30900	13800	0.14	20.4	298.0	11.50	0.46	1.9	83071
Cons67	30900	13800	0.09	21.3	298.0	31.89	0.37	3.4	242279
Cons68	30900	13800	0.89	10.4	327.4	19.16	0.82	10.1	38562
Cons69	30900	13800	0.2	17.4	298.0	28.75	0.46	4.8	123660
Cons70	30900	13800	0.2	16.5	298.0	19.96	0.55	4.7	116303
Cons71	30900	13800	0.2	13.7	349.7	14.17	0.55	3.4	80762
Cons72	30900	13800	0.12	6.1	605.2	20.21	0.37	2.2	66851
Cons73	30900	13800	4.4	24.4	308.0	79.21	1.37	116.8	199270
Cons74	30900	13800	0.66	9.8	295.8	10.76	0.46	1.8	7814
Cons75	30900	13800	1.76	46.3	295.2	11.16	1.77	27.5	213386
CONSB	30900	13800	21.55	30.5	319.1	0.01	0.91		
Farm84	46600	-2400	0.09	12.2	366.3	0.03	0.61	0.0	435
Farm85	46600	-2400	0.09	12.2	366.3	2.67	0.61	0.8	38713
Farm86	46600	-2400	0.66	30.5	349.7	8.70	2.29	35.8	578691
Farm87	46600	-2400	0.66	30.5	351.9	9.74	2.29	40.1	651944
Farm88	46600	-2400	2.94	39.3	326.9	12.41	2.29	51.1	223467
Farm89	46600	-2400	4.46	27.4	305.2	5.48	0.91	3.6	6690
Farm90	46600	-2400	3.31	50.3	298.0	8.86	0.70	3.4	15438
Farm91	46600	-2400	3.43	26.8	349.7	19.09	0.73	8.0	21848
Farm92	46600	-2400	3.22	39.6	311.9	5.66	1.22	6.6	25392
Farm93	46600	-2400	3.8	39.3	319.1	10.66	2.13	38.0	125419
Farm94	46600	-2400	3.8	39.9	298.0	9.92	2.44	46.4	145249
Farm95	46600	-2400	3.22	39.3	327.4	7.47	2.29	30.8	123004
Farm96	46600	-2400	2.94	56.4	338.0	5.17	1.52	9.4	60819
Farm97	46600	-2400	6.62	35.1	349.7	22.72	0.67	8.0	14831
Farm98	46600	-2400	3.4	39.3	327.4	6.84	2.29	28.2	106667
Farm99	46600	-2400	0.06	12.2	366.3	0.03	0.61	0.0	652
Farm100	46600	-2400	0.09	12.2	366.3	0.03	0.61	0.0	435
FARM	46600	-2400	42.79	12.2	366.3	0.03	0.61		

Table B-1. PM Source Screening Analysis Using the EPA 'M' Factor

ISCST ID	Relative Coord (m) X	Relative Coord (m) Y	QS (g/s)	HS (m)	TS (K)	VS (m/s)	DS (m)	Flowrate (m^3/s)	Merged Stack Parameter "M"
Flor101	4300	-28400	108.93	152.1	425.8	23.61	7.99	1183.8	703828
Flor102	4300	-28400	108.93	152.1	425.8	23.98	7.92	1181.4	702388
Hard106	41900	-25000	1.89	22.9	389.0	23.90	4.88	447.0	2103253
IMCF107	26700	-14600	3.17	38.1	339.1	15.16	2.44	70.9	288910
IMCF108	26700	-14600	3.14	38.1	339.1	16.80	2.44	78.6	323223
IMCF109	26700	-14600	6.45	45.7	316.3	8.43	0.82	4.5	9981
IMCF110	26700	-14600	6.77	22.9	314.7	17.33	0.85	9.8	10450
IMCFA	26700	-14600	19.53	45.7	316.3	8.43	0.82		
IMCF116	33600	-3500	3.6	40.5	313.6	15.18	2.13	54.1	191020
IMCF117	33600	-3200	2.53	40.5	313.6	1.01	0.91	0.7	3301
IMCF118	33800	-3100	0.43	18.3	313.6	9.70	0.30	0.7	9146
IMCF119	33800	-3100	0.43	13.7	313.6	9.70	0.30	0.7	6861
IMCF120	33800	-3100	0.43	26.5	438.6	86.24	0.46	14.3	387693
IMCF121	33800	-3100	1.78	52.1	316.3	17.97	1.83	47.3	437748
IMCF122	33800	-3100	0.43	26.5	438.6	86.24	0.46	14.3	387693
IMCF123	33800	-3100	0.43	5.2	380.2	38.27	0.40	4.8	22026
IMCF124	33800	-3100	0.43	17.4	352.4	22.96	0.40	2.9	41072
IMCF125	33800	-3100	3.34	52.4	313.6	15.97	1.37	23.5	115890
IMCF126	33800	-3100	0.43	32.6	313.6	20.96	0.55	5.0	118431
IMCF127	33800	-3100	0.43	19.8	352.4	14.37	0.46	2.4	38772
IMCF128	33800	-3100	2.13	21.6	299.7	10.35	0.30	0.7	2228
IMCF129	33800	-3100	0.12	30.5	299.7	54.62	0.46	9.1	690999
IMCF130	33800	-3100	0.43	31.7	313.6	21.48	0.49	4.1	93645
IMCF131	33800	-3100	0.6	12.2	315.2	20.12	0.91	13.1	83799
IMCF132	33800	-3100	1.78	52.1	316.3	17.97	1.83	47.3	437748
IMCF133	33800	-3100	0.17	33.5	316.3	13.86	0.43	2.0	125567
IMCF134	33800	-3100	0.58	28.7	352.4	10.78	1.83	28.4	493564
IMCF135	33600	-3400	4.26	40.5	316.3	20.66	1.83	54.3	163567
IMCF136	33800	-3100	0.06	30.5	311.9	12.58	0.55	3.0	473560
IMCF137	33600	-3500	1.93	40.5	333.0	21.43	1.22	25.1	175228
IMCF138	33800	-3100	0.2	26.2	299.7	16.50	0.21	0.6	22446
IMCF139	33600	-3300	3.63	40.5	315.2	18.87	1.83	49.6	174714
IMCF140	33800	-3100	0.43	36.0	313.6	10.35	0.30	0.7	19192
IMCF141	33800	-3100	0.46	19.8	313.6	51.75	0.30	3.7	49402
IMCF142	33800	-3100	0.35	32.6	338.6	15.84	1.07	14.2	449347
IMCF143	33800	-3100	0.43	18.3	313.6	16.17	0.30	1.1	15246
IMCF144	33800	-3100	0.66	7.6	333.0	10.49	1.31	14.1	54358
IMCF145	33800	-3100	0.43	34.1	313.6	10.35	0.30	0.7	18216
IMCF146	33800	-3100	0.78	51.8	316.3	1.97	1.52	3.6	75118
IMCF147	33800	-3100	0.43	32.0	313.6	42.69	0.30	3.0	70423
IMCF148	33800	-3100	0.81	12.2	299.7	9.39	0.27	0.5	2425
IMCF149	33800	-3100	0.43	35.7	313.6	38.81	0.30	2.7	71345
IMCF150	33800	-3100	0.2	5.5	313.6	9.70	0.30	0.7	5902
IMCF151	33900	-3100	4.64	52.4	321.9	13.14	2.44	61.4	223485
IMCF152	33800	-3100	0.43	34.1	313.6	10.35	0.30	0.7	18216
IMCFB	33800	-3100	41.06	21.6	299.7	10.35	0.30		
IMCU168	45500	300	2.42	27.4	299.7	16.50	0.21	0.6	1941
IMCU169	45500	300	5.82	18.3	302.4	9.50	1.07	8.5	8118
IMCU170	45500	300	1.47	30.5	321.9	12.98	0.55	3.1	20583
IMCU171	45500	300	0.12	30.5	299.7	5.95	0.76	2.7	205473

Table B-1. PM Source Screening Analysis Using the EPA 'M' Factor

ISCST ID	Relative Coord (m)		QS	HS	TS	VS	DS	Flowrate	Merged Stack Parameter
	X	Y	(g/s)	(m)	(K)	(m/s)	(m)	(m^3/s)	"M"
IMCU172	45500	300	23.9	25.9	296.9	11.64	0.15	0.2	66
IMCU173	45500	300	0.63	25.9	296.9	11.64	0.15	0.2	2512
IMCU174	45500	300	0.4	27.4	299.7	16.50	0.21	0.6	11745
IMCU175	45500	300	0.12	15.2	313.6	8.09	0.61	2.4	94162
IMCU	45500	300	34.88	25.9	296.9	11.64	0.15		
Mobi182	35600	2600	4.55	24.4	344.1	12.65	2.29	52.1	96063
Mobi183	35600	2600	5.5	24.4	344.1	12.65	2.29	52.1	79471
Mobi184	35500	2700	1.12	30.5	338.6	19.02	1.10	18.1	166560
Mobi185	35300	2500	3.11	25.9	338.6	16.10	2.29	66.3	187060
Mobi186	35500	2700	1.41	24.4	326.9	11.68	0.49	2.2	12450
Mobi187	35500	2700	1.55	24.4	326.9	11.68	0.49	2.2	11325
Mobi188	35500	2600	0.14	4.6	312.4	16.50	0.43	2.4	24435
Mobi189	35500	2800	0.72	4.0	521.9	2.12	0.76	1.0	2761
Mobi190	35500	2800	1.96	25.9	299.7	14.54	1.68	32.2	127694
Mobi191	35400	2600	7	25.9	296.9	19.40	1.52	35.2	38686
Mobi192	35500	2800	1.38	12.2	344.1	11.83	1.07	10.6	32333
Mobi193	35500	2800	0.06	24.1	349.7	14.64	0.24	0.7	92951
MOBIL	35500	2800	28.5	4.0	521.9	2.12	0.76		
Roys202	43900	2600	1.93	22.6	308.0	3.80	1.07	3.4	12302
Semi203	46900	4200	1.38	24.4	299.7	17.90	0.52	3.8	20128
Semi204	46900	4200	0.12	10.7	305.2	9.98	0.55	2.4	64345
Semi205	46900	4200	1.27	15.2	294.1	8.02	0.34	0.7	2570
Semi206	46900	3500	3.77	15.2	333.0	17.29	2.04	56.5	76073
Semi207	46900	4200	0.58	20.7	294.1	2.46	0.52	0.5	5492
Semi208	46900	4200	0.43	30.5	300.2	9.70	0.61	2.8	60322
Semi209	47000	4500	1.73	45.7	304.1	9.32	2.04	30.5	244818
Semi210	46900	4200	0.46	30.5	324.7	9.70	0.61	2.8	60990
Semi211	46900	4200	1.93	16.8	294.1	17.42	1.07	15.7	40005
Semi213	47000	4500	1.35	61.0	341.3	24.58	1.52	44.6	687395
Semi214	46900	4200	0.06	6.1	366.3	17.46	0.30	1.2	45961
Semi215	46900	4200	33.6	30.5	324.7	13.40	2.04	43.8	12901
Semi216	46900	4200	0.06	10.4	366.3	0.12	0.30	0.0	536
Semi217	46900	4200	0.43	16.2	301.9	4.19	0.67	1.5	16750
Semi218	46900	4200	0.06	9.5	366.3	0.03	0.61	0.0	506
Semi219	46900	4200	0.26	12.8	307.4	9.41	1.16	9.9	150500
Semi220	46900	4200	0.06	7.9	366.3	0.12	0.30	0.0	410
Semi221	46900	4200	0.63	30.5	294.1	13.20	2.13	47.0	669256
Semi222	46900	4200	0.06	7.9	366.3	0.12	0.30	0.008	410
Semi223	46900	4200	0.63	27.4	296.9	11.37	0.98	8.6	110866
Semi224	46900	4200	0.52	14.0	296.9	8.09	0.61	2.4	18926
Semi225	47000	4500	2.82	40.2	316.3	26.40	2.13	94.1	424476
Semi226	46900	4200	0.75	21.3	299.7	21.27	1.28	27.4	233398
Semi227	46900	4200	1.38	22.6	305.2	9.98	0.55	2.4	11830
Semi228	46900	4200	1.93	16.8	298.0	17.42	1.07	15.7	40536
Semi229	46900	4200	1.93	16.8	294.1	17.42	1.07	15.7	40005
Semi230	46900	4200	0.58	14.0	298.0	15.16	0.24	0.7	4940
Semi231	46900	4200	0.58	16.2	294.1	20.21	0.12	0.2	1872
Semi232	46900	4200	0.81	16.2	299.7	7.68	0.67	2.7	16180
Semi233	46900	4200	3.17	24.4	313.6	16.63	2.01	52.8	127270
Semi234	46900	3500	3.77	15.2	333.0	17.29	2.04	56.5	76073

Table B-1. PM Source Screening Analysis Using the EPA 'M' Factor

ISCST ID	Relative Coord (m)		QS	HS	TS	VS	DS	Flowrate	Merged Stack Parameter
	X	Y	(g/s)	(m)	(K)	(m/s)	(m)	(m^3/s)	"M"
Semi235	46900	4200	3.77	30.2	330.2	16.21	2.29	66.8	176481
Semi236	47000	4500	1.3	61.0	346.9	28.46	1.52	51.6	840075
Semi237	46900	4200	0.09	30.5	260.8	15.52	1.52	28.2	2487418
Semi238	47000	4500	3.34	61.0	346.9	28.46	1.52	51.6	326975
Semi239	46900	4200	0.09	18.0	317.4	9.70	0.61	2.8	179753
Semi240	46900	4200	0.12	10.7	305.2	9.98	0.55	2.4	64345
Semi241	46900	4200	3.22	24.4	294.1	8.38	0.76	3.8	8465
Semi242	46900	4200	0.12	10.7	305.2	9.98	0.55	2.4	64345
SEMINOL	46900	4200	79.16	7.9	366.3	0.12	0.30		
TECO243	-1000	-7500	50.96	149.4	404.7	13.74	7.32	578.2	685816
TECO244	-1000	-7500	50.44	149.4	404.7	13.02	7.32	547.9	656578
TECO245	-900	-7500	51.97	149.4	410.2	14.47	7.32	608.9	717842
TECO246	-1200	-7000	4.17	22.9	770.8	18.74	4.27	268.4	1133958
TECO247	-1200	-7300	4.17	22.9	770.8	18.74	4.27	268.4	1133958
TECO248	-1000	-7500	4.17	10.7	816.3	15.17	4.57	248.8	519740
TECO249	-1000	-7500	54.61	149.4	341.9	18.21	7.32	766.3	716563
TECO250	-1000	-7500	0.66	31.1	394.1	16.04	0.76	7.3	135084
TECO251	-1000	-7500	2.1	34.4	394.1	123.77	0.27	7.1	45802
TECO252	-1000	-7500	0.03	42.4	333.0	18.19	0.49	3.4	1613230
TECO253	-1000	-7500	0.06	54.6	298.6	21.04	0.52	4.5	1213264
TECO254	-1000	-7500	0.06	54.6	298.6	21.04	0.52	4.5	1213264
TECO255	-1000	-7500	0.06	54.6	298.6	21.04	0.52	4.5	1213264
TECOBBA	-1000	-7500	0.21	54.6	298.6	21.04	0.52		
TECO256	-2900	5000	15.89	93.3	415.8	28.90	3.05	211.1	515335
TECO257	-2900	5000	15.89	93.3	420.8	30.85	3.05	225.4	556722
TECO258	-2900	5000	20.18	93.3	419.7	38.64	3.23	316.6	614175
TECO259	-2900	5000	23.69	93.3	426.9	22.97	3.05	167.8	282068
TECO260	-2900	5000	28.76	93.3	423.6	23.18	4.45	360.5	495259
TECO261	-2900	5000	47.91	93.3	433.0	24.74	5.36	558.2	470569
TECO262	-2900	5000	15.4	10.7	816.3	136.61	1.52	247.9	140202
TECO263	-2900	5000	0.03	22.0	449.7	10.96	0.21	0.4	124904
TECO264	-2900	5000	0.14	32.6	449.7	30.37	0.30	2.1	224866
TECO265	-2900	5000	0.37	31.7	449.7	18.27	0.61	5.3	205716
TECO267	-2900	5000	0.06	53.3	298.6	21.49	0.52	4.6	1211503
TECO268	-2900	5000	0.03	54.0	298.6	15.52	0.61	4.5	2435574
TECO269	-2900	5000	0.03	53.3	298.6	21.49	0.52	4.6	2423006
TECO270	-2900	5000	0.03	53.0	298.6	24.26	0.37	2.6	1377071
TECO271	-2900	5000	0.03	53.3	298.6	21.49	0.52	4.6	2423006
TECOGANA	-2900	5000	0.72	22.0	449.7	10.96	0.21		
FPCB292	-24100	-11200	8.14	12.2	755.4	6.54	6.98	250.3	283329
FPC-296	-20500	100	31.96	91.4	424.8	31.09	2.74	183.3	222708
FPC-297	-20500	100	27.9	91.4	408.2	34.44	3.35	303.6	405936
FPC-298	-20500	100	0.04	9.1	541.5	5.18	0.91	3.4	415033

Table B-1. PM Source Screening Analysis Using the EPA 'M' Factor

ISCST ID	Relative Coord (m) X	Relative Coord (m) Y	QS (g/s)	HS (m)	TS (K)	VS (m/s)	DS (m)	Flowrate (m^3/s)	Merged Stack Parameter "M"
FPC-299	-20500	100	12.8	13.7	772.0	22.25	5.27	485.3	401023
FPC-300	-20500	100	0.01	7.6	298.1	0.04	0.27	0.0	519
FPCBART	-20500	100	72.71	7.6	298.1	0.04	0.27		
Sources Obtained from FDEP									
GAF1	-700	4700	0.43	10.7	298.0	0.06	14.30	9.6	71457
GAF2	-700	4700	0.18	6.1	298.0	15.16	0.49	2.9	28871
GAF3	-700	4700	0.03	6.1	298.0	2.87	0.46	0.5	28901
GAF4	-700	4700	0.29	10.1	700.0	8.53	0.70	3.3	80031
GAF4	-700	4700	0.24	11.6	464.0	18.59	0.49	3.5	78619
GAF4	-700	4700	0.02	13.7	298.0	1.22	0.61	0.4	72781
GAF4	-700	4700	0.03	13.7	298.0	1.22	0.61	0.4	48520
GAF4	-700	4700	0.03	13.7	298.0	1.22	0.61	0.4	48520
GAF	-700	4700	1.25	6.1	298.0	15.16	0.49		
BayConc1	2200	11300	0.62	3.0	299.0	0.61	0.61	0.2	258
BayConc2	2200	11300	0.45	18.3	298.0	4.57	0.61	1.3	16185
Pakhoed1	-2100	4800	0.2	9.1	299.0	39.32	0.30	2.8	37812
Pakhoed2	-2100	4800	0.08	4.9	299.0	13.72	0.34	1.2	22813
Pakhoed3	-2100	4800	0.13	14.3	299.0	8.84	0.52	1.9	61747
IMC_Ag1	-800	-6400	0.4	11.0	298.0	12.80	0.46	2.1	17433
IMC_Ag2	-800	-6400	0.19	7.6	298.0	10.36	0.40	1.3	15518
IMC_Ag3	-800	-6400	0.19	7.6	298.0	10.36	0.40	1.3	15518
IMC_Ag4	-800	-6400	1.42	9.1	298.0	26.52	0.67	9.4	17856
IMC_Ag5	-800	-6400	1.16	13.7	314.0	12.19	0.85	6.9	25652
IMC_Ag6	-800	-6400	1.93	22.9	314.0	12.80	1.52	23.2	86536
IMCAGCH	-800	-6400	5.29	7.6	298.0	10.36	0.40		
DravLim1 (Pt 4)	0	2200	0.04	5.5	298.0	7.01	0.15	0.1	5076
DravLim2 (Pt 2,3,5)	0	2200	0.12	5.5	298.0	11.28	0.12	0.1	1742
DravLim3 (Pt 1)	0	2200	0.08	5.5	298.0	1.83	0.61	0.5	10957
DravLim4 (Pt 6)	0	2200	0.05	5.5	299.0	11.28	0.12	0.1	4196
DRAVLIME			0.13	5.5	299.0	1.83	0.61		
GarrStv1	-5100	9200	0.5	18.3	298.0	0.30	1.37	0.4	4823
GarrStv2	-5100	9200	4.71	6.1	298.0	0.30	3.05	2.2	846
ReedMin1	-700	3000	0.43	9.1	329.0	9.75	1.19	10.8	75502
ReedMin2	-700	3000	1.45	9.1	306.0	9.75	1.68	21.6	41506
ReedMin3	-700	3000	0.06	11.0	300.0	0.30	3.35	2.6	145433
ReedMin4	-700	3000	0.06	10.4	300.0	0.30	3.35	2.6	137500
REEDMIN	-700	3000	2.00	9.1	306.0	9.75	1.68		
RinkerM	2000	1900	0.25	6.7	298.0	18.90	0.40	2.4	18968
FlRock	2900	2500	0.63	6.7	298.0	8.53	0.70	3.3	10404
CommMet1	-4400	5800	1.3	15.2	298.0	16.15	1.22	18.9	65781
CommMet1	-4400	5800	1.78	15.2	298.0	22.25	1.22	26.0	66188

Table B-1. PM Source Screening Analysis Using the EPA 'M' Factor

ISCST ID	Relative Coord (m) X	Relative Coord (m) Y	QS (g/s)	HS (m)	TS (K)	VS (m/s)	DS (m)	Flowrate (m^3/s)	Merged Stack Parameter "M"
Combined PM Sources from FPL Manatee SCA									
CSX Corporation									
CSXTR01	-1900	6500	3.88	13.7	298.1	13.2	2.38		
CSXTR11	-1900	6500	3.53	18.3	298.7	3.05	2.74		
CSXTRC9	-1900	6500	3.76	0.9	298.1	194.04	0.15		
Eastern Association Terminal									
EASTAT03	-2700	6400	3.5	4.3	298.7	194.04	0.61		
EASTATBA	-2700	6400	2.1	3.4	298.1	24.05	0.34		
EASTATBB	-2700	6400	9.2	4.6	298.1	81.76	0.76		
Golden Triangle Asphalt									
GLDTRI01	-29100	3600	123.48	12.2	410.9	20.74	1.22		
Graves Enterprises									
GRAVES01	200	2800	10.08	4.3	1144	3.05	3.66		
Hillsborough Co Resource Recovery									
HILRFC3	5300	10200	2.65	67.1	494.3	16.76	3.51		
TECO Hookers Point									
TECHKC6	-4900	8500	35.44	85.3	448.2	10.48	3.44		
IMC Port Sutton Terminal									
IACPTS01	-2800	5000	5.52	19.8	338.7	12.63	2.44		
IACPTSBA	-2800	5000	3.58	2.1	322	32.07	0.34		
Lafarge Corp.									
LAFRG29	-5200	8100	11.98	44.5	494.8	40.24	2.44		
LAFRG30	-5200	8100	5.67	30.8	401.9	6.09	3.81		
LAFRGMM	-5200	8100	17.06	1.5	310.8	17.92	0.58		
Nitram									
NITRM06	-400	6500	3.55	52.7	310.9	5.84	4.57		
NITRMBA	-400	6500	2.32	11.9	298.1	4.48	0.58		
Sulfuric Acid Trading Co.									
SULFTC3	-13900	-1000	0.4	7.6	480.4	4.56	0.52		
Tampa City McKay Bay Refuse-to-Energy									
MCKBAYC5	-2900	9400	3.57	45.7	500	21.3	1.3		
Tropicana									
TROPNC3	-16100	-41600	11.99	29	333.1	21.56	0.91		
TROPNC8	-16100	-41600	14.01	15.2	305.4	3.23	0.3		

Table B-2 . PM Emission Inventory of AAQS Sources Taken from FPL Manatee SCA

APIS Number	Facility/Source	Facility Relative Location Coordinate (in meters) X	Y	ISCST ID	APIS Src #	Stack Height (ft)	Stack Height (m)	Stack Diameter (ft)	Stack Diameter (m)	Exit Velocity (ft/s)	Exit Velocity (m/s)	Temperature (°F)	Temperature (K)	Maximum PM Emissions (lb/hr)	Maximum PM Emissions (TPY)	Maximum PM Emissions (g/s)	Merged Stack Parameter M Test (a)	
40HIL290018	LaFarge Corp.	-5200	8100	LAFRG29	29	146.0	44.5	8.0	2.44	132.0	40.24	431	494.8	95.1	416	11.98		
				LAFRG30	30	101.0	30.8	12.5	3.81	20.0	6.09	264	401.9	45.0	197	5.67		
					01	98.0	29.9	1.6	0.49	39.8	12.13	77	298.0	1.1	5	0.14	145434	
					02	98.0	29.9	1.6	0.49	39.8	12.13	77	298.0	1.1	5	0.14	145434	
					03	102.0	31.1	1.9	0.58	64.7	19.71	77	298.0	2.8	12	0.35	137848	
					05	100.0	30.5	2.5	0.76	40.7	12.42	77	298.0	3.2	14	0.40	127941	
					06	147.0	44.8	1.7	0.52	44.1	13.43	77	298.0	1.6	7	0.20	190429	
					07	147.0	44.8	1.7	0.52	44.1	13.43	77	298.0	1.6	7	0.20	190429	
					08	147.0	44.8	1.7	0.52	44.1	13.43	77	298.0	1.6	7	0.20	190429	
					09	171.0	52.1	1.1	0.34	84.2	25.66	77	298.0	1.1	5	0.14	258462	
					11	47.0	14.3	1.3	0.40	62.8	19.14	77	298.0	1.3	6	0.17	60418	
					12	83.0	25.3	2.3	0.70	80.2	24.45	77	298.0	5.0	22	0.63	112606	
					13	83.0	25.3	3.4	1.04	62.4	19.02	77	298.0	8.7	38	1.09	111758	
					14	57.0	17.4	2.2	0.67	57.0	17.37	157	342.4	1.6	7	0.20	182114	
					15	30.0	9.1	2.4	0.73	55.2	16.84	77	298.0	3.9	17	0.49	39178	
					16	83.0	25.3	3.4	1.04	62.4	19.02	77	298.0	8.7	38	1.09	111758	
					17	90.0	27.4	1.1	0.34	87.7	26.73	77	298.0	3.2	14	0.40	49594	
					18	16.0	4.9	2.4	0.73	55.2	16.84	77	298.0	3.9	17	0.49	20918	
					19	83.0	25.3	3.4	1.04	62.4	19.02	77	298.0	8.7	38	1.09	111758	
					20	57.0	17.4	2.2	0.67	57.0	17.37	77	298.0	3.2	14	0.40	79249	
					21	30.0	9.1	2.4	0.73	55.2	16.84	77	298.0	3.9	17	0.49	39178	
					23	49.0	14.9	2.2	0.67	35.1	10.69	77	298.0	2.1	9	0.26	64537	
					24	49.0	14.9	2.2	0.67	35.1	10.69	77	298.0	2.1	9	0.26	64537	
					25	72.0	22.0	0.8	0.24	265.3	80.85	77	298.0	2.1	9	0.26	92017	
					27	20.0	6.1	2.2	0.67	78.9	24.06	100	310.8	4.6	20	0.58	27728	
					31	49.0	14.9	2.0	0.61	63.6	19.40	77	298.0	2.9	13	0.37	68221	
					42	174.0	53.0	1.5	0.46	75.5	23.00	77	298.0	20.1	88	2.53	23880	
					43	174.0	53.0	1.5	0.46	94.3	28.75	77	298.0	2.3	10	0.29	260415	
					44	60.0	18.3	1.0	0.30	112.0	34.15	77	298.0	1.3	6	0.17	77393	
					45	60.0	18.3	1.0	0.30	112.0	34.15	77	298.0	1.3	6	0.17	77393	
					50	123.0	37.5	1.0	0.30	84.9	25.87	77	298.0	1.1	5	0.14	145926	
					--	33.0	10.1	2.4	0.73	55.2	16.84	196	364.1	2.9	13	0.37	69774	
					--	5.0	1.5	1.9	0.58	58.8	17.92	100	310.8	2.5	11	0.32	6990	Lowest M
					--	95.0	29.0	1.5	0.46	37.7	11.50	77	298.0	1.1	5	0.14	117812	
					--	57.0	17.4	2.2	0.67	57.0	17.37	77	298.0	3.2	14	0.40	79249	
					--	73.0	22.3	1.9	0.58	76.4	23.29	77	298.0	2.9	13	0.37	110271	
					--	115.0	35.1	1.9	0.58	70.5	21.50	100	310.8	2.9	13	0.37	167244	
					--	33.0	10.1	2.4	0.73	55.2	16.84	196	364.1	1.6	7	0.20	129082	
					--	90.0	27.4	1.0	0.30	106.1	32.34	77	298.0	1.3	6	0.17	109917	
					--	34.0	10.4	1.1	0.34	107.0	32.61	77	298.0	1.6	7	0.20	45703	
					--	83.0	25.3	3.4	1.04	62.4	19.02	180	355.2	2.1	9	0.26	558454	
					--	57.0	17.4	2.2	0.67	57.0	17.37	157	342.4	2.1	9	0.26	140088	
					--	83.0	25.3	3.4	1.04	62.4	19.02	180	355.2	1.6	7	0.20	725990	
					--	83.0	25.3	1.3	0.40	80.3	24.49	77	298.0	1.6	7	0.20	116013	
					--	33.0	10.1	2.4	0.73	55.2	16.84	196	364.1	2.1	9	0.26	99294	
				LAFRGMM		5.0	1.5	1.9	0.58	58.8	17.92	100	310.8	2.5	11.1	17.06		
40HIL290014	Eastern Association Terminal	-2700	6400	EASTAT03	3	14	4.3	2.0	0.61	636.6	194.04	78	298.7	27.8	122	3.50	20810	
					1	55	16.8	4.2	1.28	62.6	19.07	77	298.1	12.0	53	1.52	80852	
					2	70	21.3	0.5	0.15	25.5	7.76	77	298.1	0.1	0	0.01	87071	
					4	11	3.4	1.6	0.49	93.3	28.42	78	298.7	2.5	11	0.31	17557	
					6	11	3.4	1.1	0.34	78.9	24.05	77	298.1	1.0	5	0.13	17024	Lowest M
					9	11	3.4	1.1	0.34	78.9	24.05	78	298.7	1.0	5	0.13	17058	

Table B-2 . PM Emission Inventory of AAQS Sources Taken from FPL Manatee SCA

APIS Number	Facility/Source	Facility Relative Location Coordinate (in meters) X	Y	ISCST ID	APIS Src #	Stack Height (ft)	(m)	Stack Diameter (ft)	(m)	Exit Velocity (ft/s)	(m/s)	Temperature (°F)	(K)	Maximum PM Emissions (lb/hr)	(TPY)	(g/s)	Merged Stack Parameter M Test (s)	
				EASTATBA	1,2,4,6,9	11	3.4	1.1	0.34	78.9	24.05	77	298.1	16.6	73	2.10		
					11	15	4.6	2.5	0.76	268.2	81.76	77	298.1	18.3	80	2.30	22113	
					12	15	4.6	2.5	0.76	268.2	81.76	77	298.1	18.3	80	2.30	22113	
					13	15	4.6	2.5	0.76	268.2	81.76	77	298.1	18.3	80	2.30	22113	
					14	15	4.6	2.5	0.76	268.2	81.76	77	298.1	18.3	80	2.30	22113	
				EASTATBB	11,12,13,14	15	4.6	2.5	0.76	268.2	81.76	77	298.1	73.1	320	9.20		
40HIL290024	IMC-Agrico Co. (Port Sutton)	-2800	5000	IACPTS01	1	65	19.8	8.0	2.44	41.4	12.63	150	338.7	43.8	192	5.52		
					2	68	20.7	6.0	1.83	55.1	16.80	79	299.3	11.1	49	1.40	195547	
					3	45	13.7	1.5	0.46	113.2	34.50	90	305.4	3.09	14	0.39	61511	
					4	7	2.1	1.1	0.34	105.2	32.07	120	322.0	1.54	7	0.19	10363	Lowest M
					5	32	9.8	1.7	0.52	51.4	15.67	120	322.0	1.8	8	0.23	45658	
					6	18	5.5	1.1	0.34	105.2	32.07	120	322.0	1.54	7	0.19	27140	
					7	39	11.9	1.1	0.34	105.2	32.07	120	322.0	1.54	7	0.19	58721	
					8	97	29.6	1.1	0.34	61.4	18.71	77	298.1	0.9	4	0.11	136264	
					9	101	30.8	1.3	0.4	43.9	13.40	120	322.0	1.05	5	0.13	128463	
					12	10	3	2.0	0.61	132.6	40.43	100	310.9	5.94	26	0.75	14694	
				IACPTSBA	ALL	7	2.1	1.1	0.34	105.2	32.07	120	322.0	28.5	125	3.58		
40HIL290029	Nitram	-400	6500	NITRM06	6	173	52.7	15.0	4.57	19.1	5.84	100	310.9	28.2	124	3.55		
					3	90	27.4	4.5	1.37	35.3	10.76	260	399.8	4.1	18	0.52	334144	
					4	30	9.1	4.5	1.37	35.3	10.76	450	505.4	2.04	9	0.26	280573	
					8	36	11	1.9	0.58	47	14.33	77	298.1	0.6	3	0.08	155187	
					9	39	11.9	1.9	0.58	14.7	4.48	77	298.1	2.1	9	0.26	16150	Lowest M
					10	63	19.2	0.3	0.09	106.1	32.34	77	298.1	0.12	1	0.02	58877	
					11	35	10.7	0.3	0.09	129.7	39.53	77	298.1	0.14	1	0.02	40107	
					12	35	10.7	5.0	1.52	35.4	10.79	101	311.5	9.24	40	1.16	56258	
				NITRMBA	3-12	39	11.9	1.9	0.58	14.7	4.48	77	298.1	18.3	80	2.32		
40HIL290033	CSX Transportation Inc.	-1900	6500	CSXTR01	1	45	13.7	7.8	2.38	43.3	13.20	77	298.1	30.8	135	3.88		
				CSXTR11	11	60	18.3	9.0	2.74	10	3.05	78	298.7	28	123	3.53		
					2	3	0.9	0.5	0.15	636.6	194.04	77	298.1	1.9	8	0.24	3833	Lowest M
					3	40	12.2	6.7	2.04	47.5	14.49	77	298.1	17.9	78	2.26	76214	
					4	40	12.2	2.2	0.67	63.6	19.38	77	298.1	1.9	8	0.24	103539	
					5	40	12.2	1.8	0.55	59.6	18.17	77	298.1	1.2	5	0.15	104665	
					6	4	1.2	0.5	0.15	360.8	109.96	77	298.1	1.1	5	0.14	4965	
					7	3	0.9	0.5	0.15	275.9	84.08	77	298.1	0.8	4	0.10	3986	
					8	3	0.9	0.5	0.15	275.9	84.08	77	298.1	0.8	4	0.10	3986	
					9	36	11	3.3	1.01	37.2	11.34	77	298.1	3.93	17	0.50	59584	
					10	54	16.5	6.0	1.83	12.4	3.77	77	298.1	0.27	1	0.03	1625766	
				CSXTRC9	2-10	3	0.9	0.5	0.15	636.6	194.04	77	298.1	29.8	131	3.76		
40HIL290099	Sulfuric Acid Trading Co.	-13900	-1000		1	25	7.6	1.7	0.52	15	4.56	405	480.4	1.38	6	0.17		
					2	25	7.6	1.7	0.52	15	4.56	405	480.4	1.38	6	0.17		
					3	0	0	0.0	0	0	0.00	0	255.4	0.51	2	0.06		
				SULFTC3	1,2,3	25	7.6	1.7	0.52	15	4.56	405	480.4	3.27	14	0.40		

Table B-2 . PM Emission Inventory of AAQS Sources Taken from FPL Manatee SCA

APIS Number	Facility/Source	Facility Relative Location Coordinate (in meters) X	Y	ISCST ID	APIS Src #	Stack Height (ft)	(m)	Stack Diameter (ft)	(m)	Exit Velocity (ft/s)	(m/s)	Temperature (°F)	(K)	Maximum PM Emissions (lb/hr)	(TPY)	(g/s)	Merged Stack Parameter M Test (a)
40HIL290127	Tampa City McKay Bay RTE	-2900	9400		1	160	45.7	4.3	1.30	70.0	21.30	440	500.0	7.0	31	0.88	
					2	160	45.7	4.3	1.30	70.0	21.30	440	500.0	7.0	31	0.88	
					3	160	45.7	4.3	1.30	70.0	21.30	440	500.0	7.0	31	0.88	
					4	160	45.7	4.3	1.30	70.0	21.30	440	500.0	7.0	31	0.88	
					5	57	17.4	2.0	0.61	11.2	3.41	200	366.5	0.4	2	0.05	
				MCKBAYC5	1-5	160	45.7	4.3	1.30	70.0	21.30	440	500.0	28.36	124	3.57	
40MAN410007	Tropicana Products, Inc.	-16100	-41600		1	95	29	3.0	0.91	70.7	21.56	140	333.1	31.8	139	4.01	33779 Lowest M
					2	95	29	3.0	0.91	70.7	21.56	140	333.1	31.8	139	4.01	33779 Lowest M
					3	95	29	3.2	0.98	62.2	18.95	140	333.1	31.5	138	3.97	34780
				TROPNC3	01-03	95	29	3.0	0.91	70.7	21.56	140	333.1	95.2	417	11.99	
					10	30	9.1	2.5	0.76	1.4	0.41	600	588.7	2.2	10	0.28	3559
					11	71	21.6	6.3	1.92	25.2	7.69	441	500.4	17.39	76	2.19	109887
					12	71	21.6	6.3	1.92	39.2	11.95	536	553.2	18.2	80	2.29	180535
					14	103	31.4	6.3	1.92	22.4	6.83	489	527.0	21.5	94	2.71	120749
					15	80	24.4	7.0	2.13	24.8	7.55	540	555.4	7.87	34	0.99	368262
					16	80	24.4	12.0	3.66	54.3	16.55	268	404.3	1.75	8	0.22	7807661
					18	50	15.2	1.0	0.3	10.6	3.23	90	305.4	26.4	116	3.33	318
					20	65	19.8	6.7	2.04	18.9	5.76	90	305.4	15.9	70	2.00	56922
				TROPNC8	10-20	50	15.2	1.0	0.3	10.6	3.23	90	305.4	111.2	487	14.01	
40PNL520004	Golden Triangle Asphalt	-29100	3600	GLDTRJ01	1	40	12.2	4.0	1.22	68	20.74	280	410.9	980	4292	123.48	
40HIL290261	Hillsborough County RRF	5300	10200	HILRFC3	--	220	67.1	11.5	3.51	55.0	16.76	430	494.3	21.0	92	2.65	
40HIL290317	Graves Enterprises	200	2800	GRAVES01	1	14	4.3	12.0	3.66	10	3.05	1600	1144.3	80.0	350	10.08	
40HIL290038	TECO Hooker's Point	-4900	8500		1	280.0	85.3	11.3	3.44	20.0	6.10	295	419.3	29.9	11	3.77	538137
					2	280.0	85.3	11.3	3.44	18.0	5.49	315	430.2	29.9	11	3.77	496914
					3	280.0	85.3	12.0	3.66	26.0	7.93	322	434.3	41.1	16	5.18	596978
					4	280.0	85.3	12.0	3.66	24.7	7.52	300	422.0	41.1	16	5.18	550080
					5	280.0	85.3	11.3	3.44	34.4	10.48	347	448.2	61.0	23	7.69	484492 Lowest M
					6	280.0	85.3	9.4	2.87	73.0	22.26	320	433.3	78.2	30	9.85	540635
				TECHKC6	01-06	280.0	85.3	11.3	3.44	34.4	10.48	347	448.2	281.3	106.9	35.44	

Notes:

Some point sources provided by TECO PPS data were identifed with an APIS source number.

(a) M parameter used for merging multiple stacks at a single facility. Where M= (Stack ht (m) x Airflow (m^3/s) x Exit Temperature (K)) / Maximum emissions (g/s), based on Screening Procedures for Estimating Air Quality Impacts From Stationary Sources (EPA, 1992)

UTM Coordinates of the Cargill Riverview Facility are: 362.9 3082.5

TABLE 6
PM-10 CLASS II AREA
PSD INCREMENT INVENTORY

Facility	UTM East	UTM North	PM* (g/s)	Height+ (m)	Temper-ature (K)	Velocity** (m/s)	Diameter (m)
Agrico Chemical Pierce	403.7	3,079.0	5.04	24.38	320.8	21.25	2.44
Agrico Chemical Pierce	403.7	3,079.0	3.92	28.96	683.0	14.75	1.77
Agrico South Pierce	407.5	3,071.3	49.10	45.70	350.0	39.06	1.60
CF Industries Bonnie Mine Road	408.4	3,082.4	15.27	42.70	298.0	21.60	0.80
CF Industries Bonnie Mine Road	408.4	3,082.4	2.45	36.58	333.0	17.17	2.29
CF Industries Bonnie Mine Road	408.4	3,082.4	4.95	41.45	333.0	18.05	2.83
Conserv Inc.	398.7	3,084.2	28.91	45.72	349.7	10.31	2.29
Conserv Inc.	398.7	3,084.2	4.92	12.80	310.8	10.60	1.22
FPC Bayboro C4	338.8	3071.3	8.14	12.2	755.4	6.54	6.98
FPC-Bartow TC2	342.4	3082.6	31.96	91.4	424.8	31.09	2.74
FPC-Bartow TD4	342.4	3082.6	12.8	13.7	772	22.25	5.27
FPC-Bartow TO3	342.4	3082.6	27.9	91.4	408.2	34.44	3.35
FPC-Bartow TO4	342.4	3082.6	0.04	9.1	541.5	5.18	0.91
FPC-Bartow TO9	342.4	3082.6	0.01	7.6	298.1	0.04	0.27
Farmland Industries Green Bay Plant	409.5	3,080.1	28.09	30.50	308.0	18.30	1.40
Florida Power & Light	367.2	3054.1	218	152.1	425.8	23.61	7.99
Hardee Power Station	404.8	3,057.4	1.89	22.90	389.0	23.90	4.88
IMC Ft. Lonesome	389.6	3,067.9	3.17	38.10	339.1	15.16	2.44
IMC Ft. Lonesome	389.6	3,067.9	3.14	38.10	339.1	16.80	2.44
IMC Ft. Lonesome	359.6	3,067.9	6.45	45.72	316.3	8.43	0.82
IMC Fertilizer Noralyn Mine	414.7	3,080.3	28.00	11.58	333.0	7.17	0.58
IMC/Uranium Recovery CF Industries	408.4	3,082.8	23.90	25.90	297.0	11.60	0.20
Lakeland City Power CT (Larsen)	409.2	3,102.8	1.89	30.48	783.0	28.22	5.79
Lakeland McIntosh	409.5	3,105.8	40.82	76.20	350.0	32.60	4.90
Lakeland McIntosh	409.5	3,105.8	14.00	45.70	419.0	23.77	2.74
Mobil-Electrophos Division	405.6	3,079.4	15.95	30.48	319.1	12.34	1.31
TECO Big Bend	361.9	3,079.4	167.30	149.40	342.0	20.00	7.32
TECO Big Bend	361.9	3,057.0	54.61	149.35	341.9	18.21	7.32
TECO Polk KBA	402.5	3067.4	2.02	6.1	533	13.1	0.9
TECO Polk KBB	402.5	3067.4	7.43	45.7	400	16.79	5.8
TECO Polk KBC	402.5	3067.4	3.15	60.7	1033	9.14	1.07
WR Grace/Seminole	409.8	3,087.0	13.61	15.24	333.0	17.10	2.00
WR Grace/Seminole	409.8	3,087.0	4.68	60.96	347.0	25.10	1.52

Table 6a. Additional PM/PM10 PSD Class II Increment-Consuming Sources

	UTM Coordinates		PM	Height	Temperature	Velocity	Diameter
	East	North	(g/s)	(m)	(K)	(m/s)	(m)
Hillsborough Co. Resource Recovery Facility	368.2	3092.7	2.65	67.1	494.3	16.76	3.51
Tampa City McKay Bay Refrigerator-Energy	360.0	3091.9	3.57	45.7	500.0	21.3	1.3
Tropicana	346.8	3040.9	11.99	29.0	333.1	21.56	0.91
Tropicana	346.8	3040.9	14.01	15.2	305.4	3.23	0.3