PSD APPLICATION FOR THE "A" SULFURIC ACID PLANT AND "A" AND "B" PHOSPHORIC ACID PLANTS

Prepared for:
CF INDUSTRIES, INC., PLANT CITY PHOSPHATE COMPLEX
PLANT CITY, FLORIDA

Prepared by:
GOLDER ASSOCIATES INC.
6241 NW 23rd STREET
GAINESVILLE, FLORIDA

0537596

APRIL 2006

Scan 8/1/07

PSD-FL-355

√ + Plant City

Pages 407

RECEIVED
APR 06 2006
BUREAU OF AIR REGULATION

PSD APPLICATION FOR "A" SULFURIC ACID PLANT AND "A" AND "B" PHOSPHORIC ACID PLANTS CF INDUSTRIES *PLANT CITY, FLORIDA*

Prepared For:
CF Industries
P.O. Drawer L
Plant City, Florida 33564

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

April 2006

0537596

DISTRIBUTION:
7 Copies – FDEP
2 Copies – CF Industries
2 Copies – Golder Associates Inc.

APPLICATION FOR AIR PERMIT – LONG FORM

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit for a proposed project:

- subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- at an existing federally enforceable state air operation permit (FESOP) or Title V permitted facility.

Air Operation Permit – Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

Air Construction Permit & Revised/Renewal Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Site Name: Plant City Phosphate Complex	
2. Facility Identification Number: 0570005	
3. Facility Location...: Street Address or Other Locator: 10608 Paul Buchman Highway City: Plant City County: Hillsborough Zip Code: 33565	
4. Relocatable Facility? ☐ Yes ☒ No	5. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: Tom Edwards
2. Application Contact Mailing Address... Organization/Firm: CF Industries, Inc. Street Address: P.O. Drawer L City: Plant City State: FL Zip Code: 33567-9007
3. Application Contact Telephone Numbers... Telephone: (813) 782-1591 ext. Fax: (813) 788-9126
4. Application Contact Email Address: tedwards@cfifl.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	4-6-06
2. Project Number(s):	0570005-021-AC
3. PSD Number (if applicable):	PSD-FL-355
4. Siting Number (if applicable):	

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

☒ Air construction permit.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Application to increase the production rate and modify the "A" Sulfuric Acid Plant and the "A" and "B" Phosphoric Acid Plants. Refer to PSD Report for detailed description.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
004	"A" Phosphoric Acid Plant	AC1A	
009	"B" Phosphoric Acid Plant	AC1A	
002	"A" Sulfuric Acid Plant	AC1A	

Application Processing Fee

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

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :	
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:	
3. Owner/Authorized Representative Telephone Numbers... Telephone: ext. Fax:	
4. Owner/Authorized Representative Email Address:	
5. Owner/Authorized Representative Statement: *I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. 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 and all other requirements identified in this application to which the facility is subject. 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 the facility or any permitted emissions unit.* Signature Date	

Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:
   Herschel Morris, Vice President Phosphate Operations/General Manager

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):
   - ☒ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
   - ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
   - ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
   - ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm: **CF Industries, Inc.**
   Street Address:
   City: **Plant City** State: **FL** Zip Code: **33564**

4. Application Responsible Official Telephone Numbers...
   Telephone: **(813) 782-1591** ext. Fax: **(813) 788-9126**

5. Application Responsible Official Email Address: **hmorris@cfifl.com**

6. Application Responsible Official Certification:
   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. 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 and all other applicable requirements identified in this application to which the Title V source is subject. 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 the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Herschel Morris — Signature   4/5/06 — Date

APPLICATION INFORMATION

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**
3.	Professional Engineer Telephone Numbers... Telephone: **(352) 336-5600** ext.**545** Fax: **(352) 336-6603**
4.	Professional Engineer Email Address: **dbuff@golder.com**
5.	Professional Engineer Statement:

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

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

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

(3) If the purpose of this application is to obtain a Title V 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 plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, 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.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal 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

4/4/06
Date

(seal)

* Attach any exception to certification statement.
** Board of Professional Engineers Certificate of Authorization #00001670

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **388.00** North (km) **3,116.00**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **28/9/57** Longitude (DD/MM/SS) **82/8/27**	
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **28**	6. Facility SIC(s): **2874**
7. Facility Comment : **This is a phosphate fertilizer manufacturing facility producing sulfuric acid, phosphoric acid, diammonium phosphate (DAP) and monoammonium phosphate (MAP).**			

Facility Contact

1. Facility Contact Name: **Tom Edwards**
2. Facility Contact Mailing Address... Organization/Firm: **CF Industries, Inc.** Street Address: **P.O. Drawer L** City: **Plant City** State: **FL** Zip Code: **33564-9007**
3. Facility Contact Telephone Numbers: Telephone: **(813) 782-1591** ext. Fax: **(813) 788-9126**
4. Facility Contact Email Address: **tedwards@cfifl.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
Particulate Matter-Total (PM)	**A**	**N**
Fluoride (FL)	**B**	**N**
Sulfur Dioxide (SO_2)	**A**	**N**
Sulfuric Acid Mist (SAM)	**A**	**N**
Nitrogen Oxides (NO_x)	**A**	**N**
Particulate Matter (PM_{10})	**A**	**N**
Hydrogen Fluoride (H107)	**A**	**N**
Total HAPs (HAPs)	**A**	**N**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID Nos. Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID:**PSD Report** ☐ Previously Submitted, Date:
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID:**CF-FI-C2** ☐ Previously Submitted, Date:
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID:**CF-FI-C3** ☐ Previously Submitted, Date:

Additional Requirements for Air Construction Permit Applications

1.	Area Map Showing Facility Location: ☐ Attached, Document ID:_____ ☒ Not Applicable (existing permitted facility)
2.	Description of Proposed Construction or Modification: ☒ Attached, Document ID: **PSD Report**
3.	Rule Applicability Analysis: ☒ Attached, Document ID:**CF-FI-CC3**
4.	List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): ☐ Attached, Document ID:_____ ☒ Not Applicable (no exempt units at facility)
5.	Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.): ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
6.	Preconstruction Air Quality Monitoring and Analysis (Rule 62-212.400(5)(f), F.A.C.): ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
7.	Ambient Impact Analysis (Rule 62-212.400(5)(d), F.A.C.): ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
8.	Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.): ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
9.	Additional Impact Analyses (Rules 62-212.400(5)(e)1. and 62-212.500(4)(e), F.A.C.): ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Attached, Document ID:_____ ☒ Not Applicable

FACILITY INFORMATION

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)	

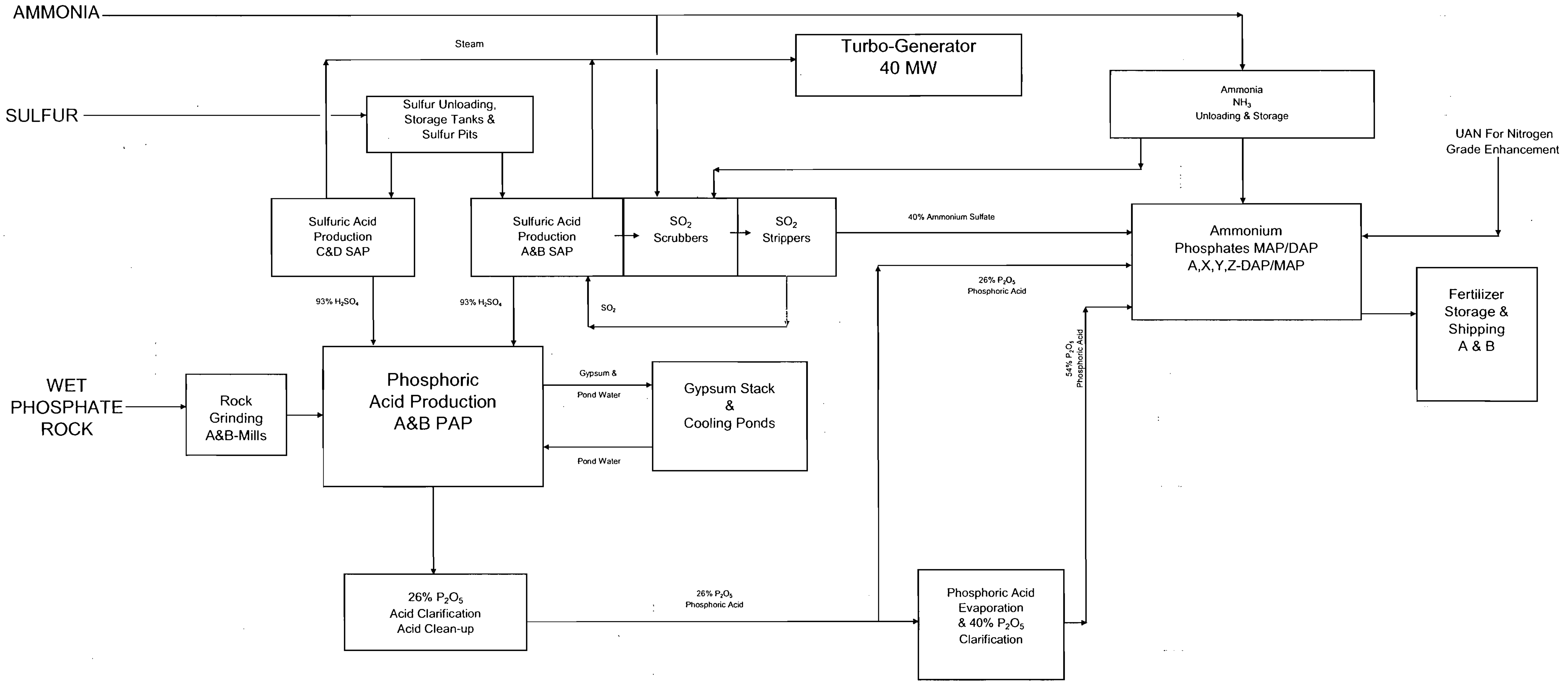
Additional Requirements for Title V Air Operation Permit Applications

1.	List of Insignificant Activities (Required for initial/renewal applications only): ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)
2.	Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought): ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application with no change in applicable requirements)
3.	Compliance Report and Plan (Required for all initial/revision/renewal applications): ☐ Attached, Document ID:_____ Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4.	List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only): ☐ Attached, Document ID:_____ ☐ Equipment/Activities On site but Not Required to be Individually Listed ☐ Not Applicable
5.	Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) : ☐ Attached, Document ID:_____ ☐ Not Applicable
6.	Requested Changes to Current Title V Air Operation Permit: ☐ Attached, Document ID:_____ ☐ Not Applicable

Additional Requirements Comment

ATTACHMENT CF-FI-C2

PROCESS FLOW DIAGRAM



Revision	By	Date		Title	DWR. NO
	Randy Charlot	1/15/02	**CF Industries, Inc.** Plant City Phosphate Complex	**Attachment CF-FI-C2**	0.0-SK-113
	Josh McEwen	1/31/2002	P.O. Drawer L	**Facility Wide Block Flow Diagram**	
			Plant City, Florida 33564		
			Phone: (813) 782-1591		
			Fax: (813) 788-9126		0.0-SK-113.xls

ATTACHMENT CF-FI-C3

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

ATTACHMENT CF-FI-C3

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

The Plant City Phosphate Complex has the potential to emit unconfined particulate matter as a result of the operation of the phosphate facility. Examples of fugitive particulate matter emissions include:

- Fugitive dust from the fertilizer storage and shipping operation;
- Fugitive dust from paved and unpaved roads; and
- Fugitive dust from the gypsum stack.

The following measures are undertaken at the phosphate plant to minimize fugitive particulate matter emissions, in accordance with Rule 62-296.320(4)(c), F.A.C. These measures are described below:

- The use of product-coating materials;
- The use of enclosed material transfer points where feasible;
- The use of windbreaks around the material handling equipment;
- The use of water to control dust from the gypsum stack; and
- Maintenance of paved areas as needed.

ATTACHMENT CF-FI-CC3

RULE APPLICABILITY ANALYSIS

ATTACHMENT CF-FI-CC3

RULE APPLICABILITY ANALYSIS

"A" and "B" Phosphoric Acid Plants

40 CFR 63, Subpart A – NESHAPS General Provisions
40 CFR 63.600 – Applicability – Subpart AA – Phosphoric Acid Manufacturing Plants
40 CFR 63.600(a) – Applicability – Subpart AA – Phosphoric Acid Manufacturing Plants
40 CFR 63.600(b)(1) - Applicability – Subpart AA – Phosphoric Acid Manufacturing Plants
40 CFR 63.600(c) – Applicability – Subpart AA – Phosphoric Acid Manufacturing Plants
40 CFR 63.600(d) – Applicability – Subpart AA – Phosphoric Acid Manufacturing Plants
40 CFR 63.600(e) – Applicability – Subpart AA – Phosphoric Acid Manufacturing Plants
40 CFR 63.601 – Definitions
40 CFR 63.602(a) – Standards for existing sources- wet process phosphoric acid
40 CFR 63.604 – Operating requirements
40 CFR 63.605(a)(1) – Monitoring requirements
40 CFR 63.605(b)(1) – Monitoring requirements
40 CFR 63.605(c) – Monitoring requirements
40 CFR 63.605(d) – Monitoring requirements
40 CFR 63.606(a)(1) – Performance tests and compliance provisions
40 CFR 63.606(b) – Performance tests and compliance provisions
40 CFR 63.606(c) – Performance tests and compliance provisions
40 CFR 63.607 – Notification, recordkeeping, and reporting requirements
40 CFR 63.608 – Applicability of general provisions
40 CFR 63.609 – Compliance dates
40 CFR 63.610 – Exemption from new source performance standards

62-212.400 – PSD
62-296.403 – Phosphate Processing
62-296.403(1) – Phosphate Processing – New Plants or Plant Sections
62-297.310(7) – Frequency of Compliance Tests

"A" Sulfuric Acid Plant – List of Applicable Rules

40 CFR 60.7 - NSPS – General Provisions – Notification & Recordkeeping
40 CFR 60.8 - NSPS – General Provisions – Performance Tests
40 CFR 60.11 - NSPS – General Provisions – Standards & Maintenance
40 CFR 60.12 - NSPS – Circumvention
40 CFR 60.13(a) – NSPS – Monitoring Requirements
40 CFR 60.13(b) – NSPS – Monitoring Requirements
40 CFR 60.13(c)(2) – NSPS – Monitoring Requirements
40 CFR 60.13(d)(1) – NSPS – Monitoring Requirements
40 CFR 60.13(e)(2) – NSPS – Monitoring Requirements
40 CFR 60.13(f) – NSPS – Monitoring Requirements
40 CFR 60.13(i) – NSPS – Monitoring Requirements
40 CFR 60.13(j) – NSPS – Monitoring Requirements
40 CFR 60.19 – NSPS – General Provisions – General Notification & Reporting
40 CFR 60.82 – NSPS Subpart H – SO_2 Standard

40 CFR 60.83 – NSPS Subpart H – Acid Mist Standard
40 CFR 60.84 – NSPS Subpart H – Emission Monitoring
40 CFR 60.85 – NSPS Subpart H – Test Methods & Procedures
62-204.800(8)(b)11. - Reference to NSPS
62-212.400 – PSD
62-296.402(2) – Sulfuric Acid Plants – New Plants
62-296.402(3) - Sulfuric Acid Plants – Test Methods
62-296.402(4) - Sulfuric Acid Plants – CEM Requirements
62-296.402(5) - Sulfuric Acid Plants – Quarterly Reporting
62-297.310 – General Compliance Test Requirements
62-297.520(2) – Continuous Monitor Performance Specifications – PS2

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ 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.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **"A" Phosphoric Acid Plant**

3. Emissions Unit Identification Number: **004**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			**28**	☐ Yes ☒ No

9. Package Unit:
   Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Wet cyclonic scrubber followed by a packed bed scrubber with "Kimre" packing or equivalent packing.**	
2. Control Device or Method Code(s): **013, 085**	

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **1,699 TPD as 100% P_2O_5 input**	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	 **7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment: **Based on a modification to increase input rate to 70.8 TPH 100% P_2O_5.**	

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **004**		2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **85** feet	7. Exit Diameter: **5.0** feet
8. Exit Temperature: **120** °F	9. Actual Volumetric Flow Rate: **49,900** acfm	10. Water Vapor: **8.2** %
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)
15. Emission Point Comment: **Exit temperature, actual volumetric flow, and water vapor based on recent compliance tests (May 2005).**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Chemical Manufacturing; Phosphoric Acid: Wet Process; Reactor**		
2. Source Classification Code (SCC): **3-01-016-01**	3. SCC Units: **Tons processed**	
4. Maximum Hourly Rate: **70.8**	5. Maximum Annual Rate: **620,208**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **Max annual rate based on maximum daily rate of 1,699 tons/day P_2O_5 input.**		

Segment Description and Rate: Segment _____ of _____

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

EMISSIONS UNIT INFORMATION
Section [1]
"A" Phosphoric Acid Plant

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
FI	085	013	EL

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **Fl**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.85** lb/hour **3.7** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.012 lb/ton of "equivalent P_2O_5 feed" from phosphate rock** Reference: **Proposed BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.012 lb/ton x 70.8 TPH = 0.85 lb/hr** **0.85 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 3.7 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

<u>Allowable Emissions</u> Allowable Emissions 1 of 3

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.012 lb/ton**	4. Equivalent Allowable Emissions: **0.85** lb/hour **3.7** tons/year
5. Method of Compliance: **EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed BACT**	

<u>Allowable Emissions</u> Allowable Emissions 2 of 3

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.40 lb/ton P_2O_5 input**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **EPA Method 13A or 13B.**	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-296.403(2), F.A.C. Allowable emissions applies to the entire facility.**	

<u>Allowable Emissions</u> Allowable Emissions 3 of 3

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.02 lb/ton P_2O_5**	4. Equivalent Allowable Emissions: **1.42** lb/hour tons/year
5. Method of Compliance: **EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR 63.602(a)**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 3

1. Parameter Code: **Mass Flow Rate**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Continuous monitoring of phosphorus-bearing feed material to the process.** **40 CFR 63.605(a)(1)** **Continuous monitoring of rock slurry flow and periodic monitoring of slurry percent-solids and percent-P_2O_5.**	

Continuous Monitoring System: Continuous Monitor 2 of 3

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Continuous monitoring of pressure drop across the scrubbing system.** **40 CFR 63.605(c)(1)**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 3 of 3

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Continuous monitoring of scrubbing liquid flow rate. 40 CFR 63.605(c)(2)**	

Continuous Monitoring System: Continuous Monitor _____ of _____

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **CF-EU1-I1** ☐ Previously Submitted, Date ________
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **CF-EU1-I3** ☐ Previously Submitted, Date ________
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable (construction application)
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable
6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____

   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____

   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☒ Not Applicable

EMISSIONS UNIT INFORMATION
Section [1]
"A" Phosphoric Acid Plant

Additional Requirements for Air Construction Permit Applications

1.	Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
2.	Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
3.	Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1.	Identification of Applicable Requirements ☐ Attached, Document ID: _____ ☐ Not Applicable
2.	Compliance Assurance Monitoring ☐ Attached, Document ID: _____ ☐ Not Applicable
3.	Alternative Methods of Operation ☐ Attached, Document ID: _____ ☐ Not Applicable
4.	Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: _____ ☐ Not Applicable
5.	Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: _____ ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Not Applicable

EMISSIONS UNIT INFORMATION

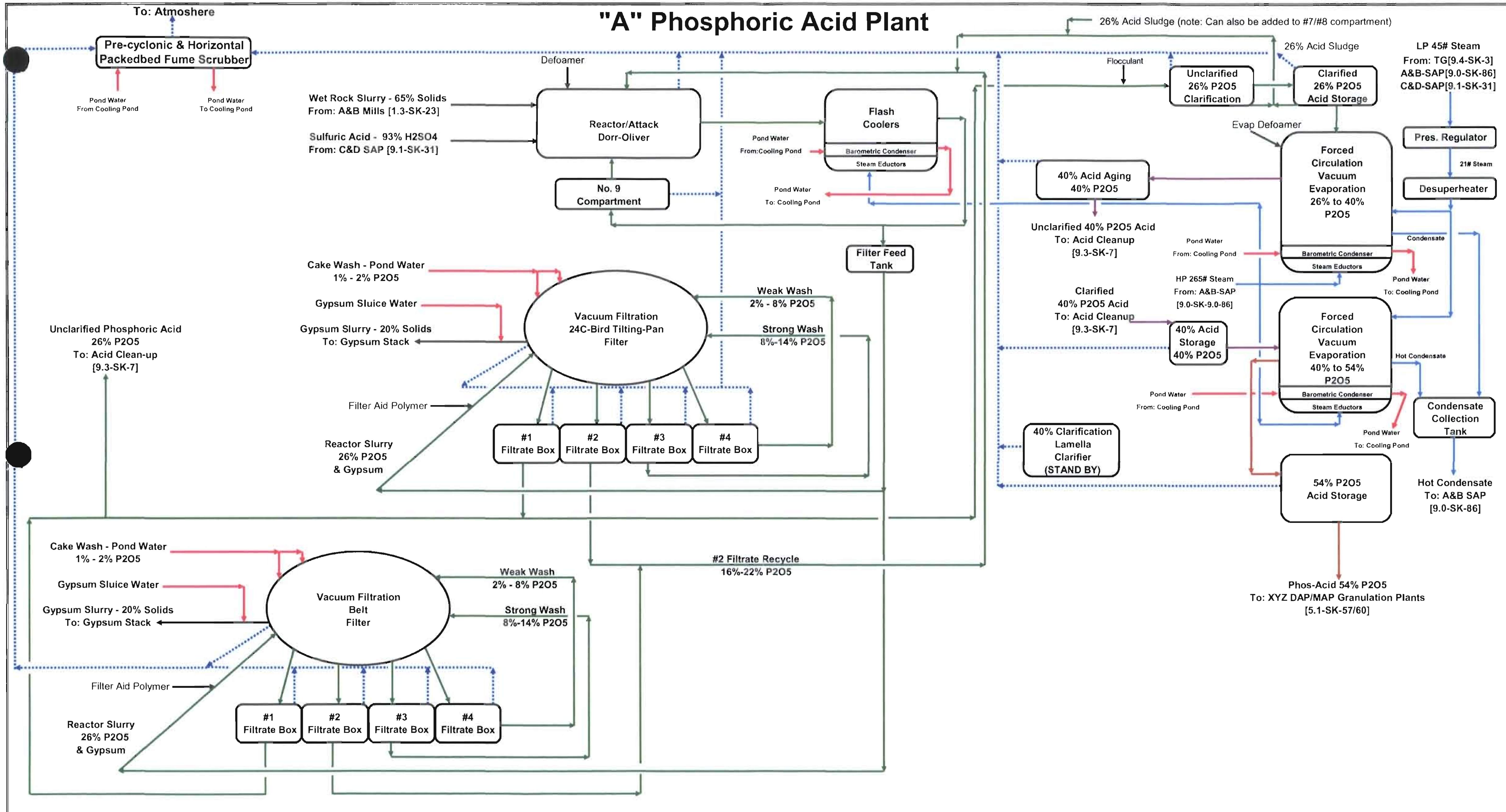
Section [1]

"A" Phosphoric Acid Plant

Additional Requirements Comment

ATTACHMENT CF-EU1-I1

PROCESS FLOW DIAGRAM



Legend		By	Date		Title	DWR. NO
Fume Ducts	Pond Water	Randy Charlot	08/28/01	**CF Industries, Inc.**	Attachment CF-EU1-I1	2.0-SK-97
26% Phos-Acid	Misc.	Josh McEwen	10/31/02	Plant City Phosphate Complex	"A" Phosphoric Acid Plant Block Flow Diagram	
40% Phos-Acid				P.O. Drawer L		
54% Phos-Acid				Plant City, Florida 33564		
Steam & Condensate				Phone: (813) 782-1591		
				Fax: (813) 788-9126	0537596/4.2/CF-EU1-I1.xcl	20-SK-97.XLS

ATTACHMENT CF-EU1-I3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

ATTACHMENT CF-EU1-I3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

"A" PHOSPHORIC ACID PLANT

CF INDUSTRIES INC., PLANT CITY FACILITY

Control equipment: Wet cyclonic scrubber followed by a packed bed scrubber with "Kimre" packing or equivalent packing.

Parameter	**Operating Range***
Scrubbing Liquid:	Process Water
Flow (gpm):	1,000-2,000
Pressure Drop Across Scrubber (Inches H_2O):	5-20

*Subject to change based on performance testing as allowed by current Title V permit.

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ 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.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **"B" Phosphoric Acid Plant**

3. Emissions Unit Identification Number: **009**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			**28**	☐ Yes ☒ No

9. Package Unit:
   Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description: **Packed bed scrubber with "Kimre" packing or equivalent packing.**
2. Control Device or Method Code(s): **013**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **2,530 TPD as 100% P_2O_5 input**		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate:	million Btu/hr	
4. Maximum Incineration Rate:	pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	**24** hours/day **52** weeks/year	**7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment: **Based on a modification to increase input rate to 105.4 TPH 100% P_2O_5.**		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **009**		2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **119** feet	7. Exit Diameter: **4.0** feet
8. Exit Temperature: **116**°F	9. Actual Volumetric Flow Rate: **34,300** acfm	10. Water Vapor: **8.4** %
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)
15. Emission Point Comment: **Exit temperature, actual volumetric flow, and water vapor based on recent compliance tests (October 2005).**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Chemical Manufacturing; Phosphoric Acid: Wet Process; Reactor**		
2. Source Classification Code (SCC): **3-01-016-01**	3. SCC Units: **Tons processed**	
4. Maximum Hourly Rate: **105.4**	5. Maximum Annual Rate: **923,304**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **Max annual rate based on maximum daily rate of 2,530 tons/day 100% P_2O_5 input.**		

Segment Description and Rate: Segment _____ of _____

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
FI	013		EL

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

<u>**Potential/Estimated Fugitive Emissions**</u>

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **FI**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **1.26** lb/hour **5.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.012 lb/ton of "equivalent P_2O_5 feed" from phosphate rock** Reference: **Proposed BACT**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **0.012 lb/ton x 105.4 TPH = 1.26 lb/hr** **1.26 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 5.5 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 3

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.012 lb/ton**	4. Equivalent Allowable Emissions: **1.26** lb/hour **5.5** tons/year
5. Method of Compliance: **EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed BACT**	

Allowable Emissions Allowable Emissions 2 of 3

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.40 lb/ton P_2O_5 input**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Description of Operating Method): **Rule 62-296.403(2), F.A.C. Allowable emissions applies to the entire facility.**	

Allowable Emissions Allowable Emissions 3 of 3

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.02 lb/ton P_2O_5**	4. Equivalent Allowable Emissions: **2.11** lb/hour tons/year
5. Method of Compliance: **EPA Method 13A or 13B**	
6. Allowable Emissions Comment (Description of Operating Method): **40 CFR 63.602(a)**	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 3

1. Parameter Code: **Mass Flow Rate**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Continuous monitoring of the mass flow of phosphorus-bearing feed material to the process. 40 CFR 63.605(a)(1)** **Continuous monitoring of rock slurry flow and periodic monitoring of slurry percent-solids and percent-P_2O_5.**	

Continuous Monitoring System: Continuous Monitor 2 of 3

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Continuous monitoring of pressure drop across the scrubbing system. 40 CFR 63.605(c)(1)**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 3 of 3

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Continuous monitoring of scrubbing liquid flow rate. 40 CFR 63.605(c)(2)**	

Continuous Monitoring System: Continuous Monitor ____ of ____

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: CF-EU2-I1 ☐ Previously Submitted, Date
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: CF-EU2-I3 ☐ Previously Submitted, Date
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable (construction application)
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable
6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____

   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____

   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____

   ☒ Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

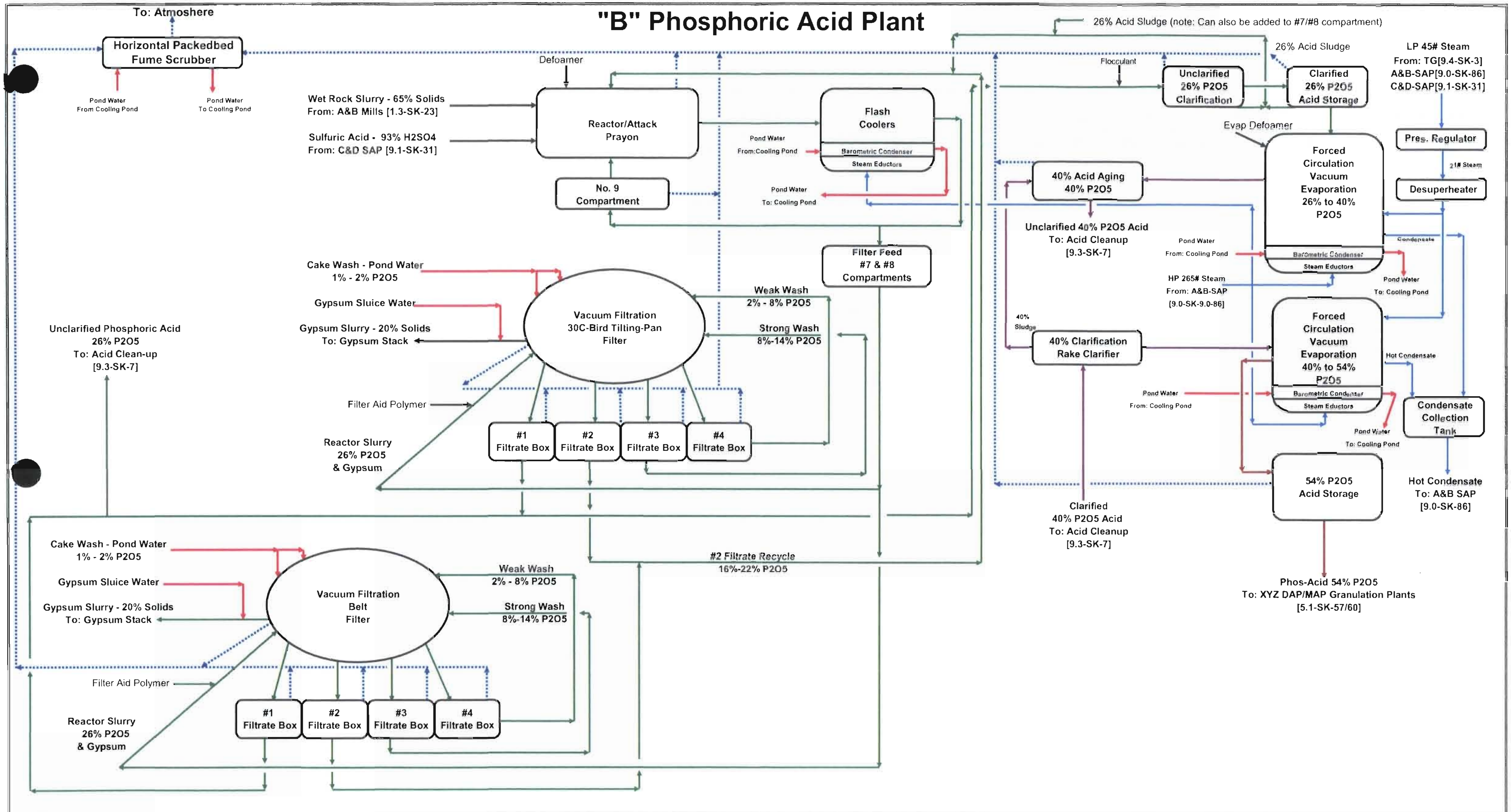
Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements ☐ Attached, Document ID: _____ ☐ Not Applicable
2. Compliance Assurance Monitoring ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: _____ ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Not Applicable

Additional Requirements Comment

ATTACHMENT CF-EU2-I1

PROCESS FLOW DIAGRAM



Legend		By	Date		Title	DWR. NO
Fume Ducts	Pond Water	Randy Charlot	08/28/01	CF Industries, Inc.	Attachment CF-EU2-I1	2.1-SK-119
26% Phos-Acid	Misc.	Josh McEwen	10/31/02	Plant City Phosphate Complex	"B" Phosphoric Acid Plant Block Flow Diagram	
40% Phos-Acid				P.O. Drawer L		
54% Phos-Acid				Plant City, Florida 33564		
Steam & Condensate				Phone: (813) 782-1591		
				Fax: (813) 788-9126		21-SK-119.XLS

ATTACHMENT CF-EU2-I3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

ATTACHMENT CF-EU2-I3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

"B" PHOSPHORIC ACID PLANT

CF INDUSTRIES INC., PLANT CITY FACILITY

Control equipment: Packed bed scrubber with "Kimre" packing or equivalent packing.

Parameter	**Operating Range***
Scrubbing Liquid:	Process Water
Flow (gpm):	1,000-2,000
Pressure Drop Across Scrubber (Inches H_2O):	2-15

*Subject to change based on performance testing as allowed by current Title V permit.

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☐ 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.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
   "A" Sulfuric Acid Plant (SAP)

3. Emissions Unit Identification Number: **003**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			**28**	☐ Yes ☒ No

9. Package Unit:
   Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

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

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

   038 – Two-stage Ammonia Scrubber

   014 – Brink's demister

2. Control Device or Method Code(s): **038, 014**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate: **1,600 TPD 100% H_2SO_4**	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	 **7** days/week **8,760** hours/year
6. Operating Capacity/Schedule Comment:	

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **"A" SAP**		2. Emission Point Type Code: **1**
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **110** feet	7. Exit Diameter: **5.0** feet
8. Exit Temperature: **83** °F	9. Actual Volumetric Flow Rate: **88,140** acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)
15. Emission Point Comment: **Flow rate and temperature updated based on recent compliance tests.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): **Industrial Processes; Chemical Manufacturing; Sulfuric Acid (Contact Process); Absorber at 99.9% Conversion**			
2. Source Classification Code (SCC): **3-01-023-01**		3. SCC Units: **Tons 100% H_2SO_4 Produced**	
4. Maximum Hourly Rate: **66.67**	5. Maximum Annual Rate: **584,000**		6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:		9. Million Btu per SCC Unit:
10. Segment Comment: **Maximum rates based on 1,600 TPD 100% H_2SO_4.**			

Segment Description and Rate: Segment _____ of _____

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

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
SO_2	038		EL
SAM	014		EL
NO_X			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **256.7** lb/hour **1,022.0** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **3.85 lb/ton 100% H_2SO_4** Reference: **Proposed BACT (3-hour)**	7. Emissions Method Code: **0**

8. Calculation of Emissions:

3-hour Average: 3.85 lb/ton x 1,600 TPD x 1 day/24 hr = 256.7 lb/hr
24-hour Average: 3.5 lb/ton x 1,600 TPD x 1 day/24 hr = 233.3 lb/hr
Annual: 3.5 lb/ton x 1,600 TPD x 1 day/24 hr x 8,760 hr/yr x 1 ton/2,000 lb = 1,022.0 TPY

9. Pollutant Potential/Estimated Fugitive Emissions Comment:
Potential hourly emissions represent 3-hour average (3.85 lb/ton). The 24-hour average emission rate is 3.5 lb/ton.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **3.85 lb/ton**	4. Equivalent Allowable Emissions: **256.7** lb/hour tons/year
5. Method of Compliance: **Annual stack test using EPA Method 8**	
6. Allowable Emissions Comment (Description of Operating Method): **Represents 3-hour average** **Proposed BACT**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **3.5 lb/ton**	4. Equivalent Allowable Emissions: **233.3** lb/hour **1,022.0** tons/year
5. Method of Compliance: **Continuous SO_2 monitor**	
6. Allowable Emissions Comment (Description of Operating Method): **Represents 24-hour average** **Proposed BACT**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **6.67** lb/hour **29.2** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.10 lb/ton 100% H_2SO_4** Reference: **Proposed BACT Limit**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **Hourly: 0.10 lb/ton x 1,600 TPD 1 day/24 hr = 6.67 lb/hr** **Annual: 6.67 lb/hr x 8,760 hr/yr x 1 ton/2,000 lb = 29.2 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.10 lb/ton**	4. Equivalent Allowable Emissions: **6.67** lb/hour **29.2** tons/year
5. Method of Compliance: **Annual stack test using EPA Method 8**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed BACT**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **NO_X**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **8.0** lb/hour **35.0** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.12 lb/ton 100% H_2SO_4** Reference: **Test data from similar plants**	7. Emissions Method Code: **0**
8. Calculation of Emissions: **Hourly: 0.12 lb/ton x 1,600 TPD x 1 day/24 hr = 8.0 lb/hr** **Annual: 0.12 lb/ton x 1,600 TPD x 1 day/24 hr x 8,760 hr/yr x 1 ton/2,000 lb = 35.0 TPY**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Emission factor based on test data from similar plants.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual EPA Method 9 stack test**	
5. Visible Emissions Comment: **Permit No. 0570005-007-AV, Rules 62-296.402(1)(b)1, 62-204.800 (NSPS), F.A.C., and 40 CFR 60.83(a)(2).**	

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 3

1. Parameter Code: **EM**	2. Pollutant(s): **SO_2**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **DuPont** Model Number: **460-002-901**	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Permit No. 0570005-017-AV, 40 CFR 60.84, and Rule 62-296.402(4), F.A.C.**	

Continuous Monitoring System: Continuous Monitor 2 of 3

1. Parameter Code: **Acid Production**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **Yokogawa AdMag** Model Number: **AE 100**	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Rule 62-297.310(5)(b), F.A.C., and Permit No. 0570005-017-AV.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 3 of 3

1. Parameter Code: O_2	2. Pollutant(s):
3. CMS Requirement: ☒ Rule ☐ Other	
4. Monitor Information... Manufacturer: **Yokogawa** Model Number: **ZR402 G**	Serial Number:
5. Installation Date:	6. Performance Specification Test Date: **02/27/04**
7. Continuous Monitor Comment: **NSPS Subpart H (40 CFR Part 60.84) and Permit No. 0570005-017-AV.**	

Continuous Monitoring System: Continuous Monitor _____ of _____

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **CF-EU3-I1** ☐ Previously Submitted, Date _____
2.	Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
3.	Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **PSD Report** ☐ Previously Submitted, Date _____
4.	Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **CF-EU3-I4** ☐ Previously Submitted, Date _____ ☐ Not Applicable (construction application)
5.	Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **CF-EU3-I5** ☐ Previously Submitted, Date _____ ☐ Not Applicable
6.	Compliance Demonstration Reports/Records ☐ Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ ☐ Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ ☐ To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ ☒ Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7.	Other Information Required by Rule or Statute ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.) ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable	
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable	

Additional Requirements for Title V Air Operation Permit Applications

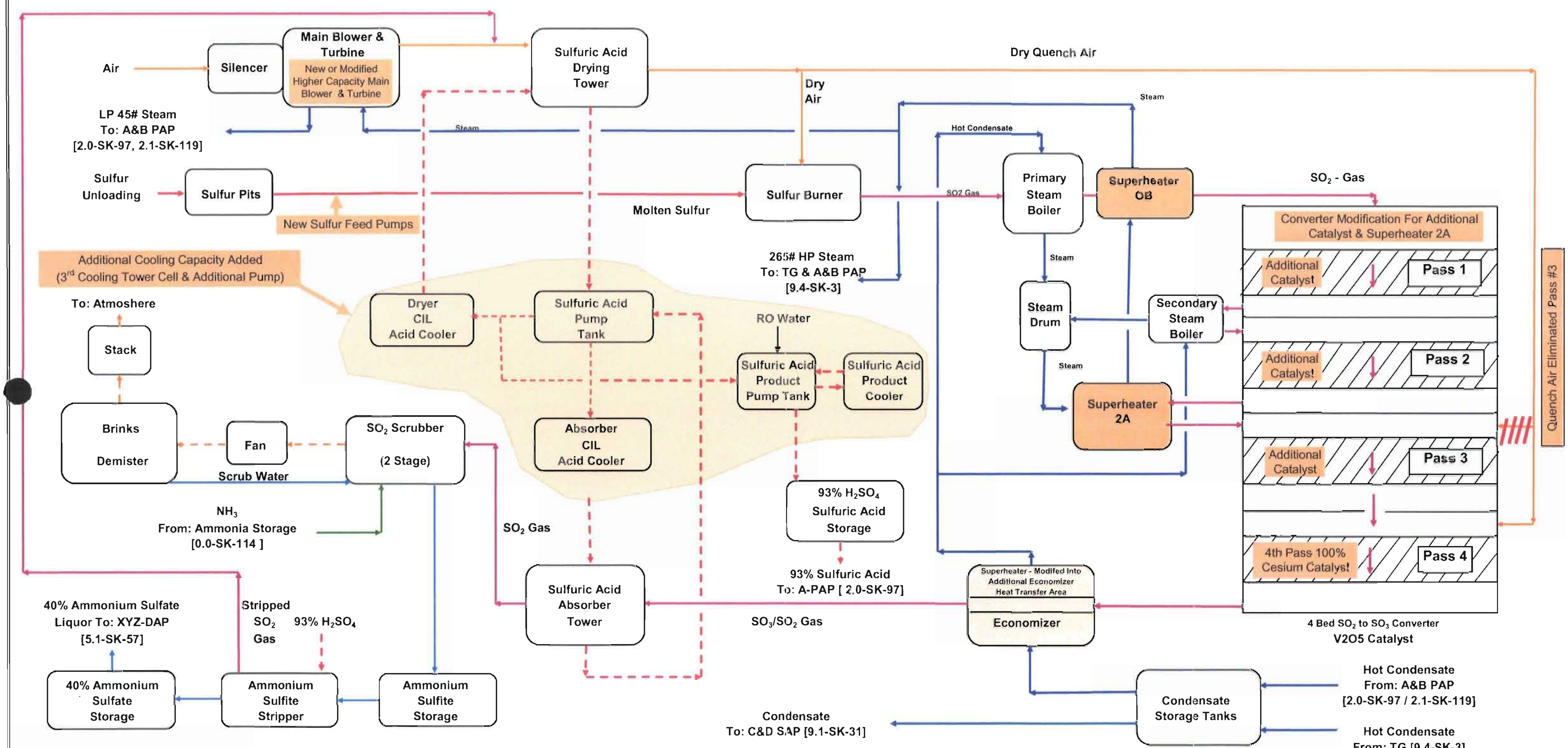
1. Identification of Applicable Requirements ☐ Attached, Document ID: _____ ☐ Not Applicable	
2. Compliance Assurance Monitoring ☐ Attached, Document ID: _____ ☐ Not Applicable	
3. Alternative Methods of Operation ☐ Attached, Document ID: _____ ☐ Not Applicable	
4. Alternative Modes of Operation (Emissions Trading) ☐ Attached, Document ID: _____ ☐ Not Applicable	
5. Acid Rain Part Application ☐ Certificate of Representation (EPA Form No. 7610-1) ☐ Copy Attached, Document ID: _____ ☐ Acid Rain Part (Form No. 62-210.900(1)(a)) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date: _____ ☐ Not Applicable	

Additional Requirements Comment

ATTACHMENT CF-EU3-I1

PROCESS FLOW DIAGRAM

Increased Sulfuric Acid Production A-SAP - Proposed Modifications



Legend		By	Date
Sulfuric Acid	Sulfur	Randy Charlot	8/28/01
Steam/Condensate	Ammonia	Randy Charlot	10/30/02
Process Gas SO_2/SO_3	Scrub Liquor	Randy Charlot	11/3/04
Air	Air + trace SO_2		
Other			

CF Industries, Inc.
Plant City Phosphate Complex
P.O. Drawer L
Plant City, Florida 33564
Phone: (813) 782-1591
Fax: (813) 788-9126

Title	DWR. NO
Attachment CF-EU3-I1	
A&B Sulfuric Acid Plants & Ammonium Sulfate	
Process Block Flow Diagram	9.0-SK-86
Proposed A-SAP Upgrades	

90-SK-86.XLS

ATTACHMENT CF-EU3-I4

MEMORANDUM OF UNDERSTANDING REGARDING BEST OPERATIONAL START-UP PRACTICES FOR SULFURIC ACID PLANTS

ATTACHMENT CF-EU3-I4

MEMORANDUM OF UNDERSTANDING REGARDING BEST OPERATIONAL START-UP PRACTICES FOR SULFURIC ACID PLANTS (NOT FEDERALLY ENFORCEABLE)

These Sulfuric Acid Plant Best Operation Start-up Practices will be made available in the control room at all times.

1. Only one sulfuric acid plant at a facility should be started up and burning sulfur at a time. There are times when it will be acceptable for more than one sulfuric acid plant to be in the start-up mode at the same time, provided the following condition is met. It is not acceptable to initiate sulfur burning at one sulfuric acid plant when another plant at the same facility is emitting SO_2 at a rate in excess of the emission limits imposed by the permit or rule, as determined by the CEM's emission rates for the immediately preceding 20 minutes.

2. A plant start-up must be at the lowest practicable operating rate, not to exceed 70 percent of the designated operating rate, until the SO_2 monitor indicates compliance. Because production rate is difficult to measure during start-up, if a more appropriate indicator (such as blower pressure, furnace temperature, gas strength, blower speed, number of sulfur guns operating, etc.) can be documented, tested, and validated, the Department will accept this in lieu of directly documenting the operating rate. Implementation requires the development of a suitable list of surrogate parameters to demonstrate and document the reduced operating rate on a plant-by-plant basis. Documentation that the plant is conducting start-up at the reduced rate is the responsibility of the owner or operator.

3. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices, in accordance with this agreement, to minimize emissions are followed. No plant shall be operated (with sulfur as fuel) <u>out</u> of compliance for more than three consecutive hours of start-up. Thereafter, the plant shall be shut down. The plant shall be shut down (cease burning sulfur) if, as indicated by the continuous emission monitoring system, the plant is not in compliance within three hours of start-up. Restart may occur as soon as practicable following any needed repairs or adjustments, provided the corrective action is taken and properly documented.

4. Cold Start-up Procedures

a. Converter

(1) The inlet and outlet temperature at the first two masses of catalyst shall be sufficiently high to provide immediate ignition when SO_2 enters the masses. In no event shall the inlet temperature to the first mass be less than 800 degrees Fahrenheit (°F) or the outlet temperature to the first two masses be less than 700°F. These temperatures are the desired temperatures at the time the use of auxiliary fuel is terminated.

(2) The gas stream entering the converter shall contain SO_2 at the level less than normal, and sufficiently low, to promote catalytic conversion to SO_3.

b. Absorbing Towers

The concentration, temperature, and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.

5. Warm Restart

a. Converter

The inlet and outlet temperatures of the first two catalyst masses should be sufficiently high to ensure conversion. One of the following three conditions must be met:

(1) The first two catalyst masses inlet and outlet temperatures must be at a minimum of 700°F; or

(2) Two of the four inlet and outlet temperatures must be greater than or equal to 800°F; or

(3) The inlet temperature of the first catalyst must be greater than or equal to 600°F and the outlet temperature greater than or equal to 800°F. Also, the inlet and outlet temperatures of the second catalyst must be greater than or equal to 700°F. Failure to meet one of the above conditions requires use of cold start-up procedures. To allow for technological improvements or individual plant conditions, alternative conditions will be considered by the Department in appropriate cases.

b. Absorbing Towers

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.

ATTACHMENT CF-EU3-I5

CF INDUSTRIES, INC., PLANT CITY PHOSPHATE COMPLEX
"A" AND "B" SULFURIC ACID PLANTS
SULFURIC ACID MIST EMISSIONS PREVENTION PLAN

Not federally enforceable

Attachment B
CF Industries, Inc.
Plant City Phosphate Complex
"A" and "B" Sulfuric Acid Plants

Sulfuric Acid Mist Emissions Prevention Plan

Scope of Work

Develop an "Acid Mist Control Preventive Maintenance Plan" for the CF Industries, Inc., Plant City Phosphate Complex "A" Sulfuric Acid Plant to insure mist emissions are maintained within allowable limits. U.S. EPA new source performance standards for sulfur burning sulfuric acid plants set sulfuric acid mist emission limits at 0.15 Lbs/Ton of sulfuric acid produced on a one hour average, and a maximum opacity of 10%. The Florida Department of Environmental Protection specified in the permit for this plant a sulfuric acid mist emission limit based on past performance, of 1.483 Lbs/Hr (0.027 Lbs/Ton) Maximum and 0.83 Lbs/Hr (0.015 Lbs/Ton) average or about 10% of the U.S. EPA level.

In Air Construction Permit Application No. 0570005-020-AC, CF Industries requested to also comply with this Sulfuric Acid Mist Emissions Prevention Plan for the "B" Sulfuric Acid Plant.

Background

Sulfuric acid is produced in the "A" and "B" Sulfuric Acid Plants using elemental sulfur as the raw material. The sulfur is oxidized (burned in a furnace) with dry air to produce sulfur dioxide. The sulfur dioxide is further oxidized (in the converter) to sulfur trioxide. The sulfur trioxide is absorbed (in the absorption tower) into concentrated (nominal 98.5%) sulfuric acid and reacted with free water contained in the acid to form sulfuric acid. The unconverted (residual) sulfur dioxide is removed from the gas to acceptable level in an ammonia-sulfur dioxide scrubbing tower where the sulfur dioxide is absorbed and reacted with ammonia and water to form an ammonium sulfite/bisulfite solution. The scrubbing system exit gas is slightly superheated and contains some ammonium sulfite/bisulfite particles and entrained solution. The gas then passes through high efficiency mist eliminators to remove ammonium sulfite/bisulfite particles and sulfuric acid mist before being released to atmosphere via the stack.

Upstream of the scrubber, sulfuric acid mist particles are formed in the absorption tower. Large particles, above three microns, are produced from entrainment of liquid droplets from the absorber packing surface. These particles are easily removed in the ammonia-sulfur dioxide scrubbing tower. Small sulfuric acid particles (sulfuric acid mist - less than one micron) are produced by the rapid cooling and condensation of sulfuric acid vapor at the inlet section of the absorption tower by a phenomenon known as "fog formation". These mist particles will pass through the ammonia-sulfur dioxide scrubber relatively untouched and are removed in a Brownian Diffusion high efficiency mist eliminator.

Operational Practices - A number of operational practices can significantly reduce or eliminate generation of fine sulfuric acid mist particles in the absorption tower. The following maintenance procedure cover normal operating conditions but do not address startup conditions. Startup conditions are specified in Attachment A.

1. Drying Tower Operation

Minimize the amount of water in the sulfuric trioxide gas stream entering the absorption tower by through drying of the inlet air to the plant, minimizing acid carryover from the drying tower (decomposes to water and sulfur trioxide on heating), and detecting steam/water leaks (from boilers, superheaters and economizers) into the gas stream.

a. Drying Tower - Insure Good Drying - Maintain sulfuric acid flow at the proper level, acid concentration to the drying tower above 97.5%, and acid inlet temperature to the tower below 170 °F to minimize the water partial pressure above the acid (water vapor in the gas leaving the tower) monitor acid concentration, temperature, acid circulating pump current (amps), and acid flow to the drying and absorption towers by instruments.

b. Drying Tower - Acid Carryover - Monitor the condition and performance of the drying tower entrainment separator to prevent sulfuric acid droplet carryover from the drying tower. Perform a stick test of the gas exit from the drying tower to monitor acid droplets in the gas stream on a regular basis - once per week minimum.

c. Steam/Water Leaks - The economizer is the coldest area in the gas flow path ahead of the absorption tower, so any excessive water vapor in the gas will result in acid condensation in the economizer. Monitor gas side (casing) drains for condensed sulfuric acid on a regular basis - once per shift minimum. Acid condensate formation indicates excessive water vapor in the gas stream. When this occurs, further investigation to determine the source of the water entering the gas should follow. Check drying tower acid concentration, temperature and acid flow. Perform a stick test for acid droplet carryover from the drying tower. Check steam equipment for leaks - check gas side vestibule blowdowns for indications of moisture.

2. Absorption Tower Operation

Operate the absorption tower outside the fog formation region. Operate the absorption tower to maximize sulfur trioxide absorption by maintaining proper acid concentration, temperature and flow.

a. Operate Outside Fog Formation Region - Fog formation is dependent on the concentrations of sulfur trioxide, water and sulfuric acid vapor in the gas stream and the partial pressure of sulfuric acid and water above the acid in the bottom, gas inlet area, of the absorption tower. Operate the plant at acid concentrations above 97.5% and at acid temperatures above 160 ^{o}F to reduce or eliminate fog formation. Monitor the acid concentration and temperature in the control room.

b. Maximize Sulfur Trioxide Absorption - Maintain sulfur trioxide absorption by maintaining the proper acid flow and acid concentration (above 97.5%) to the absorption tower. Monitor the acid circulating pump current (amps), acid flow and concentration in the control rooom.

3. High-Efficiency Mist Eliminator

Maintain the water spray wash of high efficiency mist eliminator elements (water spray at the inlet to the mist eliminator vessel) to saturate the gas and prevent ammonium sulfite/bisulfite/sulfate solids build-up. Build-up could cause restriction (plugging) of the gas passages in the mist eliminator elements, increasing pressure drop and causing excessive particle emissions to the stack.

Water Spray High Efficiency Mist Eliminator - A low mist eliminator gas pressure drops insures wash spray is effectively saturating the gas and preventing solids build-up on the elements (solids build-up is a slow process). Monitor high-efficiency mist eliminator's fan discharge pressure and water flow to the mist eliminator in the control room. Water flow to the sprays is ensured by maintaining a level in the high-efficiency mist eliminator's basin and monitoring the pumped flow from the Brink's basin to the scrubber.

4. Stack Opacity

Monitor the integrity of the high efficiency mist eliminator system. Monitor stack appearance by visual operator inspection on a regular basis (once per shift minimum). High stack opacity may indicate a leak in one of the elements, element flange leak, element seal leg problem, or failure of the glass fiber bed in one or more elements. Optimize operational practices items 1-3 above to minimize mist entering the mist eliminator, until the plant can be shutdown and the mist eliminator problem repaired.

Preventive Maintenance Practices - Maintenance inspection and testing during the plants regular maintenance outage (turnaround) insures proper performance of the high efficiency mist eliminator system for the next operating period.

During the turnaround the plant is purged, cooled and inspected, and any required maintenance repairs or replacements are performed. All areas of the plant are inspected. Boilers are inspected and hydrostatically tested for water tightness; towers are inspected, including acid distribution, flow, acid cooling, and entrainment separators; acid pumps are inspected, rebuilt, or in many cases, replaced with a spare; instruments are inspected and calibrated; etc. The high efficiency mist eliminator system is inspected and elements repaired or replaced as required.

Preventive maintenance tasks to be accomplished during the turnaround are as follows:

1. Inspect High Efficiency Mist Eliminator System - Inspection should include visual inspection of the elements, element to tubesheet flange connections, seal legs, and the inlet water spray system.

   a. Visually inspect each mist eliminator vessel and each element for unusual flow area, bulges in the element glass, loose flanges, flanges missing bolts or nuts, element wire failure, etc.

   b. Start inlet water spray and check the spray pattern and flow.

   c. Visually inspect element seal legs for damage.

2. Test System - Perform leak check of Element System - Use high intensity light in each element or use smoke generator (smoke bomb) to detect leaks in the mist eliminator system. Tighten flanges, repair seal legs, repair or replace any leaking or plugged elements as indicated and required.

PSD REPORT

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

TABLE OF CONTENTS

LIST OF APPENDICES

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
acfm	actual cubic feet per minute
AOR	Annual Operating Report
AQRV	air quality related values
b_{ext}	light-extinction coefficient
BACT	Best Available Control Technology
BPIP	Building Profile Input Program
CAA	Clean Air Act
CAC	cation exchange capacity
$CaCO_3$	limestone
$Ca(OH)_2$	hydrated lime
CALPUFF	California Puff
CBL	connective boundary layer
CEM	continuous emission monitoring
CF	CF Industries Inc.
CFR	Code of Federal Regulations
CO	carbon monoxide
DAP	diammonium phosphate
DAT	deposition analysis threshold
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
°F	degrees Fahrenheit
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
Fl	fluoride
FGD	flue gas desulfurization
FGR	flue gas recirculation
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
FLM	Federal Land Manager
FR	fuel reburning
GEP	Good Engineering Practice
gpm	gallons per minute

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

HAPs	hazardous air pollutants
HF	hydrogen fluoride
HNO_3	nitric acid
H_2O	water
H_2SO_4	sulfuric acid
HSH	highest, second-highest
ISCST3	Industrial Source Complex Short-term
IWAQM	Interagency Workgroup on Air Quality Models
kg/ha/yr	kilogram per hectare per year
km	kilometer
lb/hr	pounds per hour
lb/ton	pounds per ton
LEA	less excess air
LNB	low NO_x burners
MACT	Maximum Achievable Control Technology
MAP	monoammonium phosphate
Mm^{-1}	inverse megameter
MM4	Mesoscale Model-Generation 4
MW	megawatt
N	total nitrogen
NAAQS	National Ambient Air Quality Standards
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NH_3	anhydrous ammonia
NO_2	nitrogen dioxide
NO_3	nitric oxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
NSR	new source review
NTPR	Non-Thermal Plasma Reactor
NWA	National Wilderness Area
NWS	National Weather Service
O	oxygen

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

OFA	over-fire air
OH	hydroxyl
P_2O_5	phosphorous pentoxide
PAP	phosphoric acid plant
PM	particulate matter
PM_{10}	particulate matter less than or equal to 10 micrometers
ppm	parts per million
PRIME	Plume Rise Model Enhancement
PSD	prevention of significant deterioration
psig	pounds per square inch, gauge
S	total sulfur
SAM	sulfuric acid mist
SAP	sulfuric acid plant
SBL	stable boundary layer
SCR	selective catalytic reduction
SCRAM	Support Center for Regulatory Air Models
SIA	significant impact area
SIP	State Implementation Plan
SNCR	selective non-catalytic reduction
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SO_4	sulfate
TPD	tons per day
TPH	tons per hour
TPY	tons per year
TSP	total suspended particulate
TTN	Technical Transfer Network
$\mu g/m^3$	micrograms per cubic meter
$\mu g/m^2/s$	micrograms per square meter per second
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VMT	vehicle miles traveled

1.0 INTRODUCTION

CF Industries, Inc. (CF) is proposing to modify the "A" Sulfuric Acid Plant (SAP) and "A" and "B" Phosphoric Acid Plants (PAP) at its Plant City Phosphate Complex located in Plant City, Florida. The proposed changes will include improvements to allow the A SAP to produce sulfuric acid (H_2SO_4) at a maximum production rate of 1,600 tons per day (TPD) of 100-percent H_2SO_4. Currently, the A SAP is permitted to produce H_2SO_4 at a maximum rate of 1,300 TPD of 100-percent H_2SO_4. The proposed changes will also include modifications to increase the A and B PAP maximum permitted production rate of phosphoric acid by 20 percent. This will allow the A PAP input limit to increase to 1,699 TPD of 100-percent rock phosphorus pentoxide (P_2O_5). Currently, the A PAP has a maximum input limit of 1,416 TPD of 100-percent rock P_2O_5. This will also allow the B PAP input limit to increase to 2,530 TPD of 100-percent rock P_2O_5. Currently, the B PAP has a maximum input limit of 2,107 TPD of 100-percent rock P_2O_5.

Since the late 1980s, the production rate of phosphoric acid has exceeded the availability of H_2SO_4 manufactured onsite at the Plant City Phosphate Complex. One reason is that the B SAP has not been able to attain the current permitted production rate of 1,300 TPD, 100-percent H_2SO_4. Therefore, in order to maximize fertilizer production, purchased H_2SO_4 has been imported annually to make up the imbalance. However, the Plant City Complex can no longer purchase H_2SO_4 at a reasonable cost. The cost of purchased H_2SO_4 has increased, and diammonium phosphate (DAP) and monoammonium phosphate (MAP) cannot be economically manufactured from imported H_2SO_4.

As a result, CF is proposing several improvements to increase production capacity of the A SAP. The production rate increase will be accomplished through several plant improvements related to increasing air flow, increased process cooling, increasing catalyst loading, and utilizing high-efficiency cesium-promoted catalyst in the fourth pass of the converter.

The requested increase in the permitted production rates of the A and B PAPs will be facilitated by the installation of additional reactor flash cooling equipment and/or increased evaporation capacity equipment, and double-gypsum filtration.

Based on the potential increase in actual emissions of particulate matter (PM), particulate matter less than or equal to 10 micrometers (PM_{10}), sulfur dioxide (SO_2), sulfuric acid mist (SAM), nitrogen oxides (NO_x), and fluorides (Fl) due to the proposed modification, the project will constitute a major modification to a major stationary source, and thus trigger new source review (NSR) under the provisions of the prevention of significant deterioration (PSD) regulations.

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

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

This PSD permit application addresses these requirements and is organized into six additional sections, followed by the appendices. A description of the project, including air emission sources and pollution control equipment, is presented in Section 2.0. A regulatory applicability analysis of the proposed project is presented in Section 3.0. An ambient air monitoring analysis is presented in Section 4.0. The BACT analysis is presented in Section 5.0. The air quality impact analyses and air modeling analysis results are presented in Sections 6.0 and 7.0, respectively. Additional impact analyses, such as impacts on PSD Class I Areas and impacts due to associated growth, are presented in Section 8.0. Supporting documentation is presented in the appendices.

2.0 PROJECT DESCRIPTION

CF is proposing to modify its A SAP and A and B PAPs at the Plant City Phosphate Complex to increase the production capacity. The facility is currently operating under Permit No. 0570005-017-AV, issued October 13, 2005. The plant is located south of Zephyrhills and north of Plant City in northeastern Hillsborough County. An area map showing the facility location is presented in Figure 2-1. The following sections describe the project modifications to the A SAP and the A and B PAPs in more detail.

2.1 "A" Sulfuric Acid Plant

2.1.1 General

The Plant City Phosphate Complex operates two Monsanto double-absorption SAPs (C and D SAPs) permitted to produce 2,750 TPD of 100-percent H_2SO_4 and two Dorr-Oliver single-absorption SAPs (A and B SAPs) permitted to produce 1,300 TPD of 100-percent H_2SO_4 each. H_2SO_4, produced in the SAPs or purchased, is reacted with phosphate rock to produce phosphoric acid, which in turn is used for DAP and MAP fertilizer production.

Since the late 1980s, the production rate of phosphoric acid at the Plant City Complex has exceeded the availability of onsite manufactured H_2SO_4. Therefore, in order to maximize fertilizer production, up to 316,000 tons per year (TPY) of purchased H_2SO_4 has been imported annually to make up the imbalance.

One of the two Dorr-Oliver designed SAPs, the A SAP, was built in 1965 and is identical to the B SAP. The A SAP currently produces approximately 1,150 TPD of 100-percent H_2SO_4, although it is permitted to produce 1,300 TPD of 100-percent H_2SO_4. The plant historically has not attained this maximum permitted rate.

The A SAP utilizes single-absorption technology. In the A SAP, molten sulfur is combusted with dry air in the sulfur furnace. The resulting SO_2 gas is catalytically converted (further oxidized) to sulfur trioxide (SO_3) in a 4-bed converter tower. SO_3 is then absorbed in an approximately 98-percent H_2SO_4 stream to form a more concentrated acid in a single-stage absorption tower (final stage of production). Heat generated by the chemical reactions in the sulfur furnace and the 4-bed converter tower is recovered to operate two boilers and an economizer. The process results in emissions of SO_2

and SAM, as well as a small amount of NO_x. Refer to Attachment CF-EU3-I1 in the application form for a flow diagram of the process.

2.1.2 Proposed Modifications

The Plant City Complex can no longer purchase H_2SO_4 at a reasonable cost. In order to alleviate this problem, CF is proposing to increase the H_2SO_4 production capability of the A SAP to 1,600 TPD H_2SO_4. The production rate increase will be accomplished through several plant improvements relating to increasing air flow, increasing process cooling, increasing catalyst loading, and utilizing high-efficiency cesium-promoted catalyst in the fourth pass of the converter. The specific construction items in the scope of the project include:

- The existing main blower wheel and turbine will be modified or replaced in order to increase plant air flow.
- The existing superheater-economizer will be modified to improve heat transfer.
- In order to accommodate the increased rates, the existing sulfur feed pumps will be replaced with larger capacity pumps.
- The existing converter will be modified to maximize catalyst loading on all passes of the converter.
- The quench air injected after pass 2 will be eliminated. A new superheater will be installed between pass 2 and pass 3 to replace the process gas cooling lost with the removal of quench air.
- A new superheater will be installed after the primary boiler to provide additional cooling capacity. This will facilitate a 15 percent bypass around the boiler and result in a pressure drop savings.
- The No. 4 catalyst bed will be replaced with cesium catalyst. The cesium catalyst is necessary to reduce ammonium sulfate production at the higher H_2SO_4 production rates.
- The packing in the Absorption Tower will be replaced with a new design low-pressure drop packing.
- A third cell will be added to the existing cross flow cooling tower. The new cell will increase the existing cooling water system capacity from 10,000 to 15,000 gallons per minute (gpm). An additional cooling tower pump will be added, and the existing pumps will be upgraded.

2.1.3 Pollution Control Equipment and Air Emissions

SO_2 and SAM emissions from the A SAP are controlled by a two-stage ammonia scrubber and a Brink's demister. The ammonium sulfate solution generated in the scrubber is consumed in the DAP/MAP plants on-site. The current SO_2 emission limits for the A SAP are 5.6 pounds per ton (lb/ton) of 100-percent H_2SO_4, equivalent to 303.3 pounds per hour (lb/hr) (3-hour average), and 4.23 lb/ton of 100-percent H_2SO_4, equivalent to 229 lb/hr and 1,003 TPY (consecutive 12-month average). The current SAM emission limits are 0.3 lb/ton of 100-percent H_2SO_4, 1.43 lb/hr (hourly average), 0.83 lb/hr (consecutive 12-month average), and 3.49 TPY (consecutive 12-month average). There is currently no NO_x emission limit.

As part of the proposed project, CF is proposing to reduce permitted SO_2 emissions to 3.85 lb/ton of 100-percent H_2SO_4 as a 3-hour average and 3.5 lb/ton as a 24-hour average. These emission rates represent current BACT emission levels.

To achieve the proposed lower SO_2 emission limits, CF will need to implement changes to the A SAP. The primary change includes incorporation of cesium catalyst into the fourth pass of the converter, which will increase conversion efficiency while increasing the H_2SO_4 production rate. Higher conversion efficiency will allow the A SAP to increase production rates by increasing burner SO_2 concentrations, while at the same time lowering stack SO_2 emissions per ton, without generating excess ammonium sulfate that cannot be consumed on-site.

CF is proposing a SAM emission limit of 0.10 lb/ton of 100-percent H_2SO_4. No new technology will be necessary to meet this limit. The proposed emission limit represents current BACT emission levels.

The current and proposed allowable emission rates for the A SAP are summarized in Table 2-1. The table includes the existing permitted allowable emission rates and the proposed maximum emission rates for SO_2, SAM, and NO_x. The current actual annual average emissions for 2003 and 2004 from the A SAP are presented in Table 2-2. Current actual hourly emission rates are presented in Table 2-3, which are based on continuous emission monitoring (CEM) data.

2.1.4 Stack Data

The current and future stack geometry and operating data for the A SAP are presented in Table 2-4. The stack will not be physically modified as part of the proposed project.

2.2 "A" and "B" Phosphoric Acid Plants

2.2.1 General

CF Industries operates two PAPs, designated A PAP (EU 004) and B PAP (EU 009). Based on the current Title V operating permit (Permit No. 0570005-017-AV), A PAP has permitted input limits of 59 tons per hour (TPH) and 1,416 TPD of 100-percent rock P_2O_5, and B PAP has permitted input limits of 87.8 TPH and 2,107 TPD of 100-percent rock P_2O_5. Both A and B PAPs have federally enforceable emission limits for Fl. Both the A and B PAPs use control devices to comply with these emission limits.

Fl emissions from A PAP are controlled by a cyclonic scrubber followed by a horizontal, cross-flow packed-bed scrubber with "Kimre" packing. Fl emissions from B PAP are controlled by a horizontal, cross-flow packed-bed scrubber with "Kimre" packing. Both scrubber systems use pond water as the scrubbing liquid.

Refer to Attachments CF-EU1-I1 and CF-EU2-I1 in the application form for a flow diagram of the A PAP and B PAP processes, respectively. The Florida Department of Environmental Protection (FDEP) has determined that the Plant City complex is a major source of hazardous air pollutants (HAPs), with potential hydrogen fluoride (HF) emissions from the facility exceeding 10 TPY. As a result, the PAP plants are subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Phosphoric Acid Manufacturing Plants, which are contained in Title 40 of the Code of Federal Regulations (CFR) Part 63, Subpart AA.

2.2.2 Process Description

A modification is proposed for the PAPs to increase the production rate by 20 percent, which will be facilitated by the installation of additional reactor flash cooling equipment and/or increased evaporation capacity equipment, and double-gypsum filtration. The modification will increase the A PAP input limits to 70.8 TPH and 1,699 TPD of 100-percent rock P_2O_5. B PAP input limits will increase to 105.4 TPH and 2,530 TPD of 100-percent rock P_2O_5.

Sulfuric acid (93-percent H_2SO_4) from the four SAPs, or purchased H_2SO_4, enters the A and B PAPs along with wet phosphate rock. The A and B PAPs contain evaporators, reactors, clarifiers, vacuum systems, filtration systems, coolers, and storage tanks. The filter systems produce weak phosphoric acid (26-percent P_2O_5), which is sent to a flow-through tank and then to a clarifier. The weak acid is clarified and further processed in an evaporator, where the acid concentration is increased. The

26-percent P_2O_5 acid is evaporated through a forced circulation vacuum to 40-percent P_2O_5 and then again to 54-percent P_2O_5.

The condensate from the vacuum evaporators is collected and sent to the A and B SAPs. The 54-percent P_2O_5 acid is sent to the A, X, Y, and Z DAP/MAP plants. The acid is reacted with ammonia to produce fertilizer.

There are currently one reactor, two vacuum filtration filters, three acid storage tanks, and three clarifiers at each PAP. Each system employs a horizontal packed-bed scrubber to control Fl emissions.

There will be no new emission sources in this area.

2.2.3 Pollution Control Equipment and Air Emissions

Fl emissions from the A PAP are controlled using a cyclonic scrubber followed by a horizontal, cross-flow packed-bed scrubber with "Kimre" packing. The scrubber system uses pond water as the scrubbing liquid. The typical gas flow rate through the scrubbers is approximately 49,900 actual cubic feet per minute (acfm). The scrubber system's approximate normal operating parameters for liquid flow rate to the packed-bed scrubber is 1,000 to 2,000 gpm. Total gas pressure drop across the scrubbers is approximately 5 to 20 inches water (H_2O). The pollution control equipment for the A and B PAPs at the Plant City facility are summarized in Table 2-5.

Fl emissions from the B PAP are controlled by a horizontal, cross-flow, packed-bed scrubber with "Kimre" packing. The scrubber system uses pond water as the scrubbing liquid. The typical gas flow rate through the scrubber is approximately 34,300 acfm. The packed-bed scrubber's approximate normal water flow rate is 1,000 to 2,000 gpm, and normal pressure drop is 2 to 15 inches H_2O.

The A and B PAPs are currently subject to a Fl emission limit of 0.020 lb/ton as equivalent P_2O_5 feed (Permit No. 0570005-017-AV). The "equivalent P_2O_5 feed" means the quantity of phosphorus, expressed as phosphorus pentoxide, fed to the process as rock P_2O_5. As shown in Table 2-5, this limit corresponds to 1.18 lb/hr and 5.2 TPY of Fl for A PAP. For B PAP, the limit of 1.04 lb/hr and 4.6 TPY of Fl is equivalent to 0.012 lb/ton P_2O_5 at the maximum production rate.

As described earlier, CF is requesting a 20 percent production increase. CF is proposing to reduce the allowable hourly Fl emission rate at the A PAP even with the increased production rate. However, the allowable hourly Fl emission rate at the B PAP will increase slightly. Fl emissions from the A PAP will decrease to 0.85 lb/hr or 3.72 TPY, and Fl emissions from the B PAP will increase to 1.26 lb/hr or 5.54 TPY. To meet the lower limits, CF will begin injecting a small volume of fresh water into the scrubber liquid entering the scrubbers, as needed.

The current actual average annual emissions for 2003 and 2004 from the A and B PAPs are presented in Table 2-2. These emissions are based on Annual Operating Reports (AORs) submitted to FDEP. Refer to Appendix A for supportive information. The current actual hourly emission rates for the A and B PAPs are presented in Table 2-3. These rates were based on compliance test data.

2.2.4 Stack Data

Stack and operating data for the A and B PAPs are presented in Table 2-4. The stacks will not be physically modified as part of the proposed modification.

2.3 Plot Plan

A plot plan of the facility showing stack locations is presented in Figure 2-2.

2.4 Effects on Other Emission Units

Due to the proposed modification to the A SAP and A and B PAPs, several other emission units at the Plant City facility may potentially be affected (i.e., increased production rates or actual emission rates). The following sections describe the other emission units at CF and the potential to be affected by the proposed modifications.

2.4.1 Molten Sulfur Handling System

The Molten Sulfur Handling System supplies molten sulfur to the SAPs for the production of H_2SO_4. Although the potential amount of H_2SO_4 produced at the A SAP is increasing as part of this project, the Molten Sulfur Handling System is not considered to be affected by the proposed project. CF recently received a PSD construction permit to increase the maximum potential molten sulfur throughput from 930,750 TPY to 965,388 TPY to facilitate an H_2SO_4 production increase at the C and D SAPs (Permit No. 0570005-019-AC/PSD-FL-339). The maximum rate of 965,388 TPY for the Molten Sulfur Handling System is considered to be adequate to support the potential increase in the production rate for the A SAP as well.

Since the maximum permitted molten sulfur throughput rate will not be increasing, and since the Molten Sulfur Handling System has recently undergone PSD review in a separate application with the maximum rate, the Molten Sulfur Handling System is not considered to be affected by the proposed project.

2.4.2 B, C, and D Sulfuric Acid Plants

The increased production of the PAPs will be facilitated by the installation of additional reactor flash cooling equipment, increased evaporation capacity equipment, and increased amount of H_2SO_4 produced in the A SAP. Therefore, the H_2SO_4 production at the B, C, and D SAPs will not be affected due to the proposed project.

Currently, most of the H_2SO_4 required for the P_2O_5 production is manufactured onsite. The balance is imported from outside. However, since the potential H_2SO_4 production at the A SAP will be increasing as part of the proposed project, CF will need to import less H_2SO_4 in the future. Trucks and railcars are used to import purchased H_2SO_4. Therefore, fewer trucks will be driven onsite to import purchased H_2SO_4 in the future.

2.4.3 MAP/DAP Plants

The Plant City complex is permitted to operate four MAP/DAP plants: "A", "X", "Y" and "Z." The "A" MAP/DAP plant has been in cold shutdown for the past five years and was operational for only a few days in October 2005 for a compliance test. The Plant City complex plans to keep the "A" MAP/DAP plant in cold shutdown and start it only in case of emergency need. Therefore, there will be no change in operation of the "A" MAP/DAP plant due to the proposed project.

At the MAP/DAP plants, phosphoric acid is reacted with ammonia to produce fertilizer. Due to the increased production of phosphoric acid, the actual production of fertilizer is also expected to increase. However, the permitted capacities of the A, X, Y, and Z DAP/MAP plants will not change. Current actual annual emissions for 2003 and 2004 and the future potential annual emissions from the MAP/DAP plants are presented in Table 2-2. Current and future hourly emission rates are presented in Table 2-3. Future potential emissions from the MAP/DAP plants are based on Permit No. 0570005-017-AV. Current hourly emission rates are based on compliance test results. The dryer emission calculations are presented in Appendix A.

2.4.4 MAP/DAP Storage and Shipping

There are two storage and shipping operations at the Plant City complex – "A" and "B" shipping units. Fertilizer from the MAP/DAP plants is stored in the "A" and "B" storage buildings, and is loaded onto trucks and railcars for shipment. The "A" and "B" shipping units consist of sizing, screening, and conveying systems for transferring MAP/DAP from storage buildings to the truck and railcar loading operations. The maximum loading rate of the "A" and "B" shipping units are limited to 250 TPH and 500 TPH, respectively.

The "A" and "B" storage buildings are fugitive sources of PM emissions as fugitive dust is generated from the transfer points in the conveying system. Dust is controlled by the application of dust suppressant coating oil. PM emissions from some of the transfer points and sizing and screening are controlled by "A" and "B" shipping baghouses, one for each of units "A" and "B." The truck and railcar loading operations are also fugitive sources of PM emissions and are controlled by a second application of dust suppressants (coating oil). Due to the increased fertilizer production, more fertilizer will be handled by the "A" and "B" shipping units, and therefore, there will be an increase in actual PM emissions from these sources.

Current actual annual PM emissions for 2003 and 2004 and the future potential annual PM emissions from the "A" and "B" shipping units are presented in Table 2-2. Current and future hourly emission rates are presented in Table 2-3. Current actual emissions from the "A" and "B" shipping baghouses, truck and railcar loading, and the "A" and "B" storage building scrubber are based on AORs submitted to FDEP. Future emissions from the "A" and "B" shipping baghouses are based on Permit No. 0570005-017-AV. The "A" and "B" storage building scrubber is not operated and dust suppressant (coating oil) is now used to control fugitive PM emissions from these buildings. The future maximum fugitive PM emissions from the "A" and "B" storage and shipping buildings and from the truck and railcar loading operations are presented in Appendix A.

2.4.5 Truck Traffic

The Plant City Phosphate Complex uses trucks and railcars to ship fertilizer. Due to the 20 percent increase in phosphoric acid production from the proposed project, an increase in actual fertilizer production is expected. As a result, there will be an increase in truck and railcar traffic to ship the additional fertilizer.

Currently, some of the H_2SO_4 required for the phosphoric acid production is imported from outside and up to 316,000 TPY of H_2SO_4 have been imported in the past. However, due to the increased production of H_2SO_4 at the A SAP from the proposed project, less H_2SO_4 will need to be imported.

To facilitate this increase in H_2SO_4 production at A SAP, there will be an increase in the actual amount of molten sulfur imported to the facility, even though the existing molten sulfur handling capacity will not be increasing.

A detailed analysis was conducted for fugitive PM emissions from the change in the truck traffic pattern due to the proposed project, which is presented in Appendix A. The results of the emissions calculation show that there will be an increase of about 0.8 TPY in PM_{10} emissions due to the change in the truck traffic pattern for the proposed project.

TABLE 2-1
SUMMARY OF CURRENT AND PROPOSED PERMITTED EMISSION RATES FOR THE A SULFURIC ACID PLANT, CF INDUSTRIES, PLANT CITY

Pollutant & Averaging Time	Current Permit Limits[a]				Proposed Permit Limits[d]			
	Production Rate	Emission Rates			Production Rate	Emission Rates		
	(TPD)	(lb/ton H_2SO_4)	(lb/hr)	(TPY)	(TPD)	(lb/ton H_2SO_4)	(lb/hr)	(TPY)
	1,300				1,600			
SO_2								
3-Hour		5.6 [b]	303.3 [b]	--		3.85	256.7	--
24-Hour		--	--	--		3.5	233.3	--
Annual		4.23	229.0 [c]	1,003 [c]		--	--	1,022.0
SAM								
Hourly		0.3	1.43	--		0.10	6.67	--
Annual		--	0.83 [c]	3.49 [c]		--	--	29.2
NO_x								
Annual		[e]	[e]	[e]		0.12	8.0	35.0

[a] Based on Title V Permit No. 0570005-017-AV.

[b] Limits are based on a 3-hour rolling average.

[c] Limits are based on a consecutive 12-month rolling average.

[d] Based on proposed BACT limits.

[e] Currently, there is no permit limit for NO_x.

TABLE 2-2
ACTUAL ANNUAL (2003-2004) AND FUTURE POTENTIAL EMISSIONS FOR SOURCES AFFECTED BY THE PROPOSED PROJECT

Source Description	EU ID	Pollutant Emission Rate (TPY)							
		SO_2	NO_x	CO	PM	PM_{10}	VOC	SAM	Fluoride
2003 Actual Emissions[a]									
A Sulfuric Acid Plant	002	541.06	7.10 [g]	--	--	--	--	1.83	--
A Phosphoric Acid Plant	004	--	--	--	--	--	--	--	2.43
B Phosphoric Acid Plant	009	--	--	--	--	--	--	--	1.22
Z DAP/MAP Plant	011	0.01	0.42 [h]	1.77	16.54	16.54	0.12	--	3.83
X DAP/MAP Plant	012	0.00	0.13 [h]	0.56	8.48	8.48	0.04	--	1.08
Y DAP/MAP Plant	013	0.01	0.33 [h]	1.40	13.71	13.71	0.09	--	2.58
A & B Storage Buildings Scrubber	014	--	--	--	0.07	0.07	--	--	--
A Shipping Baghouse	015	--	--	--	0.79	0.79	--	--	--
B Shipping Baghouse	018	--	--	--	1.84	1.84	--	--	--
B Shipping Truck Loading Station	019	--	--	--	1.71	1.71	--	--	--
B Shipping Railcar Loading	020	--	--	--	1.71	1.71	--	--	--
2004 Actual Emissions[a]									
A Sulfuric Acid Plant	002	681.51	8.30 [g]	--	--	--	--	2.52	--
A Phosphoric Acid Plant	004	--	--	--	--	--	--	--	2.44
B Phosphoric Acid Plant	009	--	--	--	--	--	--	--	2.96
Z DAP/MAP Plant	011	0.01	0.36 [h]	1.50	13.84	13.84	0.10	--	2.67
X DAP/MAP Plant	012	0.00	0.09 [h]	0.39	13.68	13.68	0.03	--	3.05
Y DAP/MAP Plant	013	0.01	0.35 [h]	1.46	19.46	19.46	0.10	--	2.00
A & B Storage Buildings Scrubber	014	--	--	--	0.11	0.11	--	--	--
A Shipping Baghouse	015	--	--	--	0.99	0.99	--	--	--
B Shipping Baghouse	018	--	--	--	1.78	1.78	--	--	--
B Shipping Truck Loading Station	019	--	--	--	1.40	1.40	--	--	--
B Shipping Railcar Loading	020	--	--	--	2.34	2.34	--	--	--
Average 2003 & 2004 Actual Emissions									
A Sulfuric Acid Plant	002	611.285	7.70	--	--	--	--	2.17	--
A Phosphoric Acid Plant	004	--	--	--	--	--	--	--	2.43
B Phosphoric Acid Plant	009	--	--	--	--	--	--	--	2.09
Z DAP/MAP Plant	011	0.012	0.39	1.63	15.19	15.19	0.11	--	3.25
X DAP/MAP Plant	012	0.004	0.11	0.47	11.08	11.08	0.03	--	2.07
Y DAP/MAP Plant	013	0.010	0.34	1.43	16.59	16.59	0.09	--	2.29
A & B Storage Buildings Scrubber	014	--	--	--	0.09	0.09	--	--	--
A Shipping Baghouse	015	--	--	--	0.89	0.89	--	--	--
B Shipping Baghouse	018	--	--	--	1.81	1.81	--	--	--
B Shipping Truck Loading Station	019	--	--	--	1.55	1.55	--	--	--
B Shipping Railcar Loading	020	--	--	--	2.02	2.02	--	--	--
Future Potential Emissions									
A Sulfuric Acid Plant	002	1,022.00 [b]	35.04 [c]	--	--	--	--	29.20 [b]	--
A Phosphoric Acid Plant	004	--	--	--	--	--	--	--	3.72 [b]
B Phosphoric Acid Plant	009	--	--	--	--	--	--	--	5.54 [b]
Z DAP/MAP Plant	011	9.50 [d]	26.75 [d]	15.73 [d]	99.00 [e]	99.00 [e]	1.03 [d]	0.16 [d]	6.31 [e]
X DAP/MAP Plant	012	9.94 [d]	27.99 [d]	16.46 [d]	41.88 [e]	41.88 [e]	1.08 [d]	0.17 [d]	6.70 [e]
Y DAP/MAP Plant	013	11.00 [d]	30.97 [d]	18.21 [d]	67.00 [e]	67.00 [e]	1.19 [d]	0.19 [d]	9.60 [e]
A & B Storage Buildings	014	--	--	--	4.8 [d]	2.3 [d]	--	--	--
A Shipping Baghouse	015	--	--	--	21.9 [f]	21.9 [f]	--	--	--
B Shipping Baghouse	018	--	--	--	21.9 [f]	21.9 [f]	--	--	--
B Shipping Truck&Railcar Loading	019,020	--	--	--	5.7 [d]	2.7 [d]	--	--	--
A Shipping Truck&Railcar Loading		--	--	--	2.9 [d]	1.4 [d]	--	--	--

[a] From the 2003 and 2004 Annual Operating Reports, CF Industries, Plant City facility.

[b] Based on proposed BACT limits (see Tables 2-1 and 2-5).

[c] Based on 0.04 lb/ton H_2SO_4 from stack test data dated 8/25/93 and a 1.5 factor of safety.

[d] See Appendix A for calculations of potential emissions.

[e] Based on Title V Permit No. 0570005-017-AV.

[f] Based on Title V Permit No. 0570005-017-AV and derived from hourly emission rate and 8,760 hr/yr.

[g] Based on 0.04 lb/ton H_2SO_4 from stack test dated 8/25/93 and actual annual H_2SO_4 production.

[h] See Table A-8 for calculations of current actual NO_x emissions from "X", "Y", and "Z" DAP/MAP dryers.

Note: The "A" DAP/MAP plant is in cold shutdown status and there is no plan to activate it in the near future. Therefore, the "A" DAP/MAP plant is not affected by the proposed project.

TABLE 2-3
CURRENT ACTUAL AND FUTURE POTENTIAL HOURLY EMISSIONS FOR SOURCES AFFECTED BY THE PROPOSED PROJECT

Source Description	EU ID	SO_2 3-Hr (lb/hr)	SO_2 24-Hr (lb/hr)	CO (lb/hr)	PM_{10} (lb/hr)	SAM (lb/hr)	Fluoride (lb/hr)
Current Actual Hourly Emissions							
A Sulfuric Acid Plant	002	233.4 [a]	195.2 [b]	--	--	0.53 [c]	--
A Phosphoric Acid Plant	004	--	--	--	--	--	0.83 [d]
B Phosphoric Acid Plant	009	--	--	--	--	--	0.80 [e]
Z DAP/MAP Plant	011	0.0031 [c]	0.0031 [c]	0.43 [c]	6.75 [f]	--	1.30 [g]
X DAP/MAP Plant	012	0.0009 [c]	0.0009 [c]	0.13 [c]	3.63 [h]	--	0.79 [h]
Y DAP/MAP Plant	013	0.0027 [c]	0.0027 [c]	0.38 [c]	8.06 [i]	--	1.05 [j]
A & B Storage Buildings Scrubber	014	--	--	--	2.79 [c]	--	--
A Shipping Baghouse	015	--	--	--	0.43 [c]	--	--
B Shipping Baghouse	018	--	--	--	0.43 [c]	--	--
B Shipping Truck Loading Station	019	--	--	--	0.49 [c]	--	--
B Shipping Railcar Loading	020	--	--	--	0.64 [c]	--	--
Future Potential Hourly Emissions							
A Sulfuric Acid Plant	002	256.70 [k]	233.30 [k]	--	--	6.67 [k]	--
A Phosphoric Acid Plant	004	--	--	--	--	--	0.85 [k]
B Phosphoric Acid Plant	009	--	--	--	--	--	1.26 [k]
Z DAP/MAP Plant	011	2.17 [l]	2.17 [l]	3.59 [l]	22.60 [m]	0.04 [l]	1.44 [m]
X DAP/MAP Plant	012	2.52 [l]	2.52 [l]	4.17 [l]	13.75 [m]	0.04 [l]	2.20 [m]
Y DAP/MAP Plant	013	2.51 [l]	2.51 [l]	4.16 [l]	15.30 [m]	0.04 [l]	2.20 [m]
A & B Storage Buildings		--	--	--	0.52 [l]	--	--
A Shipping Baghouse	015	--	--	--	5.0 [m]	--	--
B Shipping Baghouse	018	--	--	--	5.0 [m]	--	--
B Shipping Truck&Railcar Loading	019,020	--	--	--	0.62 [l]	--	--
A Shipping Truck&Railcar Loading		--	--	--	0.31 [l]	--	--

[a] Based on the maximum 3-hr average emissions from CEM data dated 3/02/04.

[b] Based on the maximum 24-hr average emissions from CEM data dated 7/24/04.

[c] Based on the average actual annual emissions and actual operating hours for 2003 and 2004.

[d] Based on compliance test data of 6/17/2003.

[e] Based on compliance test data of 5/19/2004.

[f] Based on compliance test data of 3/10/2005.

[g] Based on compliance test data of 3/11/2003.

[h] Based on compliance test data of 4/20/2004.

[i] Based on compliance test data of 4/27/2004.

[j] Based on compliance test data of 4/29/2003.

[k] Proposed BACT limits.

[l] See Appendix A for calculations of potential emissions.

[m] Based on Title V Permit No. 0570005-017-AV.

TABLE 2-4
SUMMARY OF STACK AND OPERATING PARAMETERS AND LOCATIONS FOR THE PROJECT AFFECTED SOURCES

		Relative Location [a]				Stack and Operating Parameters								
		X		Y		Height		Diameter		Flow Rate	Exit Temperature		Velocity	
Emission Unit	ISCST3 ID	ft	m	ft	m	ft	m	ft	m	(acfm)	°F	K	ft/s	m/s
Current Operations														
"A" SAP	SAPA	-244.4	-74.5	58.5	17.8	110	33.53	5.0	1.52	80,950	83	301	68.7	20.94
"A" PAP	PAPA	-666.7	-203.2	46.3	14.1	85	25.91	5.0	1.52	49,900	120	322	42.4	12.91
"B" PAP	PAPB	-879.7	-268.1	255.0	77.7	119	36.27	4.0	1.22	34,300	116	320	45.5	13.87
"Z" DAP/MAP Plant	ZDMP	-1042.8	-317.9	150.6	45.9	136	41.45	9.0	2.74	169,800	140	333	44.5	13.56
"X" DAP/MAP Plant	XDMGP	-1118.7	-341.0	310.3	94.6	136	41.45	9.0	2.74	193,700	134	330	50.7	15.47
"Y" DAP/MAP Plant	YDMGP	-1074.8	-327.6	245.1	74.7	136	41.45	9.0	2.74	203,400	135	330	53.3	16.24
"A" and "B" Storage Building Scrubber	ABSTO	-1197.4	-365.0	-219.5	-66.9	86	26.21	9.0	2.74	175,000	80	300	45.8	13.97
"A" Shipping Baghouse	ASBAG	-1153.9	-351.7	-332.3	-101.3	90	27.43	1.7	0.52	8,500	110	316	62.4	19.02
"B" Shipping Baghouse	BSBAG	-1343.5	-409.5	-134.8	-41.1	35	10.67	2.0	0.61	10,000	120	322	53.1	16.17
"B" Truck/Railcar Loading [b]	BLOAD	-1489.5	-454.0	-134.5	-41.0	10	3.05	--	--	--	--	--	--	--
"A" Railcar/Truck Loading [b]	ALOAD	-1112.2	-339.0	-318.2	-97.0	10	3.05	--	--	--	--	--	--	--
Future Operations														
"A" SAP	SAPA	-244.4	-74.5	58.5	17.8	110	33.53	5.0	1.52	88,140	83	302	74.8	22.80
"A" PAP	PAPA	-666.7	-203.2	46.3	14.1	85	25.91	5.0	1.52	49,900	120	322	42.4	12.91
"B" PAP	PAPB	-879.7	-268.1	255.0	77.7	119	36.27	4.0	1.22	34,300	116	320	45.5	13.87
"Z" DAP/MAP Plant	ZDMP	-1042.8	-317.9	150.6	45.9	136	41.45	9.0	2.74	169,800	140	333	44.5	13.56
"X" DAP/MAP Plant	XDMGP	-1118.7	-341.0	310.3	94.6	136	41.45	9.0	2.74	193,700	134	330	50.7	15.47
"Y" DAP/MAP Plant	YDMGP	-1074.8	-327.6	245.1	74.7	136	41.45	9.0	2.74	203,400	135	330	53.3	16.24
"A" and "B" Storage Building [c]	ABSTO	--	--	--	--	--	--	--	--	--	--	--	--	--
"A" Shipping Baghouse	ASBAG	-1153.9	-351.7	-332.3	-101.3	90	27.43	1.7	0.52	8,500	110	316	62.4	19.02
"B" Shipping Baghouse	BSBAG	-1343.5	-409.5	-134.8	-41.1	35	10.67	2.0	0.61	10,000	120	322	53.1	16.17
"B" Truck/Railcar Loading [b]	BLOAD	-1489.5	-454.0	-134.5	-41.0	10	3.05	--	--	--	--	--	--	--
"A" Railcar/Truck Loading [b]	ALOAD	-1112.2	-339.0	-318.2	-97.0	10	3.05	--	--	--	--	--	--	--

[a] Relative to the C SAP stack, true north.

[b] Fugitive emissions, modeled as volume source.

[c] Fugitive emissions, modeled as volume source, "A" storage building represented by three volumes and "B" storage building represented by two volumes.

TABLE 2-5
SUMMARY OF POLLUTION CONTROL EQUIPMENT AND CURRENT AND PROPOSED PERMITTED EMISSION RATES FOR THE "A" AND "B" PHOSPHORIC ACID PLANTS

Source	EU ID	Control Equipment	Gas Flow Rate	Operating Hours	Maximum Process Rate (TPH P_2O_5)	Fluoride Emission Rate lbs/ton P_2O_5 feed	lb/hr	TPY
<u>Existing Phosphoric Acid Plants - Current Permit Limits</u> [a]								
A PAP	004	Cyclonic Scrubber and Packed-bed Scrubber [c]	49,900 acfm	8,760	59.0	0.020	1.18	5.2
B PAP	009	Packed-bed Scrubber [c]	34,300 acfm	8,760	87.8	0.020	1.04	4.6
Total--Existing Phosphoric Acid Plants					146.8		2.22	9.7
<u>Modified Phosphoric Acid Plants - Proposed Permit Limits</u> [b]								
A PAP	004	Cyclonic Scrubber and Packed-bed Scrubber [c]	49,900 acfm	8,760	70.8	0.012	0.85	3.7
B PAP	009	Packed-bed Scrubber [c]	34,300 acfm	8,760	105.4	0.012	1.26	5.5
Total--Modified Phosphoric Acid Plants					176.2		2.11	9.3

Notes: acfm = actual cubic feet per minute

[a] Based on Title V Permit No. 0570005-017-AV.

[b] Based on proposed BACT limit.

[c] Packed-bed scrubbers packed with "Kimre" packing or equivalent packing.

LEGEND

Property Boundary

REFERENCE

450 0 450 Meters

PROJECT

CF INDUSTRIES PLANT CITY

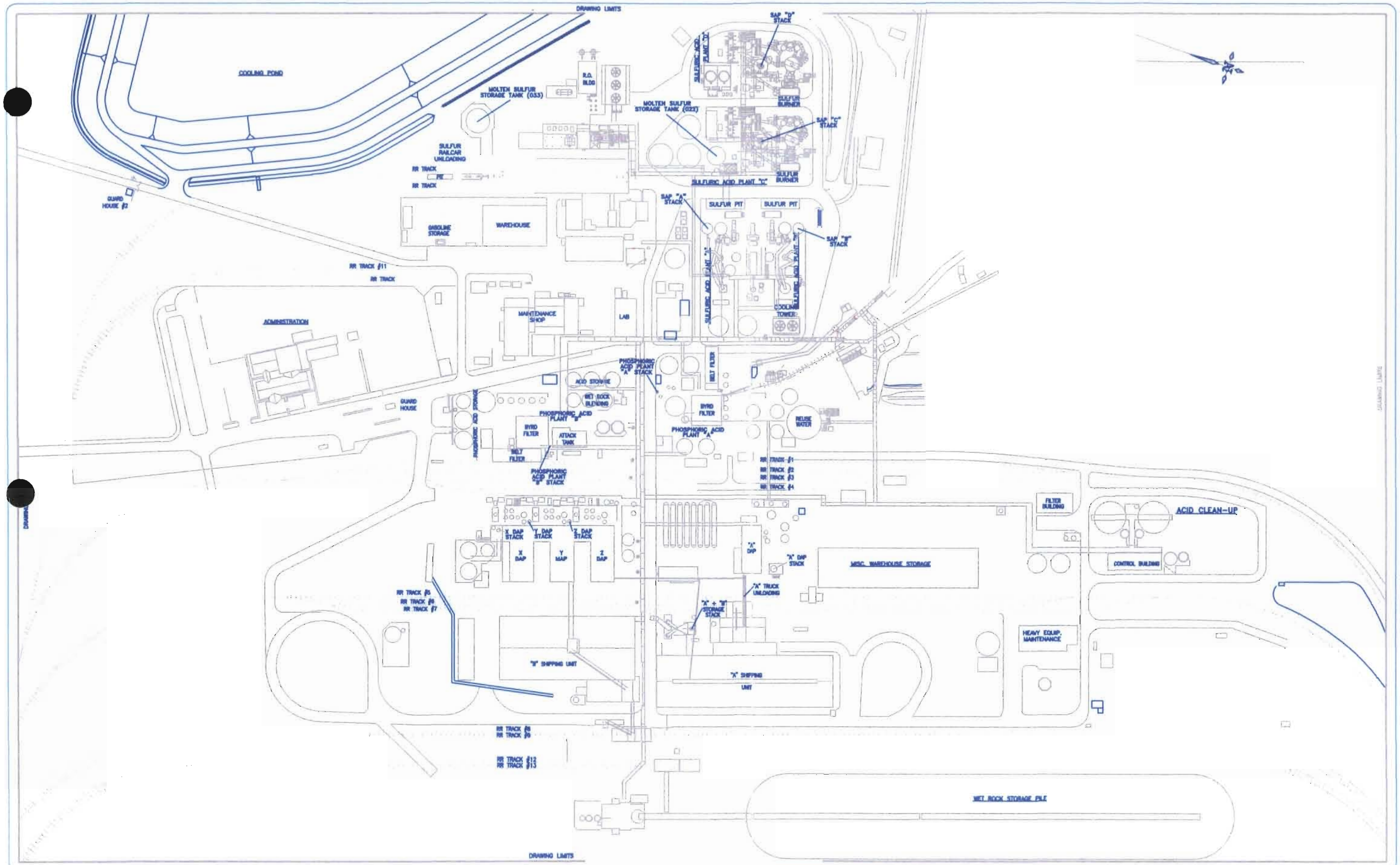
TITLE

AREA MAP SHOWING FACILITY LOCATION AND PROPERTY BOUNDARY

PROJECT No. 043-7632			SCALE AS SHOWN	REV. 0
DESIGN	SM	14 Mar. 2006	FIGURE 2-1	
GIS	AB	14 Mar. 2006		

Golder Associates
Gainesville, Florida

Project: P:\2004\0437632\GIS\Figure 2-1.mxd



For instructions for color plot setup see I:\design\scheds\dwd_org.cr2

By	Date	Rev. No.	Revision Description
RTN	6/20/96	0	Was dwg no. 0.0-A-011, Changed no., border, & created color plot
			Added AREAS I, II, III, & IV
RTN	10/18/96	1	Corrected offsite images south of Area I & @ Guard House #2
RTN	9/17/97	2	Added RO as built - modified Area I Battery Limits
MNJ	3/04/02	3	General Revisions

CF Industries, Inc. PLANT CITY PHOSPHATE COMPLEX

N/A	D00Z/001
AS BUILT	CFI
1200	6/19/94
4/04/02	1" = 100'

AREA LOCATION

FIGURE 2-2 – FACILITY PLOT PLAN

D-00-ZA-001 3

3.0 AIR QUALITY REVIEW REQUIREMENTS

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

3.1 National and State Ambient Air Quality Standards

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

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

3.2 PSD Requirements

3.2.1 General Requirements

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

A "major facility" is defined as any one of 28 named source categories that have the potential to emit 100 TPY or more or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new source is determined to be a "major facility" for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review. For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The PSD significant emission rates are shown in Table 3-2.

The EPA class designation and allowable PSD increments are presented in Table 3-1. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications are designated based on criteria established in the 1990 CAA Amendments. Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. The State of Florida has adopted the EPA class designations and allowable PSD increments for SO_2, PM_{10}, and nitrogen dioxide (NO_2) increments.

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

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

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

3.2.2 Control Technology Review

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

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

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

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

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

3.2.3 Source Impact Analysis

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

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

The EPA has proposed significant impact levels for PSD Class I Areas as follows:

SO_2	3-hour	1 μg/m^3
	24-hour	0.2 μg/m^3
	Annual	0.1 μg/m^3
PM_{10}	24-hour	0.3 μg/m^3
	Annual	0.2 μg/m^3
NO_2	Annual	0.1 μg/m^3

Although these levels have not been officially promulgated as part of the PSD review process and may not be binding for states in performing PSD review, the proposed levels serve as a guideline in assessing a source's impact in a PSD Class I Area. The EPA action to incorporate Class I significant impact levels in the PSD process is part of implementing the NSR provisions of the 1990 CAA Amendments. Because the process of developing the regulations will be lengthy, EPA believes that the proposed rules concerning the significant impact levels is appropriate to assist states in implementing the PSD permit process.

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

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

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

1. The actual emissions representative of facilities in existence on the applicable baseline date; and
2. The allowable emissions of major stationary facilities that commenced construction before January 6, 1975, for SO_2 and PM_{10} concentrations, or February 8, 1988, for NO_2 concentrations, but that were not in operation by the applicable baseline date.

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

1. Actual emissions from any major stationary facility on which construction commenced after January 6, 1975, for SO_2 and PM_{10} concentrations, and after February 8, 1988, for NO_2 concentrations; and
2. Actual emission increases and decreases at any stationary facility occurring after the baseline date.

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

1. The major facility baseline date, which is January 6, 1975, in the cases of SO_2 and PM_{10}, and February 8, 1988, in the case of NO_2;
2. The minor facility baseline date, which is the earliest date after the trigger date on which a major stationary facility or major modification subject to PSD regulations submits a complete PSD application; and
3. The trigger date, which is August 7, 1977, for SO_2 and PM_{10}, and February 8, 1988, for NO_2.

3.2.4 Air Quality Monitoring Requirements

In accordance with requirements of 40 CFR 52.21(m), any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-2).

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

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

3.2.5 Source Information/GEP Stack Height

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

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

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

$$Hg = H + 1.5L$$

where: Hg = GEP stack height,

H = Height of the structure or nearby structure, and

L = Lesser dimension (height or projected width) of nearby structure(s); or

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

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

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

3.2.6 Additional Impact Analysis

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

3.3 Nonattainment Rules

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

3.4 Emission Standards

3.4.1 New Source Performance Standards

The NSPS are a set of national emission standards that apply to specific categories of new sources. As stated in the CAA Amendments of 1977, these standards "shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated."

Federal NSPS exist for facilities producing phosphoric acid and phosphate fertilizer products (40 CFR 60, Subparts T through X). Specifically, Subpart T applies to wet-process PAPs. The NSPS apply to all facilities constructed or modified after October 22, 1974. Subpart T regulates Fl emissions from both the A and B PAPs.

3.4.2 NESHAPS for Source Categories

Maximum Achievable Control Technologies (MACT) standards applicable to Phosphoric Acid Manufacturing Plants are codified in Subpart AA of 40 CFR Part 63. Subpart AA is applicable to both the A and B PAPs. The MACT standards require certain monitoring requirements for existing sources subject to the rule.

3.4.3 Florida Rules

Both A and B PAPs are subject to the emission limitations of Rule 62-296.403(2) F.A.C., pertaining to Fl emissions from existing phosphoric acid processing plants.

3.5 Source Applicability

3.5.1 Area Classification

The project site is located in Hillsborough County, which has been designated by EPA and FDEP as an attainment or maintenance area for all criteria pollutants. Hillsborough County and surrounding counties are designated as PSD Class II areas for all criteria pollutants. The site is located about 69 km from a PSD Class I Area: the Chassahowitzka National Wilderness Area (NWA).

3.5.2 PSD Review

3.5.2.1 Pollutant Applicability

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

The net increase in emissions due to the proposed modification at the facility is shown in Table 3-3. The past actual and future potential emissions for all affected sources are based on information from Section 2.0. As shown, the net increase in emissions exceeds the PSD significant emission rates for SO_2, NO_x, PM/PM_{10}, SAM, and Fl. As a result, PSD review applies for these pollutants.

3.5.2.2 Source Impact Analysis

A source impact analysis was performed for SO_2, NO_x, PM, PM_{10}, SAM, and Fl emissions resulting from the proposed modification. The results of this analysis are presented in Section 7.0.

3.5.2.3 Ambient Monitoring

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

As shown in Table 3-4, the proposed modification's NO_x, impact is predicted to be below the applicable *de minimis* monitoring concentrations. As such, an exemption from submittal of preconstruction monitoring data is requested. Preconstruction ambient monitoring analyses are required for PM_{10} and SO_2. These analyses are presented in Section 4.0.

No air monitoring data are presented for SAM or Fl, since AAQS have not been established for either of these pollutants. Also, no *de minimis* monitoring level has been established for SAM.

3.5.2.4 GEP Stack Height Impact Analysis

No existing stacks at the CF facility currently exceed the *de minimis* GEP stack height of 213 feet. In addition, no new stacks are proposed as part of this project. Therefore, the proposed modification will comply with the GEP stack height regulations.

3.5.3 <u>Emission Standards</u>

3.5.3.1 New Source Performance Standards

The A and B PAPs are not currently subject to NSPS requirements. Subpart T of 40 CFR Part 60 applies to all PAPs constructed or modified after October 22, 1974. However, the NESHAP, Subpart AA, exempts sources from complying with the NSPS.

3.5.3.2 NESHAPs for Source Categories

MACT standards applicable to the CF facility are codified in Subpart AA of 40 CFR Part 63. Subpart AA is applicable to both the A and B PAPs. The Subpart AA MACT standards limit emissions of total Fl from both PAPs. The emission standard for the existing sources is 0.020 lb/ton P_2O_5 input.

The MACT standards require monitoring for wet scrubber emission control systems for existing sources subject to the rule. The scrubber monitoring requirements under Subpart AA are summarized below.

Plants using a wet scrubbing emission control system shall install, calibrate, maintain, and operate the following monitoring systems:

1. A monitoring system that continuously measures and permanently records the **pressure drop across each scrubber** in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of ±5 percent over its operating range.
2. A monitoring system that continuously measures and permanently records the **flow rate of the scrubbing liquid to each scrubber** in the process scrubbing system in 15-minute block averages. The monitoring system shall be certified by the manufacturer to have an accuracy of ±5 percent over its operating range.

For each source using a wet scrubbing emission control system and subject to emissions limitations for total Fl contained in this subpart, the source must establish allowable ranges for operating parameters for each scrubber in the process scrubbing system, using either of the following methodologies:

The allowable range for the daily averages is ±20 percent of the baseline average value determined from performance testing. The allowable range could be adjusted downward to ±10 percent based on test results. The baseline average value can be readjusted based on subsequent performance testing.

1. The source can establish, and provide to the Administrator for approval, allowable ranges for the daily averages based on performance testing. The source shall certify that the control devices and processes have not been modified subsequent to the testing upon which the data used to establish the allowable ranges were obtained. The owner or operator must request and obtain approval of the Administrator for changes to the allowable ranges. When a source using the methodology of this paragraph is retested, the owner or operator shall determine new allowable ranges of baseline average values unless the retest indicates no change in the operating parameters outside the previously established ranges.

However, the General Provisions of the MACT standards (40 CFR 63, Subpart A) provide for approval of an alternative monitoring method. Section 63.8(f) sets forth the requirements.

Section 63.8(f)(2) states, "After receipt and consideration of written application, the Administrator may approve alternatives to any monitoring methods or procedures of this part ..." The application may be submitted at any time provided the monitoring procedure is not the performance test method used to demonstrate compliance.

Additional requirements of the MACT standards include performance test and compliance provisions (40 CFR 63.606) and notification, recordkeeping, and reporting requirements (40 CFR 63.607). CF will comply with these requirements for both PAPs. CF has applied for and had approved an alternative monitoring plan to meet the MACT rule.

3.5.3.3 State of Florida Standards

The applicable State of Florida Fl emission limit for existing phosphoric acid processing plants or plant sections [Rule 62-296.403(2)] is 0.40 lb/ton P_2O_5 for the entire complex. The A and B PAPs at CF will comply with the Florida standards contained in Rule 62-296.403(2).

TABLE 3-1
NATIONAL AND STATE AAQS, ALLOWABLE PSD INCREMENTS, AND SIGNIFICANT IMPACT LEVELS (µg/m^3)

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

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

[a] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, $PM_{2.5}$ standards were introduced with a 24-hour standard of 65 µg/m^3 (3-year average of 98th percentile) and an annual standard of 15 µg/m^3 (3-year average at community monitors). Implementation of these standards is many years away. The ozone standard was modified to be 0.08 ppm for 8-hour average; achieved when 3-year average of 99th percentile is 0.08 ppm or less. FDEP has not yet adopted these standards.

[b] Short-term maximum concentrations are not to be exceeded more than once per year except for the PM_{10} AAQS (these do not apply to significant impact levels). The PM_{10} 24-hour AAQS is attained when the expected number of days per year with a 24-hour concentration above 150 µg/m^3 is equal to or less than 1. For modeling purposes, compliance is based on the sixth highest 24-hour average value over a 5-year period.

[c] Achieved when the expected number of days per year with concentrations above the standard is fewer than 1.

[d] Maximum concentrations.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978. 40 CFR 50. 40 CFR 52.21. Rule 62-204, F.A.C.

TABLE 3-2
PSD SIGNIFICANT EMISSION RATES AND *DE MINIMIS* MONITORING CONCENTRATIONS

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

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

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

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

Sources: 40 CFR 52.21.
Rule 62-212.210

TABLE 3-3
PSD APPLICABILITY ANALYSIS FOR THE PROPOSED CFI PLANT CITY PROJECT

Source Description	Pollutant Emission Rate (TPY)							
	SO_2	NO_x	CO	PM	PM_{10}	VOC	SAM	Fluoride
Potential Emissions From Modified/Affected Sources [a]								
A Sulfuric Acid Plant	1,022.0	35.0	--	--	--	--	29.20	--
A Phosphoric Acid Plant	--	--	--	--	--	--	--	3.72
B Phosphoric Acid Plant	--	--	--	--	--	--	--	5.54
Z DAP/MAP Plant	9.5	26.7	15.7	99.0	99.0	1.03	0.16	6.31
X DAP/MAP Plant	9.9	28.0	16.5	41.9	41.9	1.08	0.17	6.70
Y DAP/MAP Plant	11.0	31.0	18.2	67.0	67.0	1.19	0.19	9.60
A & B Storage Buildings	--	--	--	4.8	2.3	--	--	--
A Shipping Baghouse	--	--	--	21.90	21.90	--	--	--
B Shipping Baghouse	--	--	--	21.90	21.90	--	--	--
B Shipping Truck/Railcar Loading	--	--	--	5.7	2.7	--	--	--
A Shipping Truck/Railcar Loading	--	--	--	2.9	1.4	--	--	--
Total Potential Emission Rates	**1,052.43**	**120.75**	**50.40**	**265.08**	**258.08**	**3.30**	**29.71**	**31.87**
Actual Emissions from Current Operations [b]								
A Sulfuric Acid Plant	611.3	7.70	--	--	--	--	2.17	--
A Phosphoric Acid Plant	--	--	--	--	--	--	--	2.43
B Phosphoric Acid Plant	--	--	--	--	--	--	--	2.09
Z DAP/MAP Plant	0.01	0.39	1.63	15.19	15.19	0.11	--	3.25
X DAP/MAP Plant	0.00	0.11	0.47	11.08	11.08	0.03	--	2.07
Y DAP/MAP Plant	0.01	0.34	1.43	16.59	16.59	0.09	--	2.29
A & B Storage Buildings Scrubber	--	--	--	0.09	0.09	--	--	--
A Shipping Baghouse	--	--	--	0.89	0.89	--	--	--
B Shipping Baghouse	--	--	--	1.81	1.81	--	--	--
B Shipping Truck Loading Station	--	--	--	1.55	1.55	--	--	--
B Shipping DAP (Railcar Loading)	--	--	--	2.02	2.02	--	--	--
Total Actual Emission Rates	**611.33**	**8.54**	**3.53**	**49.22**	**49.22**	**0.23**	**2.17**	**12.13**
TOTAL CHANGE DUE TO PROJECT	**441.1**	**112.2**	**46.9**	**215.9**	**208.9**	**3.1**	**27.5**	**19.7**
Contemporaneous Emission Changes								
C and D Sulfuric Acid Plants PSD (1/04)	[c]	[c]	0.00	1.43	1.43	0.92	[c]	0.00
Total Contemporaneous Emission Changes	**0.00**	**0.00**	**0.00**	**1.43**	**1.43**	**0.92**	**0.00**	**0.00**
TOTAL NET CHANGE	**441.1**	**112.2**	**46.9**	**217.3**	**210.3**	**4.0**	**27.5**	**19.7**
PSD SIGNIFICANT EMISSION RATE	40	40	100	25	15	40	7	3
PSD REVIEW TRIGGERED?	Yes	Yes	No	Yes	Yes	No	Yes	Yes

[a] See future potential annual emissions from Table 2-2.
[b] Based on actual emissions for 2003 and 2004 from Table 2-2 (see also Appendix A).
[c] Denotes that PSD review was triggered, therefore all previous contemporaneous emission changes are wiped clean.

TABLE 3-4
PREDICTED IMPACTS DUE TO THE PROPOSED PROJECT COMPARED TO CLASS II SIGNIFICANT IMPACT LEVELS AND AMBIENT MONITORING DE MINIMIS LEVELS

Pollutant	Averaging Time	Maximum Concentration[a] (μg/m^3)	EPA Class II Significant Impact Levels (μg/m^3)	*De Minimis* Monitoring Concentration (μg/m^3)	Ambient Monitoring Review Applies?
Sulfur Dioxide (SO_2)	Annual	4.6	1	NA	NA
	24-hour	15.7	5	13	Yes
	3-hour	24.1	25	NA	No
Particulate (PM_{10})	Annual	2.7	1	NA	NA
	24-hour	18.5	5	10	Yes
Nitrogen Dioxide (NO_2	Annual	0.84	1	14	No
Fluorides	24-hour	1.4	NA	0.25	Yes

Note: NA = Not Applicable
[a] Highest concentration from significant impact analysis (see Section 7.0).

4.0 AMBIENT MONITORING ANALYSIS

4.1 Monitoring Requirements

In accordance with the requirements of 40 CFR 52.21(m) and Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility potentially would emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceeds the significant emission rate (see Table 3-1). As discussed in Section 3.1, SO_2, SAM, NO_x, PM/PM_{10}, and Fl require an air quality analysis to meet PSD preconstruction monitoring requirements for the proposed CF modification.

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

An exemption from the 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_{10} is 10 $\mu g/m^3$, 24-hour average; for NO_x is 14 $\mu g/m^3$, annual average; for SO_2 is 13 $\mu g/m^3$, 24-hour average; and for Fl is 0.25 $\mu g/m^3$, 24-hour average. The predicted increase in PM_{10}, NO_x, SO_2, and Fl concentrations due to the proposed modification only are presented in Section 7.0 and in Table 3-4. Since the predicted increases of PM_{10}, SO_2, and Fl impacts due to the proposed modification are greater than the *de minimis* monitoring concentration levels, a preconstruction air monitoring analysis must be conducted for these pollutants. A preconstruction air monitoring analysis is not required for NO_x. However, background concentrations for NO_x are presented in Section 4.5 to support the air dispersion modeling analysis.

No air monitoring data are presented for SAM and Fl, since AAQS has not been established for either pollutant.

4.2 SO_2 Ambient Monitoring Analysis

Presented in Table 4-1 is a summary of the existing ambient SO_2 data for monitors located in the vicinity of the CF Plant City facility. Data are presented for 2004 and 2005. As shown, four SO_2 monitors were operational in the vicinity of the Plant City facility during this period. Three of these stations are located in Hillsborough County and one of these is located in Polk County.

The monitors show that all of the ambient SO_2 concentrations were below the AAQS of 1,300 $\mu g/m^3$, maximum 3-hour average, 260 $\mu g/m^3$; maximum 24-hour average; and 60 $\mu g/m^3$, annual average. For purposes of an ambient SO_2 background concentration for use in the modeling analysis, the highest of the second-highest 24-hour and the highest annual average concentrations occurring over the 3-year period from the Plant City, One Raider Place, monitoring station, the closest monitor to the Plant City facility, were selected. These concentrations are 13 and 5.3 $\mu g/m^3$ for the 24-hour and annual averages, respectively. This monitor is likely impacted by several existing point sources that are already included explicitly in the modeling dispersion analysis. As a result, these background concentrations are conservatively high.

4.3 PM_{10} Ambient Monitoring Analysis

The PSD ambient monitoring guidelines allow the use of existing data to satisfy preconstruction review requirements. Presented in Table 4-2 is a summary of existing ambient PM_{10} data for monitors located in the vicinity of the CF Plant City facility. Data are presented for 2004 and 2005. As shown, eight PM_{10} monitors were operational in the vicinity of CF's Plant City facility during this period. Six of these stations are located in Hillsborough County and two are located in Polk County.

The monitors show that all of the ambient PM_{10} concentrations were below the AAQS of 150 $\mu g/m^3$, maximum 24-hour average, and 50 $\mu g/m^3$, annual average. For purposes of an ambient PM_{10} background concentration for use in the modeling analysis, the highest annual average concentration and the sixth-highest 24-hour average concentration occurring over the 3-year period at the closest site were selected. These concentrations are 22 and 37 $\mu g/m^3$, measured at the Brandon monitoring site. This monitor is likely impacted by several existing point sources that are already included explicitly in the modeling dispersion analysis. As a result, these background concentrations are conservatively high.

4.4 Fluoride Ambient Monitoring Analysis

There are no known existing Fl monitors in the vicinity of CF's Plant City facility. No AAQS for Fl emissions have been promulgated. Typically, preconstruction monitoring has not been required for pollutants for which no AAQS exist. However, potential effects of FL impacts are addressed in Section 8.0.

4.5 NO_2 Ambient Monitoring Analysis

Background NO_2 concentrations must be estimated to account for NO_2 sources, which are not explicitly included in the atmospheric dispersion modeling analysis. To estimate reasonable background NO_2 concentrations, a review of recent, available NO_2 monitoring data in the area of CF was performed. Presented in Table 4-3 is a summary of ambient NO_2 data available for 2004 and 2005, for the two closest monitors to the Plant City facility. Both stations are located in Hillsborough County; one in Plant City and one in Tampa.

The monitors show that ambient NO_2 annual average concentrations were well below the AAQS of 100 $\mu g/m^3$. For purposes of an ambient NO_2 background concentration modeling analysis, the highest annual average concentration occurring over the 2-year period at the closest station was selected. This concentration is 13 $\mu g/m^3$, measured in Plant City. This background is conservatively high, since it is likely impacted by several existing point sources, such as Tampa Electric's Big Bend and Gannon power stations, which are already included explicitly in the dispersion modeling analysis. These monitors are also impacted significantly by vehicular traffic in the Tampa area.

TABLE 4-1

SUMMARY OF SO_2 MONITORING DATA COLLECTED NEAR CF INDUSTRIES, PLANT CITY PHOSPHATE COMPLEX

County	Station ID	Monitor Location	Distance From CF Plant City (km)	Year	Number of Observations	Reported Concentration (ug/m^3) Highest 24-Hour	Second-Highest 24-Hour	Highest 3-Hour	Second-Highest 3-Hour	Annual
Hillsborough	12-057-4004	Plant City, One Raider Place	19	2005	6,483	16	13	39	34	5
				2004	6,483	16	13	61	59	5.3
Polk	12-105-0010	Mulberry, Anderson Road	36	2005	6,358	24	16	86	60	8
				2004	6,358	42	37	112	105	10
Hillsborough	12-057-0095	Tampa, 5012 Causeway Blvd.	37	2005	6,446	55	31	220	170	5
				2004	6,446	11	11	53	45	5.3
Hillsborough	12-057-1035	Tampa, Davis Island	41	2005	6,450	42	39	146	123	10
				2004	6,450	37	35	194	114	10.6

Source: FDEP Air Monitoring Report, 2003 through 2005.
EPA Air Data Monitor Value Report, 2003 through 2005.

TABLE 4-2
SUMMARY OF PM10 MONITORING DATA COLLECTED NEAR CF INDUSTRIES, PLANT CITY PHOSPHATE COMPLEX

						Reported Concentration (ug/m^3)				
						24-Hour Average				
County	Station ID	Monitor Location	Distance From CFI Plant City (km)	Year	Number of Observations	Highest	Second-Highest	Third-Highest	Fourth-Highest.	Annual Mean
Hillsborough	12-057-2002	Brandon, 2929 S. Kingsway Ave.	26	2005	45	37 (6)	36	32	29	20
				2004	60	42 (1)	40 (4)	33	30	20
				2003	58	42 (2)	41 (3)	38 (5)	35	22
Polk	12-105-2006	Mulberry, NW 4th Circle	34.7	2005	264	61	57	54	47	21
				2004	347	68	50	42	41	21
				2003	355	59	49	45	42	20
Polk	12-105-0010	Mulberry, Anderson and Pinecrest Road	36.4	2005	265	63	61	56	47	21
				2004	349	66	51	43	42	21
Hillsborough	12-057-0095	Tampa, 5012 Causeway Blvd.	37	2005	273	76	69	68	59	28
				2004	353	64	63	55	55	27
Hillsborough	12-057-1070	Tampa, 4702 Central Ave. (Seminole Adult Day School)	37	2005	272	75	71	71	68	29
				2004	362	75	62	56	55	28
Hillsborough	12-057-1002	Tampa, 1105 E. Kennedy Blvd.	39	2005	45	62	47	46	41	26
				2004	61	48	38	38	37	25
Hillsborough	12-057-1069	Tampa, 900 Harbour Island Blvd. (Athletic Club)	40	2005	43	42	36	36	33	22
				2004	59	43	42	35	34	22
Hillsborough	12-057-0066	Ruskin, Hwy 41 (Gibsonton)	40	2005	45	72	63	56	48	27
				2004	60	51	43	37	37	25

Note: Numbers appearing in parentheses represent rank of 24-hour average concentration (highest to sixth-highest).

Source: FDEP Air Monitoring Report, 2003 through 2005.
EPA Air Data Monitor Value Report, 2003 through 2005.

TABLE 4-3
SUMMARY OF NO_2 MONITORING DATA COLLECTED NEAR CF INDUSTRIES, PLANT CITY PHOSPHATE COMPLEX

						Reported Concentration (ug/m^3)		
County	Station ID	Monitor Location	Distance From CF Plant City (km)	Year	Number of Observations	Highest 1-Hour	Second-Highest 1-Hour	Annual Mean
Hillsborough	12-057-3002	Plant City, 1167 North Dover Road	24	2005	6,471	71	70	11
				2004	8,212	81	81	13
Hillsborough	12-057-1065	Tampa, 5121 W. Gandy Blvd.	50	2005	6,400	79	77	13
				2004	8,182	92	90	17

Source: FDEP Air Monitoring Report, 2003 through 2005.
EPA Air Data Monitor Value Report, 2003 through 2005.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

5.1 Requirements

The 1977 CAA Amendments established requirements for the approval of preconstruction permit applications under the PSD program. As discussed in Section 3.2.2, one of these requirements is that 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 "top-down" approach to BACT determinations.

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

In the case of the proposed project, only the A SAP and the A and B PAPs are being physically modified or undergoing a change in the method of operation. Therefore, only the A SAP and the A and B PAPs require a BACT analysis. The A SAP emits SO_2, SAM, and NO_x and the PAPs only emit Fl. Therefore, only Fl emissions from the PAPs and SO_2, SAM, and NO_x emissions from the A SAP require a BACT analysis. The BACT analyses are presented in the following sections.

5.2 Sulfur Dioxide Emissions from the A SAP

5.2.1 Proposed Control Technology

The A SAP utilizes single absorption technology. In the A SAP, molten sulfur is combusted with dry air in the sulfur furnace. The resulting SO_2 gas is catalytically converted (further oxidized) to SO_3 in a 4-bed converter tower. SO_3 is then absorbed in an approximately 98-percent H_2SO_4 stream to form a more concentrated acid in a single stage absorption tower (final stage of production). Heat generated by the chemical reactions in the sulfur furnace and the 4-bed converter tower is recovered to operate two boilers, and an economizer.

The A SAP currently utilizes a two-stage ammonia scrubber to control SO_2 emissions. The A SAP will be upgraded by incorporating cesium catalyst into the 4th pass of the converter. Cesium catalyst is similar to the traditional vanadium catalyst except that cesium salts are added to lower the activation temperature and increase SO_2 conversion efficiency. Higher conversion efficiency allows the plants to increase production rates by increasing burner SO_2 concentrations while at the same time lowering stack SO_2 emissions and limiting ammonium sulfate generation.

The proposed BACT for SO_2 is the continued use of the two-stage ammonia scrubber. The proposed BACT emission limit for SO_2 is 3.5 lb/ton, 100-percent H_2SO_4 as a 24-hour average.

On a 3-hour average, the proposed BACT emission rate is 3.85 lb/ton, 100-percent H_2SO_4. Both the proposed 24-hour and 3-hour emission limits are stricter than the NSPS limit of 4.0 lb/ton. This higher 3-hour average emission rate is necessary to account for plant process fluctuations and variability.

5.2.2 BACT Analysis

5.2.2.1 Previous BACT Determinations

A review was performed of previous SO2 BACT determinations for H_2SO_4 plants listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of these BACT determinations is presented in Table 5-1. Only determinations issued within the last 10 years are shown.

Previous BACT determinations have ranged from 3.5 lb/ton to 4.0 lb/ton, 100-percent H_2SO_4. All of these determinations were for double-absorption SAPs.

5.2.2.2 Control Technology Feasibility

The technically feasible SO_2 controls for the A SAP are shown in Table 5-2. As shown, there are six types of feasible SO_2 abatement methods. Each available technique is listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

5.2.2.3 Potential Control Method Descriptions

Sorbent Injection

Sorbent injection has been used on boilers and involves the injection of a dry sorbent into the furnace, economizer, or in the flue gas duct after the preheater where the temperature is about 300 degrees Fahrenheit (°F). In furnace injection, a finely grained sorbent limestone ($CaCO_3$) or hydrated lime [$Ca(OH)_2$] is distributed quickly and evenly over the entire cross section in the upper part of the furnace in a location where the temperature is in the range of 1,380 to 2,280°F. The sorbent reacts with SO_2 and O_2 to form $CaSO_4$. $CaSO_4$ is then captured in a particulate control device together with unused sorbent and fly ash. Temperatures over 2,280°F result in sintering of the surface on the sorbent, destroying the structure of the pores and reducing the active surface area.

In an economizer sorbent injection system, hydrated lime is injected into the flue gas stream near the economizer zone where the temperature is in the range of 570 to 1,200°F. At this temperature, SO_2 reacts with the sorbent to form $CaSO_3$.

In duct sorbent injection the aim is to distribute the sorbent evenly in the flue gas duct after the air preheater, where the temperature is about 300°F. At the same time, the flue gas is humidified with water. As with the furnace and economizer designs, the end products are collected in a particulate control device.

There are many factors that influence the performance of a duct sorbent injection process. These include sorbent reactivity, quantity of injected sorbent, relative humidity of the flue gas, gas and solids residence time in the duct, and quantity of recycled, unreacted sorbent from the particulate control device. The most efficient way of achieving good conditions is to establish a dedicated reaction chamber.

Although demonstrated on boilers, sorbent injection has never been used at a SAP to control SO_2. Nor is there a suitable injection location that would not interfere with the H_2SO_4 recovery process. Therefore, since this is not a proven technique for SO_2 control from a SAP, this technique was not considered further.

Process Modification

The most common process modification control technique applied to SAPs is the double-absorption process. In the double-absorption process, SO_2 is formed in the furnace (sulfur burner). The SO_2 is then converted to SO_3 gas in the primary converter stages and is sent to an interpass absorber where most of the SO_3 is removed to form H_2SO_4. The remaining unconverted SO_2 is forwarded to the final stages in the converter to convert much of the remaining SO_2 by oxidation to SO_3, whence it is sent to the final absorber for removal of the remaining SO_3. There are no byproducts or waste scrubbing materials created, only additional H_2SO_4.

SO_2 to SO_3 conversion efficiencies of 99.7 percent and higher are achievable, whereas most single-absorption plants have SO_2 conversion efficiencies ranging from only 95 to 98 percent. Furthermore, double-absorption permits higher converter inlet SO_2 concentrations than are used in single-absorption plants because the final conversion stages effectively remove any residual SO_2 from the interpass absorber. This type of SO_2 control would require a new converter and a second absorbing tower, to achieve the necessary conversion with the double-absorption process.

Gas Absorption/Wet Scrubbers

Absorption is a mass transfer operation in which one or more soluble components of a gas mixture are dissolved in a liquid that has low volatility under the process conditions. The pollutant diffuses from the gas into the liquid when the liquid contains less than the equilibrium concentration of the gaseous component. The difference between the actual and the equilibrium concentration provides the driving force for absorption. Devices that are based on absorption principles include wet scrubbers such as packed towers, plate columns, venturi scrubbers, and spray chambers. Specific applications of these technologies to SAPs are described below.

In cases where very low SO_2 emissions limits are required (i.e., substantially lower than NSPS limits), tail-gas scrubbing in addition to the double-absorption system have been employed. Hydrogen peroxide scrubbing has been employed at SAPs. In addition, ammonia scrubbing has been employed at some single-absorption SAPs (such as at CF's A and B SAPs).

In hydrogen peroxide scrubbing, dilute H_2SO_4 and hydrogen peroxide are circulated over a packed bed countercurrent to the stream of SO_2 containing tail-gas. SO_2 is absorbed in the solution where a rapid, high-yield reaction takes place to produce H_2SO_4. The acid produced in the scrubber becomes part of the plant's total production by blending with high-strength acid in the drying or absorbing towers. Thus, there is no by-product or purge stream to dispose of with this process. Although this technique has been applied to SAPs, the high cost of hydrogen peroxide makes this technique economically infeasible.

The ammonia scrubbing process uses anhydrous ammonia (NH_3) and water makeup in a 2-stage scrubbing system to remove SO_2 from acid plant tail gas. Excess ammonium sulfite-bisulfite solution is reacted with H_2SO_4 in a stripper to evolve SO_2 gas and produce an ammonium sulfate byproduct solution. The SO_2 is returned to the SAP while the solution is recycled to the MAP/DAP fertilizer production units.

As of 1979, one new plant (two units) and a new unit added to an existing plant were known to employ an ammonia scrubbing system for tail gas SO_2 emissions control. Ammonia scrubbing is the type of SO_2 control that is employed at CF's A SAP.

Molecular sieves are also known as Zeolite traps. Zeolites are naturally occurring rock composed of aluminum, silicon, and oxygen. Zeolite has a natural porosity because it has a crystal structure with windows, cages, and supercages. These internal voids, when engineered to have specific opening size ranges, can trap and hold a variety of molecules which enter the structural matrix. The trapped molecules are held in the cavities by physical and chemical bonding. Zeolites possess properties of attrition resistance, temperature stability, inertness to regeneration techniques, and uniform pore size which make them ideal absorbents. However, they lack the ability to catalyze the oxidation of SO_2 to SO_3 and, thus, cannot desulfurize flue-gases at normal operating temperatures.

Flue Gas Desulfurization

The processes that transform gaseous SO_2 from flue gas to primarily solid sulfur compounds that are collected for safe disposal or beneficial use are referred to as flue gas desulfurization (FGD) processes. Although similar in concept, these processes are characterized as wet or dry, and they differ as to the sorbents used and byproducts produced. Several FGD systems are described below.

Spray dryer FGD is one of the principal methods of SO_2 control used today. Calcium oxide (quick lime) mixed with water produces a calcium hydroxide slurry, which is injected into a spray dryer where it is dried by the hot flue gas and reacts with the gas to remove SO_2. The dry product is collected both at the bottom of the spray tower and in the downstream particulate removal device where more SO_2 may be removed. Pilot testing has indicated that SO_2 removal of 80 to 90 percent is possible, and over 90 percent removal is possible under certain conditions. However, a fabric filter may have to be added to maintain particulate emission standards. Since this option would require an additional particulate control device, this would be more expensive than the wet scrubbing options. Use of spray dryer FGD in a SAP has not been demonstrated.

The dual alkali SO_2 removal system is a regenerative process designed for disposal of wastes in a solid/slurry form. The process consists of three basic steps: gas scrubbing, a reactor system, and solids dewatering. The scrubbing system utilizes a sodium hydroxide and sodium sulfite solution. Upon absorption of SO_2 in the scrubber, a solution of sodium bisulfite and sodium sulfite is produced. The scrubber effluent containing the dissolved sodium salts is reacted outside the scrubber with lime or limestone to produce a precipitate of calcium salts containing calcium sulfate. The precipitate slurry from the reactor system is dewatered and the solids are deposed of in a landfill. The liquid fraction containing soluble salts is recirculated back to the absorber. Dual alkali systems can achieve efficiencies of 90 to 95 percent.

Wet FGD systems using lime or limestone scrubbing are very popular in the U.S. and are the predominant SO_2 control technology used by the utilities industry, for example. Other wet FGDs include forced or inhibited oxidation and magnesium-enhanced lime FGD. These systems create solid and liquid waste streams, which must be treated before disposal. SO_2 control efficiencies for wet limestone FGD range from 50 to 98 percent, depending on the type of device and design, with an average of 90 percent.

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

Oxidation

SO_2 oxidation with activated carbon is an alternative to double-absorption technology that has been applied to SAPs for SO_2 control. In this process, the dry gas leaving the final absorbing tower is humidified then passed through a reactor filled with activated carbon. The activated carbon oxidizes the SO_2 to H_2SO_4, which is retained in the pores of the carbon. Clean but wet tail-gas is discharged to the stack. Periodically, the carbon bed is regenerated by flushing with water. This produces a weak H_2SO_4 stream that can be recycled back to the contact plant as dilution water.

One application of this technology is the Centaur process, which uses low-temperature wet carbon catalysis/adsorption in place of the standard final pass and absorption tower. The Centaur process has been demonstrated on a pilot scale at a sulfur burning plant. Emissions as low as 1 lb SO_2 per ton of acid are theoretically possible. However, the process has not yet been optimized and might result in a separate excess weak H_2SO_4 stream (beyond plant water makeup needs), which might require treatment and disposal. Process optimization and building wastewater treatment facilities would delay expansion of the plant. Also, the high cost involved in building, maintenance, and operation of the wastewater treatment facility makes it a less favorable option.

EPA Review of Technologies

EPA's latest review of NSPS for H_2SO_4 plants (MITRE Corp., 1979) presents a comprehensive assessment of alternative control technologies for removing SO_2 from H_2SO_4 plant tail-gases. Alternative technologies identified included the double-absorption contact H_2SO_4 plant, sodium sulfite-bisulfite scrubbing, ammonia scrubbing, and molecular sieves. The study concluded that the best demonstrated control technology to reduce SO_2 emissions is the double-absorption H_2SO_4 plant. Nearly all of the SAPs built in the United States since 1971 have used the double-absorption process. However, the double-absorption system requires that the plant be constructed for this type of system, and the A SAP is an existing single-absorption plant. Ammonia scrubbing is an effective SO_2 control technique.

5.2.3 Economic Analysis

To achieve SO_2 emissions below those proposed for the A SAP single-absorption system, conversion from a single-absorption plant to a double-absorption plant or a different type of tail-gas scrubbing would be required. Even though double-absorption has been generally accepted as the best available control technology for new plants, according to the Air Pollution Engineering Manual, converting an existing plant to double-absorption is rarely justified economically. To convert a single-absorption plant to a double-absorption plant, another converter and absorbing tower will have to be added on the tail end of the single absorption plant, which would add considerable capital and operating costs to the present system. The tail-gas scrubbing systems can all achieve the same level of SO_2 control efficiency, and ammonia scrubbing is already employed at CF's A SAP.

To evaluate the cost-effectiveness of converting a single-absorption plant to a double-absorption plant, cost estimates for a converter and absorbing tower were developed. The complete system includes a converter, absorption tower, ancillary equipment, and all installation costs. A capital cost quote by Monsanto for two double-absorption plants at Plant City for the price of $16.2 million was used in the analysis. Based on economies of scale, the capital cost to construct only one double-absorption plant on the A SAP was estimated at $10 million. The cost quote was given in 1996, which was converted to 2005 dollars using the U.S. Department of Labor Bureau of Labor Statistics Producer Price Index for Chemical Manufacturing Industry. Also, the cost quote, which was for 1,300 TPD of H_2SO_4 production, was escalated for a 1,600-TPY production capacity. These factors resulted in a capital cost of $15.8 million. The cost analysis is presented in Table 5-3.

Annual operating costs were developed considering the annualized capital recovery cost and other direct and indirect operating costs, which are based on standard cost factors and engineering estimates. Capital recovery costs are based on an interest rate of 7 percent and a 20-year equipment life.

Baseline SO_2 emissions, for the purpose of determining the cost-effectiveness of adding a converter and absorption tower, is based on the proposed allowable SO_2 emissions of 3.5 lb/ton of H_2SO_4 produced, which can be achieved by the current single-absorption configuration and the ammonia scrubber control technology. Baseline annual emissions also reflect a production capacity factor. The production capacity factor is the ratio of average actual annual production for 2003 to 2004 and the maximum production capacity (i.e., 1,300 TPD of 100-percent H_2SO_4 at 365 days per year). If the plant is converted to a double-absorption plant, an SO_2 emission rate of 3.5 lb/ton H_2SO_4 can be achieved without the ammonia scrubber. Assuming an SO_2 removal efficiency of 90 percent, the ammonia scrubber will further reduce the SO_2 emission rate to 0.35 lb/ton H_2SO_4, which is a reduction of 737.6 TPY.

Based on the annualized cost of converting the existing single-absorption plant to a double-absorption plant of $3.3 million and an additional SO_2 removal of 737.6 TPY, the resulting cost-effectiveness is $4,469 per ton of SO_2 removed. This cost is considered to be unreasonable and infeasible for CF's A SAP.

5.2.4 Environmental Impacts

As shown in Tables 7-3 through 7-6, the maximum predicted SO_2 impacts for the proposed project are below the AAQS and PSD increments. Additional SO_2 control would result in an insignificant reduction of ambient impacts that are already below AAQS and PSD increments.

Some of the technically feasible control techniques have a negative environmental impact due to waste streams created or additional water or energy demands. For instance, SO_2 oxidation can create an excess weak H_2SO_4 stream and requires additional water for flushing of the carbon bed for regeneration. The primary environmental concern of using the wet scrubbing system is the process wastewater or waste sludge which is generated. These waste streams require proper treatment and disposal.

In a single-absorption process SAP, there are no byproducts or waste scrubbing materials produced. Therefore, there is very little environmental impact. The A SAP has a tail gas SO_2 control technology consisting of an ammonia scrubbing system, which produces an ammonium sulfate byproduct solution. The solution is used for the production of phosphate fertilizers and the liquid ammonium sulfate is sent to the MAP/DAP plants. However, the MAP/DAP plants cannot accommodate further increases in ammonium sulfate solution. As a result, any further increase in tail gas SO_2 scrubbing would negatively impact MAP/DAP product quality. Therefore, the excess would create a liquid ammonium sulfate stream, which must be disposed of.

5.2.5 Summary

The proposed BACT for SO_2 for the A SAP is the current single-absorption system with the ammonia scrubber. The proposed annual and 24-hour SO_2 limit is 3.5 lb/ton, 100-percent H_2SO_4, and the proposed 3-hour SO_2 limit is 3.85 lb/ton, 100-percent H_2SO_4. This is consistent with recent BACT determinations at existing plants.

There is currently no limit on a 24-hour basis. The proposed limits of 3.5 lb/ton on a 24-hour basis and 3.85 lb/ton on a 3-hour basis are more restrictive than the NSPS limit of 4.0 lb/ton H_2SO_4. The proposed 3-hour limit of 3.85 lb/ton is more restrictive than the current 3-hour limit of 5.6 lb/ton and the current annual limit of 4.23 lb/ton. CF is required to operate the SAP with some margin or safety factor to compensate for plant variability and upsets to ensure that the emission limit is not exceeded. Thus, a slightly higher 3-hour limit is needed to account for these fluctuations in emissions.

CF's proposed BACT of single-absorption process with ammonia scrubbing tail gas SO_2 control technology is reasonable, based on previous BACT determinations and the high cost of converting the single-absorption to a double-absorption process. Double-absorption has been generally accepted as the BACT for a new plant, but as shown in Table 5-3, it is not cost-effective to convert the existing single-absorption to a double-absorption process. Also, the proposed SO_2 emission limits, with its current single-absorption system with the ammonia scrubber, are consistent with the BACT emission limits of double-absorption plants.

5.3 Sulfuric Acid Mist Emissions from A SAP

5.3.1 Proposed Control Technology

CF is proposing the continued use of the Brink's demister to control SAM emissions at the A SAP. The proposed emission limit for the A SAP is 0.10 lb/ton, 100-percent H_2SO_4 produced. The SAM emissions prevention plan to ensure mist emissions are maintained within allowable limits is presented in Attachment CF-EU3-I5.

5.3.2 BACT Analysis

5.3.2.1 Previous BACT Determinations

As part of the BACT analysis, a review was performed of previous SAM BACT determinations for SAPs listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of the

BACT determinations for SAM emissions from SAPs is presented in Table 5-4. The SAM emission limits range from 0.10 to 0.15 lb/ton H_2SO_4. All of the previous BACT determinations have been based on mist eliminators.

5.3.2.2 Control Technology Feasibility

The only known technically feasible add-on SAM controls for SAPs are mist eliminators. There are several types of mist eliminators, including conventional packed fiber mist eliminators or demister pads, impaction based mist eliminators, and Brownian-type mist eliminators. These are described in more detail below.

5.3.2.3 Potential Control Method Descriptions

As previously stated, mist eliminators are the only known add-on SAM controls for SAPs. The different types of mist eliminators include the conventional packed fiber mist eliminator or demister pads, impaction based mist eliminators, and Brownian-type mist eliminators.

Acid mist removal from SAP tail gases is accomplished almost exclusively with packed fiber mist eliminators or demister pads. Although a small portion of the SO_3 that leaves the final absorber will be absorbed in fiber mist eliminators and demister pads, SO_3 emission control depends primarily on proper plant operation. A successful packed fiber tubular mist eliminator using treated glass fibers was developed in 1959, known as the Brinks mist eliminator. These devices capture particles using a combination of three different mechanisms: interception, impaction, and Brownian motion. Each mechanism operates most efficiently for a particular particle size. Together, they provide overall collection efficiencies that can exceed 99 percent depending on the inlet mist loading.

Demister pads are mesh pads designed to capture larger mist particles by the interception and impaction mechanisms. Sometimes a coalescing pad is used ahead of the demister pad to provide higher collection efficiency. Demister pads, with or without a coalescer section, are not able to collect submicron particles as efficiently as packed fiber demisters. Successful use of demister pads requires careful control of plant operating parameters to minimize internal mist formation.

Alternatives to the conventional mist eliminator are impaction based devices and Brownian-type devices. The Monsanto CS-type eliminator is an impaction-based product which is stated to remove approximately 100 percent of particles above 3 microns in diameter, and 50 to 95 percent of particles between 0.5 and 3 microns. In order to implement this type of control device, the final tower of a SAP would need to be modified (enlarged) at a considerable expense.

The Brownian-type mist eliminator is much more expensive that the impaction type. To implement this type of control device, the tower would also have to be modified to accommodate the larger size requirements, structural support, etc.

5.3.2.4 Economic Analysis

Alternative SAM controls are not economically feasible since the use of a different type of mist eliminator would result in very high capital costs since the towers would have to be modified considerably. Furthermore, a significant reduction in SAM emissions would not be achieved by employing an alternative type of mist eliminator, since current actual emissions are already low.

5.3.3 Summary

The proposed BACT for SAM emissions is the use of the existing Brink's demister in the A SAP. The proposed emission limit is 0.10 lb/ton H_2SO_4. This proposed emission limit is reasonable based on previous BACT determinations, and is consistent with currently established BACT, based on recent PSD permits.

A summary of the SAM emissions compliance test data for the A SAP from the last 5 years is presented in Table 5-5. The average for the last 5 years for the A SAP is 0.012 lb/ton H_2SO_4 produced, while the maximum compliance test result was 0.017 lb/ton H_2SO_4 produced. This demonstrates that the mist eliminators are achieving low SAM emission rates.

However, the increased production rate associated with the A SAP may lead to higher SAM emissions compared to historical emission rates. Therefore, a higher SAM emission limit, equal to the lowest BACT determination to date, is proposed as BACT for the A SAP.

In summary, the use of mist eliminators is consistent with all other previous BACT determinations and is reasonable based on current performance and economics.

5.4 Nitrogen Oxides Emissions from A SAP

5.4.1 Proposed Control Technology

The A SAP emits a small amount of NO_x emissions, which is a result of the combustion process. The proposed NO_x emissions from the A SAP at CF is 0.12 lb/ton 100-percent H_2SO_4 produced. The proposed BACT for NO_x is the existing combustion system and good combustion practices.

5.4.2 BACT Analysis

5.4.2.1 Previous BACT Determinations

As part of the BACT analysis, a review was performed of previous BACT determinations for SAPs listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. There are only two BACT emission limits for NO_x emissions listed on the Clearinghouse. The first one is for IMC-Agrico's South Pierce facility (PSD-FL-235, 09/17/97), and the second one is for CF Industries' construction permits for C and D SAPs (PSD-FL-339, 06/01/04). For both of these cases, BACT have been good combustion practice and the NO_x emission limit has been 0.12 lb/ton H_2SO_4.

5.4.2.2 Control Technology Feasibility

The technically feasible NO_x controls for the A SAP are shown in Table 5-6. As shown in the table, there are six types of NO_x abatement methods with various techniques of each method. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

5.4.2.3 Potential Control Method Descriptions

Using a Sorbent

- Absorbent in Combustion Chambers or Ducts -- Several methods are used to inject and remove absorbent. For the removal of NO_x, aqueous ammonia can be sprayed into the flue gas. In this system, the ammonia reacts with NO in the gas stream to produce ammonium nitrate. See below for a description of SNCR.

Oxidation of NO_x with Subsequent Absorption

- Inject Oxidant – The oxidation of nitrogen to its higher valence states makes NO_x soluble in water. When this is done a gas absorber can be effective. Oxidants that have been injected into the gas stream are ozone, ionized oxygen, or hydrogen peroxide.

- Non-Thermal Plasma Reactor (NTPR) – This technique generates electron energies in the gas stream that generate gas-phased radicals, such as hydroxyl (OH) and atomic oxygen (O) through collision of electrons with water and oxygen molecules present in the flue gas stream. In the flue gas stream, these radicals oxidize NO_x to form nitric acid (HNO_3), which can then be condensed out through a wet condensing precipitator.

  These techniques have not been demonstrated on any SAPs. Therefore, these techniques were not considered further.

Chemical Reduction of NO_x

- Selective Catalytic Reduction (SCR) – SCR uses a catalyst to react injected ammonia to chemically reduce NO_x. The catalyst has a finite life in flue gas and some ammonia slips through without being reacted. SCR has historically used precious metal catalysts, but can now also use base metal and zeolite catalyst materials. The optimum temperatures for the SCR process range from 480 to 800°F. The exhaust temperature from the SAPs is approximately 150 to 200°F, which is much lower than the temperatures required for the SCR system. Therefore, this control technique is considered technically infeasible.

- Selective Non-Catalytic Reduction (SNCR) – In SNCR, ammonia or urea is injected within the boiler or in ducts in a region where temperature is between 1,650 and 2,010°F. This technology is based on temperature ionizing the ammonia or urea instead of using a catalyst or non-thermal plasma. The temperature window for SNCR is very important because outside of it either more ammonia slips through the system or more NO_x is generated than is being chemically reduced. SNCR has never been demonstrated on A SAP, and NO_x emissions are relatively low. Therefore, this control technique was considered technically infeasible.

- $SCONO_x$ Catalytic Absorption System – The $SCONO_x$ system utilizes a single catalyst for the reduction of carbon monoxide (CO) and NO_x without the use of ammonia, unlike conventional catalytic units which require two separate catalysts. Conventional systems use an oxidation catalyst for the removal of CO and an SCR catalyst for the reduction of NO_x with the use of ammonia. The system can operate effectively over a wide operating temperature range of 450 to 700°F. Although the $SCONO_x$ technology is capable of operating at temperatures as low as 300°F with some additional equipment and changes to the $SCONO_x$ operating process, the exhaust temperature of the SAPs is considerably lower, between 150 to 200°F. Therefore, this control technique is considered technically infeasible.

Reducing Residence Time at Peak Temperature

- Air Staging of Combustion – Combustion air is divided into two streams. The first stream is mixed with fuel in a ratio that produces a reducing flame. The second stream is injected downstream of the flame and creates an oxygen-rich zone.

- Fuel Staging of Combustion -- This is staging of combustion using fuel instead of air. Fuel is divided into two streams. The first stream feeds primary combustion that operates in a reducing fuel-to-air ratio. The second stream is injected downstream of primary combustion, causing the net fuel to air ratio to be slightly oxidizing. Excess fuel in the primary combustion zone dilutes heat to reduce temperature. The second stream oxidizes the fuel while reducing the NO_x to N_2.

- Inject Steam – Injection of steam causes the stoichiometry of the mixture to be changed and dilutes calories generated by combustion. These actions cause combustion temperature to be lower, and in-turn reduces the amount of thermal NO_x formed.

Reducing Peak Temperature

- Flue Gas Recirculation (FGR) – Recirculation of cooled flue gas reduces combustion temperature by diluting the oxygen content of the combustion air and by causing heat to be diluted in a greater mass of flue gas. Heat in the flue gas can be recovered by a heat exchanger. This reduction of temperature lowers the thermal NO_x concentration that is generated.

- Over-Fire Air (OFA) – When primary combustion uses a fuel-rich mixture, use of OFA completes the combustion. Because the mixture is always off-stoichiometric when combustion is occurring, the temperature is reduced. After all other stages of combustion, the remainder of the fuel is oxidized in the OFA.

- Less Excess Air (LEA) – Excess airflow combustion has been correlated to the amount of NO_x generated. Limiting the net excess airflow can limit NO_x content of the flue gas.

- Combustion Optimization – Combustion optimization refers to the active control of combustion. The active combustion control measures seek to find optimum combustion efficiency and to control combustion at that efficiency.

- Low NO_x Burners (LNB) – A LNB provides a stable flame that has several different zones. For example, the first zone can be primary combustion. The second zone can be Fuel Reburning (FR) with fuel added to chemically reduce NO_x. The third zone can be the final combustion in low excess air to limit the temperature.

Add-on NO_x control equipment is not known to be applied on any H_2SO_4 plant. The only known NO_x control technique applied to SAPs is good combustion practices. Therefore, none of the add-on control techniques were considered further.

5.4.3 Economic Analysis

The maximum proposed NO_x emissions from the A SAP is very low; 0.12 lb/ton H_2SO_4. There are no known add-on NO_x control techniques that have been applied to SAPs. Add-on technology would have a significant economic impact on CF and would not result in significant emission reductions.

5.4.4 Environmental Impacts

As shown in Table 7-2, the maximum predicted annual NO_2 impact for the proposed project is well below the EPA significant impact levels. Additional NO_x controls would result in an insignificant reduction of ambient impacts that are already below EPA significance levels for both Class I and II areas.

5.4.5 Summary

The proposed BACT is the continued use of good combustion practices. The equivalent NO_x emission rate is 0.12 lb/ton H_2SO_4, which is the same emission rate for the C and D SAPs.

5.5 Fluoride Emissions from Phosphoric Acid Plant

5.5.1 Proposed Control Technology

The proposed BACT for Fl emissions from the A and B PAPs is the continued use of the existing control equipment. The existing control equipment is described below:

A PAP

- One existing cyclonic scrubber using pond water; and
- One existing horizontal, cross-flow packed-bed scrubber using pond water.

B PAP

- One existing horizontal, cross-flow packed-bed scrubber using pond water.

Refer to Section 2.0 and the application form for a complete description of the existing and proposed control equipment at the A and B PAPs.

The proposed maximum Fl emissions for the A and B PAPs is 0.012 lb/ton P_2O_5. This rate is equivalent to 0.85 lb/hr, or 3.72 TPY for the A PAP and 1.26 lb/hr, or 5.54 TPY for the B PAP.

5.5.2 BACT Analysis

5.5.2.1 Previous BACT Determinations

As part of the BACT analysis, a review was performed of previous Fl BACT determinations for phosphoric acid production plants listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of BACT determinations for PAPs from this review are presented in Table 5-7. Determinations issued during the last 10 years are shown in the table.

From review of the previous BACT determinations, it is evident that Fl BACT determinations for PAPs have been based on wet scrubber technology. Previous BACT determinations have been in the range of 0.012 to 0.04 lb/ton P_2O_5. The most recent determinations are in the range of 0.012 to 0.0135 lb/ton P_2O_5.

5.5.2.2 Control Technology Feasibility

The control technology feasibility analysis for Fl emissions controls for the PAPs is listed in Table 5-8. As shown, there is one type of Fl abatement method, with five different techniques. Each available technique was listed with its associated efficiency estimate, identified as feasible or infeasible, and ranked based on control efficiency.

5.5.2.3 Potential Control Method Descriptions

Wet scrubbers that are based on absorption principles include:

- Packed towers,
- Plate or tray towers,
- Wet cyclonic,
- Spray chambers, and
- Venturi.

Absorption is a mass transfer operation in which one or more soluble components of a gas mixture are dissolved in a liquid that has low volatility under the process conditions. The pollutant diffuses from the gas into the liquid when the liquid contains less than the equilibrium concentration of the gaseous component. The difference between the actual and the equilibrium concentration provides the driving force for absorption.

Packed towers are the most commonly used gas absorbers for pollution control. Packed towers are columns filled with packing materials that provide a large surface area to facilitate contact between the liquid and gas. Packed tower absorbers can achieve higher removal efficiencies, handle higher liquid rates, and have relatively lower water consumption requirements compared to other types of gas absorbers. However, packed towers may also have high system pressure drops, high clogging and fouling potential, and extensive maintenance costs due to the presence of packing materials.

Plate or tray towers are vertical cylinders in which the liquid and gas are contacted in step-wise fashion on trays (plates). Liquid enters at the top of the column and flows across each plate and through a downspout (downcomer) to the plates below. Gas moves upwards through openings in the plates, bubbles into the liquid, and passes to the plate above. Plate towers are easier to clean and tend to handle large temperature fluctuations better than packed towers. However, at high gas flow rates, plate towers exhibit larger pressure drops and have larger liquid holdups. There is no known application of a plate or tray tower on a PAP, and therefore the technology is unproven for PAPs.

Wet cyclonic scrubbers are wet cyclones usually with the inlet gas flow through a tangential entry similar to the classic cyclone configuration. The scrubbing liquid can be injected at a number of locations, including through a center axial spray manifold, from sprays located on outer walls of a cylindrical spray chamber, and from sprays evenly spaced throughout the tower chamber. The circular rotating gases with the entrained droplets and the resulting centrifugal force on the droplets cause them to migrate toward the outer scrubber walls. The droplet velocities relative to the gas stream are higher compared to gravity spray towers, and this increases the inertial impaction particle collection mechanism (which increases the single drop particle collection efficiency) but may reduce the distance the droplet travels with respect to the gas (which reduces the fraction of gas swept).

Spray chambers operate by delivering liquid droplets through a spray dilution system. The droplets fall through a countercurrent gas stream under the influence of gravity and contact the pollutant(s) in the gas. Spray towers are simple to operate and maintain, and have relatively low energy requirements. However, they have the least effective mass transfer capability of the absorbers discussed and are usually restricted to particulate removal and control of highly soluble gases such as SO_2 and ammonia. They also require higher water recirculation rates and are inefficient at removing very small particles.

Venturi scrubbers are generally used for controlling particulate matter and SO_2 emissions. Although venturi scrubbers are a feasible control technique for controlling Fl emissions, they are much more energy intensive and do not have very high control efficiencies as compared to other wet scrubbers, such as wet cyclonic or packed-bed scrubbers.

5.5.3 Economic Analysis

Alternative Fl controls are not necessary because the existing control equipment at the A and B PAPs are the most common and proven control technology for PAPs and already utilize the top-ranked control technology (packed tower) as shown in Table 5-8.

5.5.4 BACT Selection

Packed towers and wet cyclonic scrubbers are technically feasible for application at the PAPs. The abatement methods with the highest control efficiency listed in Table 5-8 are packed towers and tray towers. Packed tower scrubbers are a proven technology, as they are the most common control technique listed in previous BACT determinations for the previous twelve years (refer to Table 5-1). Tray towers are not a proven technique for PAPs. The abatement methods with the second highest control efficiencies listed in Table 5-8 are wet cyclonic and spray chamber scrubbers. Both are proven techniques, but spray chambers are more effective at controlling large particulates and highly soluble gases. Therefore, CF will utilize a combination of a wet cyclonic scrubber and a packed-bed scrubber to control Fl emissions at the A PAP, and a single packed-bed scrubber to control Fl emissions at the B PAP.

Currently, the existing scrubber systems of the A and B PAPs are achieving lower Fl emission rates than required by the operation permit (0.02 lb/ton P_2O_5, 1.18 lb/hr, 28.3 lb/day, and 5.2 TPY for the A PAP, and 0.02 lb/ton P_2O_5, 1.04 lb/hr, 24.9 lb/day, and 4.6 TPY for the B PAP). The results of the last 3 years of compliance tests for the PAP are summarized in Table 5-9. As shown in Table 5-9, actual Fl emission rates for the existing PAP measured during the compliance tests ranged from 0.0016 lb/ton P_2O_5 to 0.0173 lb/ton P_2O_5.

In conclusion, CF's proposed Fl control technology and emission limit for A PAP (based on the wet cyclonic scrubber and a packed-bed scrubber) and B PAP (based on a packed-bed scrubber) is lowest based on the previous BACT determinations for similar facilities. Any additional or different Fl control equipment is not appropriate for the PAPs. Such control equipment would result in significant capital costs and may prove unworkable. Therefore, a proposed Fl BACT limit of 0.012 lb/ton P_2O_5, which is the lowest based on the recent determinations for PAPs, is based on the combination of the wet cyclonic scrubber and packed-bed scrubber for the A PAP and packed-bed scrubber for the B PAP, both with "Kimre" or equivalent packing.

TABLE 5-1
SUMMARY OF BACT DETERMINATIONS FOR SULFUR DIOXIDE EMISSIONS FROM SULFURIC ACID PLANTS

Company Name	State	Permit No./RBLC ID	Permit Issue Date	Throughput	Emission Limit	Control Equipment
CF INDUSTRIES, INC.--PLANT CITY	FL	0570005-020-AC	8/19/2005	2,750 TPD	3.5 lb/ton (3-hr)	Double Absorption & Mist Eliminators
PCS PHOSPHATE COMPANY	NC	NC-0088	9/24/2003	1,850 TPD	4.0 lb/ton	Double Absorption Catalyst
IMC PHOSPHATES--NEW WALES	FL	FL-0253	7/12/2002	3,400 TPD	4.0 lb/ton (3-hr)	Double Absorption System
					3.5 lb/ton (24-hr)	
PCS PHOSPHATE COMPANY	NC	NC-0099	7/14/2000	2,000 TPD	4.0 lb/ton	Double Absorption
CARGILL FERTILIZER	FL	0570008-036-AC/PSD-FL-315	11/21/2001	3,400 TPD	4 lb/ton (3-hr)	Double Absorption System
					3.5 lb/ton (24-hr)	
US AGRI-CHEMICALS CORP.	FL	PSD-FL-278/FL-0237	2/6/2001	3,000 TPD	3.5 lb/ton (24-hr)	Double Absorption & Mist Eliminators
CARGILL FERTILIZER--RIVERVIEW	FL	0570008-014-AV	4/28/1999	2,700 TPD	4 lb/ton (3-hr)	Double Absorption
					3.5 lb/ton (24-hr)	Double Absorption
FARMLAND HYDRO, L. P. (NOW CARGILL GREEN BAY)	FL	1050053-019-AC/FL-0129	3/8/1999	2,750 TPD	3.5 lb/ton (24-hr)	Double Absorption Scrubber/Mist Eliminator
CARGILL FERTILIZER	FL	FL-0197	10/16/1998	3,200 TPD	3.5 lb/ton (24-hr)	Double Absorption Process
FARMLAND HYDRO, L. P. (NOW CARGILL GREEN BAY)	FL	1050053-019-AC	7/15/1998	250 TPD	401 lb/hr	Double Absorption Scrubber/Mist Eliminator
PINEY POINT PHOSPHATES INC.	FL	FL-0194	2/17/1998	2,000 TPD	4 lb/ton (3-hr)	Double Absorption
					3.5 lb/ton (48-hr)	Double Absorption

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, 2004.

TABLE 5-2
SO_2 CONTROL TECHNOLOGY FEASIBILITY ANALYSIS FOR THE A SULFURIC ACID PLANT

SO_2 Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible and Demonstrated? (Y/N)	Rank Based on Control Efficiency	Employed by the A SAP? (Y/N)
Sorbent Injection	Sorbent Furnace Injection	50%	N	5	N
	Sorbent Economiser Injection	50%	N	5	N
	Sorbent Duct Injection	80%	N	4	N
Process Modification	Double-Absorption System	>99.7%	Y	1	N
Gas Absorption/Wet Scrubbers	Ammonia Scrubbing	>90%	Y	3	Y
	Hydrogen Peroxide Scrubbing	>90%	Y	3	N
	Molecular Sieves	>90%	Y	3	N
Flue Gas Desulfurization	Sodium Sulfite-Bisulfite Scrubbing	>90%	Y	3	N
	Lime or Calcium Oxide Spray Dryers	80 - 90%	Y	4	N
	Wet Limestone FGD	50 - 98%	Y	2	N
Oxidation	SO_2 Oxidation with Activated Carbon	>90%	Y	3	N

TABLE 5-3
COST EFFECTIVENESS OF DOUBLE ABSORPTION SAP, CF INDUSTRIES "A" SAP

Cost Items	Cost Factors[a]	Cost ($)
DIRECT CAPITAL COSTS (DCC):		
Purchased Equipment Cost (PEC)		
Converter + Absorption Tower	Engineering Estimate	15,800,000
Instruments and Controls	Included	0
Freight	Included	0
Taxes	6% Sales Tax	948,000
Total PEC:		16,748,000
Direct Installation Costs		
Foundation and Structure Support	Included	0
Handling & Erection	Included	0
Electrical	Included	0
Piping	Included	0
Insulation for ductwork	Included	0
Painting	Included	0
Total Direct Installation Costs		0
Total DCC (PEC + Direct Installation):		16,748,000
INDIRECT CAPITAL COSTS (ICC):		
Engineering	2% of PEC (for excluded items)	334,960
Construction and field expenses	2% of PEC (for excluded items)	334,960
Contractor Fees	2% of PEC (for excluded items)	334,960
Startup	1% of PEC	167,480
Performance test +	1% of PEC	167,480
Contingencies (retrofit cost)	15% of PEC	2,512,200
Total ICC:		3,852,040
TOTAL CAPITAL INVESTMENT (TCI):	DCC + ICC	20,600,040
DIRECT OPERATING COSTS (DOC):		
(1) Operating Labor		
Operator	21 hours/week, $16/hr, 52 weeks/yr	17,472
Supervisor	15% of operator cost	2,621
(2) Maintenance	Engineering estimate, 1% PEC	167,480
(3) Replacement Parts	Engineering estimate, 1% PEC	167,480
(4) Electricity - Operating	$0.06/kWh, 8760 hr/yr	60,000
Total DOC:		415,053
INDIRECT OPERATING COSTS (IOC):		
Overhead	60% of oper. labor & maintenance	112,544
Property Taxes	1% of total capital investment	206,000
Insurance	1% of total capital investment	206,000
Administration	2% of total capital investment	412,001
Total IOC:		936,545
CAPITAL RECOVERY COSTS (CRC):	CRF of 0.0944 times TCI (20 yrs @ 7%)	1,944,644
ANNUALIZED COSTS (AC):	DOC + IOC + CRC	3,296,242
FUTURE SO_2 EMISSIONS (TPY) :	3.5 lb/ton H_2SO_4; 1600 ton H_2SO_4/day	1,022.0
H_2SO_4 PRODUCTION CAPACITY FACTOR[b]:		0.80
BASELINE SO_2 EMISSIONS (TPY) :	Future SO_2 Emissions x Capacity Factor	819.6
MAXIMUM SO_2 EMISSIONS (TPY) :	90% reduction	82.0
REDUCTION IN SO_2 EMISSONS (TPY):		737.6
COST EFFECTIVENESS:	$ per ton of SO_2 Removed	4,469

Footnotes:

[a] Unless otherwise specified, factors and cost estimates reflect OAQPS Cost Manual, Section 3, Sixth edition.

[b] Production capacity factor is based on average actual annual production from 2003 to 2004.

TABLE 5-4
SUMMARY OF BACT DETERMINATIONS FOR SULFURIC ACID MIST EMISSIONS FROM SULFURIC ACID PLANTS

Company Name	State	Permit No./RBLC ID	Permit Issue Date	Throughput	Emission Limits	Control Equipment
CF INDUSTRIES, INC.--PLANT CITY	FL	PSD-FL-339	6/1/2004	2,750 TPD	0.10 lb/ton	Mist Eliminators
PCS PHOSPHATE COMPANY	NC	NC-0088	9/24/2003	1,850 TPD	0.10 lb/ton	Vertical Tube Mist Eliminators
IMC PHOSPHATES--NEW WALES	FL	FL-0253	7/12/2002	3,400 TPD	0.10 lb/ton	Mist Eliminators
CARGILL FERTILIZER	FL	0570008-036-AC/PSD-FL-315	11/21/2001	3,400 TPD	0.10 lb/ton	Mist Eliminators
US AGRI-CHEMICALS CORP.	FL	PSD-FL-278/FL-0237	2/6/2001	3,000 TPD	0.12 lb/ton	Mist Eliminators
PCS PHOSPHATE COMPANY	NC	NC-0099	7/14/2000	2,000 TPD	0.15 lb/ton	Fiberglass Packed Mist Eliminators & Mesh Pad Installed on Final Absorption Tower
CARGILL FERTILIZER	FL	0570008-014-AV	4/28/1999	2,700 TPD	0.15 lb/ton	Mist Eliminators
FARMLAND HYDRO, L. P. (NOW CARGILL GREEN BAY)	FL	1050053-019-AC/FL-0129	3/8/1999	2,750 TPD	0.15 lb/ton	Mist Eliminators
CARGILL FERTILIZER	FL	FL-0197	10/16/1998	3,200 TPD	0.12 lb/ton	Mist Eliminators (Impaction or Brownian Diffusion)
FARMLAND HYDRO, L. P. (NOW CARGILL GREEN BAY)	FL	1050053-019-AC	7/15/1998	250 TPD	17.2 lb/hr	Mist Eliminators
PINEY POINT PHOSPHATES INC	FL	FL-0194	2/17/1998	2,000 TPD	0.15 lb/ton	Mist Eliminators (Brownian Diffusion)

Reference: RACT/BACT/LAER Clearinghouse on EPA's Website, 2004.

TABLE 5-5

SUMMARY OF SAM EMISSIONS TEST DATA FOR THE A SULFURIC ACID PLANT

	SAM Emissions	
Date	**lb/hr**	**lb/ton**
1/13/2004	0.46	0.010
2/11/03 - 2/12/03	0.43	0.010
2/5/2002	0.58	0.013
11/9/2001	0.42	0.009
1/30/2001	0.74	0.017
Average =	**0.52**	**0.012**

TABLE 5-6

NO_x CONTROL TECHNOLOGY FEASIBILITY ANALYSIS
FOR THE A SULFURIC ACID PLANT, CF INDUSTRIES, PLANT CITY

NO_x Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible and Demonstrated? (Y/N)	Rank Based on Control Efficiency	Employed by the A SAP? (Y/N)
1. Oxidation of NO_x with subsequent absorption.	Inject Oxidant	60 - 80%	N	1	N
	Non-Thermal Plasma Reactor (NTPR)	60 - 80%	N	1	N
2. Chemical reduction of NO_x	Selective Catalytic Reduction (SCR)	35 - 80%	NTF	NTF	N
	Selective Non-Catalytic Reduction (SNCR)	35 - 80%	NTF	NTF	N
	$SCONO_X$™	35 - 80%	NTF	NTF	N
3. Reducing residence time at peak temperature	Air Staging of Combustion	50 - 65%	N	2	N
	Fuel Staging of Combustion	50 - 65%	N	2	N
	Inject Steam	50 - 65%	N	2	N
4. Reducing peak temperature	Flue Gas Recirculation (FGR)	15 -25%	N	3	N
	Over Fire Air (OFA)	15 -25%	N	3	N
	Less Excess Air (LEA)	15 -25%	N	3	N
	Combustion Optimization	15 -25%	Y	3	Y
	Reduce Air Preheat	15 -25%	N	3	N
	Low NO_x Burners (LNB)	15 -25%	NTF	NTF	N

Note: NTF = Not Technically Feasible.

TABLE 5-7
SUMMARY OF BACT DETERMINATION FOR FLUORIDE EMISSIONS FROM PHOSPHORIC ACID PLANTS

Company	State	Permit No.	Permit Issue Date	Throughput	Emission Limits	Control Equipment
PCS PHOSPHATE COMPANY	NC	NC-0083	7/30/2002	-- --	0.02 LB/TON P_2O_5	SCRUBBER
CARGILL FERTILIZER INC.--RIVERVIEW	FL	PSD-FL-315	11/21/2001	170 TPH	0.012 LB/TON P_2O_5	CROSS-FLOW PACKED SCRUBBER
WHITE SPRINGS AGRICULTURAL CHEMICALS, INC.	FL	PSD-FL-297	11/27/2000	110 TPH	0.012 LB/TON P_2O_5	CROSS-FLOW PACKED SCRUBBERS
CARGILL FERTILIZER--BARTOW	FL	PSD-FL-295	10/13/2000	170 TPH	0.0135 LB/TON P_2O_5	PACKED SCRUBBER USING POND WATER
SF PHOSPHATES LIMITED CO.-FERTILIZER COMPLEX	MD	MD-384	12/22/1998		0.0135 LB/TON P_2O_5	FILTER VACUUM PUMP SCRUBBER. FUME SCRUBBER
CARGILL FERTILIZER--RIVERVIEW	FL	0570008-013-AC	6/12/1997	300,000 TPY	0.04 LB/TON P_2O_5	CROSS-FLOW SCRUBBER
CARGILL FERTILIZER--RIVERVIEW	FL	0570008-004-AC	8/27/1996	170 TPH	0.0135 LB F/TON P_2O_5 (Conbined New & Existing Plant)	PACKED SCRUBBER USING POND WATER
					0.016 LB F/TON P_2O_5 (Existing Plant)	PACKED SCRUBBER USING POND WATER
					0.012 LB F/TON P_2O_5 (New Plant)	PACKED SCRUBBER USING POND WATER
CARGILL FERTILIZER--BARTOW	FL	AC53-262532 / PSD-FL/224	8/24/1995	170 TPH	0.0135 LB F/TON P_2O_5 (Conbined New & Existing Plant)	PACKED SCRUBBER
					0.016 LB F/TON P_2O_5 (Existing Plant)	PACKED SCRUBBER
					0.012 LB F/TON P_2O_5 (New Plant)	PACKED SCRUBBER

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, May 25, 2005.

TABLE 5-8
FLUORIDE CONTROL TECHNOLOGY FEASIBILITY ANALYSIS FOR THE PHOSPHORIC ACID PLANT

Fluoride Abatement Method	Technique Now Available	Estimated Efficiency	Technically Feasible and Demonstrated? (Y/N)	Rank Based on Control Efficiency	Employed by the PAP? (Y/N)
Wet Scrubbers	Packed Tower	95-99%	Y	1	N
	Plate or Tray Towers	95-99%	N	NA	N
	Wet Cyclonic	90-95%	Y	2	Y
	Spray Chamber	90-95%	Y	2	N
	Venturi	80-90%	Y	3	N

Note: NA = Not Applicable

TABLE 5-9
SUMMARY OF RECENT PHOSPHORIC ACID PLANT EMISSION TESTS

Date	Unit	Average Process Rate (TPH P_2O_5)	Fluoride avg lb/hr	Fluoride avg lb/ton P_2O_5[a]
A PAP				
11/10/2005	A PAP	55.0	0.5533	0.0101
11/8/2005	A PAP	56.1	0.3600	0.0064
5/12/2005	A PAP	54.3	0.2733	0.0050
5/13/2004	A PAP	53.8	0.6933	0.0129
5/11/2004	A PAP	50.1	0.6500	0.0130
6/17/2003	A PAP	55.0	0.8333	0.0151
5/22/2002	A PAP	55.4	0.4833	0.0087
5/15/2001	A PAP	53.5	0.5100	0.0095
5/23/2000	A PAP	56.4	0.3567	0.0063
B PAP				
10/6/2005	B PAP	84.7	0.2900	0.0034
10/4/2005	B PAP	85.8	0.1400	0.0016
4/27/2005	B PAP	86.0	0.3133	0.0036
5/19/2004	B PAP	81.2	0.8033	0.0099
8/8/2003	B PAP	87.2	0.4500	0.0052
5/13/2003	B PAP	83.4	0.3300	0.0040
5/1/2002	B PAP	82.5	0.3733	0.0045
4/24/2001	B PAP	81.7	0.6667	0.0082
4/26/2000	B PAP	83.2	0.8075	0.0097
4/25/2000	B PAP	82.3	1.4200	0.0173

[a] As calculated.

6.0 AIR QUALITY IMPACT ANALYSIS

The air quality impact analysis is provided to demonstrate that the CF Industries maximum emissions of SO_2, PM_{10}, NO_x, SAM and fluoride associated with the facility's current and future operation will comply with the AAQS and allowable PSD Class I and II increments. This section presents the air quality modeling methodology.

6.1 General Approach

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's restricted boundaries.

Generally, if the facility undergoing the modification is within 200 km of a PSD Class I Area, then a significant impact analysis is also performed to evaluate the impact due to the project alone at the PSD Class I Area. The nearest PSD Class I Area to CF Industries is the Chassahowitzka NWA, located approximately 70 km northwest of the facility. There are no other PSD Class I Areas within 200 km of the facility. Maximum impacts due to the project were predicted impacts at the Chassahowitzka NWA and compared to EPA's proposed significant impact levels for PSD Class I Areas. These recommended levels have never been promulgated as rules, but are the currently accepted criteria for determining whether a proposed project will incur a significant impact on a PSD Class I Area.

If the project-only impacts are above the significant impact levels in the vicinity of the facility, then two additional and more detailed air modeling analyses are required. The first analysis demonstrates compliance with federal and Florida AAQS, and the second analysis demonstrates compliance with allowable PSD Class II increments.

If the project-only impacts at the PSD Class I Area are above the proposed EPA PSD Class I significant impact levels, then an analysis is performed to demonstrate compliance with allowable PSD Class I impacts at the PSD Class I Area. The proposed project's maximum emission increases are also evaluated at the PSD Class I Area to support the air quality related values (AQRV) analysis, which includes an evaluation of regional haze degradation and sulfur and nitrogen deposition due to the project.

6.2 Significant Impact Analysis

FDEP policies stipulate that the highest annual average and highest short-term concentrations are to be compared to the applicable significant impact levels both in the vicinity of the project and at the PSD Class I Area. To develop the maximum short-term and annual 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. Based on the screening modeling analysis results in the vicinity of the project, additional modeling refinements are performed, if necessary, to obtain the maximum concentration with a receptor grid spacing of 100 m or less.

6.3 AAQS and PSD Class II Analyses

For each pollutant for which a significant impact is predicted in the vicinity of the project, AAQS and PSD Class II analyses are required. The AAQS analysis is a cumulative source analysis that evaluates whether the post-project concentrations from all sources will comply with the AAQS. All sources include the post-project source configuration at the project site, the impacts from other nearby facility sources, plus a background concentration to account for sources not included in the modeling analysis. The maximum total concentrations are compared to the AAQS.

The PSD Class II analysis is a cumulative source analysis that evaluates whether the post-project PSD increment concentrations for all increment-affecting sources will comply with the allowable PSD Class II increments. This includes the PSD increment-affecting sources at the project site, plus the impacts from all nearby PSD increment-affecting sources at other facilities. The maximum predicted PSD increment consumption concentrations are compared to the PSD Class II increment.

Generally, when using 5 years of meteorological data for the analysis, the highest annual and the HSH short-term (i.e., 24 hours or less) 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.

The HSH approach is consistent with AAQS and allowable PSD increments, which permit a short-term average concentration to be exceeded once per year at each receptor.

It should be noted that for determining compliance with the 24-hour AAQS for PM_{10}, the highest of the sixth-highest concentration predicted in 5 years (i.e., H6H), instead of the HSH predicted for each year, is used to compare to the applicable 24-hour AAQS.

6.4 PSD Class I Increment Analysis

For each pollutant for which a significant impact is predicted at the PSD Class I Area, a PSD Class I analysis is required. The PSD Class I analysis is a cumulative source analysis that evaluates whether the post-project PSD increment concentrations for all increment-affecting sources within the impact distance of the PSD Class I Area will comply with the allowable PSD Class I increments. This includes the post-project PSD increment-affecting sources at the project site, plus the impacts from all PSD increment-affecting sources at other facilities that are within the impact distance of the PSD Class I Area.

6.5 Model Selection

The AMS/EPA Regulatory Model (AERMOD, Version 04300) was used to evaluate the pollutant impacts due to the proposed project in areas within 50 km of the CF Plant City facility. On October 21, 2005 EPA established AERMOD as the preferred air dispersion model in the "Guideline on Air Quality Models (GAQM)" (Appendix W to 40 CFR Part 51) in place of the ISC3 air dispersion model (Federal Register notice, November 9, 2005). This rule became effective on December 9, 2005.

This AERMOD model is maintained by the EPA on its Internet website, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN). A listing of AERMOD model features is presented in Table 6-1. AERMOD is an advanced state-of-the-art steady-state Gaussian dispersion model with advanced features in addition to containing basically the same options as the Industrial Source Complex Short-term (ISCST3) model. The AERMOD model is applicable for most applications since it is recognized as containing the latest scientific algorithms for simulating plume behavior in all types of terrain. For evaluating plume behavior within the building wake of structures, the AERMOD model incorporates the Plume Rise Model Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI).

The AERMOD modeling system is composed of one main model (AERMOD) and two preprocessors – a meteorological preprocessor known as AERMET and a terrain preprocessor known as AERMAP. AERMET calculates hourly boundary layer parameters for use by AERMOD, including friction velocity, Monin-Obukhov length, convective velocity scale, temperature scale, convective boundary layer (CBL) height, stable boundary layer (SBL) height, and surface heat flux. In addition, AERMET passes all observed meteorological parameters to AERMOD including wind direction and speed (at multiple heights, if available), temperature, and if available, measured turbulence. AERMOD uses this information to calculate concentrations in a manner that accounts for a dispersion rate that is a continuous function of meteorology. AERMAP prepares terrain data for use by AERMOD in complex terrain situations. This allows AERMOD to account for terrain using a simplification of the procedure used in CTDMPLUS model.

In this analysis, the EPA regulatory default options were used to predict all maximum impacts. In particular, the AERMOD model control pathway MODELOPT keyword parameters DEFAULT, and CONC were selected. Selection of the parameter DEFAULT, which specifies use of the regulatory default options, is recommended by the GAQM. The CONC parameter specifies calculation of concentrations. No consideration was given to pollutant exponential decay.

The AERMOD model was used to predict maximum concentrations for the annual, 24-, 8-, 3-, and 1-hour averaging times.

For predicting maximum impacts at the Chassahowitzka NWA PSD Class I Area, the California Puff (CALPUFF) modeling system was used. At distances beyond 50 km from a source, the CALPUFF model, Version 5.711a (EPA, 2004), is recommended for use by the EPA and FDEP. The CALPUFF model is a long-range transport Lagrangian puff model applicable for estimating the air quality impacts. The methods and assumptions used in the CALPUFF model were based on the latest recommendations for a refined analysis as presented in the Interagency Workgroup on Air Quality Models (IWAQM) Phase 2 Summary Report and the FLAG document. This model is also maintained by the EPA on the SCRAM website. A listing of CALPUFF model features is presented in Table 6-2.

6.6 Meteorological Data

Meteorological data used in the AERMOD model to determine air quality impacts consisted of 5 years of hourly surface weather observations and twice-daily upper air sounding data collected at the National Weather Service (NWS) stations in Tampa International Airport and Ruskin, respectively. The period of record is 1991 to 1995. The NWS office at Tampa International Airport is located approximately 44 km (27 miles) southwest of the site. The FDEP consider this station to have surface meteorological data representative of the project site

The data for these stations were processed into a format that can be input to the AERMOD model using the meteorological preprocessor program AERMET. The data were processed using the Lakes Environmental graphical interface using the latest version of AERMET (04300). The hourly surface data were obtained from the Solar and Meteorological Observation Network (SAMSON) CD. Upper air sounding data were obtained in the required NCDC TD-6201 format from the Lakes website (www.webmet.com).

A unique feature of AERMOD is its incorporation of land use parameters for the processing of boundary layer parameters used for the dispersion. Based on the most recent regulatory guidance, the land use parameters should be representative of the data measurement site (i.e., Tampa International Airport). Land use data, representing the average surface roughness, albedo, and Bowen ratio that exist within a 3-km radius of Tampa International Airport were extracted from 1-degree land use files from the U.S. Geographical Survey (USGS) using the AERSURFACE program. AERSURFACE currently extracts land use data in 12 wind direction sectors covering 360 degrees. The land use values for each wind direction sector were input into Stage 3 of the AERMET preprocessor program to create the surface and profile meteorological files that AERMOD requires.

Meteorological data used with the CALPUFF model consisted of CALMET-developed meteorological data. A refined CALPUFF analysis was performed for this project with mesoscale meteorological data for the following 3 years: 1990 with 80-km Mesoscale Model-Generation 4 (MM4) data, 1992 with 80-km MM5 data, and 1996 with 36-km MM5 data were used to create windfields for the years 1990, 1992, and 1996. A more detailed discussion of the CALMET wind fields used for the CALPUFF modeling analysis is provided in Appendix C.

6.7 Emission Inventory

6.7.1 Significant Impact Analysis

The current actual and future maximum short-term and annual emission rates for the project-affected sources that were used in the significant impact analysis are presented in Tables 6-3 (NO_x, PM_{10}, and Fl) and 6-4 (SO_2 and SAM). Stack and operating parameters are presented in Table 2-4, Section 2.0. Current actual short-term emission rates, which are also presented in Table 2-3 of Section 2.0 are based on CEM data, stack test data for 2003 through 2005, and annual operating reports for 2003 and 2004. Future potential short-term emission rates are based on proposed BACT emission limits, or limits based on the current Title V Permit No. 0570005-017-AV.

The current annual emission rates, which are also presented in Table 2-2, are based on 2003 and 2004 annual operating reports submitted to the FDEP. Future annual emission rates are based on proposed BACT emission limits or current permit limits. Increase in fugitive PM emissions from truck traffic due to the project, which are presented in Appendix A, were also included in the significant impact analysis. Fugitive PM emissions were modeled as a line source represented by volume source, and the volume source stack parameters are presented in Appendix D

Stack and operating data were obtained from previous modeling analyses. The flow rate and temperature data for the "A" SAP stack were updated based on the last two years of stack test data. All sources were modeled at locations that are relative to the "C" SAP stack location.

6.7.2 AAQS and PSD Class II Analyses

Air quality concentrations were predicted within the area of significant impact for individual pollutants subject to PSD review due to the project to determine compliance with the respective AAQS and PSD Class II increments. A significant impact area (SIA) and the radius of SIA were determined for each pollutant and averaging time combination for which the project's impact is predicted to be significant. The radius of impact is used as the basis for determining inventory of background sources to be included in the air impact analyses.

The project's SIAs for SO_2 and PM_{10} concentrations are predicted to extend out to 3.8 and 4.6 km, respectively, from the facility (see Section 7.0 for details).

The screening area in which other emissions are considered in the analysis extends 50 km beyond the modeling area. Therefore, the screening area extended out to 54 km for SO_2 and 55 km for PM_{10}.

In addition to the project-affected sources, all other sources at the Plant City facility which are part of the post-project source configuration of the facility were also modeled and emission rates and stack parameters of these sources are presented in Tables 6-5 and 6-6, respectively. Fugitive PM emissions from truck traffic in the post-project source configuration of the facility were also included in the AAQS and PSD Class II increment consumption modeling. Daily and annual fugitive PM emissions from future truck traffic are presented in Table 6-7 and 6-8, respectively. Fugitive PM emissions were modeled as a line source represented by volume sources, and the volume source stack parameters are presented in Appendix D.

Other nearby facilities located within the SIA (considered to be the modeling area) were also modeled. Facilities within the SIA plus 50 km (i.e., modeling area plus 50 km) were considered to be in the screening area. All facilities in the screening area were evaluated using the North Carolina screening technique. Based on this technique, facilities whose annual (i.e., TPY) emissions are less than the threshold quantity, Q, are eliminated from the modeling analysis. Q is equal to 20 x (D-SIA), where D is the distance in km from the facility to CF, Plant City and SIA is the distance of the proposed project's significant impact area.

Summaries of the SO_2 and PM_{10} emissions for the facilities are presented in Tables 6-9 and 6-10, respectively. The individual source emissions, stack, and operating parameters for the facilities include the AAQS and PSD Class II modeling analyses are presented in Tables B-1 and B-2 in Appendix B.

Data for non-CF Plant City SO_2 sources were obtained from FDEP and were supplemented with current and historical information obtained from Golder.

6.7.3 CF Plant City PSD Baseline Inventory (1974)

A summary of CF's SO_2 and PM_{10} sources for the PSD baseline year (1974) is provided in Table 6-11 and the basis of emission calculations is presented in Appendix B. These sources were used, along with CF's project-affected sources from Tables 6-3 and 6-4 and all other future SO_2 and PM_{10} sources from Tables 6-5 and 6-6, to determine the PSD increment consumption concentrations at the PSD Class I Area after completion of the proposed project. Fugitive PM emissions from truck traffic in the baseline year (1974) were also included in the PM_{10} increment consumption modeling. Daily and annual fugitive PM emissions from baseline truck traffic are presented in Table 6-12 and 6-13, respectively. Baseline truck traffic was estimated based on tons of phosphoric acid produced in 1974 and knowledge of the process. It is assumed that H_2SO_4 was not imported from outside in 1974.

6.7.4 PSD Class I Analysis

The proposed project's maximum NO_x, SO_2, and PM_{10} impacts at the Chassahowitzka NWA PSD Class I Area were predicted to be less than the PSD Class I significant impact levels (see Section 8.0). As a result, cumulative source impact analyses were not required to demonstrate compliance with the PSD Class I increments. However, the proposed project's emissions were evaluated at the PSD Class I Area to support the AQRV analyses including the regional haze analysis and sulfur and nitrogen deposition analysis. The AQRV analyses are presented in Section 8.0.

6.8 Receptor Locations

6.8.1 Site Vicinity

The screening receptor grid used for the site vicinity was comprised of Cartesian receptors and consisted of the following:

- Property boundary receptors, spaced at 50-m intervals;
- Receptors from the property boundary out to 2.0 km, spaced at 100-m intervals;
- Receptors from 2 to 3 km, spaced at 150-m intervals; and
- Receptors from 3 to 5 km, spaced at 500-m intervals.

The modeling origin of the receptor grid was the C SAP stack location, and all source and receptor locations are relative to this location. Figures showing the property boundary receptors and building locations are presented in Appendix E.

6.8.2 Class I Area

Maximum SO_2 and SAM concentrations were predicted at the Chassahowitzka NWA with the CALPUFF model using 58 discrete receptors located along the border of the Chassahowitzka NWA PSD Class I Area. Impacts for the proposed project only were compared to the proposed EPA PSD Class I significance levels for SO_2, the regional haze degradation criteria of 5 percent, and the sulfur deposition criteria of 0.01 kg/ha/yr. The SAM impacts were used to assess the proposed project's impacts on the Chassahowitzka NWA AQRVs. A listing of the Class I receptors is provided in Table 6-14.

6.9 Building Downwash Effects

All significant building structures within CF's existing plant area were determined by a site plot plan. The plot plan of the CF site was presented in Section 2.0 (Figure 2-2). A total of 20 current building structures and 9 structures for the baseline year of 1974 were evaluated. All structures were processed in the EPA Building Input Profile-PRIME (BPIP-PRIME, Version 04274) program using the Lakes Environmental graphical interface.

The BPIP-PRIME program determined determine direction-specific building heights (BUILDHGT), projected widths (BUILDWID), projected length of the building along the flow (BUILDLEN), along-flow distance (XBADJ), and across-flow distance (YBADJ) parameters 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 6-15. Detailed listing of direction-specific building data used in the air modeling analysis is provided in Appendix E. An electronically generated plot of the building data used in the modeling is also presented in Appendix E.

6.10 Background Concentrations

Background concentrations are necessary to determine total ambient air quality impacts to demonstrate compliance with the AAQS. "Background concentrations" are defined as concentrations due to sources other than those specifically included in the modeling analysis. For all pollutants, background would include other point sources not included in the modeling (i.e., distant sources or small sources), fugitive emission sources, and natural background sources. In general, monitoring data is used that was collected near the area in which the air quality impact is performed.

The derivation of the background concentration for the modeling analysis was presented in Section 4.0. Based on this analysis, the PM_{10} background concentrations were determined to be 22 and 37 $\mu g/m^3$ for the annual and 24-hour averaging periods, respectively. The SO_2 background concentrations were determined to be 13 and 5.3 $\mu g/m^3$ for the annual and 24-hour averaging periods, respectively. These background levels were added to model-predicted concentrations to estimate total air quality levels for comparison to AAQS.

TABLE 6-1
MAJOR FEATURES OF THE AERMOD MODEL, VERSION 04300

AERMOD Model Features
• Plume dispersion/growth rates are determined by the profile of vertical and horizontal turbulence, vary with height, and use a continuous growth function.
• In a convective atmosphere, uses three separate algorithms to describe plume behavior as it comes in contact with the mixed layer lid; in a stable atmosphere uses a mechanically mixed layer near the surface.
• Polar or Cartesian coordinate systems for receptor locations can be included directly or by an external file reference.
• Urban model dispersion is input as a function of city size and population density; sources can also be modeled individually as urban sources.
• Stable plume rise: uses Briggs equations with winds and temperature gradients at stack top up to half-way up to plume rise. Convective plume rise: plume superimposed on random convective velocities.
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash.
• Has capability of simulating point, volume, area, and multi-sized area sources.
• Accounts for the effects of vertical variations in wind and turbulence (Brower et al., 1998).
• Uses measured and computed boundary layer parameters and similarity relationships to develop vertical profiles of wind, temperature, and turbulence (Brower et al., 1998).
• Concentration estimates for 1-hour to annual average times.
• Creates vertical profiles of wind, temperature, and turbulence using all available measurement levels.
• Terrain features are depicted by use of a controlling hill elevation and a receptor point elevation.
• Modeling domain surface characteristics are determined by selected direction and month/season values of surface roughness length, Albedo, and Bowen ratio.
• Contains both a mechanical and convective mixed layer height, the latter based on the hourly accumulation of sensible heat flux.
• The method of Pasquill (1976) to account for buoyancy-induced dispersion.
• A default regulatory option to set various model options and parameters to EPA-recommended values.
• Contains procedures for calm-wind and missing data for the processing of short term averages.

Note: AERMOD = The American Meteorological Society and Environmental Protection Agency Regulatory Model.

Source: Paine, et al., 2004.

TABLE 6-2
MAJOR FEATURES OF THE CALPUFF MODEL, VERSION 5.711A

CALPUFF Model Features
• Source types: Point, line (including buoyancy effects), volume, area (buoyant, non-buoyant)
• Non-steady-state emissions and meteorological conditions (time-dependent source and emission data; gridded 3-dimensional wind and temperature fields; spatially-variable fields of mixing heights, friction velocity, precipitation, Monin-Obukhov length; vertically and horizontally-varying turbulence and dispersion rates; time-dependent source and emission data for point, area, and volume sources; temporal or wind-dependent scaling factors for emission rates)
• Efficient sampling function (integrated puff formulation; elongated puff (slug) formation)
• Dispersion coefficient options (Pasquill-Gifford (PG) values for rural areas; McElroy-Pooler values (MP) for urban areas; CTDM values for neutral/stable; direct measurements or estimated values)
• Vertical wind shear (puff splitting; differential advection and dispersion)
• Plume rise (buoyant and momentum rise; stack-tip effects; building downwash effects; partial plume penetration above mixing layer)
• Building downwash effects (Huber-Snyder method; Schulman-Scire method)
• Complex terrain effects (steering effects in CALMET wind field; puff height adjustments using ISC model method or plume path coefficient; enhanced vertical dispersion used in CTDMPLUS)
• Subgrid scale complex terrain (CTSG option) (CTDM flow module; dividing streamline as in CTDMPLUS)
• Dry deposition (gases and particles; options for diurnal cycle per pollutant, space and time variations with a resistance model, or none)
• Overwater and coastal interaction effects (overwater boundary layer parameters; abrupt change in meteorological conditions, plume dispersion at coastal boundary; fumigation; option to use Thermal Internal Boundary Layers (TIBL) into coastal grid cells)
• Chemical transformation options (Pseudo-first-order chemical mechanisms for SO_2, SO_4, HNO_3, and NO_3; Pseudo-first-order chemical mechanisms for SO_2, SO_4, NO, NO_2, HNO_3, and NO_3 (RIVAD/ARM3 method); user-specified diurnal cycles of transformation rates; no chemical conversions)
• Wet removal (scavenging coefficient approach; removal rate as a function of precipitation intensity and type)
• Graphical user interface
• Interface utilities (scan ISC-PRIME and AUSPLUME meteorological data files for problems; translate ISC-PRIME and AUSPLUME input files to CALPUFF input files)

Note: CALPUFF = California Puff Model

Source: EPA, 2004.

TABLE 6-3

SUMMARY OF PM_{10}, F, AND NO_x CURRENT ACTUAL AND FUTURE POTENTIAL EMISSION RATES FOR THE PROPOSED PROJECT -- CF INDUSTRIES, PLANT CITY

Source	EU ID	Model ID	PM_{10} Emissions: Hourly [b] lb/hr	PM_{10} Emissions: Hourly [b] g/s	PM_{10} Emissions: Annual [c] TPY	PM_{10} Emissions: Annual [c] g/s	Fluoride Emissions: Hourly [b] lb/hr	Fluoride Emissions: Hourly [b] g/s	Fluoride Emissions: Annual [c] TPY	Fluoride Emissions: Annual [c] g/s	NO_x Emissions: Annual [c] TPY	NO_x Emissions: Annual [c] g/s
Current Actual Emissions												
"A" SAP	002	SAPA	--	--	--	--	--	--	--	--	7.70	0.221
"A" PAP	004	PAPA	--	--	--	--	0.83	0.105	2.43	0.070	--	--
"B" PAP	009	PAPB	--	--	--	--	0.80	0.101	2.09	0.060	--	--
"Z" DAP/MAP Plant	011	ZDMP	6.75	0.851	15.19	0.437	1.30	0.164	3.25	0.093	0.39	0.011
"X" DAP/MAP Plant	012	XDMGP	3.63	0.457	11.08	0.319	0.79	0.100	2.07	0.059	0.11	0.003
"Y" DAP/MAP Plant	013	YDMGP	8.06	1.016	16.59	0.477	1.05	0.132	2.29	0.066	0.34	0.010
"A" and "B" Storage Building Scrubber	014	ABSTO	2.79	0.352	0.09	0.002	--	--	--	--	--	--
"A" Shipping Baghouse	015	ASBAG	0.43	0.054	0.89	0.026	--	--	--	--	--	--
"B" Shipping Baghouse	018	BSBAG	0.43	0.054	1.81	0.052	--	--	--	--	--	--
"B" Truck/Railcar Loading [a]	019	BLOAD	0.49	0.062	1.55	0.045	--	--	--	--	--	--
"A" Railcar/Truck Loading [a]	020	ALOAD	0.64	0.081	2.02	0.058	--	--	--	--	--	--
Future Potential Emissions												
"A" SAP	002	SAPA	--	--	--	--	--	--	--	--	35.0	1.008
"A" PAP	004	PAPA	--	--	--	--	0.85	0.107	3.72	0.107	--	--
"B" PAP	009	PAPB	--	--	--	--	1.26	0.159	5.54	0.159	--	--
"Z" DAP/MAP Plant	011	ZDMP	22.6	2.848	99.0	2.848	1.44	0.181	6.310	0.1815	26.7	0.770
"X" DAP/MAP Plant	012	XDMGP	13.75	1.733	41.9	1.205	2.2	0.277	6.700	0.1927	28.0	0.805
"Y" DAP/MAP Plant	013	YDMGP	15.3	1.928	67.0	1.927	2.20	0.277	9.6	0.276	31.0	0.891
"A" and "B" Storage Building [a]	014	ABSTO	0.52	0.066	4.8	0.138	--	--	--	--	--	--
"A" Shipping Baghouse	015	ASBAG	5.00	0.630	21.9	0.630	--	--	--	--	--	--
"B" Shipping Baghouse	018	BSBAG	5.00	0.630	21.9	0.630	--	--	--	--	--	--
"B" Truck/Railcar Loading [a]	019	BLOAD	0.62	0.078	5.7	0.164	--	--	--	--	--	--
"A" Railcar/Truck Loading [a]	020	ALOAD	0.31	0.039	2.9	0.083	--	--	--	--	--	--

[a] Fugitive emissions, modeled as volume source.

[b] Hourly emissions from Table 2-3.

[c] Annual emissions from Table 2-2.

TABLE 6-4

SUMMARY OF SO_2 AND SAM CURRENT ACTUAL AND FUTURE POTENTIAL EMISSION RATES FOR THE PROPOSED PROJECT – CF INDUSTRIES, PLANT CITY

			SO_2 Emissions						SAM Emissions			
	EU	Model	3-Hourly [b]		24-Hourly [b]		Annual [c]		Hourly [b]		Annual [c]	
Source	ID	ID	lb/hr	g/s	lb/hr	g/s	TPY	g/s	lb/hr	g/s	TPY	g/s
Current Actual Emissions												
"A" SAP	002	SAPA	233.4	--	195.2	--	611.3	--	0.53	0.067	2.17	0.274
"A" PAP	004	PAPA	--	--	--	--	--	--	--	--	--	--
"B" PAP	009	PAPB	--	--	--	--	--	--	--	--	--	--
"Z" DAP/MAP Plant	011	ZDMP	0.0031	3.94E-04	0.0031	3.94E-04	0.0120	1.51E-03	--	--	--	--
"X" DAP/MAP Plant	012	XDMGP	0.0009	1.19E-04	0.0009	1.19E-04	0.0035	4.41E-04	--	--	--	--
"Y" DAP/MAP Plant	013	YDMGP	0.0027	3.38E-04	0.0027	3.38E-04	0.0100	1.26E-03	--	--	--	--
"A" and "B" Storage Building Scrubber	014	ABSTO	--	--	--	--	--	--	--	--	--	--
"A" Shipping Baghouse	015	ASBAG	--	--	--	--	--	--	--	--	--	--
"B" Shipping Baghouse	018	BSBAG	--	--	--	--	--	--	--	--	--	--
"B" Truck/Railcar Loading [a]	019	BLOAD	--	--	--	--	--	--	--	--	--	--
"A" Railcar/Truck Loading [a]	020	ALOAD	--	--	--	--	--	--	--	--	--	--
Future Potential Emissions												
"A" SAP	002	SAPA	256.7	--	233.3	--	1022.0	--	6.67	0.84	29.2	3.68
"A" PAP	004	PAPA	--	--	--	--	--	--	--	--	--	--
"B" PAP	009	PAPB	--	--	--	--	--	--	--	--	--	--
"Z" DAP/MAP Plant	011	ZDMP	2.17	0.273	2.17	0.273	9.5	0.273	0.037	0.0046	0.16	0.0046
"X" DAP/MAP Plant	012	XDMGP	2.52	0.318	2.52	0.318	9.9	0.286	0.043	0.0054	0.17	0.0048
"Y" DAP/MAP Plant	013	YDMGP	2.51	0.316	2.51	0.316	11.0	0.316	0.042	0.0053	0.19	0.0053
"A" and "B" Storage Building [a]	014	ABSTO	--	--	--	--	--	--	--	--	--	--
"A" Shipping Baghouse	015	ASBAG	--	--	--	--	--	--	--	--	--	--
"B" Shipping Baghouse	018	BSBAG	--	--	--	--	--	--	--	--	--	--
"B" Truck/Railcar Loading [a]	019	BLOAD	--	--	--	--	--	--	--	--	--	--
"A" Railcar/Truck Loading [a]	020	ALOAD	--	--	--	--	--	--	--	--	--	--

[a] Fugitive emissions, modeled as volume source.

[b] Hourly emissions from Table 2-3.

[c] Annual emissions from Table 2-2.

TABLE 6-5

SUMMARY OF PM_{10} AND SO_2 EMISSION RATES FROM ALL FUTURE CF INDUSTRIES, PLANT CITY SOURCES NOT AFFECTED BY THE PROJECT

			SO_2 Emission Rate						PM_{10} Emission Rate			
	EU	Model	3-Hour		24-Hour		Annual		24-Hour		Annual	
Source	ID	ID	lb/hr	g/s	lb/hr	g/s	TPY	g/s	lb/hr	g/s	TPY	g/s
Johnston Scotch Marine Type Boiler [a]	001	JSMTB	46.86	5.90	46.86	5.90	9.37	0.27	1.32	0.166	5.77	0.166
B SAP [b]	003	SAPB	303.3	38.22	303.3	38.22	1,003.0	28.85	--	--	--	--
C SAP [b]	007	SAPC	401.0	50.53	401.0	50.53	1,757.0	50.54	--	--	--	--
D SAP [b]	008	SAPD	401.0	50.53	401.0	50.53	1,757.0	50.54	--	--	--	--
A DAP/MAP Plant [b]	010	ADMP	1.45	0.183	1.45	0.183	6.33	0.182	32.7	4.12	143.1	4.12
Phosphoric Acid Cleanup System	032	PACS	--	--	--	--	--	--	0.94	0.118	4.10	0.118
Molten Sulfur Storage and Handling System: [a]												
--Storage Tank (022)	022	MSTK22	0.13	0.017	0.13	0.017	0.57	0.017	0.13	0.017	0.37	0.011
--Truck Pit A	023	MSTPTA	0.13	0.017	0.13	0.017	0.57	0.017	0.13	0.017	0.41	0.012
--Truck Pit B	024	MSTPTB	0.13	0.017	0.13	0.017	0.57	0.017	0.13	0.017	0.41	0.012
--Storage Tank (033)	033	MSTK33	0.13	0.017	0.13	0.017	0.57	0.017	0.13	0.017	0.41	0.012
--Railcar Unloading Pit		MSRCUP	0.13	0.017	0.13	0.017	0.57	0.017	0.13	0.017	0.36	0.010

[a] Based on information presented in the *PSD Application for the C and D Sulfuric Acid Plants, CF Industries, Inc., Plant City Phosphate Complex*, Golder Associates Inc., January 2004 (0337620).

[b] Based on Title V Permit No. 0570005-017-AV.

TABLE 6-6

SUMMARY OF STACK AND OPERATING PARAMETERS AND LOCATIONS FOR ALL FUTURE CF INDUSTRIES, PLANT CITY, SOURCES NOT AFFECTED BY THE PROJECT

		Relative Location [a]				Stack and Operating Parameters					Exit			
		X		Y		Height		Diameter		Flow Rate	Temperature		Velocity	
Emission Unit	ISCST3 ID	ft	m	ft	m	ft	m	ft	m	(acfm)	°F	K	ft/s	m/s
Johnson Scotch Boiler	JSMTB	-405.4	-123.6	85.9	26.2	25	7.62	3.5	1.07	35,566	550	560.9	61.6	18.78
"B" SAP	SAPB	-171.6	-52.3	-157.1	-47.9	110	33.53	5.0	1.52	88,140	83	301.5	74.8	22.80
"C" SAP	SAPC	0.0	0.0	0.0	0.0	199	60.66	8.0	2.44	140,700	158	343.2	46.7	14.22
"D" SAP	SAPD	174.3	53.1	58.9	17.9	199	60.66	8.0	2.44	145,600	161	344.8	48.3	14.71
"A" DAP/MAP Plant	ADMP	-991.6	-302.2	-368.2	-112.2	80	24.38	10.0	3.05	173,300	137	331.5	36.8	11.21
Phosphoric Acid Cleanup System	PACS	-669.3	-204.0	-1115.5	-340.0	80	24.38	4.0	1.22	--	110	316.5	46.4	14.15
<u>Molten Sulfur Storage and Handling System:</u>														
--Storage Tank (022)[b]	MSTK22	-67.3	-20.5	95.4	29.1	38	11.58	2.0	0.61	e	212	373.2	-	0.01
--Truck Pit A[b]	MSTPTA	-171.7	-52.3	35.4	10.8	12	3.66	0.67	0.20	e	212	373.2	-	0.01
--Truck Pit B[b]	MSTPTB	-125.9	-38.4	-95.5	-29.1	12	3.66	0.67	0.20	e	212	373.2	-	0.01
--Storage Tank (033)[c]	MSTK33	-204.8	-62.4	654.2	199.4	41	12.50	-	-	e	-	-	-	-
--Railcar Unloading Pit[d]	MSRCUP	-332.3	-101.3	696.5	212.3	0	0.00	-	-	e	-	-	-	-

[a] Relative to the C SAP stack, true north.

[b] Source has a rain cap. Modeled with a velocity of 0.01 m/s.

[c] Modeled as a 16.4 x 16.4 m square area source, based on the physical dimensions of the tank.

[d] Modeled as a 3.5 x 19 m area square, based on the physical dimensions of the pit.

[e] Ventilation rate is 30 dscfm.

TABLE 6-7
ESTIMATION OF DAILY PM EMISSION FACTORS AND RATES FOR VEHICLE TRAFFIC ON PAVED ROADS IN THE FUTURE

General Data		Types of Truck Traffic			
		DAP/MAP (Type A)	Molten Sulfur (Type B)	Molten Sulfur In DAP/MAP Out (Type C)	H_2SO_4 (Type D)
Throughput Data					
Operation days	Annual	365	365	365	365
Annual Fertilizer Production (TPY) [a]	Annual	2,735,528	--	--	--
Annual Molten Sulfur Storage & Handling (TPY) [a]	Annual	--	965,388	965,388	--
Annual H_2SO_4 Import (TPY) [b]	Annual	--	--	--	106,506
Fertilizer Shipment by Truck (%) [c]	Annual	33	--	--	--
Molten Sulfur Delivery by Truck (%) [c]	Annual	--	91	91	--
H2SO4 Delivery by Truck (%) [c]	Annual	--	--	--	51
Throughput (TPY) [d]	Annual	639,173	614,952	263,551	54,318
Vehicle Data					
Vehicle weight (W), ton	Loaded	38	39.5	40	39
	Unloaded	14	15.5	16.5	14.5
	Average	26	27.5	28.25	26.75
	Payload	24	24	23.5	24.5
Number of vehicles (Material throughput/average vehicle weight)	Annual	26,632	25,623	11,215	2,217
Number of vehicles/Day	Daily	73	70	31	6
Distance (miles) travelled/ vehicle/ route [e]	Per trip	1.61	1.06	2.11	1.06
VMT (no. vehicles x miles travelled)	Daily	117.8	74.1	64.9	6.4
General/ Site Characteristics					
Days of precipitation greater than or	Short-term	0	0	0	0
equal to 0.254 mm (p)	Annual	120	120	120	120
Silt Loading (sL), g/m^2 [f]		1.0	1.0	1.0	1.0
Particle size multiplier, PM (k)		0.082	0.082	0.082	0.082
PM_{10} (k)		0.016	0.016	0.016	0.016
Emission Factor Fleet Exhaust (C), lb/VMT		0.00047	0.00047	0.00047	0.00047
Emission Control Data					
Emission control method		None	None	None	None
Emission control removal efficiency, %		0	0	0	0
Emission Factor (EF) Equation (Equation 1, AP-42, Section 13.2.1.3)					
Uncontrolled EF (UEF) Equation - PM	$UEF(lb/VMT) = [k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C]$				
PM_{10}	$UEF(lb/VMT) = [k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C]$				
Controlled (Final) EF (CEF) Equation	CEF(lb/VMT) = UEF (lb/VMT) x (100 - Removal efficiency (%))				
Calculated PM Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Daily	1.33	1.45	1.51	1.39
Controlled (Final) EF, lb/VMT	Daily	1.33	1.45	1.51	1.39
Calculated PM_{10} Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Daily	0.260	0.283	0.294	0.271
Controlled (Final) EF, lb/VMT	Daily	0.260	0.283	0.294	0.271
Estimated Emission Rate (ER)					
PM Emission Rate (lb)	Daily	157.0	107.4	97.9	8.9
PM_{10} Emission Rate (lb)	Daily	30.59	20.94	19.08	1.74

Source: USEPA, 2003 (AP-42, Section 13.2.1, Paved Roads)

[a] From Permit Nos. 0570005-017-AV and 0570005-019-AC.

[b] Up to 310,000 TPY of H_2SO_4 have been imported in the past. Future H_2SO_4 import is 310,000 minus the annual production increase of 203,494 TPY.

[c] Conservative assumption based on current plant data. About 33% fertilizer, 90.5% molten sulfur, and 51% H_2SO_4 are transported by trucks.

[d] Throughput: Type A = Annual Fertilizer Production x Percent Shipped by Truck - Amount shipped by Type C Trucks.
Type B = Annual Molten Sulfur Capacity x Percent delivered by truck x 70% delivery by Type B Trucks.
Type C = Annual Molten Sulfur Capacity x Percent delivered by truck x 30% delivery by Type C Trucks.
Type D = Annual H_2SO_4 Import x Percent delivered by trucks.

[e] Travel distance of round-trip from fence to drop-off/pick-up location.

[f] Based on silt loading developed for the permit application (DEP File No. 0571244-001-AC) for the solid and molten sulfur handling and storage facilities, Big Bend Transfer Company, LLC, 2001

TABLE 6-8
ESTIMATION OF ANNUAL PM EMISSION FACTORS AND RATES FOR VEHICLE TRAFFIC ON PAVED ROADS IN THE FUTURE, CFI PLANT CITY

General Data		DAP/MAP (Type A)	Molten Sulfur (Type B)	Molten Sulfur In DAP/MAP Out (Type C)	H_2SO_4 (Type D)
		Types of Truck Traffic			
Throughput Data					
Operation days	Annual	365	365	365	365
Annual Fertilizer Production (TPY) [a]	Annual	2,735,528	--	--	--
Annual Molten Sulfur Storage & Handling (TPY) [a]	Annual	--	965,388	965,388	--
Annual H_2SO_4 Import (TPY) [b]	Annual	--	--	--	106,506
Fertilizer Shipment by Truck (%) [c]	Annual	33	--	--	--
Molten Sulfur Delivery by Truck (%) [c]	Annual	--	91	91	--
H2SO4 Delivery by Truck (%) [c]	Annual	--	--	--	51
Throughput (TPY) [d]	Annual	639,173	614,952	263,551	54,318
Vehicle Data					
Vehicle weight (W), ton	Loaded	38	39.5	40	39
	Unloaded	14	15.5	16.5	14.5
	Average	26	27.5	28.25	26.75
	Payload	24	24	23.5	24.5
Number of vehicles (Material throughput/average vehicle weight)	Annual	26,632	25,623	11,215	2,217
Number of vehicles/Day	Daily	73	70	31	6
Distance (miles) travelled/ vehicle/ route [e]	Per trip	1.61	1.06	2.11	1.06
VMT (no. vehicles x miles travelled)	Annual	43,000	27,050	23,679	2,341
General/ Site Characteristics					
Days of precipitation greater than or	Short-term	0	0	0	0
equal to 0.254 mm (p)	Annual	120	120	120	120
Silt Loading (sL), g/m^2 [f]		1.0	1.0	1.0	1.0
Particle size multiplier, PM (k)		0.082	0.082	0.082	0.082
PM_{10} (k)		0.016	0.016	0.016	0.016
Emission Factor Fleet Exhaust (C), lb/VMT		0.00047	0.00047	0.00047	0.00047
Emission Control Data					
Emission control method		None	None	None	None
Emission control removal efficiency, %		0	0	0	0
Emission Factor (EF) Equation (Equation 1, AP-42, Section 13.2.1.3)					
Uncontrolled EF (UEF) Equation - PM	$UEF(lb/VMT) = [k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C] \times [1 - p/(4 \times 365)]$				
PM_{10}	$UEF(lb/VMT) = [k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C] \times [1 - p/(4 \times 365)]$				
Controlled (Final) EF (CEF) Equation	CEF(lb/VMT) = UEF (lb/VMT) x (100 - Removal efficiency (%))				
Calculated PM Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Annual	1.22	1.33	1.39	1.28
Controlled (Final) EF, lb/VMT	Annual	1.22	1.33	1.39	1.28
Calculated PM_{10} Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Annual	0.238	0.259	0.270	0.249
Controlled (Final) EF, lb/VMT	Annual	0.238	0.259	0.270	0.249
Estimated Emission Rate (ER)					
PM Emission Rate (TPY)	TPY	26.3	18.0	16.4	1.5
PM_{10} Emission Rate (TPY)	TPY	5.12	3.51	3.20	0.29

Source: USEPA, 2003 (AP-42, Section 13.2.1, Paved Roads)

[a] From Permit Nos. 0570005-017-AV and 0570005-019-AC.

[b] Up to 310,000 TPY of H_2SO_4 have been imported in the past. Future H_2SO_4 import is 310,000 minus the annual production increase of 203,494 TPY.

[c] Conservative assumption based on current plant data. About 33% fertilizer, 90.5% molten sulfur, and 51% H_2SO_4 are transported by trucks.

[d] Throughput: Type A = Annual Fertilizer Production x Percent Shipped by Truck - Amount shipped by Type C Trucks.
Type B = Annual Molten Sulfur Capacity x Percent delivered by truck x 70% delivery by Type B Trucks.
Type C = Annual Molten Sulfur Capacity x Percent delivered by truck x 30% delivery by Type C Trucks.
Type D = Annual H_2SO_4 Import x Percent delivered by trucks.

[e] Travel distance of round-trip from fence to drop-off/pick-up location.

[f] Based on silt loading developed for the permit application (DEP File No. 0571244-001-AC) for the solid and molten sulfur handling and storage facilities, Big Bend Transfer Company, LLC, 2001

TABLE 6-9

SUMMARY OF FACILITIES WITH SO2 EMISSION SOURCES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY PHOSPHATE COMPLEX

Facility ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum SO_2 Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 20	Include in Modeling Analysis ?
Modeling Area [d]											
0570005	CF Industries, Inc., Plant City Phos	Hillsborough	388.0	3,116.0	0.0	0.0	NA	0.0	8,297.6	SIA	Yes
Screening Area [d]											
7775202	The Lane Construction Corporation		393.8	3,124.3	5.8	8.3	35	10.1	50.0	123	No
0570370	Paradise, Inc.	Hillsborough	388.5	3,099.0	0.5	-17.0	178	17.0	18.6	260	No
0570296	Us Filter Recovery Services, Inc.	Hillsborough	389.0	3,098.0	1.0	-18.0	177	18.0	76.6	281	No
0570076	Apac Southeast, Inc. - Central Fl. Div.	Hillsborough	372.1	3,105.4	-15.9	-10.6	236	19.1	31.1	302	No
1050352	Lakeland Electric - Winston	Polk	400.2	3,100.6	12.2	-15.4	142	19.6	558.0	313	Yes
0570075	Coronet Industries, Inc.	Hillsborough	393.8	3,096.3	5.8	-19.7	164	20.5	1,372.2	331	Yes
0571279	Florida Gas Transmission Company	Hillsborough	372.2	3,102.4	-15.8	-13.6	229	20.9	14.9	337	No
1050095	Lakeland Regional Medical Center	Polk	406.9	3,104.1	18.9	-11.9	122	22.4	13.9	367	No
1050004	Lakeland Electric - McIntosh Power Plant	Polk	409.0	3,106.2	21.0	-9.8	115	23.2	35,366.8	383	Yes
1010071	Pasco Cogen Limited		384.7	3,139.1	-3.3	23.1	352	23.3	25.5	386	No
1050003	Lakeland Electric - Larsen Power Plant	Polk	408.9	3,102.5	20.9	-13.5	123	24.9	12,119.4	418	Yes
1050100	Hexion Specialty Chemicals, Incorporated	Polk	410.7	3,098.9	22.7	-17.1	127	28.4	165.5	488	No
0570261	Hillsborough Cty. Resource Recovery Fac.	Hillsborough	369.4	3,092.7	-18.6	-23.3	219	29.8	431.7	517	No
0570223	Apac-Southeast, Inc Central Florida Div.	Hillsborough	364.0	3,098.1	-24.0	-17.9	233	29.9	80.0	519	No
7774804	Central Florida Hot Mix, A Div Of Lane C		412.5	3,097.7	24.5	-18.3	127	30.6	14.5	532	No
1050047	Agrifos Mining, L.L.C. - Nichols	Polk	398.7	3,085.3	10.7	-30.7	161	32.5	2,219.2	570	Yes
0570057	Gulf Coast Recycling, Inc.	Hillsborough	364.0	3,093.5	-24.0	-22.5	227	32.9	1,015.0	578	Yes
1050319	Clark Environmental Inc	Polk	403.0	3,086.4	15.0	-29.6	153	33.2	99.0	584	No
1050216	Wheelabrator Ridge Energy Inc.	Polk	417.5	3,100.4	29.5	-15.6	118	33.4	284.7	588	No
1050057	IMC Agrico Company, Nichols Plant	Polk	398.6	3,084.2	10.6	-31.8	162	33.5	2,029.1	590	Yes
1050298	Polk County Board Of County Commissioner	Polk	418.2	3,098.5	30.2	-17.5	120	34.9	13.5	618	No
1050221	Calpine/Auburndale Power Partners, Lp	Polk	420.8	3,103.3	32.8	-12.7	111	35.2	197.4	623	No
1050334	Calpine Construction Finance Company, Lp	Polk	421.0	3,103.2	33.0	-12.8	111	35.4	105.2	628	No
1050377	Amerimix Industries, Inc	Polk	421.5	3,103.6	33.5	-12.4	110	35.8	91.1	635	No
0570127	City Of Tampa	Hillsborough	360.2	3,092.2	-27.8	-23.8	229	36.6	156.0	652	No

TABLE 6-9
SUMMARY OF FACILITIES WITH SO2 EMISSION SOURCES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY PHOSPHATE COMPLEX

Facility ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum SO_2 Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 20	Include in Modeling Analysis ?
1050046	Mosaic Fertilizer, LLC - Bartow	Polk	409.8	3,086.6	21.8	-29.4	143	36.6	6,101.8	652	Yes
1050023	Cutrale Citrus Juices Usa,Inc	Polk	422.5	3,103.6	34.5	-12.4	110	36.6	1,691.2	653	Yes
1050048	Mosaic Fertilizer, LLC - Mulberry	Polk	408.0	3,085.0	20.0	-31.0	147	36.9	1,705.6	658	Yes
0570080	Marathon Ashland Petroleum Llc	Hillsborough	359.5	3,091.7	-28.5	-24.3	230	37.5	35.2	669	No
1050059	Mosaic Phosphates Company (Was IMC) - New Wales	Polk	396.7	3,079.4	8.7	-36.6	167	37.6	11,721.7	672	Yes
7775280	Apac Southeast		423.7	3,101.9	35.7	-14.1	112	38.4	15.4	687	No
0570038	TECO, Hookers Point	Hillsborough	358.0	3,091.0	-30.0	-25.0	230	39.1	10	701	Yes
1050052	CF Industries, Inc. - Bartow	Polk	408.3	3,082.5	20.3	-33.5	149	39.2	1,827.0	703	Yes
0570040	Tampa Electric Company - Gannon	Hillsborough	361.1	3,087.5	-26.9	-28.5	223	39.2	496.1	704	No
0571209	Apac-Southeast, Inc Central Florida Div.	Hillsborough	359.9	3,088.1	-28.1	-27.9	225	39.6	58.5	713	No
0571290	Tarmac America, Llc (Titan American Bus.	Hillsborough	359.9	3,087.8	-28.1	-28.2	225	39.8	21.9	715	No
0570089	St. Joseph's Hospital	Hillsborough	353.3	3,095.9	-34.7	-20.1	240	40.1	14.5	722	No
0570041	Florida Health Sciences Ctr, Inc	Hillsborough	356.4	3,091.0	-31.6	-25.0	232	40.3	58.9	726	No
0570286	Tampa Bay Shipbuilding & Repair Company	Hillsborough	358.0	3,089.0	-30.0	-27.0	228	40.4	12.0	727	No
0570408	Agrium U.S. Inc.	Hillsborough	358.4	3,088.4	-29.6	-27.6	227	40.5	12.2	729	No
0570008	Mosaic Fertilizer, LLC - Riverview	Hillsborough	364.6	3,082.4	-23.4	-33.6	215	41.0	6,506.1	739	Yes
1050349	Cpv Pierce, Ltc.	Polk	406.7	3,079.3	18.7	-36.7	153	41.2	75.8	744	No
1010028	Overstreet Paving Co	Pasco	357.4	3,143.7	-30.6	27.7	312	41.3	28.0	746	No
1050053	Mosaic Fertilizer, LLC - Green Bay	Polk	409.5	3,080.1	21.5	-35.9	149	41.8	5,362.9	757	Yes
1050090	Todhunter International Inc .	Polk	429.6	3,108.0	41.6	-8.0	101	42.3	17.3	767	No
1050217	Polk Power Partners, L.P.	Polk	413.6	3,080.6	25.6	-35.4	144	43.7	436.9	794	No
1050231	Orange Cogeneration Limited Partnership	Polk	418.7	3,083.0	30.7	-33.0	137	45.1	11.0	821	No
1010373	Shady Hills Power Company, L.L.C.	Pasco	348.7	3,138.4	-39.3	22.4	300	45.2	331.8	824	No
1010056	Pasco County	Pasco	348.6	3,139.0	-39.4	23.0	300	45.6	527.2	832	No
1010027	Ajax Paving Industries, Inc.	Pasco	342.2	3,119.2	-45.8	3.2	274	45.9	28.0	837	No
0530357	D.A.B. Constructors Inc	Hernando	358.5	3,151.3	-29.5	35.3	320	46.0	14.0	840	No
0571242	New Ngc, Inc., D/B/A National Gypsum Com	Hillsborough	364.7	3,075.6	-23.3	-40.4	210	46.6	79.0	852	No
1010041	Apac- Southeast, Inc., Central Fl. Div	Pasco	340.7	3,119.5	-47.3	3.5	274	47.4	157.7	869	No
0570039	Tampa Electric Company - Big Bend-	Hillsborough	363.2	3,074.9	-24.9	-41.1	211	48.0	364,177.5	880	Yes

TABLE 6-9

SUMMARY OF FACILITIES WITH SO2 EMISSION SOURCES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY PHOSPHATE COMPLEX

Facility ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum SO_2 Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 20	Include in Modeling Analysis ?
0530004	Citrus Service, Inc.	Hernando	364.2	3,158.3	-23.8	42.3	331	48.5	137.2	891	No
1050055	Mosaic Phosphates Company - So. Pierce	Polk	407.5	3,071.4	19.5	-44.6	156	48.7	3,967.2	894	Yes
1050234	Progress Energy Florida - Hines	Polk	414.3	3,073.9	26.3	-42.1	148	49.7	407.0	913	No
1050233	Tampa Electric Company - Polk Power Station	Polk	402.5	3,067.4	14.5	-48.7	163	50.8	7,509.1	935	Yes
0570028	New Ngc, Inc.	Hillsborough	348.8	3,082.7	-39.2	-33.3	230	51.4	151.6	948	No
1050061	Holly Hill Fruit Products	Polk	441.0	3,115.4	53.0	-0.6	91	53.0	192.0	980	No
0530021	Florida Crushed Stone Co., Inc. - Brookville Cement	Hernando	361.3	3,162.4	-26.7	46.4	330	53.5	3,714.3	990	Yes
Beyond Screening Area out to 100 km [d]											
1030012	Progress Energy Florida - Higgins	Pinellas	336.5	3,098.4	-51.5	-17.6	251	54.4	24,803.7	1,008	Yes
1050223	Progress Energy Florida - Tiger Bay	Polk	416.3	3,069.3	28.3	-46.7	149	54.6	42.6	1,012	No
1050014	Standard Sand & Silica Co	Polk	442.8	3,117.3	54.8	1.3	89	54.8	228.3	1,016	No
1050051	U.S. Agri-Chemicals Corporation - Ft. Meade	Polk	417.0	3,069.3	29.0	-46.7	148	55.0	4,607.5	1,019	Yes
1190018	Consolidated Minerals, Inc.	Sumter	401.5	3,169.5	13.5	53.5	14	55.2	98.3	1,024	No
1030011	Progress Energy Florida - Bartow	Pinellas	343.9	3,082.7	-44.1	-33.3	233	55.3	63,539.2	1,026	Yes
0951219	Orlando Paving Company	Orange	437.9	3,140.0	49.9	24.0	64	55.3	14.0	1,027	No
0950111	Walt Disney World Company	Orange	442.0	3,139.0	54.0	23.0	67	58.7	68.3	1,094	No
0970014	Progress Energy Florida - Intercession City Plant	Osceola	446.3	3,126.0	58.3	10.0	80	59.2	11,840.5	1,103	Yes
1030117	Pinellas Co. Board Of Co. Commissioners	Pinellas	336.9	3,084.1	-51.1	-31.9	238	60.2	2,235.0	1,125	Yes
1050002	Citrus World, Inc.	Polk	441.0	3,087.3	53.0	-28.7	118	60.3	3,462.3	1,125	Yes
0490340	Seminole - Payne Creek Generating Station	Hardee	405.0	3,057.7	17.0	-58.3	164	60.7	608.0	1,135	No
1010017	Progress Energy Florida, Inc. - Anclote Power Plant	Pasco	327.4	3,120.7	-60.6	4.7	274	60.8	120,811.0	1,135	Yes
0530010	Cemex	Hernando	357.5	3,169.2	-30.5	53.2	330	61.3	132.0	1,147	No
0490015	Hardee Power Partners - Hardee Power Station	Hardee	406.0	3,057.2	18.0	-58.8	163	61.5	9,693.7	1,150	Yes
0970043	Kissimmee Utility Authority - Cane Island	Osceola	449.8	3,127.9	61.8	11.9	79	62.9	112.1	1,179	No
0810010	Florida Power & Light - Manatee	Manatee	367.3	3,054.2	-20.8	-61.8	199	65.2	83,542.6	1,225	Yes
1030013	Progress Energy Florida, Inc. - Bayboro	Pinellas	338.8	3,071.3	-49.2	-44.7	228	66.5	6,848.0	1,249	Yes
0690046	Covanta Lake, Inc.	Lake	413.1	3,179.3	25.1	63.3	22	68.1	188.5	1,282	No
0690014	Silver Springs Citrus Inc.	Lake	424.4	3,176.5	36.4	60.5	31	70.7	142.8	1,333	No

TABLE 6-9

SUMMARY OF FACILITIES WITH SO2 EMISSION SOURCES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY PHOSPHATE COMPLEX

Facility ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum SO_2 Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 20	Include in Modeling Analysis ?
0950053	Louis Dreyfus Citrus, Inc.	Orange	443.8	3,159.5	55.8	43.5	52	70.8	379.9	1,335	No
0810194	CPV Gulf Coast, Ltd.	Manatee	348.5	3,057.0	-39.5	-59.0	214	71.0	152.0	1,340	No
0810024	Florida Power & Light (Pms)	Manatee	349.1	3,056.5	-38.9	-59.5	213	71.1	145.1	1,342	No
0490043	Vandolah Power Company, LLC	Hardee	408.8	3,044.5	20.8	-71.5	164	74.5	442.4	1,409	No
0690002	Cutrale Citrus Juices Usa Inc	Lake	415.5	3,187.3	27.5	71.3	21	76.4	215.6	1,448	No
1050019	Cargill Juice North America, Inc.	Polk	447.9	3,068.3	59.9	-47.7	129	76.6	173.0	1,451	No
0950127	A T & T Information Systems	Orange	459.7	3,146.6	71.7	30.6	67	78.0	219.0	1,479	No
0950138	Agere Systems	Orange	459.3	3,153.6	71.3	37.6	62	80.6	160.8	1,532	No
0970002	St Cloud City Power Plant	Osceola	471.8	3,124.9	83.8	8.9	84	84.3	212.0	1,605	No
0810007	Tropicana Products, Inc.	Manatee	348.2	3,041.3	-39.8	-74.7	208	84.6	182.5	1,613	No
0550003	Progress Energy Florida - Avon Park		451.4	3,050.5	63.4	-65.5	136	91.2	5,054.0	1,743	Yes
0950014	Progress Energy Florida - Rio Pinar	Orange	475.2	3,156.8	87.2	40.8	65	96.3	109.2	1,845	No

Note: NA = Not applicable, ND = No data, SID = Significant impact distance for the project

[a] The CF Industries Plant City facility is located at UTM Coordinates: East 388.0 km; North 3116.0 km

[b] The significant impact distance (SID) for the project is estimated to be 4.0 km

[c] Based on the North Carolina Screening Threshold method, a background facility is included in the modeling analysis if the facility is beyond the modeling area and its emission rate is greater than the product of (Distance-SID) x 20.

[d] "Modeling Area" is the area in which the Project is predicted to have a significant impact. EPA recommends that all sources within this area be modeled.
"Screening Area" is the area that is 50 km beyond the modeling area. EPA recommends that sources be modeled that are expected to have a significant impact in the modeling area.
"Beyond Screening Area out to 120 km" is the area beyond the screening area and out to 120 km in which only large sources are included in the modeling.

TABLE 6-10

SUMMARY OF ALL PM10 EMITTING FACILITIES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY

Plant ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum PM Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 2C	Include in Modeling Analysis ?
Modeling Area [d]											
0570005	CF Industries--Plant City	Hillsborough	409.8	3,086.6	21.8	-29.4	NA	36.6	705	632	YES
Screening Area [d]											
1010076	Plaza Materials Corporation	Pasco	388.4	3,120.1	0.4	4.1	6	4.1	1	SIA	YES
1050099	AOC, L.L.C.	Polk	401.0	3,108.5	13.0	-7.5	120	15.0	36	200	NO
1010060	Lykes Agri Sales, Inc,	Pasco	386.2	3,133.3	-1.8	17.3	354	17.4	509	248	YES
1050015	US Beverage Packing Lakeland Plant	Polk	399.0	3,101.8	11.0	-14.2	142	18.0	140	259	NO
0570468	Gatsby Spas Inc.	Hillsborough	387.1	3,097.6	-0.9	-18.4	183	18.4	15	269	NO
0571115	Redman Homes, Inc.	Hillsborough	387.0	3,097.4	-1.0	-18.7	183	18.7	15	273	NO
0570076	Delta Asphalt	Hillsborough	372.1	3,105.4	-15.9	-10.6	236	19.1	62	282	NO
0570249	Alcoa Extrusions	Hillsborough	385.6	3,097.0	-2.4	-19.0	187	19.2	200	283	NO
7770037	Apac - Florida, Inc., Tampa Div.		392.6	3,097.3	4.6	-18.7	166	19.3	22	285	NO
1050139	Maxpak Corporation	Polk	402.0	3,102.0	14.0	-14.0	135	19.8	16	296	NO
0570075	Coronet Industries, Inc.	Hillsborough	393.8	3,096.3	5.8	-19.7	164	20.5	599	311	YES
0570220	Southern Culvert	Hillsborough	391.5	3,095.0	3.5	-21.0	171	21.3	14	326	NO
1050009	Florida Tile Industries, Inc.	Polk	405.4	3,102.4	17.4	-13.6	128	22.1	14	342	NO
0570409	Coniglio Construction & Demolition	Hillsborough	368.9	3,104.2	-19.1	-11.8	238	22.5	24	349	NO
0570010	Morris Bridge Water Plant	Hillsborough	365.9	3,110.6	-22.2	-5.4	256	22.8	11	356	NO
1050004	Lakeland Electric, McIntosh Power Plant	Polk	409.0	3,106.2	21.0	-9.8	115	23.2	2,308	363	YES
1010071	Pasco Cogen Limited	Pasco	385.1	3,139.0	-2.9	23.0	353	23.2	22	364	NO
0570180	FECP/CAST Crete Division	Hillsborough	371.9	3,099.2	-16.1	-16.8	224	23.3	11	365	NO
1010002	PASCO BEVERAGE COMPANY	Pasco	383.5	3,139.2	-4.5	23.2	349	23.6	56	373	NO
1010024	EWELL INDUSTRIES	Pasco	383.1	3,140.1	-4.9	24.1	349	24.6	231	392	NO
1050003	Lakeland Electric, Larsen Power Plant	Polk	408.9	3,102.5	20.9	-13.5	123	24.9	488	398	YES
1050100	Shell Epoxy Resins LLC	Polk	410.7	3,098.9	22.7	-17.1	127	28.4	25	468	NO
0570006	Yuengling Brewing Co.	Hillsborough	362.0	3,103.2	-26.0	-12.8	244	29.0	28	480	NO
0570069	Industrial Galvanizers America, Inc.	Hillsborough	368.5	3,094.5	-19.5	-21.5	222	29.0	11	481	NO
0570090	Southeastern Wire	Hillsborough	368.2	3,094.6	-19.8	-21.4	223	29.2	14	483	NO

TABLE 6-10
SUMMARY OF ALL PM10 EMITTING FACILITIES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY

Plant ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum PM Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 2C	Include in Modeling Analysis ?
1050137	Monier, Inc.	Polk	414.0	3,102.5	26.0	-13.5	117	29.3	44	486	NO
	IMC - Agrico Co. (Pierce)		404.1	3,079.0	-16.7	-24.3	214	29.5	-311	490	NO
1050073	Rinker Materials Corporation	Polk	412.5	3,099.0	24.5	-17.0	125	29.8	38	496	NO
0570261	Hillsborough Cty. RRF	Hillsborough	368.2	3,092.7	-19.8	-23.3	220	30.6	92	512	NO
1050151	Central Florida Hot-Mix, Inc.	Polk	412.5	3,097.7	24.5	-18.3	127	30.6	45	512	NO
0570185	Rinker Materials Corporation	Hillsborough	363.2	3,098.1	-24.8	-17.9	234	30.6	15	512	NO
0570136	Verlite Co	Hillsborough	363.0	3,098.1	-25.0	-17.9	234	30.7	30	515	NO
1050316	McGee Tire Stores, Inc.	Polk	413.7	3,098.8	25.7	-17.2	124	30.9	18	518	NO
0570001	Johnson Controls Battery Group, Inc	Hillsborough	359.9	3,102.5	-28.1	-13.5	244	31.2	84	523	NO
0570025	Trademark Nitrogen Corp	Hillsborough	367.3	3,092.6	-20.7	-23.4	221	31.2	1,463	525	YES
0570280	Ewell Industries, Inc.	Hillsborough	367.1	3,092.7	-20.9	-23.3	222	31.3	24	526	NO
0570013	SOUTHDOWN, INC.	Hillsborough	357.8	3,107.5	-30.2	-8.5	254	31.4	10	527	NO
0570405	Goodyear Tire & Rubber Company	Hillsborough	366.4	3,093.2	-21.6	-22.8	223	31.4	10	528	NO
0570052	Florida Rock Industries	Hillsborough	362.3	3,097.5	-25.7	-18.5	234	31.7	21	533	NO
1050157	Purina Mills, Inc.	Polk	402.0	3,087.0	14.0	-29.0	154	32.2	22	544	NO
1050319	Clark Environmental Inc	Polk	401.2	3,086.6	13.2	-29.4	156	32.2	13	545	NO
7770473	Conrad Yelvington Distributors		361.8	3,096.9	-26.2	-19.1	234	32.4	27	549	NO
1050066	K.C. Industries, L.L.C.	Polk	401.5	3,086.5	13.5	-29.5	155	32.4	16	549	NO
1050047	Agrifos Mining, L.L.C. - Nichols	Polk	398.7	3,085.3	10.7	-30.7	161	32.5	557	550	YES
1050056	CD Global Prairie Mine (IMC Agrico)	Polk	402.9	3,087.0	14.9	-29.0	153	32.6	607	552	YES
0570057	Gulf Coast Recycling, Inc.	Hillsborough	364.0	3,093.5	-24.0	-22.5	227	32.9	17	558	NO
0570364	Manna Pro Corporation	Hillsborough	364.7	3,092.6	-23.3	-23.4	225	33.0	11	560	NO
1050208	Lakeland Drum Service, Inc.	Polk	418.8	3,103.6	30.8	-12.4	112	33.2	50	564	NO
1050182	Geologic Recovery Systems	Polk	401.8	3,085.8	13.8	-30.2	155	33.2	20	564	NO
1050057	IMC Agrico Company, Nichols Plant	Polk	398.4	3,084.2	10.4	-31.8	162	33.5	561	569	NO
0570299	Premdor Inc	Hillsborough	362.1	3,092.5	-25.9	-23.5	228	35.0	13	599	NO
1050334	Calpine Osprey Energy Center	Polk	420.8	3,103.3	32.8	-12.7	111	35.2	204	603	NO
1050221	Auburndale Power Partners	Polk	420.8	3,103.3	32.8	-12.7	111	35.2	553	603	NO
1050037	All-Temp Storage LLC	Polk	421.7	3,104.2	33.7	-11.8	109	35.7	87	614	NO

TABLE 6-10

SUMMARY OF ALL PM10 EMITTING FACILITIES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY

Plant ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum PM Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 2C	Include in Modeling Analysis ?
0570373	Howard F. Curren AWT Plant	Hillsborough	364.0	3,089.5	-24.0	-26.5	222	35.8	53	615	NO
1050023	Cutrale Citrus Juices USA,Inc	Polk	422.5	3,103.6	34.5	-12.4	110	36.6	817	633	YES
0570413	Kimmins Recycling Corporation	Hillsborough	360.4	3,093.1	-27.6	-22.9	230	35.9	15	617	NO
0570466	Bulk Intermodal Services	Hillsborough	360.1	3,093.2	-27.9	-22.8	231	36.0	15	621	NO
0570077	Verlite Company	Hillsborough	360.2	3,093.0	-27.8	-23.0	230	36.1	11	622	NO
1050048	Mosaic Fertilizer, LLC - Mulberry	Polk	406.8	3,085.1	18.8	-30.9	149	36.2	131	623	NO
0570127	Mckay Bay Refuse-To-Energy Facility	Hillsborough	360.2	3,092.2	-27.8	-23.8	229	36.6	172	632	NO
1050046	Mosaic Fertilizer, LLC - Bartow	Polk	409.8	3,086.6	21.8	-29.4	143	36.6	257	632	NO
0570032	Southdown Inc.	Hillsborough	360.1	3,092.2	-27.9	-23.8	230	36.7	18	633	NO
0570029	Nitram, Inc.	Hillsborough	362.5	3,089.0	-25.5	-27.0	223	37.1	291	643	NO
0570033	CSX Transportation, Inc.	Hillsborough	362.4	3,089.0	-25.6	-27.0	223	37.2	369	644	NO
1050059	Mosaic Phosphates Co. (New Wales)	Polk	396.7	3,079.4	8.7	-36.6	167	37.6	1,521	652	YES
0570344	Pops Painting, Inc. Tampa Tank	Hillsborough	362.8	3,087.9	-25.2	-28.1	222	37.7	38	655	NO
1050007	Owens-Brockway Glass Container Inc.	Polk	423.4	3,102.8	35.4	-13.2	110	37.8	123	656	NO
0570021	International Ship	Hillsborough	358.0	3,092.8	-30.0	-23.3	232	37.9	147	659	NO
0570279	Florida Rock Industries, Inc.	Hillsborough	365.8	3,085.0	-22.2	-31.0	216	38.1	22	663	NO
1050082	APAC-Florida, Inc., Macasphalt Div.	Polk	423.7	3,101.9	35.7	-14.1	112	38.4	81	667	NO
0570092	Kinder Morgan Port Sutton Terminal LLC	Hillsborough	362.4	3,087.1	-25.6	-28.9	222	38.7	141	673	NO
0570056	Building Materials Manf. Corp.	Hillsborough	362.2	3,087.2	-25.8	-28.8	222	38.7	45	673	NO
0570014	Eastern Association Terminal Rock Port	Hillsborough	360.2	3,088.9	-27.8	-27.1	226	38.8	249	676	NO
1050146	Pavex Corporation	Polk	413.0	3,086.2	25.0	-29.8	140	38.9	14	678	NO
0570251	Conagra	Hillsborough	357.0	3,092.5	-31.0	-23.5	233	38.9	99	678	NO
0570024	IMC-Phosphates Co.(Port Sutton Terminal)	Hillsborough	361.5	3,087.5	-26.5	-28.5	223	38.9	391	679	NO
1050050	U S Agri-Chemicals - Bartow	Polk	413.2	3,086.3	25.2	-29.7	140	39.0	268	679	NO
0570051	CF Industries	Hillsborough	359.1	3,089.8	-28.9	-26.2	228	39.0	15	680	NO
0570038	TECO, Hookers Point	Hillsborough	358.0	3,091.0	-30.0	-25.0	230	39.1	3	681	Yes
0571289	North Star Recycling--Dover Street	Hillsborough	362.3	3,086.5	-25.7	-29.5	221	39.1	20	683	NO
1050052	C.F. Industries, Bartow	Polk	408.3	3,082.5	20.3	-33.5	149	39.2	64	683	NO

TABLE 6-10

SUMMARY OF ALL PM10 EMITTING FACILITIES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY

Plant ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum PM Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 2C	Include in Modeling Analysis ?
0570018	Florida Cement Inc.	Hillsborough	357.9	3,090.7	-30.1	-25.3	230	39.3	352	687	NO
	Bartow Phosphate Cnt. (IMC Uranium Rec.)	Polk	408.4	3,082.2	20.4	-33.8	149	39.5	-828	690	NO
0570317	Janet & Charlies Wood Recycling Fac.	Hillsborough	363.1	3,085.3	-24.9	-30.7	219	39.5	100	691	NO
0571209	Apac-Florida, Inc.	Hillsborough	359.9	3,088.1	-28.1	-27.9	225	39.6	38	693	NO
0530017	E.R. JAHNA INDUSTRIES, INC. - MILLS MIN	Hernando	386.7	3,155.8	-1.3	39.8	358	39.8	72	696	NO
0570040	TECO, Bayside Power Station	Hillsborough	360.1	3,087.5	-27.9	-28.5	224	39.9	1,329	698	YES
0570224	Reed Minerals Division	Hillsborough	362.2	3,085.5	-25.8	-30.5	220	39.9	32	699	NO
0570255	Lehigh Portland Cement Company	Hillsborough	360.7	3,086.8	-27.3	-29.2	223	40.0	11	699	NO
0570150	Dravo Lime,Inc.	Hillsborough	362.9	3,084.7	-25.1	-31.3	219	40.1	42	702	NO
0570286	Tampa Bay Shipbuilding & Repair Co.	Hillsborough	358.0	3,089.0	-30.0	-27.0	228	40.4	19	707	NO
0570031	Holnam Inc.	Hillsborough	359.5	3,087.3	-28.5	-28.7	225	40.4	29	709	NO
0570408	Prodica LLC	Hillsborough	358.4	3,088.4	-29.6	-27.6	227	40.5	15	709	NO
0571100	Chemical Lime Company Of Alabama Inc	Hillsborough	358.2	3,088.3	-29.8	-27.7	227	40.7	67	714	NO
0570252	Southdown, Inc.	Hillsborough	359.3	3,087.1	-28.7	-28.9	225	40.7	53	715	NO
0570065	Southdown,Inc.	Hillsborough	349.5	3,102.0	-38.5	-14.0	250	41.0	28	719	NO
0570047	Florida Rock Industries	Hillsborough	349.3	3,102.3	-38.7	-13.7	251	41.1	22	721	NO
1050091	Florida Rock Ind. - Winter Haven	Polk	428.0	3,105.2	40.0	-10.8	105	41.4	55	729	NO
1050064	Florida Rock Ind. - Bartow	Polk	416.8	3,085.8	28.8	-30.2	136	41.7	57	735	NO
1050053	Mosaic Green Bay Fertilizer, Inc.	Polk	409.5	3,080.1	21.5	-35.9	NA	41.8	54	737	NO
1050106	Citrus World, Inc.--Florida's Natural Growers-Ba	Polk	422.7	3,092.6	34.7	-23.4	124	41.9	89	737	NO
0570008	Cargill Riverview Facility	Hillsborough	362.9	3,082.5	-25.1	-33.5	217	41.9	329	737	NO
1050216	Ridge Generating Station, L.P. [D]	Polk	427.0	3,100.3	39.0	-15.7	112	42.0	61	741	NO
0570262	Chromalloy Castings Tampa, Corporation	Hillsborough	349.0	3,100.0	-39.0	-16.0	248	42.2	32	743	NO
1010344	J.E. Ausley Construction Inc	Pasco	357.7	3,145.4	-30.3	29.4	314	42.2	25	744	NO
0570198	Hillsborough Crematory	Hillsborough	350.8	3,096.0	-37.2	-20.0	242	42.2	18	745	NO
1050053	Farmland - Green Bay Plant	Polk	410.3	3,079.7	22.3	-36.3	148	42.6	139	752	NO
0570106	Rinker	Hillsborough	350.7	3,094.3	-37.3	-21.7	240	43.2	21	764	NO
1050217	Polk Power Partners, L.P. Mulberry	Polk	413.6	3,080.6	25.6	-35.4	144	43.7	35	774	NO
1050229	Parallel Products Of Florida	Polk	413.9	3,080.7	25.9	-35.3	144	43.8	31	775	NO

TABLE 6-10
SUMMARY OF ALL PM10 EMITTING FACILITIES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY

Plant ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum PM Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 2C	Include in Modeling Analysis ?
1050128	Ridge - Bartow	Polk	418.6	3,084.1	30.6	-31.9	136	44.2	47	784	NO
1050034	Mosaic Phosphates Inc. (CFMO), Noralyn Mine	Polk	414.7	3,080.3	26.7	-35.7	143	44.6	1,128	792	YES
1010070	Champeau Storage & Recycling	Pasco	343.5	3,118.3	-44.5	2.3	273	44.6	49	791	NO
1050045	Peace River Citrus Products, Inc.	Polk	418.7	3,083.6	30.7	-32.4	137	44.6	95	793	NO
1050231	Orange Cogeneration Facility	Polk	418.7	3,083.0	30.7	-33.0	137	45.1	48	801	NO
1010056	Pasco County Resource Recovery	Pasco	348.8	3,138.8	-39.2	22.8	300	45.3	101	806	NO
0530357	D.A.B. Constructors, Inc.	Hernando	358.5	3,151.3	-29.5	35.3	320	46.0	24	820	NO
0571242	National Gypsum	Hillsborough	364.7	3,075.6	-23.3	-40.4	210	46.6	14	832	NO
1010373	Shady Hills Generating Station	Pasco	347.0	3,139.0	-41.0	23.0	299	47.0	123	840	NO
0571242	New Ngc Inc.	Hillsborough	363.3	3,075.6	-24.7	-40.4	211	47.4	81	847	NO
1010041	Apac - Florida, Inc. - Tampa Division	Pasco	340.7	3,119.5	-47.3	3.5	274	47.4	15	849	NO
1010027	R.E. Purcell Const. Co.	Pasco	340.6	3,119.2	-47.4	3.2	274	47.5	20	850	NO
0570121	Ewell Industries, Inc.	Hillsborough	364.0	3,075.0	-24.0	-41.0	210	47.5	12	850	NO
0570094	Imc-Phosphates Co. (Big Bend)	Hillsborough	362.1	3,076.1	-25.9	-39.9	213	47.6	76	851	NO
1050034	Mosaic Phosphates Inc. (Cfmo), Ft. Lonesome	Polk	389.5	3,068.0	1.5	-48.0	178	48.0	-443	860	NO
1050145	Bartow Ethanol, Inc.	Polk	418.8	3,078.8	30.8	-37.2	140	48.2	281	865	NO
0530004	Citrus Service, Inc.	Hernando	364.2	3,158.3	-23.8	42.3	331	48.5	44	871	NO
0570039	TECO, Big Bend Station	Hillsborough	363.2	3,074.9	-24.9	-41.1	211	48.0	5,942	860	YES
1050055	Mosaic Phosphates Co. - South Pierce	Polk	407.5	3,071.4	19.5	-44.6	156	48.7	770	874	NO
1050198	Palex - Homeland	Polk	419.1	3,078.1	31.1	-37.9	141	49.0	97	881	NO
1050234	Hines Energy Complex (Progress Energy)	Polk	414.3	3,073.9	26.3	-42.1	148	49.7	299	893	NO
1050233	Polk Power Station-TECO	Polk	402.5	3,067.4	14.5	-48.7	163	50.8	149	915	NO
0570028	National Gypsum Company	Hillsborough	348.8	3,082.7	-39.2	-33.3	230	51.4	167	928	NO
0690001	Florida Select Citrus, Inc.	Lake	416.2	3,159.6	28.2	43.6	33	51.9	98	938	NO
1050199	Vigiron	Polk	420.4	3,075.2	32.4	-40.8	142	52.1	88	942	NO
1030037	Rmc Ewell, Inc.	Pinellas	337.6	3,102.7	-50.4	-13.3	255	52.1	34	943	NO
0570237	Standard Concrete	Hillsborough	347.7	3,082.7	-40.3	-33.3	230	52.3	15	946	NO
0530022	Sunshine Materials Inc.	Hernando	365.5	3,163.2	-22.5	47.2	335	52.3	28	946	NO
1050061	Holly Hill Fruit Products	Polk	441.0	3,115.4	53.0	-0.6	91	53.0	114	960	NO

TABLE 6-10
SUMMARY OF ALL PM10 EMITTING FACILITIES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY

Plant ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum PM Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 2C	Include in Modeling Analysis ?
1030114	Micon/Mi Metals - Oldsmar	Pinellas	336.7	3,101.0	-51.3	-15.0	254	53.4	18	969	NO
1050014	Davenport Mine-Standard Sand & Silica Co.	Polk	441.5	3,118.2	53.5	2.2	88	53.5	301	971	NO
0530021	Florida Crushed Stone Co., Inc. - Brookville Cem	Hernando	361.3	3,162.4	-26.7	46.4	330	53.5	210	970	NO
0530040	Apac - Florida, Inc. - Tampa Division	Hernando	360.0	3,162.0	-28.0	46.0	329	53.8	25	977	NO
1010327	Coastal Landfill Disposal, Inc.	Pasco	341.5	3,143.2	-46.5	27.2	300	53.9	25	977	NO
0530032	Central Power & Lime, Inc.	Hernando	360.0	3,162.5	-28.0	46.5	329	54.3	855	986	NO
0530005	Chemical Lime Inc.	Hernando	359.4	3,162.3	-28.6	46.3	328	54.4	79	988	NO
1030012	Progress Energy Florida - Higgins	Pinellas	336.5	3,098.4	-51.5	-17.6	251	54.4	1,260	988	YES
1050223	Florida Power Corp.-Tiger Bay Cogeneration Fac	Polk	416.3	3,069.3	28.3	-46.7	149	54.6	46	992	NO
1050026	Alcoa , L.L.C.	Polk	416.8	3,069.5	28.8	-46.5	148	54.7	69	994	NO
1050051	U.S. Agri-Chemicals - Ft. Meade	Polk	416.0	3,069.0	28.0	-47.0	149	54.7	119	994	NO
0530351	GRUBBS CONSTRUCTION COMPANY, ASPH	Hernando	359.8	3,163.0	-28.2	47.0	329	54.8	35	996	NO
Beyond Screening Area out to 100 km [d]											
0530044	GREGG MINE	Hernando	359.8	3,163.4	-28.2	47.4	329	55.2	32	1003	NO
1190018	Consolidated Minerals, Inc.	Sumter	401.5	3,169.5	13.5	53.5	14	55.2	20	1004	NO
1030011	Progress Energy Florida - Bartow	Pinellas	343.9	3,082.7	-44.1	-33.3	233	55.3	369	1006	NO
1050034	Mosaic Phosphates Inc. (CFMO), Ft. Green	Polk	407.5	3,061.3	19.5	-54.7	160	58.1	84	1061	NO
0970014	Progress Energy Florida - Intercession City Plant	Osceola	446.3	3,126.0	58.3	10.0	80	59.2	1,229	1083	YES
0490015	Hardee Power Station	Hardee	404.8	3,057.4	16.8	-58.6	164	61.0	247	1119	NO
1030117	Pinellas Co. Resource Recovery Facility	Pinellas	335.2	3,084.1	-52.8	-31.9	239	61.7	657	1134	NO
0530010	Florida Min'g & Mat's (Southdown)	Hernando	355.9	3,169.1	-32.1	53.1	329	62.0	768	1141	NO
0970043	Kua Cane Island Power Park	Osceola	449.8	3,127.9	61.8	11.9	79	62.9	164	1159	NO
1010017	Progress Energy Florida, Inc. - Anclote Power Pl	Pasco	327.4	3,120.7	-60.6	4.7	274	60.8	4,298	1115	YES
1030275	Protex, Inc	Pinellas	332.9	3,083.5	-55.1	-32.5	239	64.0	259	1180	NO
0810010	FPL - Manatee Power Plant	Manatee	367.3	3,054.2	-20.8	-61.8	199	65.2	7,578	1205	YES
1030013	Bayboro Power Plant	Pinellas	338.8	3,071.3	-49.2	-44.7	228	66.5	283	1229	NO
0810199	El Paso Manatee Energy Center	Manatee	349.1	3,057.6	-38.9	-58.4	214	70.2	127	1303	NO
0970001	Kua - Roy B. Hansel Power Plant	Osceola	460.1	3,129.3	72.1	13.3	80	73.3	100	1366	NO

TABLE 6-10

SUMMARY OF ALL PM10 EMITTING FACILITIES IN THE VICINITY OF CF INDUSTRIES, PLANT CITY

Plant ID	Facility Name	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to CFI [a] X (km)	Relative to CFI [a] Y (km)	Relative to CFI [a] Direction (deg.)	Relative to CFI [a] Distance (km)	Maximum PM Emissions (TPY)	Q, (TPY) Emission Threshold [b,c] (Dist - SID) x 2C	Include in Modeling Analysis ?
1030244	A-American Rent All	Pinellas	324.1	3,079.2	-63.9	-36.8	240	73.7	2,190	1375	NO
0490043	Ips Vandolah Power Project	Hardee	408.8	3,044.5	20.8	-71.5	164	74.5	164	1389	NO
0690002	Cutrale Citrus Juices Usa - Leesburg	Lake	415.5	3,187.3	27.5	71.3	21	76.4	180	1428	NO
1050019	Cargill Citro-America, Inc.	Polk	447.9	3,068.3	59.9	-47.7	129	76.6	248	1431	NO
0810052	R.C. Martin Concrete Prod., Inc.	Manatee	348.2	3,045.7	-39.8	-70.3	210	80.8	116	1516	NO
0170012	Ewell Industries/Crystal River Facility	Citrus	345.8	3,196.0	-42.2	80.0	332	90.4	202	1709	NO
0694801	Lake Cogen Ltd.	Lake	434.0	3,198.8	46.0	82.8	29	94.7	108	1794	NO
1150008	Sarasota Precast Product	Sarasota	347.5	3,027.9	-40.5	-88.1	205	97.0	121	1839	NO

Note: NA = Not applicable, ND = No data, SID = Significant impact distance for the project

[a] The Cargill Green Bay facility is located at UTM Coordinates: East 388.0 km, North 3,116.0 km

[b] The significant impact distance (SID) for the project is estimated to be 5 km

[c] Based on the North Carolina Screening Threshold method, a background facility is included in the modeling analysis if the facility is beyond the modeling area and its emission rate is greater than the product of (Distance-SID) x 20.

[d] "Modeling Area" is the area in which the Project is predicted to have a significant impact. EPA recommends that all sources within this area be modeled.
"Screening Area" is the area that is 50 km beyond the modeling area. EPA recommends that sources be modeled that are expected to have a significant impact in the modeling area.
"Beyond Screening Area out to 100 km" is the area beyond the screening area and out to 100 km in which only large sources are included in the modeling.

TABLE 6-11
SO_2 AND PM_{10} BASELINE (1974) EMISSIONS AND STACK AND OPERATING PARAMETERS - CF INDUSTRIES, PLANT CITY

Emission Unit	Unit ID	Model ID	Ref.	Stack Locations (m) X	Stack Locations (m) Y	Stack Parameters Height ft	Height m	Diameter ft	Diameter m	Operating Parameters Temperature °F	Temperature K	Flow (acfm)	Velocity ft/s	Velocity m/s	Baseline Emissions (lb/hr) PM/PM_{10}	SO_2 (a)
"A" DAP Plant	010	ADMPb	1	-302.2	-112.2	100	30.48	10.0	3.05	128	326	126,200	26.8	8.16	4.04	18.42
"X" DAP/MAP Plant	012	XDMPb	2	-341.0	94.6	125	38.10	7.3	2.23	110	316	175,000	69.7	21.24	5.08	27.43
"Y" DAP/MAP/GTSP Plant	013	YDMGPb	3	-327.6	74.7	125	38.10	7.3	2.23	110	316	112,400	44.8	13.64	5.08	18.34
"Z" DAP/MAP/GTSP Plant	011	ZDMGPb	2	-317.9	45.9	125	38.10	7.3	2.23	110	316	175,000	69.7	21.24	5.08	18.34
"A" and "B" Storage Buildings Scrubber	014	ABSTOb	4	-365.0	-66.9	85.5	26.06	9.0	2.74	80	300	175,000	45.8	13.97	2.61	--
"A" Shipping Baghouse	015	ASBAGb	5	-351.7	-101.3	90	27.43	1.7	0.52	110	316	8,500	62.4	19.02	0.42	--
"B" Shipping Baghouse	016	BSBAGb	5	-409.5	-41.1	35	10.67	2.0	0.61	120	322	10,000	53.1	16.17	0.42	--
"B" Truck Loading	018	BLOADb	6	(g)	(g)										0.32	--
"B" Railcar Loading	019	BRLOD	6	(g)	(g)										0.32	--
"A" Sulfuric Acid Plant with Ammonia Scrubber	002	SAPAb	7	-74.5	17.8	80	24.38	5.0	1.52	98	310	73,300	62.2	18.96	--	416.7
"B" Sulfuric Acid Plant with Ammonia Scrubber	003	SAPBb	7	-52.3	-47.9	80	24.38	5.0	1.52	96	309	80,600	68.4	20.85	--	416.7
"C" Sulfuric Acid Plant Double Absorption	007	SAPCb	8	0.0	0.0	199	60.66	8.0	2.44	150	339	103,900	34.5	10.50	--	250.0
"D" Sulfuric Acid Plant Double Absorption	008	SAPDb	9	53.1	17.9	199	60.66	8.0	2.44	150	339	83,600	27.7	8.45	--	250.0
Sulfur Storage and Handling (b)	--	PITSTANK	10	--	--	--	--	--	--	--	--	--	--	--	0.08	0.33
-A Sulfur Truck Pit	023	PITSTANK	10	-52.3	10.8	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	--	--
-B Sulfur Truck Pit	024	PITSTANK	10	-38.4	-29.1	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	--	--
-Storage Tank (022)	022	PITSTANK	10	-20.5	29.1	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	(f)	--	--
Rock Unloading and Storage Bag Collector	025	RUSBC1b	11	-233.5	-26.5	20	6.10	3.5	1.07	100	311	36,000	62.4	19.01	1.54	--
Product Reclaim Bag Collector	(c)	RUSBC2b	12	-359.0	90.0	3	1	1.1	1.07	120	322	10,100	(e)	(e)	0.36	--
"X,Y,Z" Rock Hopper Bag Collectors (d)	028	RBBCb	13	-319.0	49.5	119	36.27	1.0	0.30	120	322	2,120	45.0	13.71	0.23	--
ROP/MGTSP Manufacturing	--	RMMANb	14	-272.1	-135.3	135	41.15	6.5	1.98	87	304	67,500	33.9	10.33	0.08	14.11

References:

1. Stack parameters and emissions are from a construction permit application for "A" DAP dated May 30, 1974 and emissions test data (12/3/75)..
2. Stack parameters and emissions are from a construction permit application for the "X", "Y", and "Z" facilities dated May 30, 1974 and emissions test data (12/19/76).
3. Based on permit application (1/20/76) and emissions test report (1/2/76).
4. Based on application for renewal of operating permit for "A" and "B" Storage Buildings and associated shipping facilities dated April 6, 1979.
5. Based on construction permit application for Granular Storage and Shipping dated May 30, 1974. Application is for "A" Shipping Baghouse. Since the baghouses in the "A" and "B" Shipping unit are the same, "B" Shipping Baghouse is assumed to have the same emissions as "A" Shipping Baghouse. Stack parameters for "B" Shipping assumed the same as current.
6. Based on an emission factor of 0.0024 lb/ton product and 3,150 TPD product (DAP and GTSP) from operation permit application for "B" Storage and Shipping dated 1/21/76. Assumed to be fugitive emissions from transferring of product therefore no height, diameter or flow rate is associated with these sources.
7. Stack parameters and PM emissions based on emissions test data for "A" SAP (12/14/75) and "B" SAP (12/13/75). SO_2 emissions based on 1973 air construction permit to reduce SO_2 from 10 lb/ton. Compliance required by 7/1/75. No actual test data prior to modifications available, therefore 10 lb/ton limit assumed at 1,000 TPD for each plant.
8. Stack parameters and PM emissions based on operation permit application (11/6/75) and stack test data (10/1/75) for the "C" Sulfuric Acid Plant. SO_2 emissions based on 5/30/74 application and 11/11/75 operating permit application. Startup of plants was after 1/6/75. Based on each the plant operating at 1,500 TPD H2SO4 at 4 lb SO2/ton.
9. Stack parameters and PM emissions based on operation permit application (11/6/75) and stack test data (10/2/75) for the "D" Sulfuric Acid Plant. SO_2 emissions based on 5/30/74 application and 11/11/75 operating permit application. Startup of plants as after 1/6/75. Based on each plant operating at 1,500 TPD H2SO4 and 4 lb SO2/ton.
10. Based on construction permit application (6/28/89) and Title V application June 14, 1996. All 3 sources were modeled as one large area source. PM emissions were based on hourly emission rate from construction permit application. SO2 emissions were based on the hourly input from the construction permit application and the emission factor used in the Title V application.
11. Based on construction permit application (12/10/90). This was the first permit application that was completed for this emission unit.
12. Based on construction permit application for the Product Reclaim Bag Collector application dated December 10, 1990. Stack parameters assumed the same as current.
13. Based on construction permit application for the X, Y, and Z Rock Hopper Bag Collector dated (December 12, 1990).
14. Based on operating permit application for ROP/MGTSP manufacturing dated January 20, 1976.

Footnotes:

(a) SO_2 emissions for "A" DAP/MAP Plant, "X" DAP/MAP/GTSP, "Y" DAP/MAP/GTSP Plant, "Z" DAP/MAP Plant and ROP/GTSP Manufacturing are based on AP-42 emission factors and total fuel purchased in 1974. See Table B-3 in Appendix B.

(b) Emission Units 022, 023, 024 and 033 were combined into one equivalent source.

(c) The bag collector in the 72% Rock Unloading and Storage Bag Collector was moved in 1982 to the Product Reclaim Handling System and is now considered part of Emission Unit 026.

(d) The three bag collectors (Emission Units 027, 028, and 029) were combined into one equivalent source.

(e) Horizontal discharge, modeled with velocity of 0.1 m/s.

(f) The sulfur storage and handling system was modeled as one area source with dimensions of 85 m x 50 m.

(g) "B" truck and railcar loading fugitive emissions modeled as one volume source with horizontal dimension of 30 m and vertical dimension of 20 ft Release height is 10 ft.

TABLE 6-12
ESTIMATION OF DAILY PM EMISSION FACTORS AND RATES
FOR VEHICLE TRAFFIC ON PAVED ROADS IN 1974, CFI PLANT CITY

General Data		Types of Truck Traffic: DAP/MAP (Type A)	Molten Sulfur (Type B)	Molten Sulfur In DAP/MAP Out (Type C)	H_2SO_4 (Type D)
Throughput Data					
Operation days	Annual	365	365	365	365
Annual Fertilizer Production (TPY) [a]	Annual	561,177	--	--	--
Annual Molten Sulfur Storage & Handling (TPY) [a]	Annual	--	240,168	240,168	--
Annual H_2SO_4 Import (TPY) [b]	Annual	--	--	--	0
Fertilizer Shipment by Truck (%) [c]	Annual	33	--	--	--
Molten Sulfur Delivery by Truck (%) [c]	Annual	--	91	91	--
H2SO4 Delivery by Truck (%) [c]	Annual	--	--	--	60
Throughput (TPY)	Annual	119,623	152,987	65,566	0
Vehicle Data					
Vehicle weight (W), ton	Loaded	38	39.5	40	39
	Unloaded	14	15.5	16.5	14.5
	Average	26	27.5	28.25	26.75
	Payload	24	24	23.5	24.5
Number of vehicles (Material throughput/average vehicle weight)	Annual	4,984	6,374	2,790	0
Number of vehicles/Day	Daily	14	17	8	0
Distance (miles) travelled/ vehicle/ route [d]	Per trip	1.61	1.06	2.11	1.06
VMT (no. vehicles x miles travelled)	Daily	22.0	18.4	16.1	0.0
General/ Site Characteristics					
Days of precipitation greater than or	Short-term	0	0	0	0
equal to 0.254 mm (p)	Annual	120	120	120	120
Silt Loading (sL), g/m^2 [e]		1.0	1.0	1.0	1.0
Particle size multiplier, PM (k)		0.082	0.082	0.082	0.082
PM_{10} (k)		0.016	0.016	0.016	0.016
Emission Factor Fleet Exhaust (C), lb/VMT		0.00047	0.00047	0.00047	0.00047
Emission Control Data					
Emission control method		None	None	None	None
Emission control removal efficiency, %		0	0	0	0
Emission Factor (EF) Equation (Equation 1, AP-42, Section 13.2.1.3)					
Uncontrolled EF (UEF) Equation - PM	UEF (lb/VMT) = $[k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C]$				
PM_{10}	UEF (lb/VMT) = $[k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C]$				
Controlled (Final) EF (CEF) Equation.	CEF (lb/VMT) = UEF (lb/VMT) x (100 - Removal efficiency (%))				
Calculated PM Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Daily	1.33	1.45	1.51	1.39
Controlled (Final) EF, lb/VMT	Daily	1.33	1.45	1.51	1.39
Calculated PM_{10} Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Daily	0.260	0.283	0.294	0.271
Controlled (Final) EF, lb/VMT	Daily	0.260	0.283	0.294	0.271
Estimated Emission Rate (ER)					
PM Emission Rate (lb)	Daily	29.4	26.7	24.4	0.0
PM_{10} Emission Rate (lb)	Daily	5.73	5.21	4.75	0.00

Source: USEPA, 2003 (AP-42, Section 13.2.1, Paved Roads)

[a] CFI Data for annual P_2O_5 input and calculations based on 2003 & 2004 AOR data.

[b] No H_2SO_4 was imported in 1974.

[c] Conservative assumption based on current plant data. About 33% fertilizer, 90.5% molten sulfur, and 51% H_2SO_4 are transported by trucks.

[c] Throughput: Type A = Annual Fertilizer Production x Percent Shipped by Truck - Amount shipped by Type C Trucks.
Type B = Annual Molten Sulfur Capacity x Percent delivered by truck x 70% delivery by Type B Trucks.
Type C = Annual Molten Sulfur Capacity x Percent delivered by truck x 30% delivery by Type C Trucks.
Type D = Annual H_2SO_4 Import x Percent delivered by trucks.

[d] Travel distance of round-trip from fence to drop-off/pick-up location.

[e] Based on silt loading developed for the permit application (DEP File No. 0571244-001-AC) for the solid and molten sulfur handling and storage facilities, Big Bend Transfer Company, LLC, 2001

TABLE 6-13
ESTIMATION OF ANNUAL PM EMISSION FACTORS AND RATES FOR VEHICLE TRAFFIC ON PAVED ROADS IN 1974, CFI PLANT CITY

General Data		Types of Truck Traffic: DAP/MAP (Type A)	Molten Sulfur (Type B)	Molten Sulfur In DAP/MAP Out (Type C)	H_2SO_4 (Type D)
Throughput Data					
Operation days	Annual	365	365	365	365
Annual Fertilizer Production (TPY) [a]	Annual	561,177	--	--	--
Annual Molten Sulfur Storage & Handling (TPY) [a]	Annual	--	240,168	240,168	--
Annual H_2SO_4 Import (TPY) [b]	Annual	--	--	--	0
Fertilizer Shipment by Truck (%) [c]	Annual	33	--	--	--
Molten Sulfur Delivery by Truck (%) [c]	Annual	--	91	91	--
H2SO4 Delivery by Truck (%) [c]	Annual	--	--	--	51
Throughput (TPY)	Annual	119,623	152,987	65,566	0
Vehicle Data					
Vehicle weight (W), ton	Loaded	38	39.5	40	39
	Unloaded	14	15.5	16.5	14.5
	Average	26	27.5	28.25	26.75
	Payload	24	24	23.5	24.5
Number of vehicles (Material throughput/average vehicle weight)	Annual	4,984	6,374	2,790	0
Number of vehicles/Day	Daily	14	17	8	0
Distance (miles) travelled/ vehicle/ route [d]	Per trip	1.61	1.06	2.11	1.06
VMT (no. vehicles x miles travelled)	Annual	8,048	6,730	5,891	0
General/ Site Characteristics					
Days of precipitation greater than or	Short-term	0	0	0	0
equal to 0.254 mm (p)	Annual	120	120	120	120
Silt Loading (sL), g/m^2 [e]		1.0	1.0	1.0	1.0
Particle size multiplier, PM (k)		0.082	0.082	0.082	0.082
PM_{10} (k)		0.016	0.016	0.016	0.016
Emission Factor Fleet Exhaust (C), lb/VMT		0.00047	0.00047	0.00047	0.00047
Emission Control Data					
Emission control method		None	None	None	None
Emission control removal efficiency, %		0	0	0	0
Emission Factor (EF) Equation (Equation 1, AP-42, Section 13.2.1.3)					
Uncontrolled EF (UEF) Equation - PM		UEF(lb/VMT) = [k x {$(sL/2)^{0.65}$x (W(ton, ave)/3)$^{1.5}$}-C] x [1 - p/(4 x 365)]			
PM_{10}		UEF(lb/VMT) = [k x {$(sL/2)^{0.65}$x (W(ton, ave)/3)$^{1.5}$}-C] x [1 - p/(4 x 365)]			
Controlled (Final) EF (CEF) Equation		CEF(lb/VMT) = UEF (lb/VMT) x (100 - Removal efficiency (%))			
Calculated PM Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Annual	1.22	1.33	1.39	1.28
Controlled (Final) EF, lb/VMT	Annual	1.22	1.33	1.39	1.28
Calculated PM_{10} Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Annual	0.238	0.259	0.270	0.249
Controlled (Final) EF, lb/VMT	Annual	0.238	0.259	0.270	0.249
Estimated Emission Rate (ER)					
PM Emission Rate (TPY)	TPY	4.9	4.5	4.1	0.0
PM_{10} Emission Rate (TPY)	TPY	0.96	0.87	0.80	0.00

Source: USEPA, 2003 (AP-42, Section 13.2.1, Paved Roads)

[a] CFI Data for annual P_2O_5 input and calculations based on 2003 & 2004 AOR data.

[b] No H_2SO_4 was imported in 1974.

[c] Conservative assumption based on current plant data. About 33% fertilizer, 90.5% molten sulfur, and 51% H_2SO_4 are transported by trucks.

[c] Throughput: Type A = Annual Fertilizer Production x Percent Shipped by Truck - Amount shipped by Type C Trucks.
Type B = Annual Molten Sulfur Capacity x Percent delivered by truck x 70% delivery by Type B Trucks.
Type C = Annual Molten Sulfur Capacity x Pereent delivered by truck x 30% delivery by Type C Trucks.
Type D = Annual H_2SO_4 Import x Percent delivered by trucks.

[d] Travel distance of round-trip from fence to drop-off/pick-up location.

[e] Based on silt loading developed for the permit application (DEP File No. 0571244-001-AC) for the solid and molten sulfur handling and storage facilities, Big Bend Transfer Company, LLC, 2001

TABLE 6-14
CHASSAHOWITZKA NWA RECEPTORS USED IN THE MODELING ANALYSIS

	UTM Coordinates, Zone 17	
Receptor No.	East (km)	North (km)
1	337.5	3,166.0
2	338.3	3,166.0
3	339.1	3,166.0
4	339.9	3,166.0
5	336.7	3,167.0
6	339.9	3,166.9
7	335.9	3,167.9
8	339.9	3,167.8
9	335.9	3,168.8
10	339.9	3,168.8
11	336.7	3,169.7
12	340.0	3,169.7
13	336.7	3,170.6
14	340.0	3,170.6
15	336.7	3,171.6
16	340.0	3,171.5
17	336.7	3,172.5
18	337.6	3,172.5
19	338.4	3,172.5
20	339.2	3,172.5
21	340.0	3,172.4
22	340.8	3,173.4
23	340.8	3,174.3
24	341.6	3,174.3
25	335.1	3,175.3
26	336.0	3,175.3
27	336.8	3,175.3
28	337.6	3,175.2
29	338.4	3,175.2
30	340.8	3,175.2
31	341.7	3,175.2
32	342.5	3,175.2
33	334.3	3,176.2
34	338.4	3,176.2
35	342.5	3,176.1
36	333.5	3,177.2
37	338.4	3,177.1
38	331.9	3,178.1
39	332.7	3,178.1
40	333.6	3,178.1
41	338.4	3,178.0
42	333.6	3,179.0
43	338.5	3,178.9
44	334.4	3,179.9
45	338.5	3,179.9
46	339.28	3179.84
47	334.41	3180.83
48	338.48	3180.77
49	334.42	3181.75
50	338.49	3181.7
51	334.43	3182.68
52	338.5	3182.62
53	334.45	3183.6
54	335.26	3183.59
55	336.07	3183.58
56	336.89	3183.57
57	337.7	3183.56
58	338.52	3183.54

TABLE 6-15
BUILDING/STRUCTURE DIMENSIONS USED IN THE AIR DISPERSION MODELING ANALYSIS

Building / Structure	Building Dimensions					
	Height		Length		Width	
	ft	m	ft	m	ft	m
Uranium Control Room	22.0	6.7	135.0	41.1	42.6	13.0
Uranium Clarifier No. 1	22.6	6.9	80.0 [a]	24.4	-	-
Uranium Clarifier No. 2	22.6	6.9	80.0 [a]	24.4	-	-
Uranium Storage Tank 1	66.0	20.1	49.0 [a]	14.9	-	-
Uranium Storage Tank 2	66.0	20.1	49.0 [a]	14.9	-	-
Uranium Belt Filter	75.0	22.9	90.0	27.4	48.0	14.6
ROP Maintenance Warehouse	60.0	18.3	99.0	30.2	400.0	121.9
Cogeneration Building	66.0	20.1	142.0	43.3	79.0	24.1
A DAP Granulation	93.0	28.3	121.0	36.9	51.0	15.5
XYZ DAP Granulation	127.0	38.7	140.0	42.7	277.0	84.4
A Shipping Warehouse	67.0	20.4	130.0	39.6	440.0	134.1
B Shipping Warehouse	87.0	26.5	159.0	48.5	337.0	102.7
A PAP Belt Filter	65.0	19.8	92.0	28.0	33.0	10.1
B PAP Belt Filter	96.0	29.3	32.0	9.8	123.0	37.5
A PAP Byrd Filter	71.0	21.6	75.0	22.9	75.0	22.9
B PAP Byrd Filter	86.5	26.4	80.0	24.4	80.0	24.4
Molten Sulfur Storage Tank 022	30.0	9.1	49.0 [a]	14.9	-	-
A Shipping Elevator Building	100.0	30.5	37.9	11.6	32.8	10.0
B Shipping Elevator Building	96.0	29.3	54.5	16.6	44.0	13.4
"A" Railcar and Truck Loading S	40.0	12.2	66.6	20.3	40.4	12.3

[a] Indicates a tank diameter.

Source: CF Industries, 2005.

7.0 AIR MODELING ANALYSIS RESULTS

7.1 Significant Impact Analysis

7.1.1 PSD Class II Area

The maximum SO_2, PM_{10}, and NO_2 concentrations predicted for the proposed project only are presented in Table 7-1. These results show that the maximum pollutant concentrations are predicted to be above the significant impact levels for SO_2 and PM_{10}. The maximum SO_2 and PM_{10} impacts due to the project only were predicted to be significant out to the following distances from the facility:

- SO_2 - 3.4 km, 24-hour averaging period; and
  - 3.8 km, annual averaging period.
- PM_{10} - 4.6 km, 24-hour averaging period; and
  - 2.5 km, annual averaging period.

As a result, more detailed air impact analyses were performed for SO_2 and PM_{10} that included modeling background sources to address compliance with AAQS and PSD Class II increments. The maximum predicted annual average NO_2 concentration was found to be below the significant impact level. Therefore, no further analysis was required for NO_2.

7.1.2 PSD Class I Area

The maximum SO_2, PM_{10}, and NO_2 concentrations predicted at the PSD Class I Area of the Chassahowitzka NWA for the proposed project only are presented in Table 7-2. These results show that the maximum pollutant concentrations are predicted to be below the significant impact levels for these pollutants. As a result, more detailed air impact analyses were not required to address compliance with the PSD Class I increments.

7.2 AAQS Impact Analysis

The SO_2 and PM_{10} concentrations predicted for the modeled AAQS sources are presented in Tables 7-3 and 7-4. The results presented in Table 7-3 are the maximum pollutant concentrations predicted from the screening analysis in the vicinity of the CF Plant City facility. A summary of the results of the refined AAQS analysis is presented in Table 7-4 and compared to the AAQS. These results include the estimated background concentrations.

As shown in Table 7-4, the maximum total SO_2 concentrations for the 24-hour and annual averaging periods are predicted to be 246 and 24.5μg/m^3, respectively, which are well below the 24-hour and annual average NAAQS of 365 and 80 μg/m^3, respectively. The predicted concentrations are also below the 24-hour and annual average Florida AAQS of 260 and 60 μg/m^3, respectively.

The maximum total PM_{10} concentrations for the 24-hour and annual averaging periods are predicted to be 72 and 29.8 μg/m^3, respectively, which are well below the 24-hour and annual average National and Florida AAQS of 150 and 50 μg/m^3, respectively.

7.3 PSD Class II Increment Analysis

The SO_2 and PM_{10} concentrations predicted for the modeled PSD Class II sources are presented in Tables 7-5 and 7-6. The results presented in Table 7-5 are the maximum pollutant concentrations predicted in the screening analysis in the vicinity of the CF Plant City facility. A summary of the results of the refined PSD Class II increment analysis is presented in Table 7-6.

As shown in Table 7-6, the maximum SO_2 PSD increment concentrations for the 24-hour and annual averaging periods are predicted to be 23 and 0.0 μg/m^3, respectively, which are below the 24-hour and annual average PSD Class II increments of 91 and 20 μg/m^3, respectively.

The maximum PM_{10} PSD increment concentrations for the 24-hour and annual averaging periods are predicted to be 27 and 5.3 μg/m^3, respectively, which are below the 24-hour and annual average PSD Class II increments of 30 and 17 μg/m^3, respectively.

7.4 SAM Impacts in the Site Vicinity and PSD Class I Area

The maximum predicted SAM concentrations due to the proposed project in the site vicinity and in the Chassahowitzka NWA PSD Class I Area are presented in Tables 7-7 and 7-8, respectively, for the annual, 24-, 8-, 3-, and 1-hour averaging times. There are no AAQS or PSD increments for SAM concentrations. However, SAM impacts are required for the additional impact analysis presented in Section 8. At the site vicinity, the maximum predicted annual, 24-, 8-, 3-, and 1-hour SAM concentrations are 0.29, 2.5, 4.8, 7.0, and 11.4 μg/m^3, respectively.

The maximum predicted annual and 24-, 8-, 3-, and 1-hour SAM concentrations at the Chassahowitzka NWA are 0.0021, 0.023, 0.049, 0.069, and 0.095 μg/m^3, respectively.

7.5 Fluoride Impacts in the Site Vicinity and PSD Class I Area

Maximum Fl concentrations due to the proposed project in the site vicinity and the Chassahowitzka NWA PSD Class I Area are presented in Tables 7-9 and 7-10, respectively, for the annual, 24-, 8-, 3-, and 1-hour averaging times. There are no AAQS or PSD increments for Fl. However, Fl impacts are required for the additional impact analysis and AQRV analysis for the PSD Class I Area, presented in Section 8.0.

At the site vicinity, the maximum predicted annual and 24-, 8-, 3-, and 1-hour Fl concentrations are 0.2, 1.4, 2.4, 4.7, and 5.9 $\mu g/m^3$, respectively. The maximum predicted annual and 24-, 8-, 3-, and 1-hour Fl concentrations at the Chassahowitzka NWA are 0.0008, 0.009, 0.022, 0.031, and 0.04 $\mu g/m^3$, respectively.

7.6 Conclusions

Based on the results of the air quality modeling analyses, NO_2 impacts due to the project are well below the significant impact levels and will not cause or contribute to any adverse affect on air quality. The maximum annual and 24-hour average SO_2 and PM_{10} concentrations were found to be above the significant impact levels; however, additional modeling analyses demonstrated that the SO_2 and PM_{10} concentrations due to the proposed project, together with those from other air emission sources, will comply with all applicable AAQS and PSD increments.

TABLE 7-1
MAXIMUM PREDICTED PM_{10}, NO_2, AND SO_2 IMPACTS DUE TO THE PROPOSED PROJECT ONLY

Pollutant, Averaging Time, and Rank	Concentration [a] (μg/m^3)	Receptor Location [b] x (m)	Receptor Location [b] y (m)	Time Period (YYMMDDHH)	Significant Impact Level (μg/m^3)
PM_{10}					
Annual, Highest	2.60	-1,438	-642	91123124	1
	2.35	-1,438	-642	92123124	
	2.24	-1,421	-739	93123124	
	2.67	-1,430	-690	94123124	
	2.54	-1,455	-544	95123124	
24-Hour, Highest	17.2	-183	573	91013024	5
	16.8	-329	573	92070124	
	18.5	-22	585	93082024	
	18.3	-1,338	-1,225	94112524	
	16.2	-329	573	95082624	
NO_2 [c]					
Annual, Highest	0.84	-963	573	91123124	1
	0.75	-817	573	92123124	
	0.68	-866	573	93123124	
	0.74	-866	573	94123124	
	0.69	-1,455	-544	95123124	
SO_2					
Annual, Highest	4.6	-719	573	91123124	1
	4.1	-622	573	92123124	
	3.4	-671	573	93123124	
	4.0	-573	573	94123124	
	3.7	-671	573	95123124	
24-Hour, Highest	12.9	18	585	91030824	5
	11.7	-102	585	92070124	
	11.5	18	585	93102924	
	11.2	-280	573	94072024	
	15.7	-102	585	95082624	
3-Hour, Highest	20.2	-1,158	573	91052603	25
	24.1	-866	573	92072103	
	22.7	1,100	1,000	93072103	
	21.2	1,013	1,000	94062324	
	22.5	-280	573	95082706	

Note: YYMMDDHH = Year, Month, Day, Hour Ending.

[a] Concentrations are based on highest concentrations predicted using five years of surface and upper air meteorological data for 1991 to 1995 from the National Weather Service stations at Tampa and Ruskin, respectively.

[b] Relative to the "C" SAP stack location.

[c] Using EPA national default NO_2/NO_x ratio of 0.75.

TABLE 7-2
MAXIMUM POLLUTANT CONCENTRATIONS PREDICTED FOR THE PROJECT ONLY FOR COMPARISON TO THE PSD CLASS I SIGNIFICANT IMPACT LEVELS

Pollutant, Averaging Time, and Rank	Concentration [a] ($\mu g/m^3$)	Receptor Location [b]		Time Period (YYMMDDHH)	Significant Impact Level ($\mu g/m^3$)
		UTM East (km)	UTM North (km)		
PM_{10}					
Annual, Highest	0.0047	338.3	3,166.0	90123124	0.2
	0.0047	339.9	3,166.0	92123124	
	0.0059	339.9	3,166.0	96123124	
24-Hour, Highest	0.091	339.9	3,166.0	90062824	0.3
	0.084	339.9	3,166.0	92071324	
	0.081	339.9	3,166.0	96121224	
NO_2					
Annual, Highest	0.0012	339.9	3,166.0	90123124	0.1
	0.0014	339.9	3,166.0	92123124	
	0.0016	339.9	3,166.0	96123124	
SO_2					
Annual, Highest	0.0100	339.9	3,166.0	90123124	0.1
	0.0109	339.9	3,166.0	92123124	
	0.0125	339.9	3,166.0	96123124	
24-Hour, Highest	0.099	339.9	3,166.0	90062824	0.2
	0.092	339.9	3,166.0	92071324	
	0.102	339.9	3,166.0	96121224	
3-Hour, Highest	0.232	339.9	3,168.8	90031603	1.0
	0.266	340.0	3,170.6	92081306	
	0.260	340.0	3,169.7	96121109	

Note: YYMMDDHH = Year, Month, Day, Hour Ending

[a] Concentrations are highest predicted using CALPUFF model and CALMET domain for central Florida for 1990, 1992, and 1996.

[b] CFI Palnt City facility's UTM East and North coordinates are 388.0 km and 3116.0 km, respectively.

TABLE 7-3
MAXIMUM PREDICTED SO_2 AND PM_{10} IMPACTS - AAQS SCREENING ANALYSES

Pollutant, Averaging Time, and Rank	Concentration [a] (μg/m³)	Receptor Location [b] X (m)	Receptor Location [b] Y (m)	Time Period (YYMMDDHH)
PM_{10}				
Annual, Highest	7.4	-476	573	91123124
	7.2	-476	573	92123124
	6.9	-476	573	93123124
	7.8	-476	573	94123124
	7.1	-476	573	95123124
24-Hour, H6H	35.2	-427	573	91100324
SO_2				
Annual, Highest	39.2	-719	573	91123124
	36.8	-573	573	92123124
	34.0	-573	573	93123124
	35.7	-476	573	94123124
	34.4	-573	573	95123124
24-Hour, HSH	233.0	18	585	91030724
	207.4	-143	585	92033024
	199.6	-183	573	93010724
	195.6	-329	573	94072024
	232.4	-183	573	95082624

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest
H6H = Highest, Sixth-Highest

[a] Concentrations are based on highest concentrations predicted using 5 years of surface and upper air meteorological data for 1991 to 1995 from the National Weather Service stations at Tampa and Ruskin, respectively.

[b] Relative to the "C" SAP stack location.

TABLE 7-4

MAXIMUM PREDICTED SO_2 AND PM_{10} IMPACTS FOR COMPARISON TO AAQS - REFINED ANALYSES

Pollutant, Averaging Time, and Rank	Concentration (μg/m³) [a]			Receptor Location [b]		Time Period (YYMMDDHH)	National AAQS (μg/m³)	Florida AAQS (μg/m³)
	Total	Modeled Sources	Background	X (m)	Y (m)			
PM_{10}								
Annual, Highest	29.8	7.8	22	-476	573	94123124	50	50
24-Hour, H6H	72.2	35.2	37	-427	573	91100324	150	150
SO_2								
Annual, Highest	44.5	39.2	5.3	-719	573	91123124	80	60
24-Hour, HSH	246.0	233.0	13	18	585	91030724	365	260

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest
H6H = Highest, Sixth-Highest

[a] Concentrations are based on highest concentrations predicted using 5 years of surface and upper air meteorological data for 1991 to 1995 from the National Weather Service stations at Tampa and Ruskin, respectively.

[b] Relative to the "C" SAP stack location.

TABLE 7-5
MAXIMUM PREDICTED SO_2 AND PM_{10} IMPACTS --
PSD CLASS II INCREMENT SCREENING ANALYSES

Pollutant, Averaging Time, and Rank	Concentration [a] (µg/m³)	Receptor Location [b] X (m)	Receptor Location [b] Y (m)	Time Period (YYMMDDHH)
PM_{10}				
Annual, Highest	5.0	-476	573	91123124
	4.8	-476	573	92123124
	4.7	-476	573	93123124
	5.3	-476	573	94123124
	4.8	-476	573	95123124
24-Hour, HSH	25.7	-143	585	91030724
	25.1	-280	573	92121824
	22.1	-427	573	93101624
	20.7	-427	573	94020924
	27.0	-329	573	95120924
SO_2				
Annual, Highest	0.0	0	0	91123124
	0.0	0	0	92123124
	0.0	0	0	93123124
	0.0	0	0	94123124
	0.0	0	0	95123124
24-Hour, HSH	21.4	1,162	1,000	91081424
	7.8	2,426	-315	92072924
	23.0	-200	1,000	93072524
	7.1	2,426	-19	94101424
	10.8	-1,900	-1,900	95082224

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest

[a] Concentrations are based on highest concentrations predicted using 5 years of surface and upper air meteorological data for 1991 to 1995 from the National Weather Service stations at Tampa and Ruskin, respectively.

[b] Relative to the "C" SAP stack location.

TABLE 7-6
MAXIMUM PREDICTED SO_2 AND PM_{10} IMPACTS FOR COMPARISON TO
THE PSD CLASS II INCREMENTS - REFINED ANALYSES

Pollutant, Averaging Time, and Rank	Concentration[a] (μg/m³)	Receptor Location[b]		Time Period (YYMMDDHH)	PSD Class II Increment (μg/m³)
		Direction (m)	Distance (m)		
PM_{10}					
Annual, Highest	5.3	-476	573	94123124	17
24-Hour, HSH	27.0	-329	573	95120924	30
SO_2					
Annual, Highest	0.0	0	0	91123124	20
24-Hour, HSH	23.0	-200	1,000	93072524	91

Note: YYMMDDHH = Year, Month, Day, Hour Ending
HSH = Highest, Second-Highest

[a] Concentrations are based on highest concentrations predicted using 5 years of surface and upper air meteorological data for 1991 to 1995 from the National Weather Service stations at Tampa and Ruskin, respectively.

[b] Relative to the "C" SAP stack location.

TABLE 7-7
MAXIMUM PREDICTED SAM IMPACTS
FOR THE PROPOSED PROJECTS IN THE SITE VICINITY

Pollutant/ Averaging Time	Concentration [a] (ug/m^3)	Receptor Location [b] X (m)	Receptor Location [b] Y (m)	Time Period (YYMMDDHH)
Annual	0.29	-719	573	91123124
	0.27	-573	573	92123124
	0.22	-622	573	93123124
	0.26	-573	573	94123124
	0.24	-622	573	95123124
Highest 24-Hour	2.19	18	585	91030824
	1.81	-476	573	92081424
	1.86	18	585	93102924
	1.85	-280	573	94072024
	2.52	-102	585	95082624
Highest 8-Hour	4.20	-62	585	91013108
	3.94	-102	585	92070108
	3.54	18	585	93022124
	3.72	-22	585	94032508
	4.81	-280	573	95082708
Highest 3-Hour	5.44	-573	573	91061924
	6.98	-102	585	92060324
	5.68	18	585	93033021
	6.06	-183	573	94040706
	6.48	-280	573	95082706
Highest 1-Hour	10.4	-62	585	91081907
	10.3	-400	900	92071622
	11.4	-524	573	93072824
	9.1	18	585	94060620
	9.7	-1,061	573	95081120

Note: YYMMDDHH = Year, Month, Day, Hour Ending

[a] Based on 5-year surface and upper air meteorological data for 1991 to 1995 from the National Weather Service Stations in Tampa and Ruskin, respectively.

[b] Relative to the "C" SAP stack location.

TABLE 7-8
MAXIMUM PREDICTED SAM IMPACTS AT THE CHASSAHOWITZKA PSD CLASS I AREA DUE TO THE PROPOSED PROJECT

Averaging Period	Year	Concentration[a] ($\mu g/m^3$)
Annual	1990	0.0018
	1992	0.0019
	1996	0.0021
24-Hour	1990	0.022
	1992	0.021
	1996	0.023
8-Hour	1990	0.047
	1992	0.045
	1996	0.049
3-Hour	1990	0.061
	1992	0.068
	1996	0.069
1-Hour	1990	0.088
	1992	0.095
	1996	0.092

[a] Concentrations predicted with the CALPUFF model and CALMET-developed domains for central Florida for 1990, 1992, and 1996.

TABLE 7-9
MAXIMUM PREDICTED FLUORIDE IMPACTS FOR THE PROPOSED PROJECT IN THE SITE VICINITY, CFI PLANT CITY

Averaging Period	Concentration[a] (µg/m³)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)
Annual	0.195	-963.0	573.0	91123124
	0.177	-866.0	573.0	92123124
	0.160	-866.0	573.0	93123124
	0.176	-1438.0	-642.0	94123124
	0.166	-1455.0	-544.0	95123124
High 24-Hour	1.205	-1061.0	573.0	91071524
	1.087	18.0	585.0	92021824
	1.371	-22.0	585.0	93082024
	0.920	18.0	585.0	94032124
	1.078	18.0	585.0	95082524
High 8-Hour	1.981	-62.0	585.0	91042724
	1.934	-329.0	573.0	92070108
	2.064	-1629.0	476.0	93111608
	1.915	-622.0	573.0	94072808
	2.429	-102.0	585.0	95102724
High 3-Hour	3.323	615.0	1000.0	91071621
	4.424	714.0	1000.0	92070724
	4.700	665.0	1000.0	93072124
	3.598	-1488.0	-350.0	94080306
	3.377	714.0	1000.0	95061203
High 1-Hour	5.85	665.0	1000.0	91070505
	5.86	700.0	1000.0	92070722
	5.92	18.0	585.0	93110518
	5.88	18.0	585.0	94113001
	5.79	665.0	1000.0	95110323

[a] Based on 5-year surface and upper air meteorological data for 1991 to 1995 from the National Weather Service Stations in Tampa and Ruskin, respectively.

[b] Relative to the "C" SAP stack location.

Note: YYMMDDHH = Year, Month, Day, Hour Ending.

TABLE 7-10
MAXIMUM PREDICTED FLUORIDE IMPACTS AT THE CHASSAHOWITZKA NWA PSD CLASS I AREA DUE TO THE PROPOSED PROJECT, CFI PLANT CITY

Averaging Period	Year	Concentration[a] ($\mu g/m^3$)
Annual	1990	0.0007
	1992	0.0007
	1996	0.0008
24-Hour	1990	0.0089
	1992	0.0085
	1996	0.0081
8-Hour	1990	0.0205
	1992	0.0208
	1996	0.0222
3-Hour	1990	0.0265
	1992	0.0256
	1996	0.0307
1-Hour	1990	0.0346
	1992	0.0394
	1996	0.0403

[a] Concentrations predicted with the CALPUFF model and CALMET-developed domains for central Florida for 1990, 1992, and 1996.

8.0 ADDITIONAL IMPACT ANALYSIS

8.1 Introduction

CF is proposing to modify its existing facility in Plant City, Florida. The facility is subject to the PSD new source review requirements for NO_x, PM_{10}, SO_2, Fl, and SAM. The additional impact analysis and the PSD Class I Area analysis addresses these pollutants.

The analysis addresses the potential impacts on vegetation, soils, and wildlife of the surrounding area and the nearest PSD Class I Area due to CF's proposed modification. The nearest PSD Class I Area is the Chassahowitzka NWA, located approximately 69 km north-northwest of the CF 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 PSD Class I Area, the proposed project will not cause any significant adverse effects due to the predicted low impacts upon these areas.

8.2 Soil, Vegetation, and AQRV Analysis Methodology

In the foregoing analysis, the maximum air quality impacts predicted to occur in the vicinity of the CF plant and in the PSD Class I Area due to the increase in emissions are used. These impacts are summarized in Section 7.0 and Table 8-1, based on the modeling described 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 PSD 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 by comparison of 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 that specifically addressed the effects of air contaminants on plant species reported to occur in the vicinity of the plant and the PSD 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 that can be used as models.

8.3 Impacts in the Vicinity of the CFI Plant City Facility

According to the modeling results presented in Section 7.0, the maximum air quality impacts due to the CF facility emitting at maximum rates are predicted to be below the AAQS and PSD Class II increments for PM_{10} and SO_2 and below the significant impact level to cause or contribute to any adverse affect on air quality for NO_x. Therefore, the project's impacts on soils, vegetation, and wildlife in the facility vicinity are also not expected to be significant. In addition, no visibility impairment in the vicinity of CF is expected, because no new emission sources are proposed for this project.

8.3.1 Impacts to Soils

According to the U.S. Department of Agriculture (USDA) Soil Survey of Hillsborough County (1989), the CF Plant City site and vicinity are dominated by four soil series (Appendix X, Soil Survey): Basinger, Holopaw and Samsula soils, depressional (Soil type 5), Arents, nearly level (4), Gypsum land (20), and Myakka fine sand (29). These soils are generally described in the Soil Survey as follows:

> *Basinger, Holopaw, and Samsula soils, depressional (5): This soil series is characteristic of swamps and depressions within flatwoods. In most areas, these soils have been left in natural vegetation, consisting of cypress, wetland hardwoods, and hydrophytic grasses, such as maidencane and cutgrass. In the highly organic surface layers, the soil pH ranges from 3.6 to 7.3, classified as extremely acidic to neutral.*
>
> *Arents, nearly level (4): Arents consist of nearly level, heterogeneous soil material that has been excavated, reworked, and reshaped by earthmoving equipment. This soil series is found near urban centers, phosphate mining operations, major highways, and landfills. In most areas, the soil in these areas has been left idle or is used for home sites, recreation, and urban development. Due to the heterogeneous nature of the soil material, the soil reaction pH is highly variable.*
>
> *Gypsum land (20): This soil series is used to describe moderately to very steep mounds of gypsum, a product of acid manufacturing plants that are associated with phosphate-mining operations. The soil surface is generally very unstable, erodes easily, and does not support vegetation due to limiting factors of acidity and*

compaction. The soil reaction pH is not presented within the Hillsborough County Soil Survey, although the series is described as acidic.

Myakka fine sand (29): This soil series is nearly level and poorly drained, typically found on broad plains in flatwoods. In most areas, this soil is used for native pasture or cultivated crops, though it is also used for improved pasture, citrus crops, or urban development. Water control systems and frequent applications of fertilizer and lime are generally needed to improve soil quality for cultivated crops. The natural vegetation consists of longleaf pine and slash pine with an understory of gallberry, running oak, saw palmetto, and wax myrtle. The soil pH ranges from 3.6 to 6.5, classified as extremely to slightly acidic.

Depressional soil series in the vicinity of the project area are poorly drained and have high organic matter content, which provides high cation exchange capacity and bulk density. These factors increase the buffering capacity of the soil, which ameliorates the effects of acidic atmospheric inputs.

The relatively low sensitivity of the soils to atmospheric inputs, coupled with the extremely low ground-level concentrations of PM_{10}, NO_x, SO_2, FI, and SAM projected from the proposed project's emissions, precludes any significant impact on soils.

8.3.2 Impacts to Vegetation

Vegetative communities in the vicinity of the Plant City facility include wet pine flatwoods and former pasture lands interspersed with cypress and mixed forested wetlands. CF Industries is restoring native Florida vegetation on 1,900 acres of former pasture land immediately east and south of the Plant City Phosphate Complex. The forested floodplain of the Blackwater Creek is located approximately 1 mile south of the Plant City facility.

Air pollutants occurring at elevated levels have long been known to potentially cause injury to plants. For SO_2, acute injury usually develops within a few hours or days of exposure. Symptoms include marginal, flecked, and/or intercostal necrotic areas which initially appear water-soaked and dullish green. This injury generally occurs to younger leaves. Chronic injury usually is evident by signs of chlorosis, bronzing, premature senescence, reduced growth and possible tissue necrosis (EPA, 1982). Background levels of SO_2 range from 2.5 to 25 $\mu g/m^3$. Phytotoxic symptoms demonstrated by plants can occur as low as 88 $\mu g/m^3$ (U.S. Department of Health, Education, and Welfare, 1971). However, this occurs with the more primitive plants (i.e., mosses, ferns, lichens).

Many studies have been conducted to determine the effects of high concentration, short-term SO_2 exposure on agronomic and natural community plants. Sensitive plants include ragweed, legumes, blackberry, southern pine, red and black oak, white ash, and sumac. These species can be injured by exposure to 3-hour SO_2 concentrations ranging from 790 to 1,570 $\mu g/m^3$. Intermediate sensitivity plants include maples, locust, sweetgum, cherry, elm, and many crop and garden species. These species can be injured by exposure to 3-hour SO_2 concentrations ranging from 1,570 to 2,100 $\mu g/m^3$. Resistant species (potentially injured at concentrations above 2,100 $\mu g/m^3$ for 3 hours) include white oak, potato, cotton, dogwood, and peach (EPA, 1982). A study of native Floridian species (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak, and mangrove exposed to 1,300 $\mu g/m^3$ SO_2 for 8 hours were not visibly damaged. This supports the levels cited by other researchers on the effects of SO_2 on vegetation. It is important to note that because plants possess metabolisms that can convert SO_2 into cellular constituents, they are capable of recovery when exposed to elevated levels of SO_2 for short periods of time. Refer to Tables 8-2 and 8-3 for SO_2 effect levels for various plant species and sensitivity groupings of vegetation.

The maximum annual and 24-hour and 3-hour SO_2 concentrations (refer to Table 7-1) predicted in the vicinity of the CF Plant City facility due to the proposed project (4.6, 15.7, and 24.1 $\mu g/m^3$, respectively) represent levels that are lower than those known to cause damage to the majority of test species. The maximum predicted 3- SO_2 concentration of 24.1 $\mu g/m^3$, due to the project only (refer to Table 7-1) are below the significant impact level, and should therefore not damage sensitive species. It is important to realize that these maximum concentrations represent an assumed worst-case scenario, since the impact is based on a combination of worst-case meteorology and all facilities modeled at their maximum allowable emissions. Plants would be exposed to this concentration for a minimal amount of time, if at all. Based on the closest SO_2 monitor in the area, the maximum measured 24-hour concentration for 2004 and 2005 is 16 $\mu g/m^3$. The modeled 24-hour concentration of 15.7 $\mu g/m^3$ is about 98 percent of the maximum measured 24-hour concentration. This demonstrates the conservatism of the modeling.

Radish and barley are considered good indicators of SO_2 pollution because of their inherent sensitivities to this gas. When these two plants were exposed to 370 and 310 $\mu g/m^3$ SO_2 for 8 hours, respectively, visible damage occurred (EPA, 1982). By comparison of these levels, it is apparent that the 24-hour total maximum predicted SO_2 concentration is less than concentrations that could potentially damage SO_2-sensitive plants. Again, it is important to realize that this modeled concentration represents a worst-case scenario. These actual levels pose minimal threats to area vegetation.

Acidic precipitation or acid rain is coupled to the emissions of SO_2: SO_2 is oxidized in the atmosphere and dissolved in rain, forming SAM, which falls as acidic precipitation. Concentration data are not available, but SAM has yielded necrotic spotting on the upper surface of leaves (Middleton et al., 1950). It has been known that exposure to caustic or acidic compound concentration of 8,200 $\mu g/m^3$ for 1 to 2 days can cause necrotic spotting on the upper surface of leaves. The maximum predicted 24-hour SAM concentration (refer to Table 7-7) due to the project of 2.5 $\mu g/m^3$ is well below the injury threshold concentration.

Fl accumulation in plants causes an inhibition of plant metabolism and chlorosis (yellowing of the leaf). Increased accumulation of Fl can kill the cells. Leaf tips and margins accumulate the highest concentrations of Fl and are the sites of initial visible injury. Plant sensitivity can range from 16 $\mu g/m^3$ of Fl in sensitive plants to 500 $\mu g/m^3$ of Fl in tolerant plants for 3-hour exposures. The lowest observed effect levels for sensitive plants are reported to be less than 50 $\mu g/m^3$ for 1-hour exposures, <16 $\mu g/m^3$ for 3-hour exposures, and <1.6 $\mu g/m^3$ for 24-hour exposures (Applied Sciences Associates, Inc.; 1978). The maximum predicted 1-hour, 3-hour, and 24-hour Fl concentrations (refer to Table 7-9) due to the project are found to be 5.9, 4.7, and 1.4 $\mu g/m^3$, respectively, which are below the lowest observed effect levels for sensitive plants.

8.3.3 Impacts on Visibility

No new emission sources will be created by the proposed CF modification. The proposed project at the A SAP and A and B PAPs will not change any stack characteristics, nor add any new stacks. All of 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.

8.4 Impacts Due to Associated Direct Growth

8.4.1 Introduction

Rule 62-212.400(3)(h)(5), F.A.C., states that an application must include information relating to the air quality impacts of, and the nature and extent of all general, residential, commercial, industrial and other growth which has occurred since August 7, 1977, in the area the facility or modification would affect. This growth analysis considers air quality impacts due to emissions resulting from the industrial, commercial, and residential growth associated with the proposed modifications to the CF Industries Plant City Phosphate Complex. This information is consistent with the EPA Guidance related to this requirement in the *Draft New Source Review Workshop Manual* (EPA, 1990).

In general, there has been minimal growth in the Plant City Phosphate Complex area since 1977. The site is located in northeast Hillsborough County, near the Pasco County border. Hillsborough County is surrounded by Manatee County to the south, Polk County to the east, Pasco County to the north, and Pinellas County to the west. Hillsborough County has the fourth largest population in Florida, just below 1 million. The county consists of 1,051 square miles of land area.

The modification will increase potential H_2SO_4 production rates at the facility. The majority of construction activities associated with the proposed modification will occur over a 9-month period, requiring an average of approximately 20 workers during that time. Recent permanent workforce reductions at the plant have compensated for this temporary increase, reducing the workforce from over 470 to about 450 employees.

It is anticipated that many of the construction personnel will commute to the site. The increase in workers will only be temporary, since CF will not employ any additional operational workers after the completion of the proposed modification to the A SAP and the A and B PAPs. Therefore, while there would be a small temporary increase in vehicular traffic in the area, the effect on air quality levels would be minimal and not above levels that existed prior to the workforce reductions.

There are also no air quality impacts expected due to associated commercial and industrial growth given the location of the existing Plant City Phosphate Complex. The existing commercial and industrial infrastructure should be adequate to provide any support services that the proposed modification might require and would not increase with the operation of the modified A SAP and the A and B PAPs.

The following discussion presents general trends in residential, commercial, industrial, and other growth that has occurred since August 7, 1977, in Hillsborough County. As such, the discussion presents information available from a variety of sources (i.e., Florida Statistical Abstract, FDEP, etc.) that characterize Hillsborough County as a whole.

8.4.2 Residential Growth

8.4.2.1 Population and Household Trends

As an indicator of residential growth, the trend in the population and number of household units in Hillsborough County since 1970 are shown in Figure 8-1. The County experienced an 82-percent increase in population for the years 1977 through 2004. During this period, there was an increase in population of about 495,000. Similarly, the number of households in the county increased by about 234,000, or 109 percent, since 1977.

8.4.2.2 Growth Associated with the Operation of the Project

Since no additional operational workers will be needed at the modified A SAP and the A and B PAPs, no residential growth due to the proposed modification is expected.

8.4.3 Commercial Growth

8.4.3.1 Retail Trade and Wholesale Trade

As an indicator of commercial growth in Hillsborough County, the trends in the number of commercial facilities and employees involved in retail and wholesale trade are presented in Figure 8-2. The retail trade sector comprises establishments engaged in retailing merchandise. The retailing process is the final step in the distribution of merchandise. Retailers are therefore organized to sell merchandise in small quantities to the general public. The wholesale trade sector comprises establishments engaged in wholesaling merchandise. This sector includes merchant wholesalers who buy and own the goods they sell; manufacturers' sales branches and offices that sell products manufactured domestically by their own company; and agents and brokers who collect a commission or fee for arranging the sale of merchandise owned by others.

Since 1977, retail trade has increased by about 1,800 establishments and 46,000 employees or 65 and 103 percent, respectively. For the same period, wholesale trade has increased by 1,400 establishments and 16,000 employees, or 109 and 80 percent, respectively.

8.4.3.2 Labor Force

The trend in the labor force in Hillsborough County since 1977 is shown in Figure 8-3. Between 1977 and 2004, approximately 300,000 persons were added to the available work force, for an increase of 123 percent.

8.4.3.3 Tourism

Another indicator of commercial growth in Hillsborough County is the tourism industry. As an indicator of tourism growth in the county, the trend in the number of hotels and motels and the number of units at the hotels and motels are presented in Figure 8-4.

This industry comprises establishments primarily engaged in marketing and promoting communities and facilities to businesses and leisure travelers through a range of activities, such as assisting organizations in locating meeting and convention sites; providing travel information on area attractions, lodging accommodations, and restaurants; providing maps; and organizing group tours of local historical, recreational, and cultural attractions.

Between 1978 and 2000, there was a decrease of 3 percent in the number of hotels and motels. However, the number of units at those establishments increased by 90 percent during that same time period.

8.4.3.4 Transportation

As an indicator of transportation growth, the trend in the number of vehicle miles traveled (VMT) by motor vehicles on major roadways in Hillsborough County is presented in Figure 8-5. Between 1977 and 2002, there was an increase of about 14,200,000 VMT, or 77 percent, on major roadways in the county.

8.4.3.5 Growth Associated with the Operation of the Project

The existing commercial and transportation infrastructure should be adequate to provide any support services that might be required during construction and operation of the modified A SAP and the A and B PAPs. The workforce needed to operate the modified emissions units represents a small fraction of the labor force present in the immediate and surrounding areas and will not increase as a result of this project.

8.4.4 <u>Industrial Growth</u>

8.4.4.1 Manufacturing and Agricultural Industries

As an indicator of industrial growth, the trend in the number of employees in the manufacturing industry in Hillsborough County since 1977 is shown in Figure 8-6. As shown, the manufacturing industry experienced a decrease of 1,900 employees, or 6 percent, from 1977 through 2004.

As another indicator of industrial growth, the trend in the number of employees in the agricultural industry in Hillsborough County since 1977 is also shown in Figure 8-6. As shown, the agricultural industry experienced an increase of 6,200 employees, or 656 percent, from 1977 through 2000.

8.4.4.2 Electrical Power Generation

Existing electrical generating plants in Hillsborough County include the following:

- Tampa Electric Company's (TECO) Plants:
  - TECO Big Bend,
  - TECO Hookers Point, and
  - TECO Gannon.
- Hillsborough County Resource Recovery Facility.
- Mackay Bay Facility.

Together, these power plants have an electrical nameplate generating capacity of over 30,000 megawatts (MW).

As an indicator of electrical utility growth, the electrical nameplate generating capacity in Hillsborough County since 1977 is shown in Figure 8-7. As shown, there has been minimal change in electrical utility growth since 1977.

Due to CF's ability to internally generate electricity, the proposed project will result in a net increase in electricity sent to the local power grid.

8.4.4.3 Growth Associated with the Operation of the Project

Since the PSD baseline date of August 7, 1977, there have not been any major facilities built within a 20 km radius of the Plant City Phosphate Complex. Based on the locations of nearby air emission sources (refer to Tables 6-9 and 6-10), there has not been a concentration of industrial and commercial growth in the vicinity of the Plant City Phosphate Complex.

8.4.5 <u>Air Quality Discussion</u>

8.4.5.1 Air Emissions and Spatial Distribution of Major Facilities

Based on actual emissions reported for 1999 by EPA on its AIRSdata website, total emissions of stationary sources from the Hillsborough County are as follows:

- SO_2: 161,868 TPY
- PM_{10} 6,651 TPY
- NO_x: 63,804 TPY
- CO: 2,710 TPY
- VOC: 2,344 TPY

8.4.5.2 Air Emissions from Mobile Sources

The trends in the air emissions of CO, VOC, and NO_x from mobile sources in Hillsborough County are presented in Figure 8-8. Between 1977 and 2002, there were significant decreases in these emissions. The decrease in CO, VOC, and NO_x emissions were about 1,022, 112, and 35 TPD, respectively, which represent decreases from 1977 emissions of 60, 64, and 28 percent, respectively.

8.4.5.3 Air Monitoring Data

Hillsborough County is classified as attainment or maintenance for all criteria pollutants. Air quality monitoring data have been collected in Hillsborough County primarily in the western portion of the county. In Hillsborough County, currently there are six air quality monitors that measure SO_2 concentrations and 11 monitors that measure PM_{10} concentrations. The nearest monitor to the Plant City facility that measure SO_2 concentrations is approximately 19 km away in Hillsborough County (Plant City, One Raider Place) and the nearest PM_{10} monitor is located approximately 26 km away in Brandon, Hillsborough County. Two monitors in Polk County that measure both SO_2 and PM_{10} are within 40 km from the project site. For this evaluation, the air quality monitoring data collected at the monitoring stations nearest to the Plant City facility were used to assess air quality trends since 1977.

Summaries of the maximum measured SO_2 and PM_{10} concentrations considered to represent air quality around the Plant City facility from 2004 through 2005 are presented in Tables 4-1 and 4-2 in Section 4.0. Since 1988, PM in the form of PM_{10} has been collected at the air monitoring stations due to the promulgation of the PM_{10} AAQS. Prior to 1989, the AAQS for PM was in the form of total suspended particulates (TSP) concentrations, and this form was measured at the stations.

These data indicate that the maximum air quality concentrations currently measured in the region comply with, and are well below, the applicable AAQS. These monitoring stations are located in areas where the highest concentrations of a measured pollutant are expected due to the combined effect of emissions from stationary and mobile sources, as well as the effects of meteorology. Therefore, the ambient concentrations in areas not monitored should have pollutant concentrations less than the monitored concentrations from these sites.

8.4.5.4 SO_2 Concentrations

The trends in the annual, 24-hour, and 3-hour average SO_2 concentrations measured at the monitors nearest to the Plant City facility in Hillsborough County since 1977 are presented in Figures 8-9 through 8-11, respectively. As shown in these figures, measured SO_2 concentrations have been, and continue to be, well below the AAQS.

8.4.5.5 PM_{10}/TSP Concentrations

The trends in the annual and 24-hour average PM_{10} and TSP concentrations measured at the nearest monitors to the Plant City facility since 1977 are presented in Figures 8-12 and 8-13, respectively. TSP concentrations are presented through 1988 since the AAQS was based on TSP concentrations through that year. In 1988, the TSP AAQS was revoked and the PM standard was revised to PM_{10}.

As shown in these figures, measured TSP concentrations were generally below the TSP AAQS. Since 1988, when PM_{10} concentrations have been measured, the PM_{10} concentrations have been and continue to be below the AAQS.

8.4.5.6 Air Quality Associated with the Operation of the Project

The air quality data measured in the region of the Plant City facility indicate that the maximum air quality concentrations are well below and comply with the AAQS. Also, based on the trends presented of these maximum concentrations, the air quality has generally improved in the region since the baseline date of August 7, 1977. Because the maximum air quality impacts resulting from the project are predicted to be low and below the AAQS for PM_{10} and SO_2, air quality concentrations in the region are expected to remain below and comply with the AAQS after completion of the proposed modification.

8.5 Impacts Upon PSD Class I Areas

8.5.1 Identification of AQRVS and Methodology

The CF facility is located about 69 km from the PSD Class I Area of the Chassahowitzka NWA. Other PSD Class I Areas are located more than 200 km from the site. An AQRV analysis was conducted to assess the potential risk to AQRVs of the Chassahowitzka NWA due to the proposed emissions from the CF project. 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 by the U.S. Fish and Wildlife 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 water birds, shorebirds, reptiles, and mammals.

The maximum pollutant concentrations due to the CF project's emissions predicted at the PSD Class I Area of the Chassahowitzka NWA are presented in Table 8-1. These results are based on using the CALPUFF model (see Appendix C).

Similar to the evaluation performed in Section 8.2, a screening approach was used that compared the maximum ambient concentration of air pollutants of concern due to the project's emissions at the PSD Class I Area of 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 Chassahowitzka 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.

8.5.2 Impacts to Soils

For soils, the potential and hypothesized effects of atmospheric deposition include:

- Increased soil acidification;
- Alteration in cation exchange;
- Loss of base cations; and
- Mobilization of trace metals.

The potential sensitivity of specific soils to atmospheric inputs is related to two factors. First, the physical ability of a soil to conduct water vertically through the soil profile is important in influencing the interaction with deposition. Second, the ability of the soil to resist chemical changes, as measured in terms of pH and soil cation exchange capacity (CEC), is important in determining how a soil responds to atmospheric inputs.

According to the USDA Soil Surveys of Citrus and Hernando Counties, nine soil complexes are found in the Chassahowitzka NWA. These include Aripeka fine sand, Aripeka-Okeelanta-Lauderhill, Hallendale-Rock outcrop, Homosassa mucky fine sandy loam, Lacoochee, Okeelanta mucks, Okeelanta-Lauderdale-Terra Ceia mucks, Rock outcrop-Homosassa-Lacoochee, and Weekiwachee-Durbin mucks (Porter, 1996). The majority of the soil complexes found in the Chassahowitzka NWA are inundated by tidal waters, contain a relatively high organic matter content, and have high buffering capacities based on their CEC, base saturation, and bulk density. 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. Therefore, they would be relatively insensitive to atmospheric inputs. However, Terra Ceia, Okeelanta, and Lauderdale freshwater mucks are present along the eastern border of the Chassahowitzka NWA, and may be more sensitive to atmospheric sulfur deposition (Porter, 1996). Although not tidally influenced, these freshwater mucks are highly organic and therefore have a relatively high intrinsic buffering capacity.

The relatively low sensitivity of the soils to atmospheric inputs coupled with the extremely low ground-level concentrations of contaminants projected for the Chassahowitzka NWA from the proposed project's emissions precludes any significant impact on soils.

8.5.3 Impacts to Vegetation

In general, the effects of air pollutants on vegetation occur primarily from SO_2, NO_2, ozone, and PM. Effects from minor air contaminants, such as Fl, 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 concentrations of the pollutants, duration of exposure, and frequency of exposures influence the response of vegetation and wildlife to atmospheric pollutants. The pattern of pollutant exposure expected from the facility is that of a few episodes of relatively high ground-level concentration that 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.

8.5.3.1 Sulfur Dioxide

Sulfur is an essential plant nutrient usually taken up as sulfate (SO_4) ions by the roots from the soil solution. When SO_2 in the atmosphere enters the foliage through pores in the leaves, it reacts with water in the leaf interior to form sulfite ions. Sulfite ions are highly toxic. They interact with enzymes, compete with normal metabolites, and interfere with a variety of cellular functions (Horsman and Wellburn, 1976). However, within the leaf, sulfite is oxidized to SO_4 ions, which can then be used by the plant as a nutrient. Small amounts of sulfite may be oxidized before they prove harmful.

SO_2 gas at sufficiently elevated levels has long been known to cause injury to plants. Acute SO_2 injury usually develops within a few hours or days of exposure, and symptoms include marginal, flecked, and/or intercostal necrotic areas that appear water-soaked and dullish green initially. This injury generally occurs to younger leaves. Chronic injury usually is evident by signs of chlorosis, bronzing, premature senescence, reduced growth, and possible tissue necrosis (EPA, 1982). Background levels of SO_2 in the Chassahowitzka NWA average 1.3 $\mu g/m^3$, with a maximum 24-hour average concentration of 14.5 $\mu g/m^3$ (IMPROVE, 2002). Observed SO_2 effect levels for several plant species and plant sensitivity groupings are presented in Tables 8-2 and 8-3, respectively.

Many studies have been conducted to determine the effects of high-concentration, short-term SO_2 exposure on natural community vegetation. Sensitive plants include ragweed, legumes, blackberry, southern pine, and red and black oak. These species are injured by exposure to 3-hour average SO_2 concentrations of 790 to 1,570 $\mu g/m^3$. Intermediate plants include locust and sweetgum. These species are injured by exposure to 3-hour average SO_2 concentrations of 1,570 to 2,100 $\mu g/m^3$. Resistant species (injured at concentrations above 2,100 $\mu g/m^3$ for 3 hours) include white oak and dogwood (EPA, 1982).

A study of native Floridian species (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak, and mangrove exposed to 1,300 $\mu g/m^3$ SO_2 for 8 hours were not visibly damaged. This finding supports the levels cited by other researchers on the effects of SO_2 on vegetation. A corroborative study (McLaughlin and Lee, 1974) demonstrated that approximately 20 percent of a cross-section of plants ranging from sensitive to tolerant was visibly injured at 3-hour average SO_2 concentrations of 920 $\mu g/m^3$.

Jack pine seedlings exposed to SO_2 concentrations of 470 to 520 $\mu g/m^3$ for 24 hours demonstrated inhibition of foliar lipid synthesis; however, this inhibition was reversible (Malhotra and Kahn, 1978). Black oak exposed to 1,310 $\mu g/m^3$ SO_2 for 24 hours per day for 1 week demonstrated a 48-percent reduction in photosynthesis (Carlson, 1979).

Two lichen species indigenous to Florida exhibited signs of SO_2 damage in the form of decreased biomass gain and photosynthetic rate as well as membrane leakage when exposed to concentrations of 200 to 400 $\mu g/m^3$ for 6 hours per week for 10 weeks (Hart et al., 1988).

The maximum 24-hour average SO_2 concentration increase that is predicted for the CF project at the PSD Class I area is 0.102 $\mu g/m^3$. When added to the average background concentration of 1.3 $\mu g/m^3$, the total SO_2 impact is 1.4 $\mu g/m^3$. When added to the maximum 24-hour average background concentration of 14.5 $\mu g/m^3$ at the Chassahowitzka NWA, the maximum worst-case total SO_2 concentration is 14.6 $\mu g/m^3$, which is much lower than those known to cause damage to test species. The maximum 24-hour average SO_2 concentrations predicted for the project at the PSD Class I Area are less than 1 to 7 percent of those that caused damage to the most sensitive lichens. The modeled annual incremental increase in SO_2 adds slightly to background levels of this gas and poses only a minimal threat to area vegetation.

8.5.3.2 Nitrogen Dioxide

NO_2 can injure plant tissue with symptoms usually appearing as irregular white to brown collapsed lesions between the leaf veins and near the margins. Conversely, non-injurious levels of NO_2 can be absorbed by plants, enzymatically transformed into ammonia, and incorporated into plant constituents such as amino acids (Matsumaru et al., 1979).

Plant damage can occur through either acute (short-term, high concentration) or chronic (long-term, relatively low concentration) exposure. For plants that have been determined to be more sensitive to NO_2 exposure than others, acute (1, 4, 8 hours) exposure caused 5-percent predicted foliar injury at concentrations ranging from 3,800 to 15,000 $\mu g/m^3$ (Heck and Tingey, 1979). Chronic exposure of selected plants (some considered NO_2-sensitive) to NO_2 concentrations of 2,000 to 4,000 $\mu g/m^3$ for 213 to 1,900 hours caused reductions in yield of up to 37 percent and some chlorosis (Zahn, 1975).

Average and maximum 24-hour average background concentrations of NO_2 reported in the Chassahowitzka NWA are 0.006 and 0.104 $\mu g/m^3$, respectively (NADP, 2000). The increase in maximum 8-hour average NO_2 concentrations due to the CF Plant City project in the PSD Class I area is predicted to be 0.11 $\mu g/m^3$ (Table 8-1). This concentration is less than 0.01 percent of the levels that cause foliar injury in acute exposure scenarios. By comparison of published toxicity values for NO_2 exposure to long-term (annual averaging time) modeled concentrations, the possibility of plant damage in the PSD Class I Areas can be examined for chronic exposure situations. For a chronic exposure, the maximum increase in annual average NO_2 concentrations due to the CF Plant City project in the PSD Class I Area is 0.0016 $\mu g/m^3$. When added to the maximum annual average concentration of NO_2 reported in the Chassahowitzka NWA, the resultant value (0.007 $\mu g/m^3$) is less than 0.001 percent of the levels that caused minimal yield loss and chlorosis in plant tissue.

8.5.3.3 Particulate Matter

Although information pertaining to the effects of PM on plants is scarce, some threshold concentrations are available. Mandoli and Dubey (1998) exposed 10 species of native Indian plants to levels of PM ranging 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 PM 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 PM 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 PM_{10} concentration in the PSD Class I Area due to the project only is 0.23 $\mu g/m^3$ (Table 8-1). This concentration is only 0.1 percent of the lower threshold value that reportedly affects plant foliage. Since the predicted 8-hour impact is very low, no measurable effects upon vegetation in the PSD Class I Area will occur due to the proposed project.

8.5.3.4 Sulfuric Acid Mist

Acidic precipitation or acid rain is coupled to SO_2 emissions mainly formed during the burning of fossil fuels. This pollutant is oxidized in the atmosphere and dissolves in rain, forming SAM, which falls as acidic precipitation (Ravera, 1989). Although concentration data are not available, SAM has been reported to yield necrotic spotting on the upper surfaces of leaves (Middleton et al., 1950).

No significant adverse effects on vegetation are expected from the project's emissions because SO_2 concentrations, which lead directly to the formation of SAM concentrations, are predicted to be well below levels that have been documented as negatively affecting vegetation. During the last decade, much attention has been focused on acid rain. Acidic deposition is an ecosystem-level problem that affects vegetation because of some alterations of soil conditions such as increased leaching of essential base cations or elevated concentrations of aluminum in the soil water (Goldstein et al., 1985). Although effects of acid rain in eastern North America have been well published and publicized, detrimental effects of acid rain on Florida vegetation are lacking documentation.

8.5.3.5 Fluoride

Fluoride is an inhibitor of plant metabolism. As Fl accumulates in plants, it causes an inhibition of plant metabolism and chlorosis (a yellowing of the leaf). With further increases in accumulation of Fl, the cells die and necrosis is observed. Leaf tips and margins accumulate the highest concentrations of Fl and are the sites of initial visible injury. Gaseous Fl is taken up primarily through the stomata of transpiring plants. There is negligible contribution to leaf Fl content by uptake through the roots (Applied Sciences Associates, Inc.; 1978).

Plant sensitivities can range from 16 $\mu g/m^3$ of Fl in sensitive plants to 500 $\mu g/m^3$ of Fl in tolerant plants for 3-hour exposures. The lowest observed effect levels for sensitive plants are reported to be as follows (Applied Sciences Associates, Inc.; 1978):

<50 $\mu g/m^3$ for 1-hour exposures
<16 $\mu g/m^3$ for 3-hour exposures
<1.6 $\mu g/m^3$ for 24-hour exposures

Gladiolus is considered the plant species most sensitive to Fl. Visible symptoms are reported to occur when gladiolus have been exposed to concentrations >0.5 $\mu g/m^3$ for 5 to 10 days. More tolerant fruit tree species and conifers displayed symptoms at around 1 $\mu g/m^3$ at 10-day exposures (Treshow and Anderson, 1989).

The predicted increase in maximum Fl concentrations in the Chassahowitzka NWA due to the modified CF Plant City plant are 0.04 $\mu g/m^3$ for 1-hour averaging time, 0.031 $\mu g/m^3$ for 3-hour averaging time, and 0.009 $\mu g/m^3$ for the 24-hour averaging time (refer to Table 8-1). These concentrations are only 0.08 to 0.6 percent of the reported effect levels. As a result, no significant adverse effects are predicted to occur to the vegetative AQRVs of the Chassahowitzka NWA.

8.5.3.6 Summary

In summary, the phytotoxic effects from the CF project's emissions are minimal. It is important to note that the emissions were conservatively modeled with the assumption that 100 percent was available for plant uptake. This is rarely the case in a natural ecosystem.

8.5.4 <u>Impacts to Wildlife</u>

The major air quality risk to wildlife in the United States is from continuous exposure to pollutants above the NAAQS. This occurs in non-attainment areas, e.g., Los Angeles Basin. Risks to wildlife also may occur for wildlife living in the vicinity of an emission source that experiences frequent upsets or episodic conditions resulting from malfunctioning equipment, unique meteorological conditions, or startup operations (Newman and Schreiber, 1988). Under these conditions, chronic effects (e.g., particulate contamination) and acute effects (e.g., injury to health) have been observed (Newman, 1981).

A wide range of physiological and ecological effects to fauna has been reported for gaseous and particulate pollutants (Newman, 1981; Newman and Schreiber, 1988). The most severe of these effects have been observed at concentrations above the secondary ambient air quality standards. Physiological and behavioral effects have been observed in experimental animals at or below these standards. The ingestion of excessive amounts of Fl can lead to an animal disease called fluorosis. Fluorosis is a skeletal and dental disease resulting in softening of bone and dental tissue that can lead to injury and other health problems. In general, forage plants with over 30 parts per million (ppm) of Fl which are regularly ingested by animals such as cattle and deer can result in mild fluorosis. A number of states (excluding Florida) have Fl standards. These range from 25 to 40 ppm of Fl in vegetation as a maximum annual average.

For impacts on wildlife, the lowest threshold values of SO_2 NO_2, and PM_{10} that are reported to cause physiological changes are shown in Table 8-4. These values are orders of magnitude larger than maximum concentrations predicted for the CF project for the PSD Class I Area. No effects on wildlife AQRVs from SO_2, NO_2, or PM_{10} are expected. The proposed project's contribution to cumulative impacts is negligible.

Since the predicted annual Fl concentration due to the project is very low, no measurable accumulation of Fl will occur in vegetation that would be the prime forage of wildlife. Therefore, no significant adverse effects to wildlife AQRVs will occur from vegetation.

8.5.5 Impacts upon Visibility

8.5.5.1 Introduction

The CAA Amendments of 1977 provide for implementation of guidelines to prevent visibility impairment in mandatory PSD Class I Areas. The guidelines are intended to protect the aesthetic quality of these pristine areas from reduction in visual range and atmospheric discoloration due to various pollutants. Sources of air pollution can cause visible plumes if emissions of SO_2, PM_{10}, and NO_x are sufficiently large. A plume will be visible if its constituents scatter or absorb sufficient light so that the plume is brighter or darker than its viewing background (e.g., the sky or a terrain feature, such as a mountain). PSD Class I Areas, such as national parks and wilderness areas, are afforded special visibility protection designed to prevent plume visual impacts to observers within a PSD Class I Area.

Visibility is an AQRV for the Chassahowitzka NWA. Visibility can take the form of plume blight for nearby areas or regional haze for long distances (e.g., distances beyond 50 km). Because the Chassahowitzka NWA is more than 50 km from the CF Plant City facility, the potential change in visibility is analyzed as regional haze.

Currently, there are several air quality modeling approaches recommended by the IWAQM to perform these analyses. The IWAQM consists of EPA and FLM of PSD Class I Areas that are responsible for ensuring that AQRVs are not adversely impacted by new and existing sources. These recommendations have been summarized in two documents:

- *Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (EPA, 1998), referred to as the IWAQM Phase 2 report; and
- *Federal Land Managers' Air Quality Related Values Workgroup (FLAG), Phase I Report,* USFS, NPS, USFWS (December, 2000), referred to as the FLAG document.

The methods and assumptions recommended in these documents were used to assess visibility impairment due to the project.

8.5.5.2 Analysis Methodology

Based on the FLAG document, current regional haze guidelines characterize a change in visibility by the change in the light-extinction coefficient (b_{ext}). The b_{ext} is the attenuation of light per unit distance due to the scattering and absorption by gases and particles in the atmosphere. A change in the extinction coefficient produces a perceived visual change. An index that simply quantifies the percent change in visibility due to the operation of a source is calculated as:

$$\Delta\% = (b_{exts} / b_{extb}) \times 100$$

where: b_{exts} is the extinction coefficient calculated for the source, and

b_{extb} is the background extinction coefficient.

The purpose of the visibility analysis is to calculate the extinction at each receptor for each day (24-hour period) of the year due to the proposed project. The criteria to determine if the project's impacts are potentially significant are based on a change in extinction of 5 percent or greater for any day of the year.

Processing of visibility impairment for this study was performed with the CALPUFF model (see Appendix C) and the CALPUFF post-processing programs POSTUTIL and CALPOST. The analysis was conducted in accordance with the most recent guidance from the FLAG report (December 2000). The CALPUFF postprocessor model CALPOST is used to calculate the combined visibility effects from the different pollutants that are emitted from the Project. Daily background extinction coefficients are calculated on an hour-by-hour basis using hourly relative humidity data from CALMET and hygroscopic and non-hygroscopic extinction components specified in the FLAG document. For the PSD Class I Area evaluated, the hygroscopic and non-hygroscopic components are 0.9 and 8.5 inverse megameters (Mm^{-1}). CALPOST then predicts the percent extinction change for each day of the year.

8.5.5.3 Emission Inventory

Based on recommendations of the FLAG Phase I Summary Report (December 2000), the regional haze analysis considered only the maximum 24-hour increase in emissions due to the proposed CF modification. The emission rates and source parameters for the affected sources are presented in Section 6.0.

8.5.5.4 *Building Wake Effects*

The air modeling analysis included the same building structure dimensions to account for the effects of building-induced downwash. Dimensions for all significant building structures were processed with the BPIP, Version 04274, and were included in the CALPUFF model.

8.5.5.5 *Receptor Locations*

Receptors for the refined analysis included 58 discrete receptors located at the boundary of the Chassahowitzka NWA PSD Class I Area. These receptors are part of the receptor data developed by the FLM for this area.

8.5.5.6 *Background Extinction Coefficients and Relative Humidity*

The regional haze analysis was performed using the latest regulatory guidance as provided in the Federal Land Manager's Air Quality Related Values Workgroup (FLAG) Phase I report. Using the hourly meteorological and relative humidity data used with the CALPUFF model, the daily change in background extinction is computed. The hygroscopic and dry non-hygroscopic components used for calculating the daily background extinction coefficients for the Chassahowitzka NWA were obtained from the FLAG report. For this analysis, the hygroscopic and dry non-hygroscopic values were 0.9 and 8.5 Mm^{-1}, respectively.

8.5.5.7 *Meteorological Data*

Three years of CALMET wind field data was used for a domain that covers all of central Florida. The years of data are 1990, 1992, and 1996. A detailed description of the data used to develop the wind domains is presented in Appendix C.

8.5.5.8 *Chemical Transformation*

The air modeling analysis included all chemical transformation processes that occur for the emitted species.

8.5.5.9 *Results*

The visibility modeling results are presented in Table 8-5. The maximum predicted 24-hour change in background extinction coefficient is 3.3 percent. As this percentage is well below the criteria value of 5 percent, it is concluded that the proposed project will not adversely impact the background visibility levels at the Chassahowitzka NWA PSD Class I Area.

8.5.6 Sulfur Deposition

As part of the AQRV analyses, total sulfur (S) deposition rates were predicted at the Chassahowitzka NWA PSD Class I Area. The deposition analysis threshold is based on the annual averaging period. The total sulfur deposition is estimated in units of kilogram per hectare per year (kg/ha/yr). The CALPUFF model is used to predict wet and dry deposition fluxes of various oxides of these elements.

For S deposition, the species include:

- SO_2, wet and dry deposition; and
- SO_4, wet and dry deposition.

The CALPUFF model produces results in units of micrograms per square meter per second ($\mu g/m^2/s$). The modeled deposition rates are then converted to S deposition in kg/ha, by using a multiplier equal to the ratio of the molecular weights of the substances (IWAQM Phase II report Section 3.3).

The deposition analysis threshold (DAT) for sulfur of 0.01 kg/ha/yr was provided by the U.S. Fish and Wildlife Service (January 2002). A DAT is the additional amount of S deposition within a PSD Class I Area, below which estimated impacts from a proposed new or modified source are considered insignificant. The maximum S deposition predicted for the proposed CF project is, therefore, compared to this DAT or significant impact level.

The maximum predicted S deposition predicted for the Project in the PSD Class I Area of the Chassahowitzka NWA is summarized in Table 8-6. The maximum S deposition rate for the project is predicted to be 0.0096 kg/ha/yr, which is below the DAT of 0.01 kg/ha/yr. Therefore, the project's emissions are not expected to have a significant adverse effect on S deposition at the PSD Class I Area.

8.5.7 Nitrogen Deposition

As part of the AQRV analyses, total nitrogen (N) deposition rates were predicted at the Chassahowitzka NWA Cass I area. The deposition analysis threshold is based on the annual averaging period. The total nitrogen deposition is estimated in units of kg/ha/yr. The CALPUFF model is used to predict wet and dry deposition fluxes of various oxides of these elements.

For N deposition, the species include:

- Particulate ammonium nitrate (from species NO_3), wet and dry deposition;
- HNO_3, wet and dry deposition;

- NO_x, dry deposition; and
- SO_4 wet and dry deposition.

The CALPUFF model produces results in units of μg/m²/s. The modeled deposition rates are then converted to N deposition in kg/ha respectively, by using a multiplier equal to the ratio of the molecular weights of the substances (IWAQM Phase II report Section 3.3).

The DAT for nitrogen of 0.01 kg/ha/yr was provided by the U.S. Fish and Wildlife Service (January 2002). A DAT is the additional amount of N deposition within a PSD Class I Area, below which estimated impacts from a proposed new or modified source are considered insignificant. The maximum N deposition predicted for the proposed CF Plant City project is, therefore, compared to these DAT or significant impact levels.

The maximum predicted N deposition predicted for the project in the PSD Class I Area of the Chassahowitzka NWA is summarized in Table 8-6. The maximum N deposition rate for the Project is predicted to be 0.0018 kg/ha/yr, which is below the DAT of 0.01 kg/ha/yr. As a result, the project's emissions are not expected to have a significant adverse effect on N deposition at the PSD Class I Area.

TABLE 8-1
MAXIMUM POLLUTANT CONCENTRATIONS PREDICTED FOR THE PROPOSED PROJECT ONLY AT THE CHASSAHOWITZKA NWA PSD CLASS I AREA

Pollutant	Averaging Time	Pollutant Maximum Concentrations (μg/m³) [a]		
		1990	1992	1996
PM_{10}	Annual	0.0047	0.0047	0.0059
	24-Hour	0.091	0.084	0.081
	8-Hour	0.217	0.218	0.229
	3-Hour	0.276	0.271	0.311
	1-Hour	0.351	0.375	0.460
NO_2	Annual	0.0012	0.0014	0.0016
	24-Hour	0.036	0.036	0.038
	8-Hour	0.105	0.107	0.113
	3-Hour	0.147	0.140	0.158
	1-Hour	0.181	0.222	0.207
SO_2	Annual	0.0100	0.0109	0.0125
	24-Hour	0.099	0.092	0.102
	8-Hour	0.246	0.246	0.287
	3-Hour	0.232	0.266	0.260
	1-Hour	0.298	0.563	0.389
SAM	Annual	0.0018	0.0019	0.0021
	24-Hour	0.022	0.021	0.023
	8-Hour	0.047	0.045	0.049
	3-Hour	0.061	0.068	0.069
	1-Hour	0.088	0.095	0.092
Fluoride (F)	Annual	0.0007	0.0007	0.0008
	24-Hour	0.009	0.009	0.008
	8-Hour	0.021	0.021	0.022
	3-Hour	0.027	0.026	0.031
	1-Hour	0.035	0.039	0.040

[a] Concentrations are highest predicted using CALPUFF model and CALMET domain for north central Florida for 1990, 1992, and 1996.

TABLE 8-2
SO_2 EFFECT LEVELS FOR VARIOUS PLANT SPECIES

Plant Species	Observed Effect Level (μg/m³)	Exposure (Time)	Reference
Sensitive to tolerant	920 (20 percent displayed visible injury)	3 hours	McLaughlin and Lee, 1974
Lichens	200-400	6 hr/wk for 10 weeks	Hart et al. , 1988
Cypress, slash pine, live oak, mangrove	1,300	8 hours	Woltz and Howe, 1981
Jack pine seedlings	470-520	24 hours	Malhotra and Kahn, 1978
Black oak	1,310	Continuously for 1 week	Carlson, 1979

TABLE 8-3
SENSITIVITY GROUPINGS OF VEGETATION BASED UPON VISIBLE INJURY AT DIFFERENT SO_2 EXPOSURES[a]

Sensitivity Grouping	SO_2 Concentration 1-Hour	SO_2 Concentration 3-Hour	Plants
Sensitive	1,310 - 2,620 µg/m^3 (0.5 - 1.0 ppm)	790 - 1,570 µg/m^3 (0.3 - 0.6 ppm)	Ragweeds Legumes Blackberry Southern pines Red and black oaks White ash Sumacs
Intermediate	2,620 - 5,240 µg/m^3 (1.0 - 2.0 ppm)	1,570 - 2,100 µg/m^3 (0.6 - 0.8 ppm)	Maples Locust Sweetgum Cherry Elms Tuliptree Many crop and garden species
Resistant	>5,240 µg/m^3 (>2.0 ppm)	>2,100 µg/m^3 (>0.8 ppm)	White oaks Potato Upland cotton Corn Dogwood Peach

[a] Based on observations over a 20-year period of visible injury occurring on over 120 species growing in the vicinities of coal-fired power plants in the southeastern United States.

Source: EPA, 1982a.

TABLE 8-4
EXAMPLES OF REPORTED EFFECTS OF AIR POLLUTANTS AT CONCENTRATIONS BELOW THE NAAQS

Pollutant	Reported Effect	Concentration ($\mu g/m^3$)	Exposure
Sulfur Dioxide[1]	Respiratory stress in guinea pigs	427 to 854	1 hour
	Respiratory stress in rats	267	7 hours/day; 5 day/week for 10 weeks
	Decreased abundance in deer mice	13 to 157	continually for 5 months
Nitrogen Dioxide[2,3]	Respiratory stress in mice	1,917	3 hours
	Respiratory stress in guinea pigs	96 to 958	8 hours/day for 122 days
Particulates[1]	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

Source: [1] Newman and Schreiber, 1988.
[2] Gardner and Graham, 1976.
[3] Trzeciak et al., 1977.

TABLE 8-5
MUM 24-HOUR AVERAGE VISIBILITY IMPAIRMENT PREDICTED AT THE CHASSAHOWITZKA FOR THE PROPOSED PROJECT ONLY, CFI PLANT CITY

Ranking	Visibility Impairment (%) [a] 1990	1992	1996	Visibility Impairment Criteria (%)
Highest	2.72	3.05	3.26	5.0

[a] Concentrations are highest predicted using the CALPUFF model and CALMET windfields for central Florida.

TABLE 8-6
MAXIMUM NITROGEN ANNUAL DEPOSITION PREDICTED AT THE CHASSAHOWITZKA NWA FOR THE PROPOSED PROJECT ONLY, CFI PLANT CITY

Species	Total Deposition (Wet & Dry)						Deposition Analysis Threshold [b]
	1990		1992		1996		
	(g/m²/s)	(kg/ha/yr)[a]	(g/m²/s)	(kg/ha/yr)[a]	(g/m²/s)	(kg/ha/yr)[a]	(kg/ha/yr)
Nitrogen (N)	4.36E-12	0.0014	5.84E-12	0.0018	4.16E-12	0.0013	0.01
Sulfur (S)	2.51E-11	0.0079	3.04E-11	0.0096	2.91E-11	0.0092	0.01

[a] Conversion factor is used to convert $g/m^2/s$ to kg/hectare (ha)/yr with the following units:

$g/m^2/s$ x 0.001 kg/g
x 10,000 m^2/hectare
x 3,600 sec/hr
x 8,760 hr/yr = kg/ha/yr
or
$g/m^2/s$ x 3.154E+08 = kg/ha/yr

[b] Deposition analysis thresholds (DAT) for nitrogen and sulfur deposition provided by the U.S. Fish and Wildlife Service, January 2002. A DAT is the additional amount of N or S deposition within a Class I area, below which estimated impacts from a propos

FIGURE 8-1
POPULATION AND HOUSEHOLD UNIT TRENDS
IN HILLSBOROUGH COUNTY

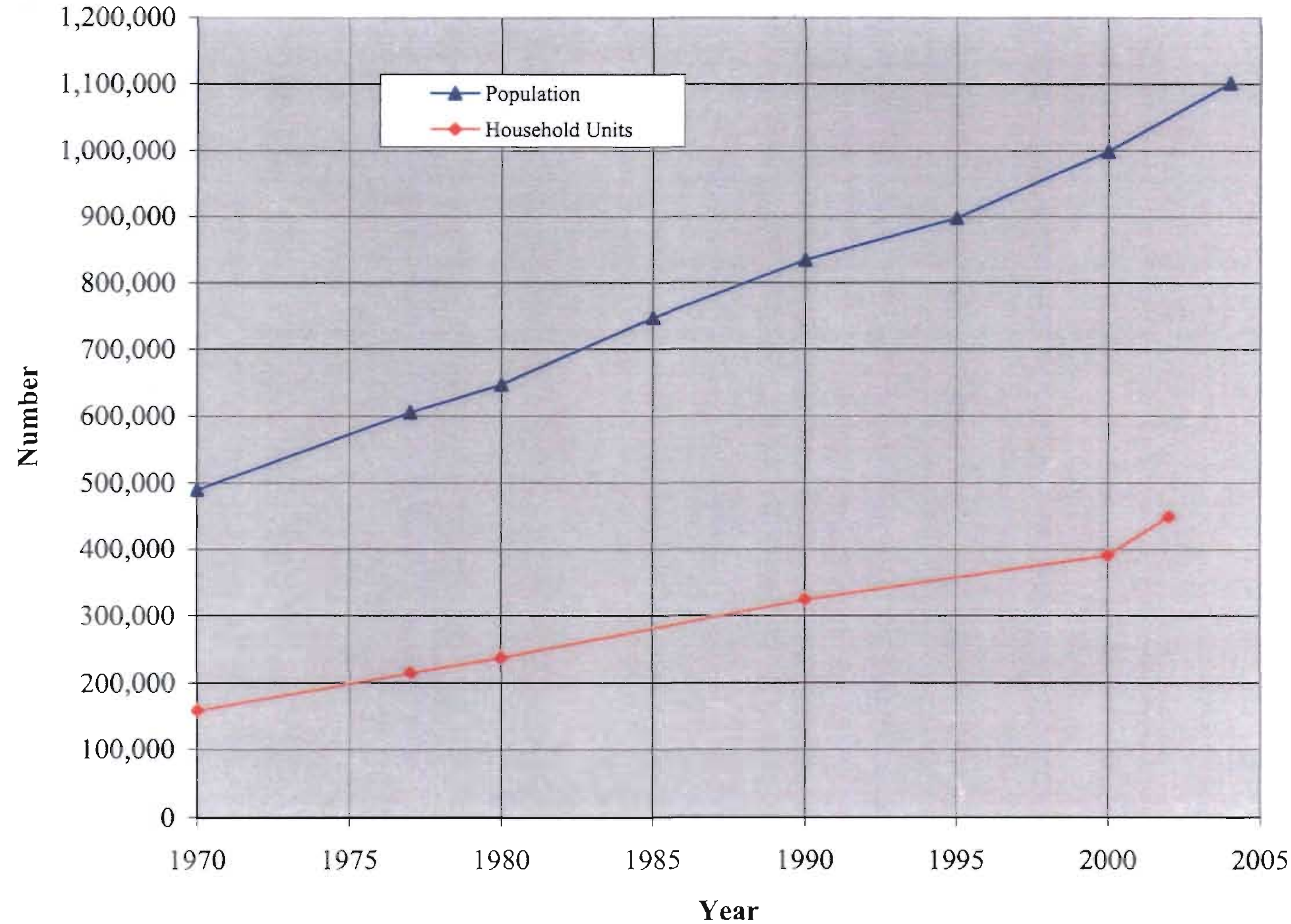


FIGURE 8-2
RETAIL AND WHOLESALE TRADE TRENDS IN HILLSBOROUGH COUNTY

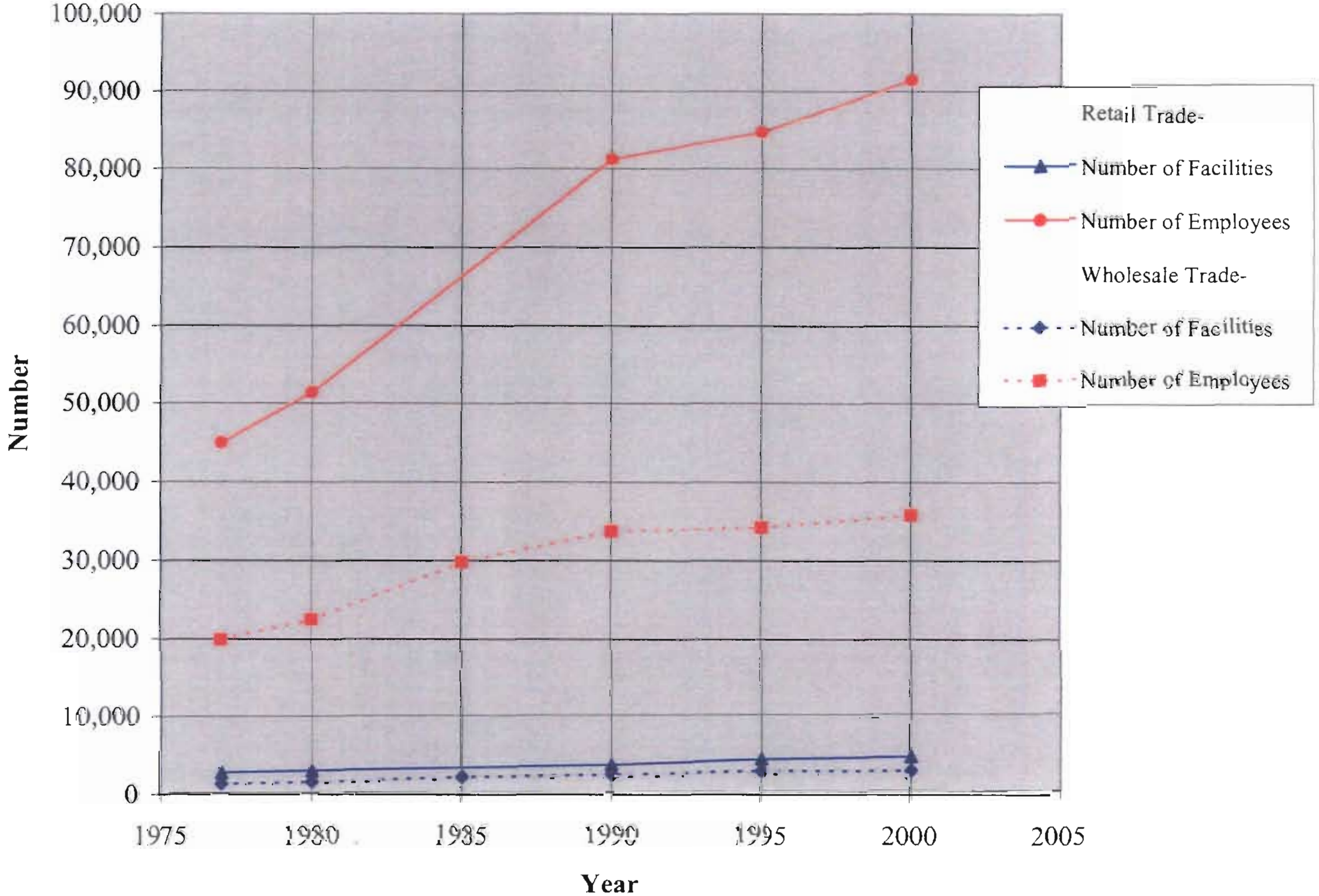


FIGURE 8-3
LABOR FORCE TREND IN HILLSBOROUGH COUNTY

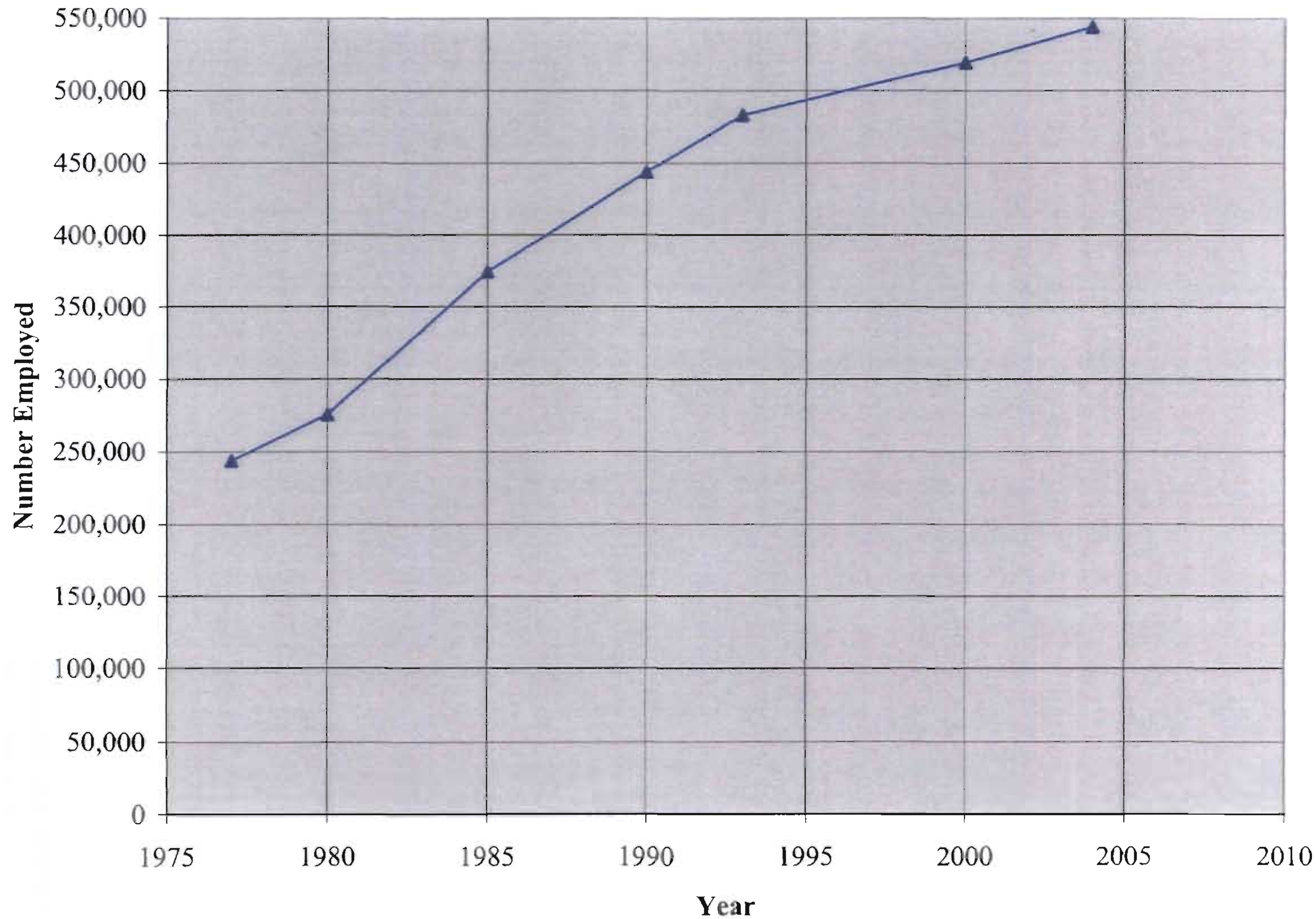


FIGURE 8-4
HOTEL AND MOTEL TREND IN HILLSBOROUGH COUNTY

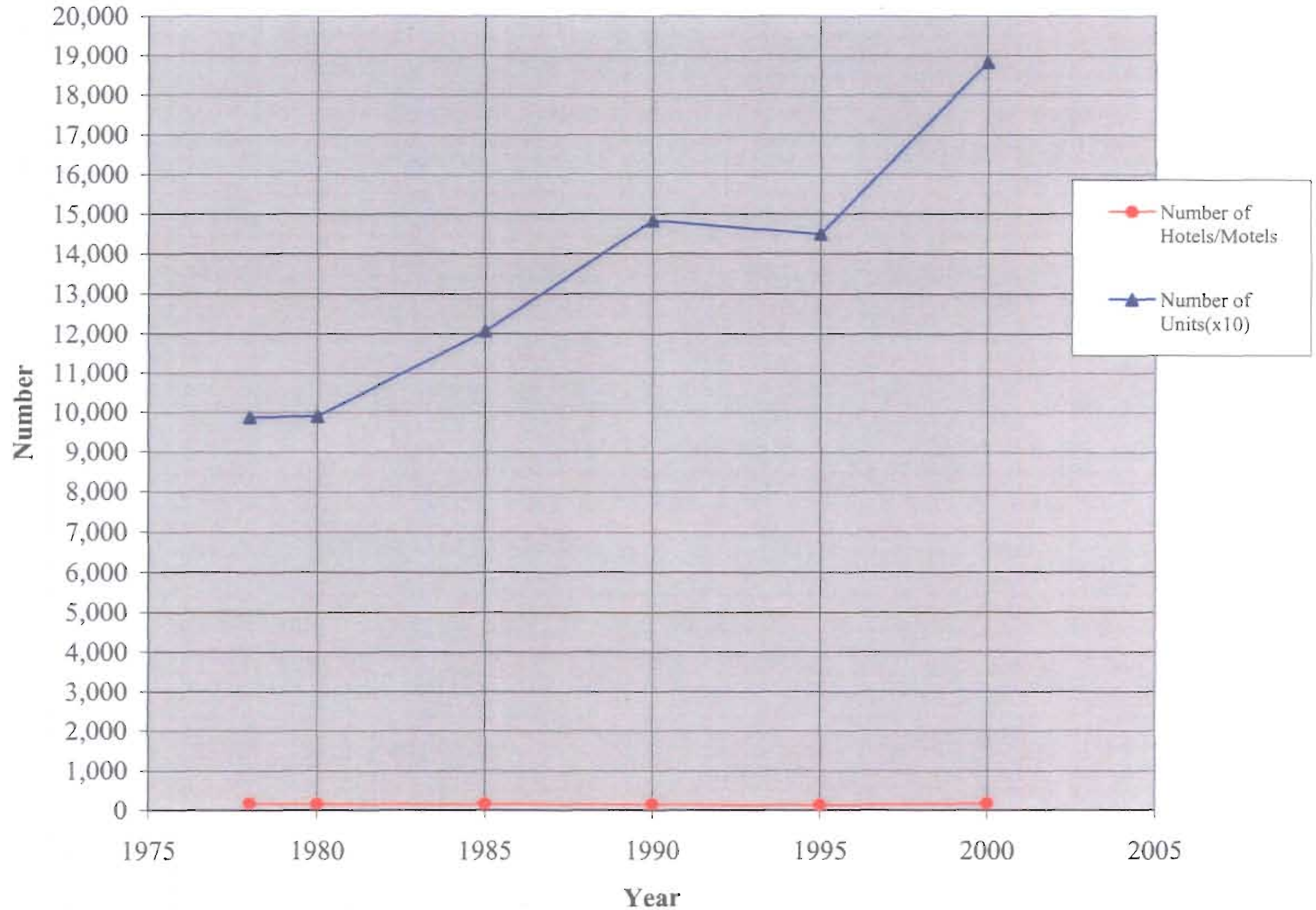


FIGURE 8-5
VEHICLE MILES TRAVELED (VMT) ESTMIATES FOR MOTOR VEHICLES IN HILLSBOROUGH COUNTY

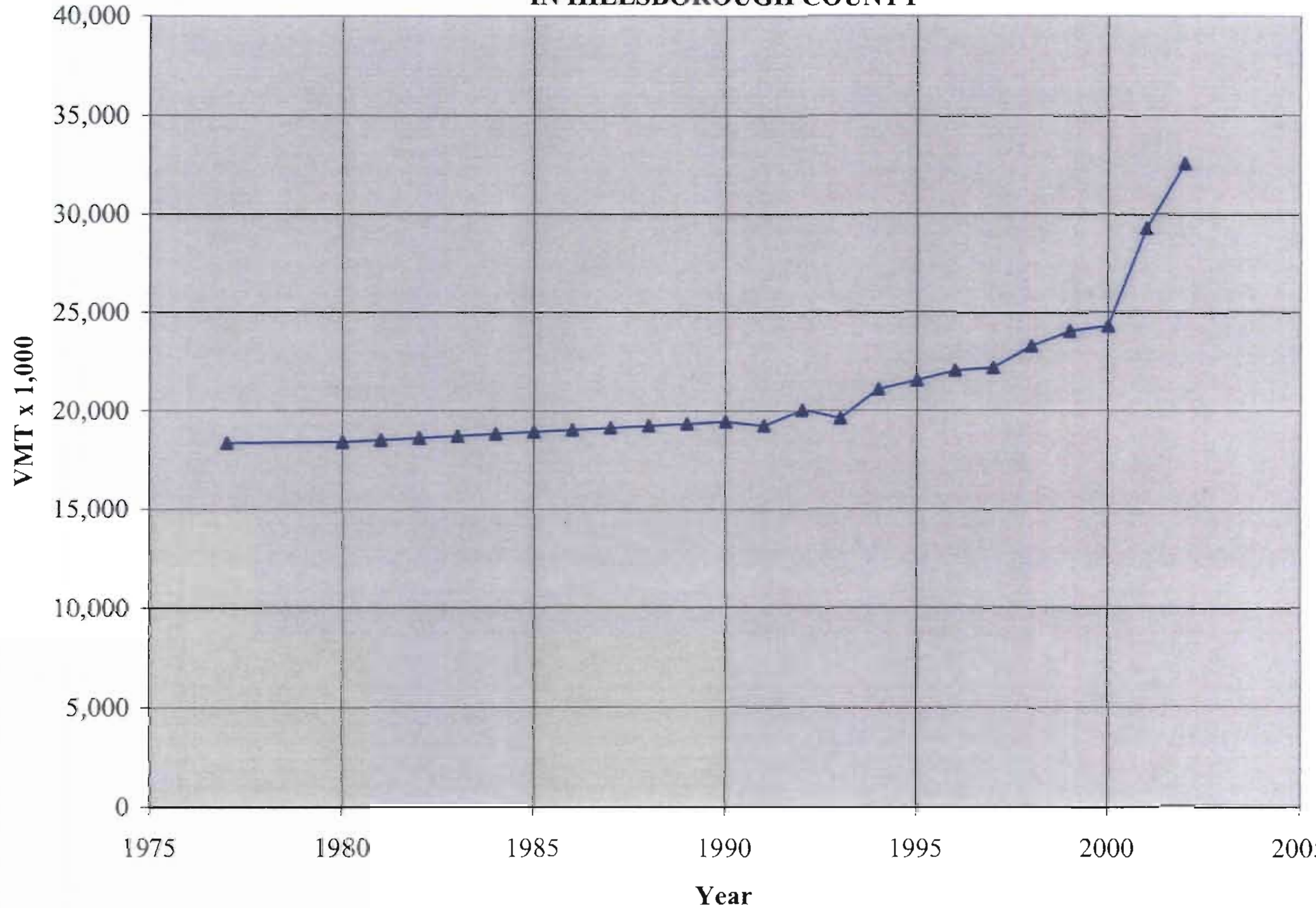


FIGURE 8-6
MANUFACTURING AND AGRICULTURE TRENDS IN HILLSBOROUGH COUNTY

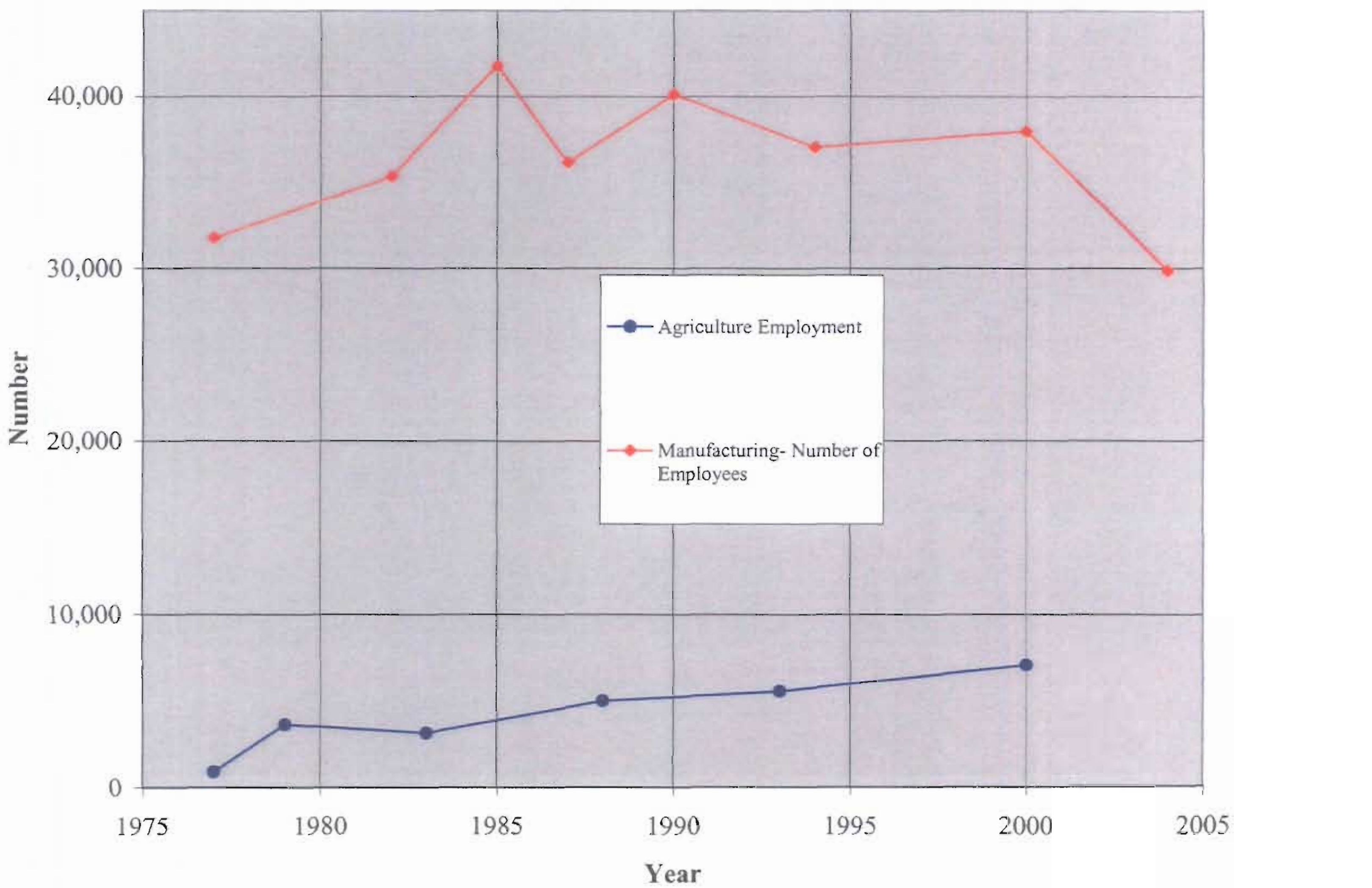


FIGURE 8-7
ELECTRICAL UTILITY POWER GENERATION CAPACITY IN HILLSBOROUGH COUNTY

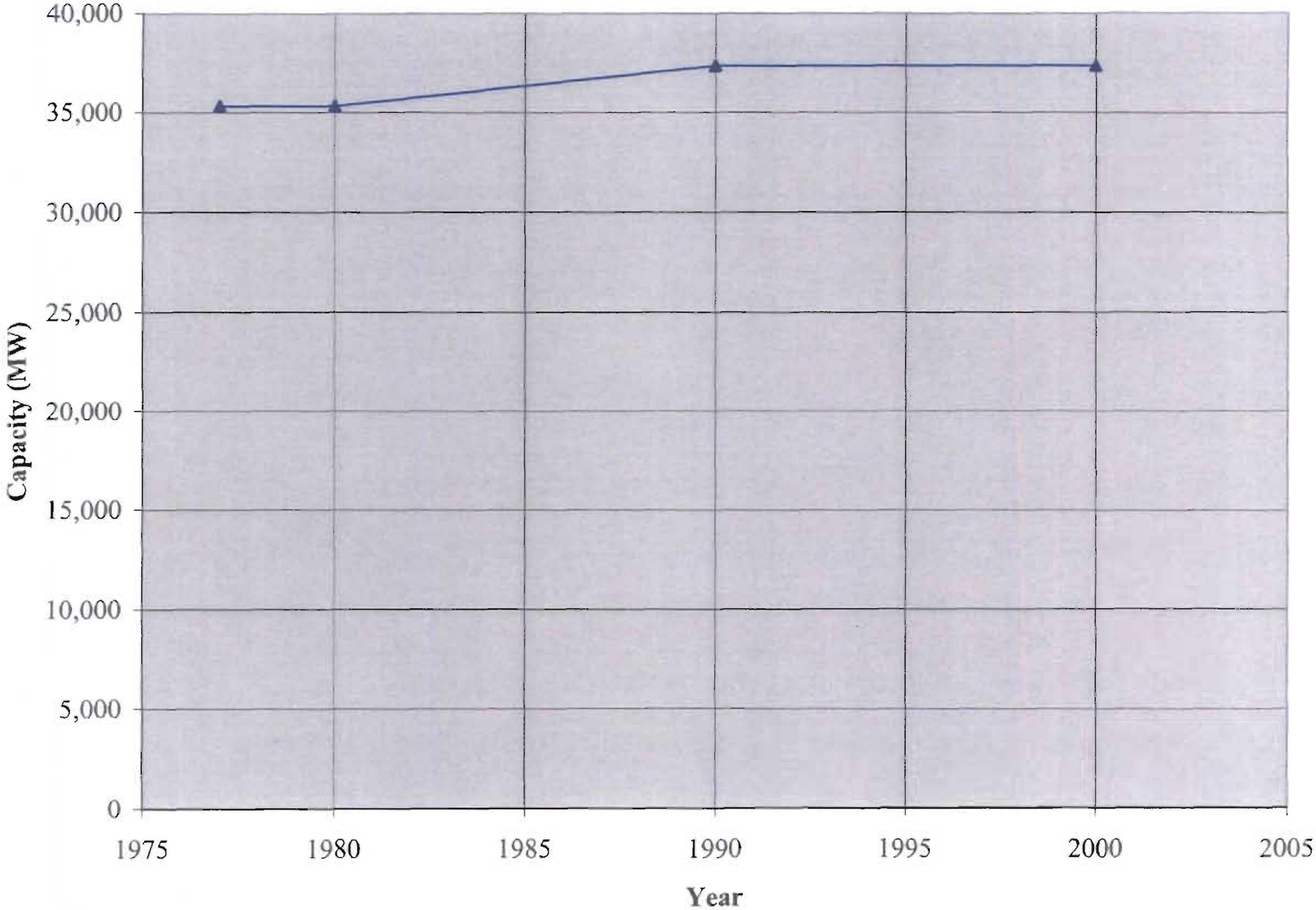


FIGURE 8-8
MOBILE SOURCE EMISSIONS [TONS PER DAY (TPD)] OF CO, VOC, AND NO_x
IN HILLSBOROUGH COUNTY

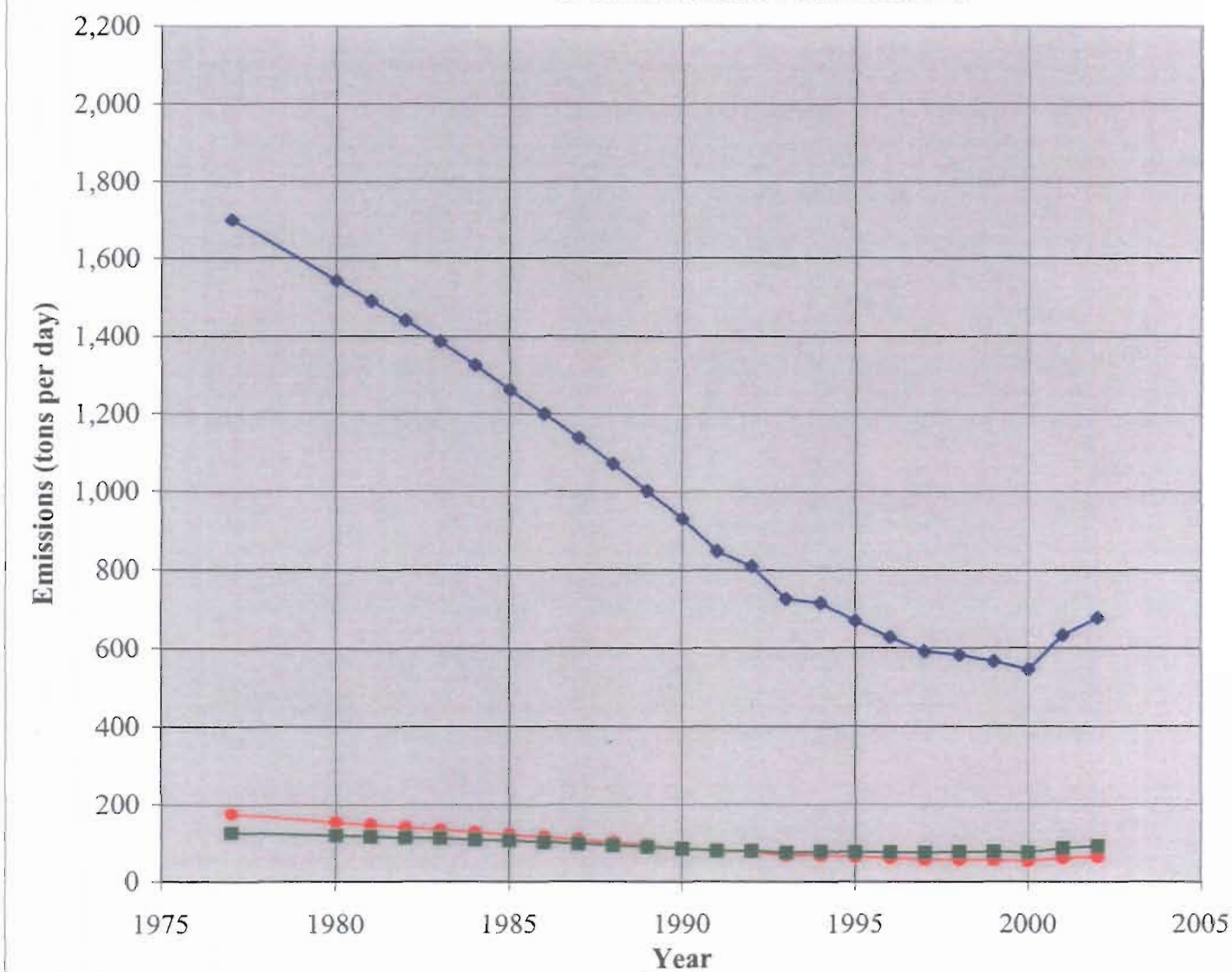


FIGURE 8-9
MEASURED ANNUAL AVERAGE SULFUR DIOXIDE
CONCENTRATIONS FROM 1982 TO 2002
HILLSBOROUGH COUNTY

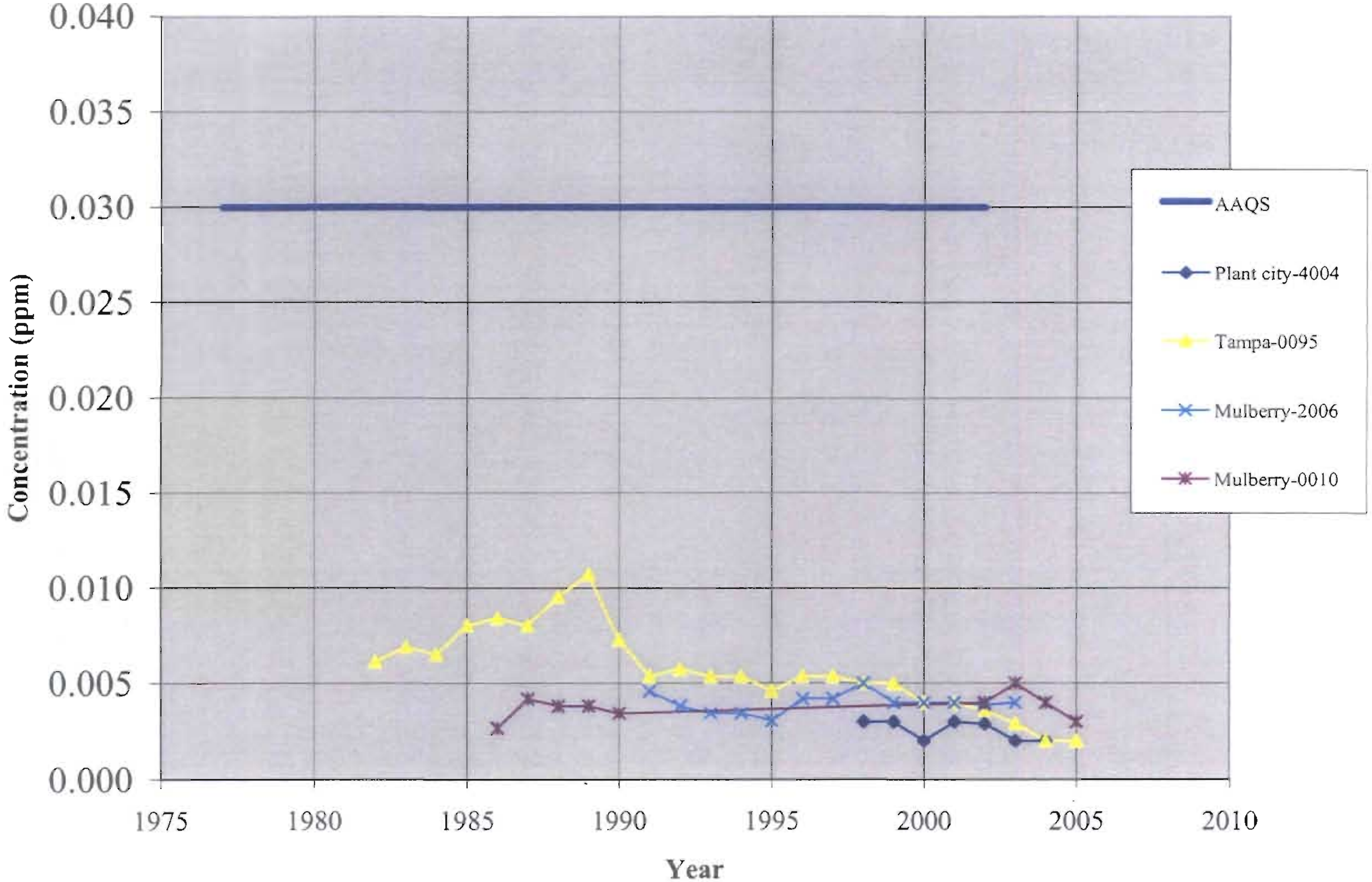


FIGURE 8-10
MEASURED 24-HOUR AVERAGE SULFUR DIOXIDE CONCENTRATIONS (SECOND HIGHEST VALUES) FROM 1982 TO 2002 HILLSBOROUGH COUNTY

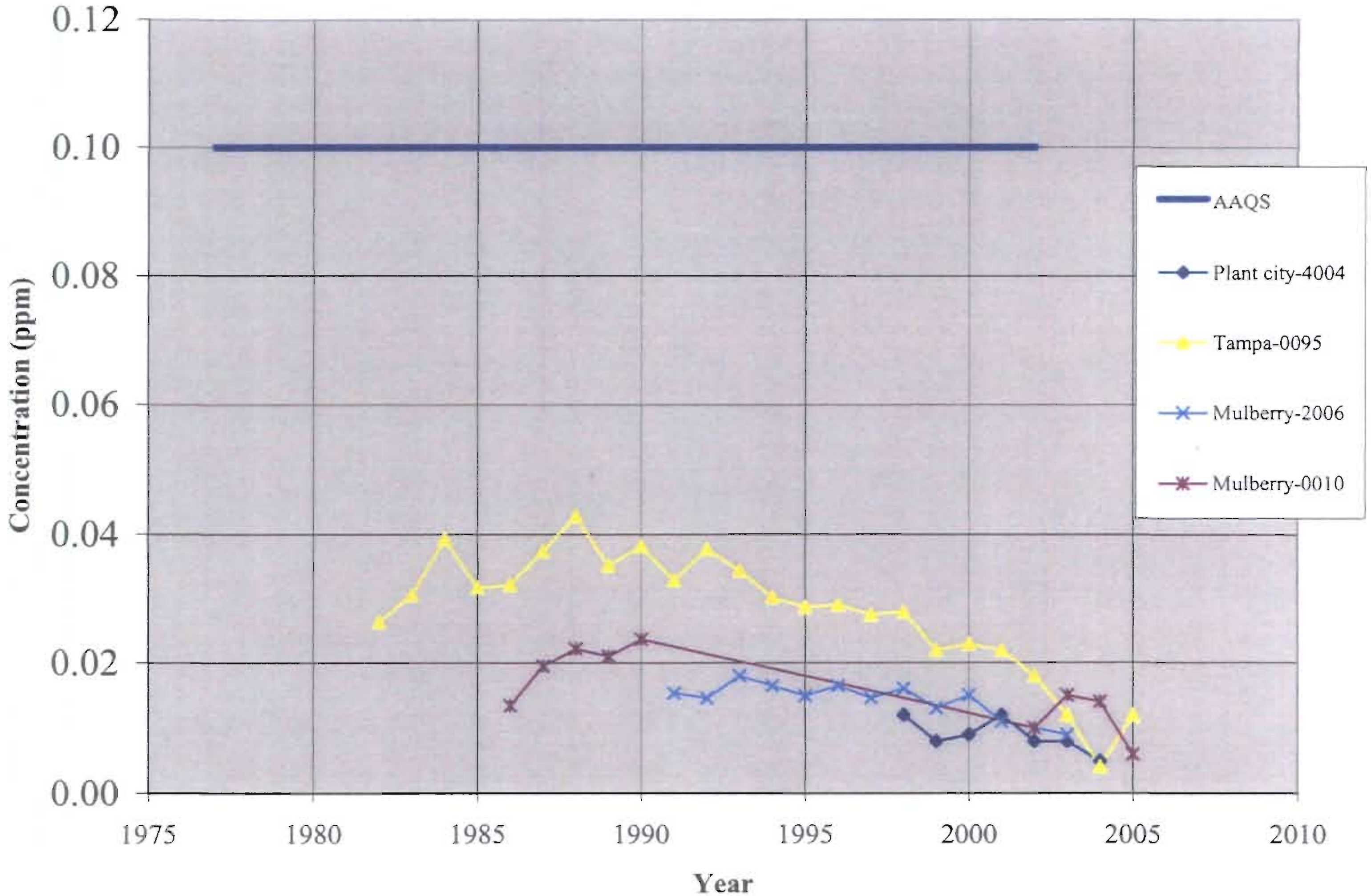


FIGURE 8-11
MEASURED 3-HOUR AVERAGE SULFUR DIOXIDE CONCENTRATIONS
(SECOND HIGHEST VALUES) FROM 1982 TO 2002
HILLSBOROUGH COUNTY

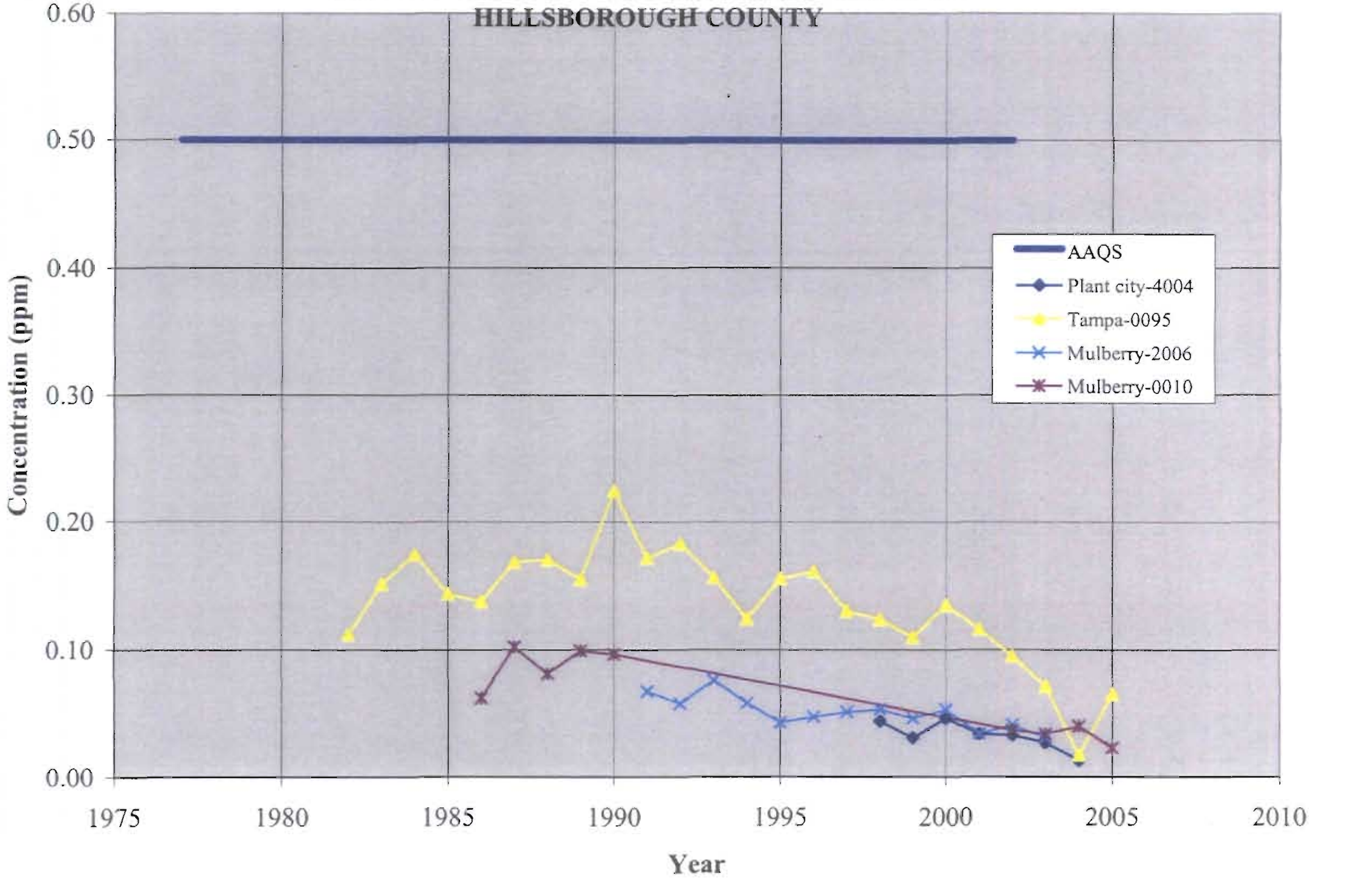


FIGURE 8-12
MEASURED ANNUAL AVERAGE PM_{10} CONCENTRATIONS (1988 TO 2005) AND TOTAL SUSPENDED PARTICULATE CONCENTRATIONS (1977 to 1987) - BRANDON, HILLSBOROUGH COUNTY AND MULBERRY, POLK COUNTY

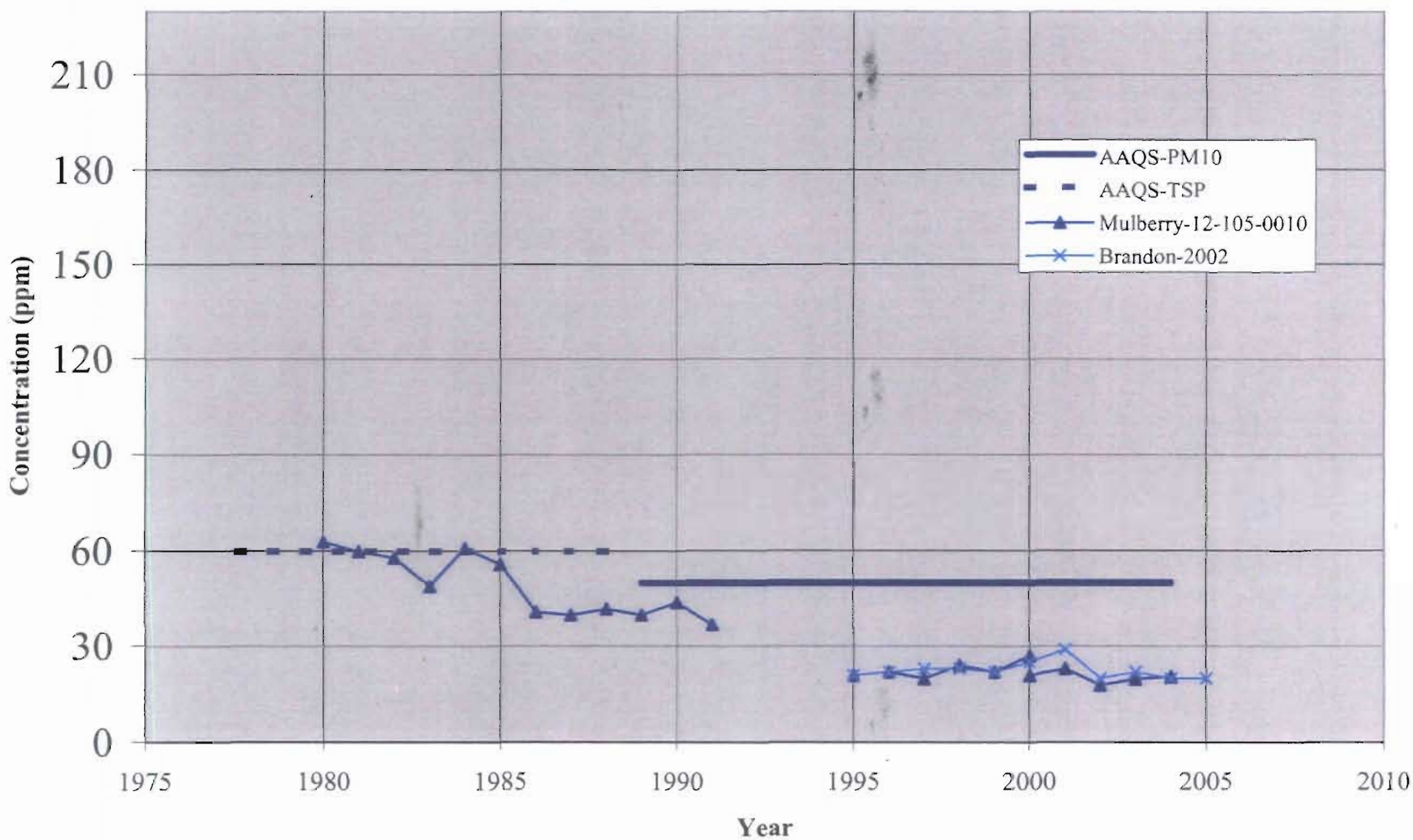
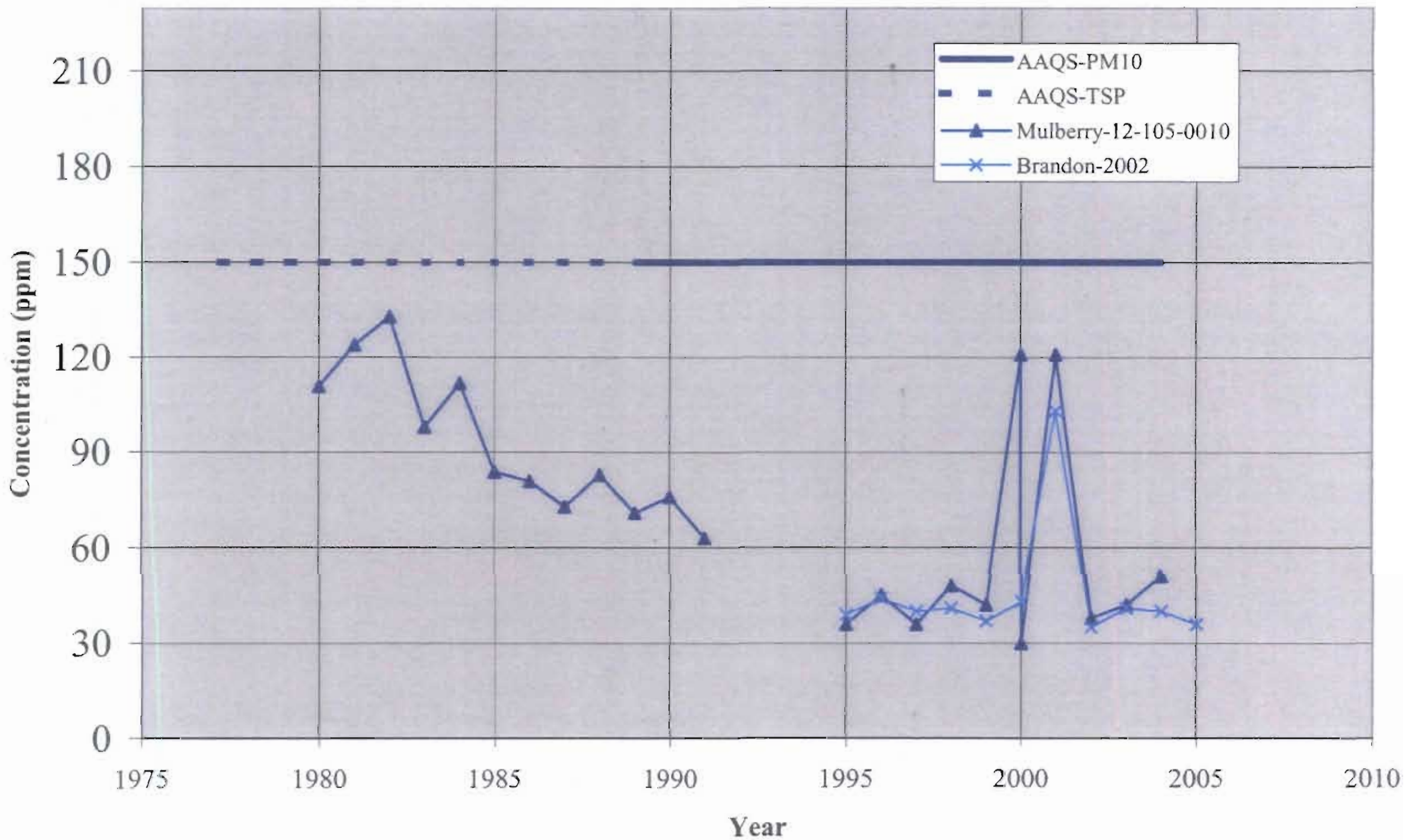


FIGURE 8-13
MEASURED 24-HOUR AVERAGE PM_{10} CONCENTRATIONS (1988 TO 2005) AND TOTAL SUSPENDED PARTICULATE CONCENTRATIONS (1977 TO 1987)
(2nd HIGHEST VALUES)
- BRANDON, HILLSBOROUGH COUNTY AND MULBERRY, POLK COUNTY



9.0 REFERENCES

Ashenden, T.W. and Williams, I.A.D, 1980. Growth Reductions on *Lolium multiflorum* Lam. and *Phleum pratense* L. as a Result of SO_2 and NO_2 pollution. Environ. Pollut. Ser. A. 21:131-139.

Auer, A.H., 1978. Correlation of Land Use and Cover with Meteorological Anomalies. J. Applied Meteorology, Vol. 17.

Carlson, R.W., 1979. Reduction in the Photosynthetic Rate of *Acer quercus* and *Fraxinus* Species Caused by Sulphur Dioxide and Ozone. Environ. Pollut. 18:159-170.

Hart, R.; Webb, P.G.; Biggs, R.H.; and Portier, K.M.; 1988. The Use of Lichen Fumigation Studies to Evaluate the Effects of New Emission Sources on PSD Class I Areas. J. Air Poll. Cont. Assoc. 38:144-147.

Heck, W.W. and Tingey, D.T., 1979. Nitrogen Dioxide: Time-Concentration Model to Predict Acute Foliar Injury. EPA-600/3-79-057, U.S. Environmental Protection Agency, Corvallis, OR.

Holzworth, G.C., 1972. Mixing Heights, Wind Speeds and Potential for Urban Air Pollution Throughout the Contiguous United States. Pub. No. AP-101. U.S. Environmental Protection Agency.

Huber, A.H. and Snyder, W.H., 1976. Building Wake Effects on Short Stack Effluents. Preprint Volume for the Third Symposium on Atmospheric Diffusion and Air Quality, American Meteorological Society, Boston, Massachusetts.

Malhotra, S.S. and Kahn, A.A., 1978. Effect of Sulfur Dioxide Fumigation on Lipid Biosynthesis in Pine Needles. Phytochemistry 17:241-244.

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

Matsumaru, T.; Yoneyama, T.; Totsuka, T.; and Shiratori, K.; 1979. Absorption of Atmospheric NO_2 by Plants and Soils. Soil Sci. Plant Nutr. 25:255-265.

9.0 REFERENCES

Ashenden, T.W. and Williams, I.A.D, 1980. Growth Reductions on *Lolium multiflorum* Lam. and *Phleum pratense* L. as a Result of SO_2 and NO_2 pollution. Environ. Pollut. Ser. A. 21:131-139.

Auer, A.H., 1978. Correlation of Land Use and Cover with Meteorological Anomalies. J. Applied Meteorology, Vol. 17.

Carlson, R.W., 1979. Reduction in the Photosynthetic Rate of *Acer quercus* and *Fraxinus* Species Caused by Sulphur Dioxide and Ozone. Environ. Pollut. 18:159-170.

Hart, R.; Webb, P.G.; Biggs, R.H.; and Portier, K.M.; 1988. The Use of Lichen Fumigation Studies to Evaluate the Effects of New Emission Sources on PSD Class I Areas. J. Air Poll. Cont. Assoc. 38:144-147.

Heck, W.W. and Tingey, D.T., 1979. Nitrogen Dioxide: Time-Concentration Model to Predict Acute Foliar Injury. EPA-600/3-79-057, U.S. Environmental Protection Agency, Corvallis, OR.

Holzworth, G.C., 1972. Mixing Heights, Wind Speeds and Potential for Urban Air Pollution Throughout the Contiguous United States. Pub. No. AP-101. U.S. Environmental Protection Agency.

Huber, A.H. and Snyder, W.H., 1976. Building Wake Effects on Short Stack Effluents. Preprint Volume for the Third Symposium on Atmospheric Diffusion and Air Quality, American Meteorological Society, Boston, Massachusetts.

Malhotra, S.S. and Kahn, A.A., 1978. Effect of Sulfur Dioxide Fumigation on Lipid Biosynthesis in Pine Needles. Phytochemistry 17:241-244.

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

Matsumaru, T.; Yoneyama, T.; Totsuka, T.; and Shiratori, K.; 1979. Absorption of Atmospheric NO_2 by Plants and Soils. Soil Sci. Plant Nutr. 25:255-265.

McLaughlin, S.B. and Lee, N.T., 1974. Botanical Studies in the Vicinity of the Widows Creek Steam Plant. Review of Air Pollution Effects Studies, 1952-1972, and Results of 1973 Surveys. Internal Report I-EB-74-1, TVA.

Naik, R.M.; Dhage, A.R.; Munjal, S.V.; Singh, P.; Desai, B.B.; Mehta, S.L.; and Naik, M.S.; 1992. Differential Carbon Monoxide Sensitivity of Cytochrome c Oxidase in the Leaves of C3 and C4 Plants. Plant Physiology 98:984-987.

Newman, J.R., 1981. Effects of Air Pollution on Animals at Concentrations at or Below Ambient Air Standards. Performed for Denver Air Quality Office, National Park Service, U.S. Department of the Interior. Denver, Colorado.

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

Pollok, M.; Hever, U.; and Naik, M.S.; 1989. Inhibition of stomatal opening in sunflower leaves by carbon monoxide and reversal of inhibition by light. Planta 178:223-230.

U.S. Department of Agriculture, Soil Conservation Service. 1981. Soil Survey of Pasco County, Florida.

U.S. Environmental Protection Agency. 1978. Guidelines for Determining Best Available Control Technology (BACT). Office of Air Quality Planning and Standards.

U.S. Environmental Protection Agency. 1980. Prevention of Significant Deterioration Workshop Manual.

U.S. Environmental Protection Agency (EPA). 1982. Air Quality Criteria for Particulate Matter and Sulfur Oxides. Vol. 3.

U.S. Environmental Protection Agency. 1987. Ambient Monitoring Guidelines for Prevention of Significant Deterioration. EPA Report No. EPA 450/4-87-007.

U.S. Environmental Protection Agency. 1990. "Top-Down" Best Available Control Technology Guidance Document (Draft). Research Triangle Park, North Carolina.

U.S. Environmental Protection Agency. 1999. Letter from P. Douglas Neeley, Chief Air and Radiation Technology Branch, EPA Region IV, Atlanta, GA (November 10, 1999).

U.S. Environmental Protection Agency. 2001. Industrial Source Complex- PRIME (ISC-PRIME) Dispersion Model (Version 01228). Updated from Technical Transfer Network.

Woltz, S.S. and Howe, T.K., 1981. Effects of Coal Burning Emissions on Florida Agriculture. In: The Impact of Increased Coal Use in Florida. Interdisciplinary Center for Aeronomy and (other) Atmospheric Sciences. University of Florida, Gainesville, Florida.

Zahn, R, 1975. Gassing Experiments with NO_2 in Small Greenhouses. Staub Reinhalt. Luft 35:194-196.

APPENDIX A

SUPPORTIVE EMISSION CALCULATIONS

APPENDIX A
FUGITIVE PM EMISSIONS CALCULATION FROM TRUCK TRAFFIC DUE TO TRAFFIC PATTERN CHANGE RESULTING FROM THE PROPOSED PROJECT

The facility produced an average of 1,865,000 TPY of fertilizer in 2003 and 2004. A 20 percent increase in production above the average production of 2003 and 2004 would mean an additional amount of 373,000 TPY of fertilizer will be produced, 33 percent of which will be shipped by truck.

The A SAP produced an average of 380,500 TPY of H_2SO_4 in 2003 and 2004. Increasing the A SAP production capacity to 1,600 TPD would mean an increase of approximately 203,500 TPY H_2SO_4 above the current average production. Therefore, 203,500 TPY less of H_2SO_4 will need to be imported in the future, 51 percent of which is brought in by truck.

Assuming 100 percent of molten sulfur converts into H_2SO_4 and a 99.6 percent recovery rate, an increased production of 203,500 TPY of H_2SO_4 would require approximately 66,700 TPY of molten sulfur, 91 percent of which is imported by truck.

Four types of truck traffic are shown – one for each of fertilizer, molten sulfur, and H_2SO_4. The fourth type of truck is a type of molten sulfur truck that ships out fertilizer after unloading molten sulfur. Approximately 30 percent of the molten sulfur trucks are of such kind.

The results of the emissions calculation are provided in Table A-1, which shows that there will be an increase of about 0.8 TPY in PM_{10} emissions due to the change in the truck traffic pattern for the proposed project.

TABLE A-1
ESTIMATION OF PM EMISSION FACTORS AND RATES FOR VEHICLE TRAFFIC ON PAVED ROADS DUE TO THE PROJECT, CF INDUSTRIES, PLANT CITY FACILITY

General Data		Types of Truck Traffic			
		DAP/MAP (Type A)	Molten Sulfur (Type B)	Molten Sulfur In DAP/MAP Out (Type C)	H_2SO_4 (Type D)
Throughput Data					
Operation days	Annual	365	365	365	365
Increase in Fertilizer Production (TPY) [a]	Annual	373,019	--	--	--
Increase in Molten Sulfur Throughput (TPY) [b]	Annual	--	66,714	66,714	--
Reduced Throughput of H_2SO_4 Import (TPY) [c]	Annual	--	--	--	-203,494
Fertilizer Shipment by Truck (%) [d]	Annual	33	--	--	--
Molten Sulfur Delivery by Truck (%) [d]	Annual	--	91	91	--
H_2SO_4 Delivery by Truck (%) [d]	Annual	--	--	--	51
Throughput (TPY) [e]	Annual	104,883	42,497	18,213	-103,782
Vehicle Data					
Vehicle weight (W), ton	Loaded	38	39.5	40	39
	Unloaded	14	15.5	16.5	14.5
	Average	26	27.5	28.25	26.75
	Payload	24	24	23.5	24.5
Number of vehicles (Material throughput/average vehicle weight)	Annual	4,370	1,771	775	-4,236
Number of vehicles/Day	Daily	12	5	2	-12
Distance (miles) travelled/ vehicle/ route [f]	Per trip	1.61	1.06	2.11	1.06
VMT (no. vehicles x miles travelled)	Daily	19.3	5.1	4.5	-12.3
General/ Site Characteristics					
Days of precipitation greater than or	Short-term	0	0	0	0
equal to 0.254 mm (p)	Annual	120	120	120	120
Silt Loading (sL), g/m^2 [g]		1.0	1.0	1.0	1.0
Particle size multiplier, PM (k)		0.082	0.082	0.082	0.082
PM_{10} (k)		0.016	0.016	0.016	0.016
Emission Factor Fleet Exhaust (C), lb/VMT		0.00047	0.00047	0.00047	0.00047
Emission Control Data					
Emission control method		None	None	None	None
Emission control removal efficiency, %		0	0	0	0
Emission Factor (EF) Equation (Equation 1, AP-42, Section 13.2.1.3)					
Uncontrolled EF (UEF) Equation - PM	UEF(lb/VMT) = $[k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C]$				
PM_{10}	UEF(lb/VMT) = $[k \times \{(sL/2)^{0.65} \times (W(ton, ave)/3)^{1.5}\}-C]$				
Controlled (Final) EF (CEF) Equation	CEF(lb/VMT) = UEF (lb/VMT) x [100 - Removal efficiency (%)]				
Calculated PM Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Daily	1.33	1.45	1.51	1.39
Controlled (Final) EF, lb/VMT	Daily	1.33	1.45	1.51	1.39
Calculated PM_{10} Emission Factor (EF)					
Uncontrolled EF, lb/VMT	Daily	0.260	0.283	0.294	0.271
Controlled (Final) EF, lb/VMT	Daily	0.260	0.283	0.294	0.271
Estimated Emission Rate (ER)					
PM Emission Rate (lb)	Daily	25.8	7.4	6.8	-17.0
PM_{10} Emission Rate (lb)	Daily	5.02	1.45	1.32	-3.32

Source: USEPA, 2003 (AP-42, Section 13.2.1, Paved Roads)

[a] Increase in fertilizer production is based on 20% of average actual fertilizer production from 2003 and 2004.

[b] Throughput of increased S is based on the throughput of reduced import of H_2SO_4 and calculated assuming 100% S converts into 98% pure H_2SO_4, Molten S (TPY) = H_2SO_4 (TPY) x $MW_S/(0.98 * MW_{H2SO4})$, where MW_S = 32 and MW_{H2SO4} = 98.

[c] Reduction in H_2SO_4 throughput is based on the average A-SAP production of 2003 and 2004 (from AORs) and future potential rpoduction.

[d] Conservative assumption based on current plant data. About 33% fertilizer, 90.5% molten sulfur, and 51% H_2SO_4 are transported by trucks.

[e] Throughput: Type A = Annual Fertilizer Production x Percent Shipped by Truck - Amount shipped by Type C Trucks.
Type B = Annual Molten Sulfur Capacity x Percent delivered by truck x 70% delivery by Type B Trucks.
Type C = Annual Molten Sulfur Capacity x Percent delivered by truck x 30% delivery by Type C Trucks.
Type D = Annual H_2SO_4 Import x Percent delivered by trucks.

[f] Travel distance of round-trip from fence to drop-off/pick-up location.

[g] Based on silt loading developed for the permit application (DEP File No. 0571244-001-AC) for the solid and molten sulfur handling and storage facilities, Big Bend Transfer Company, LLC, 2001.

TABLE A-2
ACTUAL EMISSIONS[a] FOR 2004 – CF INDUSTRIES PLANT CITY FACILITY

Source Description	EU ID	Operating Hours	Pollutant Emission Rate (TPY)								
			SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Handling System											
2600 Ton Molten Sulfur Storage Tank	022	8,784	--	--	--	--	--	--	--	--	--
5,000 Ton Molten Sulfur Storage Tank	033	8,784	--	--	--	--	--	--	--	--	--
Molten Sulfur Storage & Handling - Truck Pit A	023	8,784	--	--	--	--	--	--	--	--	--
Molten Sulfur Storage & Handling - Truck Pit B	024	8,784	1.58	--	--	0.63	0.63	1.12	0.90	--	--
B. Sulfuric Acid Production System											
A Sulfuric Acid Plant	002	8,668	681.51	--	--	--	--	--	--	2.52	--
B Sulfuric Acid Plant	003	8,675	717.64	--	--	--	--	--	--	1.99	--
C Sulfuric Acid Plant	007	8,052	1,385.72	31.40	--	--	--	--	--	14.03	--
D Sulfuric Acid Plant	008	8,600	1,402.14	10.93	--	--	--	--	--	19.42	--
C. Phosphoric Acid Production System											
A Phosphoric Acid Plant	004	8,248	--	--	--	--	--	--	--	--	2.44
B Phosphoric Acid Plant	009	8,172	--	--	--	--	--	--	--	--	2.96
D. DAP/MAP Production System											
A DAP/MAP Plant	010	0	--	--	--	--	--	--	--	--	--
Z DAP/MAP Plant [b]	011	7,809	0.01	0.36	1.50	13.84	13.84	0.10	--	--	2.67
X DAP/MAP Plant [b]	012	7,428	0.00	0.09	0.39	13.68	13.68	0.03	--	--	3.05
Y DAP/MAP Plant [b]	013	7,581	0.01	0.35	1.46	19.46	19.46	0.10	--	--	2.00
E. A & B Storage & Shipping Units											
A & B Storage Buildings Scrubber	014	77	--	--	--	0.11	0.11	--	--	--	--
A Shipping Baghouse	015	4,632	--	--	--	0.99	0.99	--	--	--	--
B Shipping Baghouse	018	8,316	--	--	--	1.78	1.78	--	--	--	--
B Shipping Truck Loading Station	019	8,316	--	--	--	1.40	1.40	--	--	--	--
B Shipping DAP (Railcar Loading)	020	8,316	--	--	--	2.34	2.34	--	--	--	--
Graham Scotch Marine Type Boiler	001	14		0.00	0.00	0.00	0.00	0.00	--	--	--
Phosphoric Acid Clean - Clarification and Scrubber	032	8,760	--	--	--	0.68	0.68	--	--	--	0.19
Total Actual Emission Rates - 2004			**4,188.6**	**43.1**	**3.3**	**54.9**	**54.9**	**1.3**	**0.9**	**38.0**	**13.3**

[a] Emissions from the 2004 AOR.
[b] See Table A-8 for annual NO_x emissions.

TABLE A-3
ACTUAL EMISSIONS[a] FOR 2003 -- CF INDUSTRIES PLANT CITY FACILITY

Source Description	EU ID	Operating Hours	Pollutant Emission Rate (TPY)								
			SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Handling System											
2600 Ton Molten Sulfur Storage Tank	022	8,760	--	--	--	--	--	--	--	--	--
5,000 Ton Molten Sulfur Storage Tank	033	8,760	--	--	--	--	--	--	--	--	--
Molten Sulfur Storage & Handling - Truck Pit A	023	8,760	--	--	--	--	--	--	--	--	--
Molten Sulfur Storage & Handling - Truck Pit B	024	8,760	1.58	--	--	0.63	0.63	1.12	0.90	--	--
B. Sulfuric Acid Production System											
A Sulfuric Acid Plant	002	7,778	541.06	--	--	--	--	--	--	1.83	--
B Sulfuric Acid Plant	003	8,298	605.01	--	--	--	--	--	--	1.72	--
C Sulfuric Acid Plant	007	8,629	1,509.11	19.07	--	--	--	--	--	10.95	--
D Sulfuric Acid Plant	008	8,178	1,397.16	10.42	--	--	--	--	--	14.67	--
C. Phosphoric Acid Production System											
A Phosphoric Acid Plant	004	7,661	--	--	--	--	--	--	--	--	2.43
B Phosphoric Acid Plant	009	7,996	--	--	--	--	--	--	--	--	1.22
D. DAP/MAP Production System											
A DAP/MAP Plant	010	0	--	--	--	--	--	--	--	--	--
Z DAP/MAP Plant[b]	011	7,535	0.01	0.42	1.77	16.54	16.54	0.12	--	--	3.83
X DAP/MAP Plant[b]	012	7,344	0.00	0.13	0.56	8.48	8.48	0.04	--	--	1.08
Y DAP/MAP Plant[b]	013	7,347	0.01	0.33	1.40	13.71	13.71	0.09	--	--	2.58
E. A & B Storage & Shipping Units											
A & B Storage Buildings Scrubber	014	47	--	--	--	0.07	0.07	--	--	--	--
A Shipping Baghouse	015	3,687	--	--	--	0.79	0.79	--	--	--	--
B Shipping Baghouse	018	8,569	--	--	--	1.84	1.84	--	--	--	--
B Shipping Truck Loading Station	019	4,285	--	--	--	1.71	1.71	--	--	--	--
B Shipping DAP (Railcar Loading)	020	4,285	--	--	--	1.71	1.71	--	--	--	--
Graham Scotch Marine Type Boiler	001	29	0.00	0.07	0.06	0.01	0.01	0.00	--	--	--
Phosphoric Acid Clean - Clarification and Scrubber	032	8,248	--	--	--	0.31	0.31	--	--	--	0.09
Total Actual Emission Rates--2003			**4,053.9**	**30.4**	**3.8**	**45.8**	**45.8**	**1.4**	**0.9**	**29.2**	**11.2**

[c] Emissions from the 2003 AOR.
[b] See Table A-8 for annual NO_x emissions.

TABLE A-4
AVERAGE ACTUAL EMISSIONS[a] FOR 2004 AND 2003--CF INDUSTRIES PLANT CITY FACILITY

Source Description	EU ID	Operating Hours	Pollutant Emission Rate (TPY)								
			SO_2	NO_x	CO	PM	PM_{10}	VOC	TRS	SAM	Fluoride
A. Molten Sulfur Handling System											
2600 Ton Molten Sulfur Storage Tank	022	8,772	--	--	--	--	--	--	--	--	--
5,000 Ton Molten Sulfur Storage Tank	033	8,772	--	--	--	--	--	--	--	--	--
Molten Sulfur Storage & Handling - Truck Pit A	023	8,772	--	--	--	--	--	--	--	--	--
Molten Sulfur Storage & Handling - Truck Pit B	024	8,772	1.58	--	--	0.63	0.63	1.12	0.90	--	--
B. Sulfuric Acid Production System											
A Sulfuric Acid Plant	002	8,223	611.3	--	--	--	--	--	--	2.17	--
B Sulfuric Acid Plant	003	8,487	661.3	--	--	--	--	--	--	1.86	--
C Sulfuric Acid Plant	007	8,341	1,447.4	25.23	--	--	--	--	--	12.49	--
D Sulfuric Acid Plant	008	8,389	1,399.7	10.67	--	--	--	--	--	17.05	--
C. Phosphoric Acid Production System											
A Phosphoric Acid Plant	004	7,955	--	--	--	--	--	--	--	--	2.43
B Phosphoric Acid Plant	009	8,084	--	--	--	--	--	--	--	--	2.09
D. DAP/MAP Production System											
A DAP/MAP Plant	010	0	--	--	--	--	--	--	--	--	--
Z DAP/MAP Plant	011	7,672	0.012	0.39	1.63	15.19	15.19	0.11	--	--	3.25
X DAP/MAP Plant	012	7,386	0.004	0.11	0.47	11.08	11.08	0.03	--	--	2.07
Y DAP/MAP Plant	013	7,464	0.010	0.34	1.43	16.59	16.59	0.09	--	--	2.29
E. A & B Storage & Shipping Units											
A & B Storage Buildings Scrubber	014	62	--	--	--	0.09	0.09	--	--	--	--
A Shipping Baghouse	015	4,160	--	--	--	0.89	0.89	--	--	--	--
B Shipping Baghouse	018	8,443	--	--	--	1.81	1.81	--	--	--	--
B Shipping Truck Loading Station	019	6,301	--	--	--	1.55	1.55	--	--	--	--
B Shipping DAP (Railcar Loading)	020	6,301	--	--	--	2.02	2.02	--	--	--	--
Graham Scotch Marine Type Boiler	001	22	0.000	0.037	0.031	0.003	0.003	0.002	--	--	--
Phosphoric Acid Clean - Clarification and Scrubber	032	8,504	--	--	--	0.49	0.49	--	--	--	0.14
Total Average Actual Emission Rates--2004 & 2003			**4,121.3**	**36.8**	**3.6**	**50.3**	**50.3**	**1.4**	**0.9**	**33.6**	**12.3**

[a] Emissions from the Annual Operating Report.

TABLE A-5
MAXIMUM EMISSION RATES DUE TO FUEL COMBUSTION
FOR THE DRYER AT THE "A" DAP/MAP PLANT

Parameter	Units	No. 2 Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	8,760	8,760
Maximum Heat Input Rate	10^6Btu/hr	28.5	28.5
Hourly Fuel Oil Usage[a]	10^3gal/hr	0.20	N/A
Annual Fuel Oil Usage	10^3gal/yr	1,783	N/A
Maximum Sulfur Content	Weight %	0.05	N/A
Hourly Natural Gas Usage[b]	10^6scf/hr	N/A	0.029
Annual Natural Gas Usage	10^6scf/yr	N/A	249.7
Maximum Sulfur Content	gr/100 ft^3	N/A	N/A

		No. 2 Fuel Oil		Natural Gas		Maximum Emission Rate	
Pollutant	AP-42 Emissions Factor[c]	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)	Hourly Emisson Rate (lb/hr)	Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S) lb/10^3gal[d]	1.45	6.33	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.02	0.07	--	--
Worst-Case Combination of Fuels		--	--	--	--	1.45	6.33
Sulfuric Acid Mist							
Fuel oil	2.4 *(S) lb/10^3gal[d,e]	0.02	0.11	--	--	0.024	0.107
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	4.07	17.83	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	2.85	12.48	--	--
Worst-Case Combination of Fuels		--	--	--	--	4.07	17.83
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	1.02	4.46	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	2.39	10.49	--	--
Worst-Case Combination of Fuels		--	--	--	--	2.39	10.49
Volatile Organic Compounds							
Fuel oil	0.052 lb/10^3gal	0.01	0.05	--	--	--	--
Natural gas	5.5 lb/10^6ft^3	--	--	0.16	0.69	--	--
Worst-Case Combination of Fuels		--	--	--	--	0.16	0.69

[a] Based on the heat content of fuel oil of 146,000 Btu/gallon.

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

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

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.05%.

[e] Sulfuric acid mist emission factor based on emission factor for SO_3 (AP-42, Section 1.3) converted to H_2SO_4 using molecular weight.

TABLE A-6
MAXIMUM EMISSION RATES DUE TO FUEL COMBUSTION
FOR THE DRYER AT THE "Z" DAP/MAP PLANT

Parameter	Units	No. 2 Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	8,760	8,760
Maximum Heat Input Rat	10^6Btu/hr	42.75	42.75
Hourly Fuel Oil Usage[a]	10^3gal/hr	0.31	N/A
Annual Fuel Oil Usage	10^3gal/yr	2,675	N/A
Maximum Sulfur Content	Weight %	0.05	N/A
Hourly Natural Gas Usage	10^6scf/hr	N/A	0.043
Annual Natural Gas Usag	10^6scf/yr	N/A	374.5
Maximum Sulfur Content	gr/100 ft^3	N/A	N/A

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural Gas Hourly Emisson Rate (lb/hr)	Natural Gas Annual Emission Rate (TPY)	Maximum Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S) lb/10^3gal[d]	2.17	9.50	--	--	--	--
Natural gas	0.6 lb/$10^6$$ft^3$	--	--	0.03	0.11	--	--
Worse-Case Combination of Fuels		--	--	--	--	2.17	9.50
Sulfuric Acid Mist							
Fuel oil	2.4 *(S) lb/10^3gal[d,e]	0.04	0.16	--	--	0.037	0.160
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	6.11	26.75	--	--	--	--
Natural gas	100 lb/$10^6$$ft^3$	--	--	4.28	18.72	--	--
Worse-Case Combination of Fuels		--	--	--	--	6.11	26.75
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	1.53	6.69	--	--	--	--
Natural gas	84 lb/$10^6$$ft^3$	--	--	3.59	15.73	--	--
Worse-Case Combination of Fuels		--	--	--	--	3.59	15.73
Volatile Organic Compounds							
Fuel oil	0.052 lb/10^3gal	0.02	0.07	--	--	--	--
Natural gas	5.5 lb/$10^6$$ft^3$	--	--	0.24	1.03	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.24	1.03

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

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

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

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.05%.

[e] Sulfuric acid mist emission factor based on emission factor for SO_3 (AP-42, Section 1.3) converted to H_2SO_4 using molecular weight.

TABLE A-7
MAXIMUM EMISSION RATES DUE TO FUEL COMBUSTION FOR THE DRYER AT THE "X" DAP/MAP PLANT

Parameter	Units	No. 2 Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	7,884	7,884
Maximum Heat Input Rat	10^6Btu/hr	49.7	49.7
Hourly Fuel Oil Usage[a]	10^3gal/hr	0.36	N/A
Annual Fuel Oil Usage	10^3gal/yr	2,799	N/A
Maximum Sulfur Content	Weight %	0.05	N/A
Hourly Natural Gas Usage	10^6scf/hr	N/A	0.050
Annual Natural Gas Usag	10^6scf/yr	N/A	391.8
Maximum Sulfur Content	gr/100 ft^3	N/A	N/A

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural Gas Hourly Emisson Rate (lb/hr)	Natural Gas Annual Emission Rate (TPY)	Maximum Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S) lb/10^3gal[d]	2.52	9.94	--	--	--	--
Natural gas	0.6 lb/10^6ft^3	--	--	0.03	0.12	--	--
Worse-Case Combination of Fuels		--	--	--	--	2.52	9.94
Sulfuric Acid Mist							
Fuel oil	2.4 *(S) lb/10^3gal[d,e]	0.04	0.17	--	--	0.043	0.168
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	7.10	27.99	--	--	--	--
Natural gas	100 lb/10^6ft^3	--	--	4.97	19.59	--	--
Worse-Case Combination of Fuels		--	--	--	--	7.10	27.99
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	1.78	7.00	--	--	--	--
Natural gas	84 lb/10^6ft^3	--	--	4.17	16.46	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.17	16.46
Volatile Organic Compounds							
Fuel oil	0.052 lb/10^3gal	0.02	0.07	--	--	--	--
Natural gas	5.5 lb/10^6ft^3	--	--	0.27	1.08	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.27	1.08

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

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

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

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.05%.

[e] Sulfuric acid mist emission factor based on emission factor for SO_3 (AP-42, Section 1.3) converted to H_2SO_4 using molecular weight.

TABLE A-8
MAXIMUM EMISSION RATES DUE TO FUEL COMBUSTION FOR THE DRYER AT THE "Y" DAP/MAP PLANT

Parameter	Units	No. 2 Fuel Oil	Natural Gas
Operating Data			
Annual Operating Hours	hr/yr	8,760	8,760
Maximum Heat Input Rat	10^6Btu/hr	49.5	49.5
Hourly Fuel Oil Usage[a]	10^3gal/hr	0.35	N/A
Annual Fuel Oil Usage	10^3gal/yr	3,097	N/A
Maximum Sulfur Content	Weight %	0.05	N/A
Hourly Natural Gas Usag	10^6scf/hr	N/A	0.050
Annual Natural Gas Usag	10^6scf/yr	N/A	433.6
Maximum Sulfur Content	gr/100 ft^3	N/A	N/A

Pollutant	AP-42 Emissions Factor[c]	No. 2 Fuel Oil Hourly Emisson Rate (lb/hr)	No. 2 Fuel Oil Annual Emission Rate (TPY)	Natural gas Hourly Emisson Rate (lb/hr)	Natural gas Annual Emission Rate (TPY)	Maximum Emission Rate Hourly Emisson Rate (lb/hr)	Maximum Emission Rate Annual Emission Rate (TPY)
Sulfur Dioxide							
Fuel oil	142 *(S) lb/10^3gal[d]	2.51	11.00	--	--	--	--
Natural gas	0.6 lb/$10^6$$ft^3$	--	--	0.03	0.13	--	--
Worse-Case Combination of Fuels		--	--	--	--	2.51	11.00
Sulfuric Acid Mist							
Fuel oil	2.4 *(S) lb/10^3gal[d,e]	0.04	0.19	--	--	0.042	0.186
Nitrogen Oxides							
Fuel oil	20 lb/10^3gal	7.07	30.97	--	--	--	--
Natural gas	100 lb/$10^6$$ft^3$	--	--	4.95	21.68	--	--
Worse-Case Combination of Fuels		--	--	--	--	7.07	30.97
Carbon Monoxide							
Fuel oil	5 lb/10^3gal	1.77	7.74	--	--	--	--
Natural gas	84 lb/$10^6$$ft^3$	--	--	4.16	18.21	--	--
Worse-Case Combination of Fuels		--	--	--	--	4.16	18.21
Volatile Organic Compounds							
Fuel oil	0.052 lb/10^3gal	0.02	0.08	--	--	--	--
Natural gas	5.5 lb/$10^6$$ft^3$	--	--	0.27	1.19	--	--
Worse-Case Combination of Fuels		--	--	--	--	0.27	1.19

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

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

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

[d] S denotes the weight-percent of Sulfur in fuel oil; Maximum sulfur content = 0.05%.

[e] Sulfuric acid mist emission factor based on emission factor for SO_3 (AP-42, Section 1.3) converted to H_2SO_4 using molecular weight.

TABLE A-9
CURRENT ANNUAL NO_x EMISSION RATES DUE TO FUEL COMBUSTION FOR THE DRYERS AT THE "X", "Y", and "Z" DAP/MAP PLANTS

-- OPERATING DATA [a] --

Emission Source	Maximum Heat Input Rate (10^6Btu/hr)	Maximum Sulfur Content (% wt)	2003 Operating Hours (hr/yr)	2003 Annual Fuel Oil Usage (10^3gal/yr)	2003 Annual Natural Gas Usage (10^6scf/yr)	2004 Operating Hours (hr/yr)	2004 Annual Fuel Oil Oil Usage (10^3gal/yr)	2004 Annual Natural Gas Gas Usage (10^6scf/yr)
"Z" DAP/MAP Dryer	42.8	0.05	7,809	0	42.05	7,809	0	35.64
"Y" DAP/MAP Dryer	49.5	0.05	7,581	0	33.31	7,581	0	34.73
"X" DAP/MAP Dryer	49.7	0.05	7,428	0	13.37	7,428	0	9.17

-- CURRENT ACTUAL EMISSION RATES [b] --

Emission Source	AP-42 Emissions Factor[c] (lb/10^3gal)	AP-42 Emissions Factor[c] (lb/10^6ft^3)	2003 NO_x Annual Emission Rate: No. 2 Fuel Oil (TPY)	2003 Natural Gas (TPY)	2003 Total (TPY)	2004 NO_x Annual Emission Rate: No. 2 Fuel Oil (TPY)	2004 Natural Gas (TPY)	2004 Total (TPY)	Average 2003-2004 NO_x Annual Emissions (TPY)
"Z" DAP/MAP Dryer	20	100	0.00	0.42	0.42	0.00	0.36	0.36	0.39
"Y" DAP/MAP Dryer	20	100	0.00	0.33	0.33	0.00	0.35	0.35	0.34
"X" DAP/MAP Dryer	20	100	0.00	0.13	0.13	0.00	0.09	0.09	0.11

Footnotes:

[a] From annual operating reports for 2003 and 2004 submitted to the FDEP.

[b] Calculated based on the acual fuel usage and AP-42 emission factors.

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

TABLE A-10
POTENTIAL FUGITIVE PARTICULATE MATTER EMISSION RATES FOR THE MAP/DAP STORAGE AND SHIPPING BUILDINGS

Process Description	Number of Transfer Points	Maximum Fertilizer Throughput		Moisture Content[f]	Wind Speed[g]	Calculated PM Emission Factor[h]	Calculated PM_{10} Emission Factor[h]	Uncontrolled PM Emission Rate		Uncontrolled PM_{10} Emission Rate		Control Equipment/ Measure	Control Efficiency	Maximum Total PM Controlled Emission Rate		Maximum PM_{10} Controlled Emission Rate	
		TPH	TPY	%	mph	lb/ton	lb/ton	lb/hr	TPY	lb/hr	TPY		%	lb/hr	TPY	lb/hr	TPY
"A" Storage & Shipping Building																	
Product Transfer, Storage, and Conveyi	12	250	2,190,000	1.5	1.3	0.00061	0.00029	1.84	8.08	0.87	3.82	Coating Oil	90	0.184	0.81	0.087	0.382
Product Screening [b, c]	6	250	2,190,000	1.5	1.3	0.00061	0.00029	0.92	4.04	0.44	1.91	Coating Oil	90	0.092	0.40	0.044	0.191
Product Coating and Blending [d]	5	250	2,190,000	1.5	1.3	0.00061	0.00029	0.77	3.37	0.36	1.59	Coating Oil [i]	90	0.077	0.34	0.036	0.159
Truck/Railcar Loading [e]	4	250	2,190,000	1.5	8	0.00653	0.00309	6.53	28.58	3.09	13.52	Coating Oil [i]	90	0.653	2.86	0.309	1.352
Total Emission Rate From the "A" Storage and Shipping Building =														**1.01**	**4.41**	**0.48**	**2.08**
"B" Storage & Shipping Building																	
Product Transfer, Storage, and Conveyi	9	500	4,380,000	1.5	1.3	0.00061	0.00029	2.77	12.12	1.31	5.73	Coating Oil	90	0.277	1.21	0.131	0.573
Product Screening [b, c]	8	500	4,380,000	1.5	1.3	0.00061	0.00029	2.46	10.77	1.16	5.09	Coating Oil	90	0.246	1.08	0.116	0.509
Product Coating and Blending [d]	7	500	4,380,000	1.5	1.3	0.00061	0.00029	2.15	9.43	1.02	4.46	Coating Oil [i]	90	0.215	0.94	0.102	0.446
Truck/Railcar Loading [e]	4	500	4,380,000	1.5	8	0.00653	0.00309	13.05	57.17	6.17	27.04	Coating Oil [i]	90	1.305	5.72	0.617	2.704
Total Emission Rate From the "B" Storage and Shipping Building =														**2.04**	**8.95**	**0.97**	**4.23**

Notes:

[a] Drop from production conveyor to storage pile, drop from pile to front-end loader, drop from front-end loader to hopper, drop from hopper to load conveyors, drop from load conveyors to elevators

[b] Drops from elevators to double-deck screens, drops from double-deck screens to single-deck screens, drops from single-deck screens to conveyors, drops to blenders, drops from screens to fines and oversize return conveyor

[c] The number of transfer point is conservative. Not all fertilizer is processed through all transfer points.

[d] Drops from blenders to conveyors, drops from conveyors to product bin hopper.

[e] Drop from bin hopper to trucks/railcars.

[f] The average MAP/DAP moisture content.

[g] For transfer points located inside the MAP/DAP Storage and Shipping Buildings, the wind speed is assumed to be 1.3 mph or the minimum wind speed recommended for use in the AP-42 drop emission factor equation. For the drop fro which is located in a partial enclosure, the average wind speed at the Tampa International Airport of 8 mph was assumed.

[h] Calculated using the following equation presented in Section 13.2 of AP-42, Compilation of Air Pollutant Emission Factors, January 1995.

$$E = k\,(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$$

where,
E = emission factor [lb/ton]
k = particulate size multiplier [dimensionless]
= 0.74 for total suspended particulate and 0.35 for particles smaller than 10 microns
U = mean wind speed [mph]
M = moisture content [%]

[i] Second application of coating oil applied in the Ribbon Blender.

APPENDIX B

EMISSION INVENTORIES FOR THE AAQS AND PSD CLASS II INCREMENT ANALYSES

TABLE B-1
SUMMARY OF SO_2 SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	SO_2 Emission Rate lb/hr	SO_2 Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
1050352	Lakeland Electric - Winston																	
	2.5 MW GM Diesel Engine Units 1-20	1-20	LEWINDE	12,200	-15,400	30	9.1	1.83	0.6	740	666	135.3	41.2	686.0	86.44	NO	Yes	No
0570075	Coronet Industries, Inc.																	
	Paragon Defluorinating Kiln #2-Packed Bed Scrubber	3	CORI3	5,800	-19,700	152	46.3	5.8	1.8	81	300	31.0	9.4	188.40	23.74	NO	Yes	No
	200 Hp Kewanee Boiler For Defluorinating Plant	19	CORI19	5,800	-19,700	25	7.6	1.3	0.4	450	505	50.0	15.2	4.26	0.54	NO	Yes	No
	100 Hp Kewanee Boiler For Defluorinating Plant.	20	CORI20	5,800	-19,700	20	6.1	1.2	0.4	630	605	66.0	20.1	2.13	0.27	NO	Yes	No
	Fluid Bed Reactor #1,Defluorinating A.F.Controlled By Scrubb	22	CORI22	5,800	-19,700	152	46.3	5.8	1.8	80	300	39.0	11.9	68.48	8.63	NO	Yes	No
	Defluorinating Fluid Bed Reactor #2 Controlled By Scrubber	24	CORI24	5,800	-19,700	152	46.3	5.8	1.8	72	295	36.0	11.0	68.48	8.63	NO	Yes	No
1050004	Lakeland Electric, C.D. McIntosh, Jr. Power Plant																	
	McIntosh Unit 1	1	MCINT1	21,000	-9,800	150	45.7	9	2.7	277	409	81.2	24.7	2612.5	329.18	NO	Yes	No
	Diesel Engine Peaking Unit 2	2	MCINT2	21,000	-9,800	20	6.1	2.6	0.8	715	653	77.0	23.5	14.30	1.80	NO	Yes	No
	Diesel Engine Peaking Unit 3	3	MCINT3	21,000	-9,800	20	6.1	2.6	0.8	715	653	77.0	23.5	14.30	1.80	NO	Yes	No
	Gas Turbine Peaking Unit 1	4	MCINT4	21,000	-9,800	35	10.7	13.5	4.1	900	755	79.5	24.2	164.70	20.75	NO	Yes	No
	McIntosh Unit 2	5	MCINT5	21,000	-9,800	157	47.9	10.5	3.2	277	409	73.2	22.3	892.0	112.39	NO	Yes	No
	McIntosh Unit 3	6	MCINT6	21,000	-9,800	250	76.2	18	5.5	167	348	82.6	25.2	4368.0	550.37	CON	Yes	Yes
	Combustion Turbine Unit 5	28	MCINT28	21,000	-9,800	85	25.9	28	8.5	1095	864	82.7	25.2	8.0	1.01	CON	Yes	Yes
1050003	Lakeland Electric, Larsen Power Plant																	
	Steam Generator # 6	3	LARPWR3	20,900	-13,500	165	50.3	10.0	3.05	340	444	21.0	6.4	841.2	105.99	NO	Yes	No
	Steam Generator # 7	4	LARPWR4	20,900	-13,500	165	50.3	10.0	3.05	340	444	22.0	6.7	1643.0	207.02	NO	Yes	No
	Peaking Gas Turbine # 3	5	LARPWR5	20,900	-13,500	31	9.4	11.8	3.60	800	700	101.0	30.8	106.20	13.38	NO	Yes	No
	Peaking Gas Turbine # 2	6	LARPWR6	20,900	-13,500	31	9.4	11.8	3.60	800	700	101.0	30.8	106.20	13.38	NO	Yes	No
	Peaking Gas Turbine # 1	7	LARPWR7	20,900	-13,500	31	9.4	11.8	3.60	800	700	101.0	30.8	-106.20	-13.38	EXP	No	Yes
	Combined Cycle CT	8	LARPWR8	20,900	-13,500	155	47.2	16.0	4.88	481	523	85.7	26.1	211.4	26.64	CON	Yes	Yes
1050047	Agrifos Mining, L.L.C. - Nichols																	
	Rock Dryer N. 1	1	AGRNIC1	10,700	-30,700	80	24.4	7.5	2.29	160	344	41.0	12.5	255.5	32.20	CON	Yes	Yes
	Rock Dryer N. 2	2	AGRNIC2	10,700	-30,700	80	24.4	7.5	2.29	160	344	41.0	12.5	251.0	31.63	CON	Yes	Yes
	Expanding Source		AGRINK3	10,700	-30,700	93	28.3	3.6	1.10	152	340	63.1	19.2	-110.32	-13.90	EXP	No	Yes
	Expanding Source		AGRINK4	10,700	-30,700	13	4.0	2.6	0.79	480	522	5.9	1.8	-6.90	-0.87	EXP	No	Yes
0570057	Gulf Coast Recycling, Inc.																	
	BLAST FURNACE	0	GULFRCY1	-24000	-22500	150	45.7	3.0	0.91	160	344	54.8	16.7	374.0	47.12	No	Yes	No
1050057	Mosaic Phosphates (Nichols)																	
	Phosphate Rock Dryer W/ Wet Scrubber - Expanding Source	12	IMCNIC12	10,600	-31,800	81	24.7	7.5	2.3	130	328	12.0	3.7	-26.49	-3.34	EXP	No	Yes
	Package Boiler (North Standby Boiler) - Expanding Source	15	IMCNIC15	10,600	-31,800	27	8.2	2.0	0.6	500	533	45.0	13.7	-12.80	-1.61	EXP	No	Yes
	Package Boiler - Expanding Source	16	IMCNIC16	10,600	-31,800	39	11.9	3.2	1.0	500	533	29.0	8.8	-25.60	-3.23	EXP	Yes	Yes
	Expanding Source		AGRNK1	10,600	-31,800	100	30.5	5.9	1.8	95	308	62.0	18.9	-121.0	-15.25	EXP	No	Yes
	Expanding Source		AGRNK2	10,600	-31,800	80	24.4	5.0	1.5	151	339	42.3	12.89	-30.20	-3.81	EXP	No	Yes
1050046	Mosaic Fertilizer LLC - Bartow																	
	NO.3 FERTILIZER PLANT	1	MFBAR1	21,800	-29,400	99	30.18	7.5	2.29	135	330	53	16.15	76.90	9.69	CON	Yes	Yes
	No. 4 Sulfuric Acid Plant	12	MFBAR12	21,800	-29,400	200	60.96	6.8	2.07	180	355	61	18.59	433.30	54.60	CON	Yes	Yes
	NO.4 FERTILIZER PLANT	21	MFBAR21	21,800	-29,400	140	42.67	10.9	3.32	132	329	53	16.15	102.53	12.92	CON	Yes	Yes
	No. 6 Sulfuric Acid Plant	32	MFBAR32	21,800	-29,400	200	60.96	6.8	2.07	180	355	61	18.59	433.30	54.60	CON	Yes	Yes
	No. 5 Sulfuric Acid Plant	33	MFBAR33	21,800	-29,400	200	60.96	6.8	2.07	180	355	61	18.59	433.30	54.60	CON	Yes	Yes
	Cleaver Brooks Package Watertube Boiler	51	MFBAR51	21,800	-29,400	31	9.45	3.5	1.07	410	483	20	6.10	165.17	20.81	CON	Yes	Yes

TABLE B-1
SUMMARY OF SO_2 SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters: Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	SO_2 Emission Rate lb/hr	SO_2 Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
1050023	Cutrale Citrus Juices USA, Inc																	
	Peel Dryer	3	CCJUSA3	34,460	-12,420	100	30.5	3.2	0.98	161	345	49.0	14.9	186.0	23.44	CON	Yes	Yes
	Cogeneration System No. 1	8	CCJUSA8	34,460	-12,420	40	12.2	4.0	1.22	323	435	60.0	18.3	170.8	21.52	CON	Yes	Yes
	Cogeneration System No. 2	9	CCJUSA9	34,460	-12,420	40	12.2	4.0	1.22	330	439	66.0	20.1	26.0	3.28	CON	Yes	Yes
1050048	Mosaic Fertilizer, LLC - Mulberry																	
	No. 3 Sulfuric Acid Plant	2	MFMUL2	20020	-30990	200	61.0	7.0	2.13	200	366	32.0	9.8	283.33	35.70	NO	Yes	No
	MAP/DAP Plant Scrubber	5	MFMUL5	20020	-30990	102	31.1	8.8	2.68	110	316	26.0	7.9	-73.79	-9.30	EXP	No	Yes
	Nebraska Model NS-E-65 Steam Boiler	9	MFMUL9	20020	-30990	45	13.7	3.7	1.13	80	300	8.0	2.4	102.44	12.91	NO	Yes	No
	Expanding Source		MFMULX	20020	-30990	168	51.2	7.0	2.13	181	356	37.5	11.4	-2,044.40	-257.59	EXP	No	Yes
1050059	Mosaic Phosphates Co. (New Wales)																	
	Sulfuric Acid Plant No. 1	2	WALES2	8,700	-36,600	200	61.0	8.50	2.59	170	350	50.0	15.24	483.30	60.896	NO	Yes	No
	Sulfuric Acid Plant No. 2	3	WALES3	8,700	-36,600	200	61.0	8.50	2.59	170	350	50.0	15.24	483.30	60.896	NO	Yes	No
	Sulfuric Acid Plant No. 3	4	WALES4	8,700	-36,600	200	61.0	8.50	2.59	170	350	50.0	15.24	483.30	60.896	NO	Yes	No
	DAP Plant No. 1	9	WALES9	8,700	-36,600	133	40.5	7.00	2.13	105	314	49.0	14.94	74.60	9.400	NO	Yes	No
	AFI Plant	27	WALES27	8,700	-36,600	172	52.4	8.00	2.44	130	328	66.3	20.21	18.30	2.306	CON	Yes	Yes
	Multifos A and B Kilns, Dryer and Blending Operation	36	WALES36	8,700	-36,600	172	52.4	4.50	1.37	105	314	52.0	15.85	192.00	24.192	CON	Yes	Yes
	Sulfuric Acid Plant No. 4	42	WALES42	8,700	-36,600	199	60.7	8.50	2.59	170	350	50.0	15.24	483.30	60.896	CON	Yes	Yes
	Sulfuric Acid Plant No. 5	44	WALES44	8,700	-36,600	199	60.7	8.50	2.59	170	350	50.0	15.24	483.30	60.896	CON	Yes	Yes
	DAP Plant No 2 - East Train	45	WALES45	8,700	-36,600	171	52.1	6.00	1.83	110	316	58.0	17.68	22.00	2.772	CON	Yes	Yes
	DAP Plant No 2 - West Train	46	WALES46	8,700	-36,600	171	52.1	6.00	1.83	110	316	58.0	17.68	22.00	2.772	CON	Yes	Yes
	7500 Ton Rail Molten Storage Tank	60	WALES60	8,700	-36,600	40	12.2	2.00	0.61	240	389	0.42	0.13	0.50	0.063	CON	Yes	Yes
	5000 Ton Molten Storage Tank	62	WALES62	8,700	-36,600	40	12.2	2.00	0.61	240	389	0.42	0.13	0.50	0.063	CON	Yes	Yes
	1500 Ton Truck Unloading Sulfur Pit	63	WALES63	8,700	-36,600	40	12.2	2.00	0.61	240	389	0.42	0.13	0.30	0.038	NO	Yes	No
	350 Ton Truck Unloading Sulfur Pit	64	WALES64	8,700	-36,600	40	12.2	2.00	0.61	240	389	0.42	0.13	0.10	0.013	NO	Yes	No
	Railcar Unloading Pit	65	WALES65	8,700	-36,600	40	12.2	2.00	0.61	240	389	0.42	0.13	0.30	0.038	NO	Yes	No
	200 Ton Molten Sulfur Transfer Pit	66	WALES66	8,700	-36,600	40	12.2	2.00	0.61	240	389	0.42	0.13	0.10	0.013	NO	Yes	No
	1500 Ton Truck Unloading Sulfur Pit, Front Vent	67	WALES67	8,700	-36,600	25	7.6	0.10	0.03	90	305	0.1	0.03	0.30	0.038	NO	Yes	No
	1500 Ton Truck Unloading Sulfur Pit, Rear Vent	68	WALES68	8,700	-36,600	25	7.6	0.10	0.03	90	305	0.1	0.03	0.30	0.038	NO	Yes	No
	350 Ton Truck Unloading Sulfur Pit, Vent	69	WALES69	8,700	-36,600	25	7.6	0.10	0.03	90	305	0.1	0.03	0.10	0.013	CON	Yes	Yes
	Multifos C Kiln	74	WALES74	8,700	-36,600	172	52.4	4.50	1.37	105	314	70.2	21.40	8.70	1.096	NO	Yes	No
	GRANULAR MAP PLANT	78	WALES78	8,700	-36,600	133	40.5	6.00	1.83	145	336	109.6	33.41	13.72	1.729	NO	Yes	No
	89.5 MMBTU/hr. boiler (non-NSPS) - rental boiler	81	WALES81	8,700	-36,600	18	5.5	3.60	1.10	400	478	34.9	10.64	4.30	0.542	NO	Yes	No
	Expanding Source		IMCWAL0	8,700	-36,600	69	21.0	7.0	2.13	165	347	61.0	18.59	-272.0	-34.3	EXP	No	Yes
	Expanding Source		IMCWAL1	8,700	-36,600	200	61.0	8.5	2.59	170	350	42.9	13.08	-1,158.7	-146.0	EXP	No	Yes
1050052	CF Industries, Inc. - Bartow																	
	Sulfuric acid plant No. 6	6	CFIBAR6	20,300	-33,500	206	62.8	7.0	2.13	140	333	21.0	6.40	400.0	50.40	CON	Yes	Yes
	Boiler No. 1	21	CFIBAR21	20,300	-33,500	36	11.0	2.5	0.76	600	589	44.0	13.41	16.8	2.12	NO	Yes	No
	Expanding Source	1	CFIBARX1	20,300	-33,500	100	30.5	4.5	1.37	170	350	40.0	12.2	-483.3	-60.90	EXP	No	Yes
	Expanding Source	2	CFIBARX2	20,300	-33,500	100	30.5	5.5	1.68	170	350	34.0	10.4	-875.0	-110.25	EXP	No	Yes
	Expanding Source	3	CFIBARX3	20,300	-33,500	100	30.5	9.0	2.74	196	364	14.0	4.3	-850.0	-107.10	EXP	No	Yes
	Expanding Source	4	CFIBARX4	20,300	-33,500	100	30.5	7.0	2.13	185	358	26.0	7.9	-1,387.5	-174.83	EXP	No	Yes
	Expanding Source	5	CFIBARX5	20,300	-33,500	206	62.8	7.0	2.13	185	358	35.0	10.7	-1,800.0	-226.80	EXP	No	Yes
	Expanding Source	6	CFIBARX6	20,300	-33,500	206	62.8	7.0	2.13	187	359	34.0	10.4	-1,350.0	-170.10	EXP	No	Yes
0570008	Mosaic Fertilizer, LLC --Riverview																	
	NO. 7 SULFURIC ACID PLANT	4	MFR7SAP	-23410	-33620	150	45.7	7.5	2.29	153	340	44.0	13.41	467.0	58.8	NO	Yes	No
	NO. 8 SULFURIC ACID PLANT	5	MFR8SAP	-23410	-33620	150	45.7	8.0	2.44	152	340	34.0	10.36	450.0	56.7	NO	Yes	No
	NO. 9 SULFURIC ACID PLANT	6	MFR9SAP	-23410	-33620	150	45.7	9.0	2.74	170	350	41.6	12.68	566.7	71.4	NO	Yes	No
	DAP Manufacturing Plant	7	MFRDAP	-23410	-33620	126	38.4	8.0	2.44	132	329	37.0	11.28	34.60	4.4	CON	Yes	Yes

TABLE B-1
SUMMARY OF SO_2 SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters: Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	SO_2 Emission Rate lb/hr	SO_2 Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
	AUXILIARY STEAM GENERATOR	43	MFRASG	-23410	-33620	20	6.1	4.0	1.22	420	489	52.0	15.85	46.15	5.8	CON	Yes	Yes
	No. 5 DAP Plant	55	MFR5DAP	-23410	-33620	133	40.5	7.0	2.13	108	315	50.0	15.24	12.7	1.6	CON	Yes	Yes
	TANK Nos. 1, 2, and 3 for molten sulfur storage w/scrubber	63	MFRT123	-23410	-33620	33	10.1	0.8	0.25	110	316	20.5	6.24	0.40	0.1	CON	Yes	Yes
	AFI PLANT NO. 1	78	MFR1AFI	-23410	-33620	125	38.1	6.0	1.83	150	339	56.0	17.07	23.51	3.0	CON	Yes	Yes
	AFI PLANT NO. 2	103	MFR2AFI	-23410	-33620	125	38.1	6.0	1.83	150	339	56.0	17.07	23.51	3.0	CON	Yes	Yes
	Ammonia Plant (Expanding Source)		AMMPLTB	-23410	-33620	60	18.3	8.3	2.53	600	589	22.7	6.93	-32.80	-4.13	EXP	No	Yes
	Sodium Silicofluoride/Sodium Fluoride Plant (Expanding Source)		SSFSFPB	-23410	-33620	28	8.5	2.5	0.76	95	308	11.6	3.55	-0.20	-0.0252	EXP	No	Yes
	No. 10 KVS Mill (Expanding Source)		10KVSMB	-23410	-33620	87	26.5	1.7	0.52	118	321	59.8	18.24	-0.020	-0.0025	EXP	No	Yes
	No. 12 KVS Mill (Expanding Source)		12KVSMB	-23410	-33620	71	21.6	1.6	0.49	135	330	68.5	20.87	-0.040	-0.0050	EXP	No	Yes
	No. 7 Oil-Fired Concentrator (Expanding Source)		7OFCONB	-23410	-33620	78	23.8	6.0	1.83	165	347	17.2	5.24	-41.40	-5.22	EXP	No	Yes
	No. 8 Oil-Fired Concentrator (Expanding Source)		8OFCONB	-23410	-33620	78	23.8	6.0	1.83	159	344	16.7	5.10	-39.70	-5.00	EXP	No	Yes
	GTSP Plant (Expanding Source)		GTSPAPB	-23410	-33620	126	38.4	8.0	2.44	129	327	34.9	10.65	-71.40	-9.00	EXP	No	Yes
	No. 5 and No. 9 Mills Bag Filter (Expanding Source)		RKML59B	-23410	-33620	66	20.1	2.0	0.61	115	319	58.3	17.75	-0.010	-0.0013	EXP	No	Yes
	No. 3 Continuous Triple Dryer (Expanding Source)		3CONTDB	-23410	-33620	68	20.7	3.5	1.07	115	319	45.8	13.96	-22.80	-2.87	EXP	No	Yes
	No. 4 Continuous Triple Dryer (Expanding Source)		4CONTDB	-23410	-33620	68	20.7	3.5	1.07	134	330	61.8	18.85	-23.20	-2.92	EXP	No	Yes
	Molten Sulfur Handling- Pits 7 & 8 (Expanding Source)		MSPTSB	-23410	-33620	8	2.4	3.3	1.00		0	0.3	0.10	-0.080	-0.0101	EXP	No	Yes
	Molten Sulfur Handling- Pits 4,5, & 6 (Expanding Source)		PTS456B	-23410	-33620	8	2.4	3.3	1.00		0	0.3	0.10	-0.13	-0.0166	EXP	No	Yes
	Molten Sulfur Handling- Tanks (Expanding Source)		MSTKTLB	-23410	-33620	36	11.0	3.3	1.00		0	0.3	0.10	-2.12	-0.27	EXP	No	Yes
	No. 4 Sulfuric Acid Plant (Expanding Source)		NO4SAPB	-23410	-33620	80	24.4	4.7	1.43	194	363	20.4	6.23	-282.00	-35.53	EXP	No	Yes
	No. 5 Sulfuric Acid Plant (Expanding Source)		NO5SAPB	-23410	-33620	74	22.6	5.3	1.62	189	360	25.3	7.72	-480.00	-60.48	EXP	No	Yes
	No. 6 Sulfuric Acid Plant (Expanding Source)		NO6SAPB	-23410	-33620	72	21.9	5.9	1.80	189	360	31.3	9.53	-688.00	-86.69	EXP	No	Yes
	No. 7 Sulfuric Acid Plant (Expanding Source)		NO7SAPB	-23410	-33620	92	28.0	9.4	2.87	183	357	22.3	6.80	-1,503.00	-189.38	EXP	No	Yes
	No. 8 Sulfuric Acid Plant (Expanding Source)		NO8SAPB	-23410	-33620	96	29.3	10.7	3.26	174	352	24.2	7.37	-1,679.00	-211.55	EXP	No	Yes
1050053	Mosaic Fertilizer, LLC - Green Bay																	
	Sulfuric Acid Plant #4 Double Contact/Absorption	4	MFGB4	21,500	-35,900	100	30.5	7.5	2.29	180	355	39.6	12.07	350.0	44.10	B	Yes	No
	Sulfuric Acid Plant #5 - Replaces Two Old Plants Sap#1 + #2	5	MFGB5	21,500	-35,900	150	45.7	8.0	2.44	180	355	44.1	13.44	466.7	58.80	B	Yes	No
	Molten Sulfur Storage Tank 1 - 6000 Short Tons, 9 Vents	30	MFGB30	21,500	-35,900	40	12.2	2.0	0.61	120	322	0.1	0.03	1.20	0.15	CON	Yes	Yes
	Molten Sulfur Storage Tank 2 (East)-2500 Short Tons, 10 Vent	31	MFGB31	21,500	-35,900	40	12.2	2.0	0.61	120	322	0.1	0.03	1.2	0.15	CON	Yes	Yes
	Molten Sulfur Storage Tank 3 (West)-2500 Short Tons, 10 Vent	32	MFGB32	21,500	-35,900	40	12.2	2.0	0.61	120	322	0.1	0.03	1.2	0.15	CON	Yes	Yes
	Molten Sulfur Truck Pit - 72 Short Tons, 1 Vent	33	MFGB33	21,500	-35,900	40	12.2	2.0	0.61	120	322	0.1	0.03	0.1	0.01	CON	Yes	Yes
	Molten Sulfur Rail (And Back-Up Truck) Pit - 91 Short Tons	34	MFGB34	21,500	-35,900	40	12.2	2.0	0.61	120	322	0.1	0.03	0.7	0.09	CON	Yes	Yes
	Molten Sulfur No. 5 Supply Pit - 31 Short Tons,	35	MFGB35	21,500	-35,900	40	12.2	2.0	0.61	200	366	0.1	0.03	0.1	0.01	CON	Yes	Yes
	Molten Sulfur Supply Pit #3 & #4 - 28 Short Tons, One Vent	36	MFGB36	21,500	-35,900	10	3.0	0.5	0.15	200	366	0.1	0.03	0.1	0.01	CON	Yes	Yes
	2750 Tpd No. 6 Sulfuric Acid Plant	38	MFGB38	21,500	-35,900	150	45.7	9.0	2.74	180	355	30.4	9.27	401.0	50.53	CON	Yes	Yes
	North MAP/DAP Fertilizer Plant	29	MFGB29	21,500	-35,900	129	39.3	7.5	2.29	108	315	43.0	13.11	0.030	0.0038	B	Yes	No
0570038	TECO, Hookers Point																	
	Expanding Source - Boiler #1	1	TECOHK1	-30,000	-25,000	280	85.3	11.3	3.4	356	453	82.0	25.0	-327.8	-41.30	EXP	No	Yes
	Expanding Source - Boiler #2	2	TECOHK2	-30,000	-25,000	280	85.3	11.3	3.4	356	453	82.0	25.0	-327.8	-41.30	EXP	No	Yes
	Expanding Source - Boiler #3	3	TECOHK3	-30,000	-25,000	280	85.3	12.0	3.7	341	445	62.7	19.1	-452.1	-56.96	EXP	No	Yes
	Expanding Source - Boiler #4	4	TECOHK4	-30,000	-25,000	280	85.3	12.0	3.7	341	445	62.7	19.1	-452.1	-56.96	EXP	No	Yes
	Expanding Source - Boiler #5	5	TECOHK5	-30,000	-25,000	280	85.3	11.3	3.4	356	453	82.0	25.0	-671.0	-84.55	EXP	No	Yes
	Expanding Source - Boiler #6	6	TECOHK6	-30,000	-25,000	280	85.3	9.4	2.9	329	438	75.2	22.9	-855.8	-107.83	EXP	No	Yes
0570039	TECO - Big Bend Station																	
	Unit #1 Coal Fired Boiler w/ ESP	1	TECOBB1	-24,850	-41,090	490	149.35	24.0	7.3	294	419	115.9	35.3	26240.5	3306.30	NO	Yes	No
	Unit #2 Riley-Stoker Coal Boiler w/ Esp	2	TECOBB2	-24,850	-41,090	490	149.35	24.0	7.3	125	325	87.6	26.7	25974.0	3272.72	NO	Yes	No
	Unit #3 Riley-Stoker Coal Boiler w/ ESP	3	TECOBB3	-24,850	-41,090	499	152.10	24.0	7.3	279	410	47.0	14.3	26747.5	3370.19	NO	Yes	No
	Unit #4 Coal Boiler W/ Belco ESP Psd-Fl-040	4	TECOBB4	-24,850	-41,090	499	152.10	24.0	7.3	156	342	59.0	18.0	3551.0	447.43	CON	Yes	Yes
	Combustion Turbine #2 - No. 2 Fuel Oil	5	TECOBB5	-24,850	-41,090	75	22.86	14.0	4.3	928	771	61.0	18.6	277.0	34.90	NO	Yes	No
	Combustion Turbine #3 - No. 2 Fuel Oil	6	TECOBB6	-24,850	-41,090	75	22.86	14.0	4.3	928	771	61.0	18.6	277.0	34.90	NO	Yes	No

TABLE B-1
SUMMARY OF SO_2 SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	SO_2 Emission Rate lb/hr	SO_2 Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
	Combustion Turbine #1 - No. 2 Fuel Oil	7	TECOBB7	-24,850	-41,090	35	10.67	11.0	3.4	1010	816	91.9	28.0	79.0	9.95	NO	Yes	No
	Steam Generators 1 & 2 Baseline	16	TCBB12B	-24,850	-41,090	490	149.35	24.0	7.3	300	422	94.0	28.7	-19333.3	-2436.0	EXP	No	Yes
	Steam Generator 3 Baseline	17	TCBB3B	-24,850	-41,090	490	149.35	24.0	7.3	293	418	47.0	14.3	-9666.7	-1218.0	EXP	No	Yes
1050055	Mosaic Phosphates Company - So. Pierce																	
	Auxiliary Boiler	1	MPPIER1	19,500	-44,600	35	10.67	4.8	1.46	430	494	51	15.54	63.5	8.00	NO	Yes	No
	Sulfuric Acid Plant No. 10	4	MPPIER4	19,500	-44,600	144	43.89	9	2.74	170	350	41.1	12.53	450.0	56.70	NO	Yes	No
	Sulfuric Acid Plant No. 11	5	MPPIER5	19,500	-44,600	144	43.89	9	2.74	170	350	41.1	12.53	450.0	56.70	NO	Yes	No
	Molten Sulfur Storage Tank, Truck Pit, and Rail Pit Vents	30-45	MPPIERV	19,500	-44,600	24	7.32	1	0.30	200	366	0.33	0.10	6.6	0.83	NO	Yes	No
	Combined Expanding Sources		MPPIERB	19,500	-44,600	144	43.89	5.2	0.00	170	350	86.6	26.40	-600.0	-75.60	EXP	No	Yes
1050233	TECO, Polk Power Station																	
	260 MW Combined cycle CT (Phase II Acid Rain Unit)	1	TECOPK1	14,450	-48,650	150	45.72	19	5.79	340	444	75.8	23.10	518.0	65.27	CON	Yes	Yes
	120 MMBtu/HR Auxiliary Boiler	3	TECOPK3	14,450	-48,650	75	22.86	3.7	1.13	375	464		0.00	96.00	12.10	CON	Yes	Yes
	Sulfuric Acid Plant	4	TECOPK4	14,450	-48,650	199	60.66	2.5	0.76	180	355	60.0	18.29	35.60	4.49	CON	Yes	Yes
	165MW Simple Cycle Combustion Turbine	9	TECOPK9	14,450	-48,650	114	34.75	29	8.84	1117	876	60.2	18.35	4.6	0.58	CON	Yes	Yes
	165MW Simple Cycle Combustion Turbine	10	TECOPK10	14,450	-48,650	114	34.75	29	8.84	1117	876	60.2	18.35	9.2	1.16	CON	Yes	Yes
0530021	Florida Crushed Stone Co., Inc.																	
	POWER PLANT	18	FCRUSH18	-26,660	46,370	320	97.54	16.0	4.88	300	422	69.6	21.21	770.0	97.02	CON	Yes	Yes
	BCP: Kiln, Clinker Cooler, Raw Mill, & Dryer with Baghouse	20	FCRUSH20	-26,660	46,370	300	91.44	16.0	4.88	220	378	47.0	14.33	50.0	6.30	CON	Yes	Yes
	KILN #2 SYSTEM: preheater/precalciner, cooler,dyer,raw mill	44	FCRUSH44	-26,660	46,370	320	97.54	14.0	4.27	258	399	33.8	10.30	28.8	3.63	CON	Yes	Yes
1030012	Progress Energy Florida - Higgins																	
	FFFSG-SG 1 (Phase II, Acid Rain Unit)	1	PEFHIG1	-51,500	-17,600	174	53.04	12.5	3.8	312	429	27.0	8.2	1507.0	189.88	NO	Yes	No
	FFFSG-SG 2 (Phase II, Acid Rain Unit)	2	PEFHIG2	-51,500	-17,600	174	53.04	12.5	3.8	310	428	27.0	8.2	1438.3	181.23	NO	Yes	No
	FFFSG-SG 3 (Phase II, Acid Rain Unit)	3	PEFHIG3	-51,500	-17,600	174	53.04	12.5	3.8	301	423	24.0	7.3	1507.0	189.88	NO	Yes	No
	CT Peaking Unit-Ctp 1	4	PEFHIG4	-51,500	-17,600	55	16.76	15.1	4.6	850	728	93.1	28.4	286.3	36.07	NO	Yes	No
	CT Peaking Unit-Ctp 2	5	PEFHIG5	-51,500	-17,600	56	17.07	15.1	4.6	850	728	93.1	28.4	286.3	36.07	NO	Yes	No
	CT Peaking Unit-Ctp 3	6	PEFHIG6	-51,500	-17,600	55	16.76	15.1	4.6	850	728	93.1	28.4	319.1	40.21	NO	Yes	No
	CT Peaking Unit-Ctp 4	7	PEFHIG7	-51,500	-17,600	55	16.76	15.1	4.6	850	728	93.1	28.4	319.1	40.21	NO	Yes	No
1050051	U.S. Agri-Chemicals - Ft. Meade																	
	AUXILIARY BOILER	6	USAGFM6	28,950	-46,720	70	21.34	3.7	1.13	400	478	49	14.94	51.00	6.43	NO	Yes	No
	SULFURIC ACID PLANT #1	16	USAGFM16	28,950	-46,720	175	53.34	8.5	2.59	180	355	32	9.75	500.00	63.00	CON	Yes	Yes
	SULFURIC ACID PLANT #2	17	USAGFM17	28,950	-46,720	175	53.34	8.5	2.59	180	355	32	9.75	500.00	63.00	CON	Yes	Yes
	MOLTEN SULFUR STORAGE - TANK (4,210 TON, 7 VENTS).	28	USAGFM28	28,950	-46,720	6	1.83	0.3	0.09	270	405	344	104.85	0.49	0.06	CON	Yes	Yes
	MOLTEN SULFUR STORAGE - PIT (5 VENTS) (229 TON)	29	USAGFM29	28,950	-46,720	6	1.83	0.3	0.09	260	400	157	47.85	0.23	0.03	CON	Yes	Yes
	Expanding Source		USAGFM0B	28,950	-46,720	95	28.96	9.9	3.02	106	314	23	7.01	-625.40	-78.80	EXP	No	Yes
	Expanding Source		USAGFM1B	28,950	-46,720	93	28.35	5	1.52	134	330	58	17.68	-145.00	-18.27	EXP	No	Yes
1030011	Progress Energy Florida - Bartow																	
	Unit #1	1	PEFBAR1	-44,130	-33,300	300	91.44	9.0	2.74	312	429	119.0	36.27	3355.00	422.73	NO	Yes	No
	Unit #2	2	PEFBAR2	-44,130	-33,300	300	91.44	9.0	2.74	305	425	102.0	31.09	3622.00	456.37	NO	Yes	No
	Unit #3	3	PEFBAR3	-44,130	-33,300	300	91.44	11.0	3.35	275	408	113.0	34.44	6080.00	766.08	NO	Yes	No
	Bartow-Anclote Pipeline Heating Boiler	4	PEFBAR4	-44,130	-33,300	30	9.14	3.0	0.91	515	541	17.0	5.18	7.80	0.98	NO	Yes	No
	GT Peaking Unit # P-1	5	PEFBAR5	-44,130	-33,300	45	13.72	17.3	5.27	930	772	69.1	21.06	360.57	45.43	NO	Yes	No
	GT Peaking Unit # P-2	6	PEFBAR6	-44,130	-33,300	45	13.72	17.3	5.27	930	772	69.1	21.06	360.57	45.43	NO	Yes	No
	GT Peaking Unit # P-3	7	PEFBAR7	-44,130	-33,300	45	13.72	17.3	5.27	930	772	69.1	21.06	360.57	45.43	NO	Yes	No
	GT Peaking Unit # P-4	8	PEFBAR8	-44,130	-33,300	45	13.72	17.3	5.27	930	772	69.1	21.06	360.57	45.43	NO	Yes	No

TABLE B-1
SUMMARY OF SO_2 SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters: Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	SO_2 Emission Rate lb/hr	SO_2 Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
0970014	Progress Energy Florida - Intercession City Plant																	
	CT Peaking Units 1-6	1-6	ICP16	58,300	10,000	45	13.72	14.6	4.46	760	678	174.9	53.3	2185.2	275.34	NO	Yes	No
	CTs 7-10	7-10	ICP710	58,300	10,000	50	15.24	13.8	4.19	1043	835	174.1	53.1	888.0	111.89	CON	Yes	Yes
	CT # 11	11	ICP11	58,300	10,000	75	22.86	19.0	5.79	1034	830	139.4	42.5	407.0	51.28	CON	Yes	Yes
	Simple Cycle CTs P-12, P13 & P-14	18-20	ICP1820	58,300	10,000	56	17.07	16.1	4.91	993	807	117.6	35.8	147.4	18.57	CON	Yes	Yes
1030117	Pinellas Co. Board Of Co. Commissioners																	
	Municipal Waste Combustor & Auxiliary burners-Unit #1	1	HILLSRC1	-51,100	-31,900	165	50.29	8.5	2.59	270	405	71.4	21.76	170.00	21.420	NO	Yes	No
	Municipal Waste Combustor & Auxiliary burners-Unit #2	2	HILLSRC2	-51,100	-31,900	165	50.29	8.5	2.59	270	405	71.4	21.76	170.00	21.420	NO	Yes	No
	Municipal Waste Combustor & Auxiliary burners-Unit #3	3	HILLSRC3	-51,100	-31,900	165	50.29	8.5	2.59	270	405	71.4	21.76	170.00	21.420	NO	Yes	No
1050002	Citrus World, Inc.																	
	Citrus Peel Dryer With Waste-Heat Evaporator #2	1	CITRUS1	53,000	-28,700	75	22.86	4.7	1.43	195	364	49.0	14.94	188.40	23.74	NO	Yes	No
	Erie City Keystone Boiler #3 Using Nat Gas And #6 Oil	3	CITRUS3	53,000	-28,700	40	12.19	3.7	1.12	450	505	59.9	18.26	178.04	22.43	NO	Yes	No
	Erie City Keystone Boiler #2 Using Nat Gas And #6 Oil	4	CITRUS4	53,000	-28,700	40	12.19	3.7	1.12	450	505	60.5	18.44	180.24	22.71	NO	Yes	No
	Citrus Peel Dryer With Waste-Heat Evaporator #1	7	CITRUS7	53,000	-28,700	75	22.86	3.2	0.97	150	339	49.7	15.15	94.20	11.87	NO	Yes	No
	Citrus Peel Dryer With Waste-Heat Evaporator #3	13	CITRUS13	53,000	-28,700	75	22.86	4.6	1.40	150	339	33.1	10.09	188.40	23.74	NO	Yes	No
	Erie City Keystone Boiler #1 Using Nat Gas And #6 Oil	17	CITRUS17	53,000	-28,700	40	12.19	3.7	1.12	450	505	25.3	7.71	75.05	9.46	NO	Yes	No
	Gas Turbine No. 2 W/Wh Boiler	27	CITRUS27	53,000	-28,700	50	15.24	4.5	1.37	319	433	70.7	21.55	4.86	0.61	NO	Yes	No
1010017	Progress Energy Florida, Inc. - Anclote Power Plant																	
	Steam Turbine Gen. Anclote Unit No.1	1	PEFANC1	-60,590	4,680	499	152.10	24	7.3	320	433	62.0	18.9	13950.8	1757.8	NO	Yes	No
	Steam Turbine Gen. Anclote Unit No.2	2	PEFANC2	-60,590	4,680	499	152.10	24	7.3	320	433	62.0	18.9	13631.8	1717.6	NO	Yes	No
0490015	Hardee Power Partners - Hardee Power Station																	
	Combustion Turbine 1A with HRSG	1	HARD1	17,990	-58,820	90	27.43	14.5	4.42	236	386	77.5	23.62	734.40	92.53	CON	Yes	Yes
	Combustion Turbine 1B with HRSG	2	HARD2	17,990	-58,820	90	27.43	14.5	4.42	245	391	75.8	23.10	734.40	92.53	CON	Yes	Yes
	Simple cycle Combustion Turbine 2A	3	HARD3	17,990	-58,820	75	22.86	17.9	5.46	986	803	94.3	28.74	734.40	92.53	CON	Yes	Yes
	Unit 2B - 75 MW gas turbine	5	HARD5	17,990	-58,820	85	25.91	14.8	4.51	999	810	142.0	43.28	5.30	0.67	CON	Yes	Yes
0810010	Florida Power & Light - Manatee																	
	Generator Unit 1	1	FPLMAN1	-20,750	-61,850	499	152.1	27.3	8.3	344	446	78.0	23.8	9515	1198.9	NO	Yes	No
	Generator Unit 2	2	FPLMAN2	-20,750	-61,850	499	152.1	26.2	8.0	325	436	82.5	25.1	9515	1198.9	NO	Yes	No
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3A	5	FPLMAN5	-20,750	-61,850	120	36.6	22.0	6.7	1116	875	104.8	31.9	13.3	1.68	CON	Yes	Yes
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3B	6	FPLMAN6	-20,750	-61,850	120	36.6	19.0	5.8	202	368	59.0	18.0	13.3	1.68	CON	Yes	Yes
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3C	7	FPLMAN7	-20,750	-61,850	120	36.6	19.0	5.8	202	368	59.0	18.0	13.3	1.68	CON	Yes	Yes
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3D	8	FPLMAN8	-20,750	-61,850	120	36.6	19.0	5.8	202	368	59.0	18.0	13.3	1.68	CON	Yes	Yes
1030013	Progress Energy Florida, Inc. - Bayboro																	
	Combustion Turbine Peaking Unit # 1	1	PEFBAY1	-49,200	-44,700	40	12.19	22.9	6.98	900	755	21	6.40	390.90	49.25	NO	Yes	No
	Combustion Turbine Peaking Unit # 2	2	PEFBAY2	-49,200	-44,700	40	12.19	22.9	6.98	900	755	21	6.40	390.90	49.25	NO	Yes	No
	Combustion Turbine Peaking Unit # 3	3	PEFBAY3	-49,200	-44,700	40	12.19	22.9	6.98	900	755	21	6.40	390.90	49.25	NO	Yes	No
	Combustion Turbine Peaking Unit # 4	4	PEFBAY4	-49,200	-44,700	40	12.19	22.9	6.98	900	755	21	6.40	390.90	49.25	NO	Yes	No
0550003	Progress Energy Florida - Avon Park																	
	Gas Turbine Peaking Unit No. 1	1	AVONP1	63,400	-65,500	55	16.76	10	3.05	850	728	424.0	129.24	577.0	72.70	CON	Yes	Yes
	Gas Turbine Peaking Unit No. 2	2	AVONP2	63,400	-65,500	55	16.76	10	3.05	850	728	424.4	129.36	577.0	72.70	CON	Yes	Yes

Note: EXP = PSD expanding source.
CON = PSD consuming source.
NO = Baseline Source, does not affect PSD increment.
ND = No data available.

TABLE B-2

SUMMARY OF PM_{10} SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters: Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	PM_{10} Emission Rate lb/hr	PM_{10} Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
0570075	Coronet Industries, Inc.																	
	Feed Prep Plant Dryer With Wet Scrubber.	1	CORI1	5,800	-19,700	100	30.5	4.5	1.4	149	338	39.0	11.9	13.2	1.66	NO	Yes	No
	Paragon Defluorinating Kiln #2-Packed Bed Scrubber	3	CORI3	5,800	-19,700	152	46.3	5.8	1.8	81	300	31.0	9.4	13.03	1.64	NO	Yes	No
	Defluorinating Kilns 6 & 7	5	CORI5	5,800	-19,700	150	45.7	5.8	1.8	104	313	60.0	18.3	15.00	1.89	NO	Yes	No
	Feed Preparation Product Handling Dust Collector	6	CORI6	5,800	-19,700	81	24.7	2.7	0.8	108	315	29.0	8.8	3.09	0.39	NO	Yes	No
	7500 Cfm Feed Baghouse #12 - Feed Preparation, Rock Handlin	7	CORI7	5,800	-19,700	107	32.6	1.2	0.4	77	298	110.0	33.5	1.3	0.16	NO	Yes	No
	Feed Prep Scrubber #2	8	CORI8	5,800	-19,700	100	30.5	3	0.9	115	319	28.0	8.5	6.8	0.86	CON	Yes	Yes
	Feed Prep. Plant-Rock Storage Bin Baghouse	9	CORI9	5,800	-19,700	97	29.6	1	0.3	77	298	44.0	13.4	0.35	0.04	CON	Yes	Yes
	Cdp Truck Loading Dust Collector	12	CORI12	5,800	-19,700	62	18.9	1.8	0.5	77	298	81.0	24.7	6.4	0.81	NO	Yes	No
	Cdp Fines Bagging W/ Baghouse	13	CORI13	5,800	-19,700	67	20.4	1.5	0.5	77	298	37.0	11.3	1.22	0.15	NO	Yes	No
	North Mill Room W/ Baghouse	15	CORI15	5,800	-19,700	34	10.4	2.7	0.8	130	328	62.0	18.9	7.12	0.90	NO	Yes	No
	Cdp Fines Storage W/ Baghouse	16	CORI16	5,800	-19,700	57	17.4	1.5	0.5	77	298	94.0	28.7	3.21	0.40	NO	Yes	No
	Bulk Railcar Loading Baghouse	17	CORI17	5,800	-19,700	54	16.5	1.8	0.5	77	298	65.0	19.8	1.71	0.22	NO	Yes	No
	South Mill Room W/ Baghouse	18	CORI18	5,800	-19,700	45	13.7	1.8	0.5	170	350	46.0	14.0	1.71	0.22	CON	Yes	Yes
	200 Hp Kewanee Boiler For Defluorinating Plant	19	CORI19	5,800	-19,700	25	7.6	1.3	0.4	450	505	50.0	15.2	0.07	0.01	CON	Yes	Yes
	100 Hp Kewanee Boiler For Defluorinating Plant.	20	CORI20	5,800	-19,700	20	6.1	1.2	0.4	630	605	66.0	20.1	0.13	0.02	NO	Yes	No
	Craneway-Temporary Product Storage Controlled By Bghs #14	21	CORI21	5,800	-19,700	80	24.4	4.5	1.4	95	308	259.0	78.9	34.29	4.32	NO	Yes	No
	Fluid Bed Reactor #1,Defluorinating A.F.Controlled By Scrubb	22	CORI22	5,800	-19,700	152	46.3	5.8	1.8	80	300	39.0	11.9	14.02	1.77	NO	Yes	No
	Potassium Fluoborate Production With Wet Scrubbers.	23	CORI23	5,800	-19,700	32	9.8	1.5	0.5	73	296	35.0	10.7	5.00	0.63	NO	Yes	No
	Defluorinating Fluid Bed Reactor #2 Controlled By Scrubber	24	CORI24	5,800	-19,700	152	46.3	5.8	1.8	72	295	36.0	11.0	14.02	1.77	NO	Yes	No
	2500lb/Hr Kbf4 Plant W/Dust Collector	27	CORI27	5,800	-19,700	10	3.0	0.8	0.2	150	339	59.0	18.0	0.38	0.05	CON	Yes	Yes
	8 Tph Borax Storage/Handling System	28	CORI28	5,800	-19,700	50	15.2	0.5	0.2	70	294	67.0	20.4	0.21	0.03	CON	Yes	Yes
	500 Ton Feed Tank, 100 Ton Feed Tank, Elevator, Reclaim Hopp	30	CORI30	5,800	-19,700	55	16.8	1.5	0.5	68	293	37.0	11.3	1.49	0.19	NO	Yes	No
	80 Ton Limestone Storage Bin	31	CORI31	5,800	-19,700	80	24.4	0.6	0.2	70	294	58.0	17.7	0.28	0.03	NO	Yes	No
	Inorganic Chemical Prod. Using Scrubber Fluorides	32	CORI32	5,800	-19,700	45	13.7	1.6	0.5	250	394	19.0	5.8	1.9	0.24	CON	Yes	Yes
1050004	Lakeland Electric, C.D. McIntosh, Jr. Power Plant																	
	McIntosh Unit 1	1	MCINT1	21,000	-9,800	150	45.7	9	2.7	277	409	81.2	24.7	98.5	12.41	NO	Yes	No
	Diesel Engine Peaking Unit 2	2	MCINT2	21,000	-9,800	20	6.1	2.6	0.8	715	653	77.0	23.5	1.74	0.22	NO	Yes	No
	Diesel Engine Peaking Unit 3	3	MCINT3	21,000	-9,800	20	6.1	2.6	0.8	715	653	77.0	23.5	1.74	0.22	NO	Yes	No
	Gas Turbine Peaking Unit 1	4	MCINT4	21,000	-9,800	35	10.7	13.5	4.1	900	755	79.5	24.2	12.16	1.53	NO	Yes	No
	McIntosh Unit 2	5	MCINT5	21,000	-9,800	157	47.9	10.5	3.2	277	409	73.2	22.3	118.5	14.93	NO	Yes	No
	McIntosh Unit 3	6	MCINT6	21,000	-9,800	250	76.2	18	5.5	167	348	82.6	25.2	273.0	34.40	CON	Yes	Yes
	Combustion Turbine Unit 5	28	MCINT28	21,000	-9,800	85	25.9	28	8.5	1095	864	82.7	25.2	32.9	4.15	CON	Yes	Yes
1050003	Lakeland Electric, Larsen Power Plant																	
	Steam Generator # 6	3	LARPWR3	20,900	-13,500	165	50.3	10.0	3.05	340	444	21.0	6.4	91.8	11.57	NO	Yes	No
	Steam Generator # 7	4	LARPWR4	20,900	-13,500	165	50.3	10.0	3.05	340	444	22.0	6.7	184.7	23.27	NO	Yes	No
	Peaking Gas Turbine # 3	5	LARPWR5	20,900	-13,500	31	9.4	11.8	3.60	800	700	101.0	30.8	7.94	1.00	NO	Yes	No
	Peaking Gas Turbine # 2	6	LARPWR6	20,900	-13,500	31	9.4	11.8	3.60	800	700	101.0	30.8	7.94	1.00	NO	Yes	No
	Peaking Gas Turbine # 1	7	LARPWR7	20,900	-13,500	31	9.4	11.8	3.60	800	700	101.0	30.8	-7.94	-1.00	E	No	Yes
	Combined Cycle CT	8	LARPWR8	20,900	-13,500	155	47.2	16.0	4.88	481	523	85.7	26.1	29.0	3.65	CON	Yes	Yes

TABLE B-2
SUMMARY OF PM_{10} SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters: Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	PM_{10} Emission Rate lb/hr	PM_{10} Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
0570025	Trademark Nitrogen Corp																	
	Nitric Acid Plant W/ 2 Absorption Towers	1	TRADE1	-20,700	-23,400	50	15.2	1.7	0.5	350	450	17.9	5.5	334	42.08	NO	Yes	No
1050047	Agrifos Mining, L.L.C. - Nichols																	
	Rock Dryer N. 1	1	AGRNIC1	10,700	-30,700	80	24.4	7.5	2.29	160	344	41.0	12.5	38.1	4.80	CON	Yes	Yes
	Rock Dryer N. 2	2	AGRNIC2	10,700	-30,700	80	24.4	7.5	2.29	160	344	41.0	12.5	38.1	4.80	CON	Yes	Yes
	Dry Rock Storage Building	10	AGRNIC10	10,700	-30,700	85	25.9	5.5	1.68	80	300	47.0	14.3	40.0	5.04	CON	Yes	Yes
	Dry Rock Loadout	11	AGRNIC11	10,700	-30,700	85	25.9	5.0	1.52	75	297	63.0	19.2	33.0	4.16	CON	Yes	Yes
1050056	IMC-Agrico Co.(Prairie)																	
	Limestone Bucket Elevator	1	IMCPR1	14,900	-29,000	90	27.4	1.0	0.30	100	311	42.0	12.8	32.3	4.07	NO	Yes	No
	#1, Limerock Grinding	2	IMCPR2	14,900	-29,000	75	22.9	1.1	0.34	130	328	79.0	24.1	15.0	1.89	NO	Yes	No
	N. 3, Limerock Grinding	3	IMCPR3	14,900	-29,000	75	22.9	1.1	0.34	130	328	133.0	40.5	19.2	2.42	NO	Yes	No
	Limerock Dryer	4	IMCPR4	14,900	-29,000	70	21.3	4.4	1.34	184	358	51.0	15.5	32.4	4.08	NO	Yes	No
	#4 Raymond Mill	5	IMCPR5	14,900	-29,000	65	19.8	2.0	0.61	140	333	33.0	10.1	19.2	2.42	NO	Yes	No
	Limestone Bin & Truck Loadout	6	IMCPR6	14,900	-29,000	50	15.2	0.5	0.15	78	299	76.0	23.2	0.15	0.02	NO	Yes	No
	Feed Bin Area & Assoc. Equip.	7	IMCPR7	14,900	-29,000	75	22.9	1.1	0.34	130	328	175.0	53.3	2.4	0.30	NO	Yes	No
1050057	Mosaic Phosphates (Nichols)																	
	Phosphate Rock Dryer W/ Wet Scrubber - Expanding Source	12	IMCNIC12	10,400	-31,800	81	24.7	7.5	2.3	130	328	12.0	3.7	-35.24	-4.44	EXP	No	Yes
	Package Boiler (North Standby Boiler) - Expanding Source	15	IMCNIC15	10,400	-31,800	27	8.2	2.0	0.6	500	533	45.0	13.7	-0.36	-0.05	EXP	No	Yes
	Package Boiler - Expanding Source	16	IMCNIC16	10,400	-31,800	39	11.9	3.2	1.0	500	533	29.0	8.8	-0.72	-0.09	EXP	No	Yes
1050023	Cutrale Citrus Juices USA, Inc																	
	Citrus Feed Mill Dryer	1	CCJUSA1	34,460	-12,420	93	28.3	3.5	1.07	140	333	55.0	16.8	32.9	4.15	NO	Yes	No
	Peel Dryer	3	CCJUSA3	34,460	-12,420	100	30.5	3.2	0.98	161	345	49.0	14.9	32.9	4.15	CON	Yes	Yes
	Cooling Reel Stack N.1N	5	CCJUSA5	34,460	-12,420	33	10.1	2.5	0.76	100	311	57.0	17.4	20.0	2.52	CON	Yes	Yes
	Cooling Reel Stack N. 2C	6	CCJUSA6	34,460	-12,420	33	10.1	2.5	0.76	100	311	57.0	17.4	20.0	2.52	CON	Yes	Yes
	Cooling Reel Stack N. 3S	7	CCJUSA7	34,460	-12,420	34	10.4	2.7	0.82	90	305	49.0	14.9	20.0	2.52	CON	Yes	Yes
	Cogeneration System No. 1	8	CCJUSA8	34,460	-12,420	40	12.2	4.0	1.22	323	435	60.0	18.3	16.2	2.04	CON	Yes	Yes
	Cogeneration System No. 2	9	CCJUSA9	34,460	-12,420	40	12.2	4.0	1.22	330	439	66.0	20.1	5.8	0.73	CON	Yes	Yes
	Vertical Cooler	10	CCJUSA10	34,460	-12,420	33	10.1	2.5	0.76	100	311	49.0	14.9	27.7	3.49	CON	Yes	Yes
1050059	Mosaic Phosphates Co. (New Wales)																	
	Dap Plant No. 1 W/3 Teller Venturi Scrubbers,	9	WALES9	8,700	-36,600	133	40.5	7.00	2.13	105	314	49.0	14.94	28.60	3.604	NO	Yes	No
	Map Prill Tower W/Venturi Scrubber And Cyclonic Demister	11	WALES11	8,700	-36,600	120	36.6	4.00	1.22	155	341	57.0	17.37	15.00	1.890	NO	Yes	No
	Animal Feed Shipping/Truck Loadout (200 Tph), With Baghouse.	15	WALES15	8,700	-36,600	65	19.8	1.00	0.30	105	314	169.0	51.51	1.08	0.136	CON	Yes	Yes
	Animal Feed Storage Silos (3) -"A"Side	23	WALES23	8,700	-36,600	114	34.7	1.00	0.30	105	314	33.0	10.06	4.75	0.599	CON	Yes	Yes
	Animal Feed Storage/Shipping/Railcar Loadout	24	WALES24	8,700	-36,600	103	31.4	1.00	0.30	105	314	140.0	42.67	3.60	0.454	CON	Yes	Yes
	Animal Feed - (2) Limestone Silos	25	WALES25	8,700	-36,600	119	36.3	1.00	0.30	105	314	127.0	38.71	3.60	0.454	CON	Yes	Yes
	Animal Feed - Silica Storage Bin	26	WALES26	8,700	-36,600	18	5.5	1.00	0.30	105	314	31.0	9.45	1.60	0.202	CON	Yes	Yes
	Animal Feed Ingredient Granulation Plant	27	WALES27	8,700	-36,600	172	52.4	8.00	2.44	130	328	66.3	20.21	36.80	4.637	CON	Yes	Yes
	Animal Feed Storage Silos (3) - "B Side"	28	WALES28	8,700	-36,600	114	34.7	1.00	0.30	105	314	33.0	10.06	4.75	0.599	CON	Yes	Yes
	#1 Fertilizer Rail/Truck Shipping	29	WALES29	8,700	-36,600	133	40.5	3.00	0.91	90	305	42.4	12.92	4.70	0.592	NO	Yes	No
	Multifos Soda Ash Conveying System W/Baghouse	31	WALES31	8,700	-36,600	108	32.9	0.80	0.24	80	300	31.0	9.45	3.60	0.454	CON	Yes	Yes

TABLE B-2

SUMMARY OF PM_{10} SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters: Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	PM_{10} Emission Rate lb/hr	PM_{10} Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
	Multifos "A" Kiln Cooler W/Baghouse	32	WALES32	8,700	-36,600	86	26.2	1.50	0.46	220	378	258.0	78.64	7.70	0.970	CON	Yes	Yes
	Multifos "B" Kiln Cooler W/Baghouse	33	WALES33	8,700	-36,600	86	26.2	1.50	0.46	274	408	225.0	68.58	7.70	0.970	CON	Yes	Yes
	Multifos Plant Milling & Sizing System West Baghouse	34	WALES34	8,700	-36,600	71	21.6	1.70	0.52	125	325	87.0	26.52	0.93	0.118	CON	Yes	Yes
	Multifos Milling & Sizing System East Baghouse	35	WALES35	8,700	-36,600	71	21.6	1.00	0.30	100	311	253.0	77.11	0.93	0.118	CON	Yes	Yes
	Multifos Production 1 Dryer 2 Kilns (A/B) For Multifos Plant	36	WALES36	8,700	-36,600	172	52.4	4.50	1.37	105	314	52.0	15.85	29.83	3.759	CON	Yes	Yes
	Map/Dap #2 Truck Loadout	37	WALES37	8,700	-36,600	10	3.0	1.80	0.55	100	311	68.0	20.73	3.60	0.454	CON	Yes	Yes
	Multifos Milling & Sizing Syst Surge Bin Baghouse	38	WALES38	8,700	-36,600	65	19.8	1.10	0.34	100	311	79.0	24.08	7.50	0.945	CON	Yes	Yes
	Gtsp Truck Loadout Facility W/Baghouse	41	WALES41	8,700	-36,600	10	3.0	1.50	0.46	100	311	179.0	54.56	5.00	0.630	CON	Yes	Yes
	Map/Dap No. 2 Rail Loadout	43	WALES43	8,700	-36,600	10	3.0	1.60	0.49	105	314	70.0	21.34	3.60	0.454	CON	Yes	Yes
	Dap Plant II - East Train	45	WALES45	8,700	-36,600	171	52.1	6.00	1.83	110	316	58.0	17.68	6.40	0.806	CON	Yes	Yes
	Dap Plant II - West Train	46	WALES46	8,700	-36,600	171	52.1	6.00	1.83	110	316	58.0	17.68	6.40	0.806	CON	Yes	Yes
	Dap Ii West Product Cooler	47	WALES47	8,700	-36,600	147	44.8	4.30	1.31	175	353	68.9	21.00	4.22	0.532	CON	Yes	Yes
	Uranium Recovery Acid Cleanup Scrubber	48	WALES48	8,700	-36,600	60	18.3	3.50	1.07	80	300	31.2	9.51	1.00	0.126	CON	Yes	Yes
	Animal Feed - Limestone Feed Bin	52	WALES52	8,700	-36,600	114	34.7	1.00	0.30	105	314	33.0	10.06	4.75	0.599	CON	Yes	Yes
	Dap Plant #1 Product Cooler	54	WALES54	8,700	-36,600	107	32.6	3.50	1.07	150	339	77.0	23.47	7.70	0.970	CON	Yes	Yes
	Map Plant Cooler	55	WALES55	8,700	-36,600	25	7.6	4.30	1.31	140	333	34.0	10.36	5.14	0.648	NO	Yes	No
	Dap Ii East Product Cooler	56	WALES56	8,700	-36,600	170	51.8	5.00	1.52	110	316	64.5	19.66	6.06	0.764	CON	Yes	Yes
	Gtsp Railcar Loadout Facility W/ Baghouse	59	WALES59	8,700	-36,600	10	3.0	1.50	0.46	100	311	68.9	21.00	5.00	0.630	CON	Yes	Yes
	Limestone Storage Silo With Baghouse.	70	WALES70	8,700	-36,600	110	33.5	0.75	0.23	110	316	113.2	34.50	0.70	0.088	CON	Yes	Yes
	Kiln C Scrubber Stack - Multifos Plant	74	WALES74	8,700	-36,600	172	52.4	4.50	1.37	105	314	70.2	21.40	14.30	1.802	CON	Yes	Yes
	Multifos Kiln C Cooler Baghouse	75	WALES75	8,700	-36,600	86	26.2	3.00	0.91	250	394	106.1	32.34	1.90	0.239	CON	Yes	Yes
	Multifos Kiln C Milling & Sizing Baghouse	76	WALES76	8,700	-36,600	90	27.4	1.50	0.46	130	328	113.2	34.50	1.90	0.239	CON	Yes	Yes
0570038	TECO, Hookers Point																	
	Boiler #1	1	TECOHK1	-30,000	-25,000	280	85.3	11.3	3.4	356	453	82.0	25.0	-37.3	-4.70	EXP	No	Yes
	Boiler #2	2	TECOHK2	-30,000	-25,000	280	85.3	11.3	3.4	356	453	82.0	25.0	-37.3	-4.70	EXP	No	Yes
	Boiler #3	3	TECOHK3	-30,000	-25,000	280	85.3	12.0	3.7	341	445	62.7	19.1	-51.4	-6.48	EXP	No	Yes
	Boiler #4	4	TECOHK4	-30,000	-25,000	280	85.3	12.0	3.7	341	445	62.7	19.1	-51.4	-6.48	EXP	No	Yes
	Boiler #5	5	TECOHK5	-30,000	-25,000	280	85.3	11.3	3.4	356	453	82.0	25.0	-76.3	-9.61	EXP	No	Yes
	Boiler #6	6	TECOHK6	-30,000	-25,000	280	85.3	9.4	2.9	329	438	75.2	22.9	-97.3	-12.26	EXP	No	Yes
	Caterpillar Power Modules 1-30	1-30	TECOHKPM	-30,000	-25,000	10	3.0	0.7	0.2	808	704	681.0	207.6	7.5	0.95	CON	Yes	Yes
0570040	TECO, Bayside Power Station																	
	Unit #1 125 MW Coal Fired Boiler with Steam Generator	1	TECOBA1	-27,900	-28,500	315	96.0	10.0	3.0	289	416	94.0	28.7	-126	-15.88	EXP	No	Yes
	Unit #2 125 MW Coal Fired Boiler with Steam Generator	2	TECOBA2	-27,900	-28,500	315	96.0	10.0	3.0	298	421	101.0	30.8	-126	-15.88	EXP	No	Yes
	Unit #3 180 MW Coal Fired Boiler with Steam Generator	3	TECOBA3	-27,900	-28,500	315	96.0	10.6	3.2	296	420	126.0	38.4	-160	-20.16	EXP	No	Yes
	Unit #4 188 MW Coal Fired Boiler with Steam Generator	4	TECOBA4	-27,900	-28,500	315	96.0	10.0	3.0	309	427	75.0	22.9	-188	-23.69	EXP	No	Yes
	Unit #5 239 MW Coal Fired Boiler with Steam Generator	5	TECOBA5	-27,900	-28,500	315	96.0	14.6	4.5	303	424	76.0	23.2	-228	-28.73	EXP	No	Yes
	Unit #6 414 MW Coal Fired Boiler with Steam Generator	6	TECOBA6	-27,900	-28,500	315	96.0	17.6	5.4	320	433	81.0	24.7	-380	-47.88	EXP	No	Yes
	Gas Fired Turbine	7	TECOBA7	-27,900	-28,500	35	10.7	11.0	3.4	1,010	816	92.6	28.2	122	15.37	NO	Yes	No
	Economizer Ash Silo	9	TECOBA9	-27,900	-28,500	72	21.9	0.7	0.2	350	450	35.0	10.7	0.14	0.02	NO	Yes	No
	Flyash Silo No. 1 For Units 5 & 6	10	TECOBA10	-27,900	-28,500	107	32.6	1.0	0.3	350	450	99.0	30.2	1.20	0.15	NO	Yes	No
	Fly Ash Silo No. 2 Units 1-4	11	TECOBA11	-27,900	-28,500	104	31.7	2.0	0.6	350	450	59.0	18.0	2.90	0.37	NO	Yes	No
	Unit 1 Coal Bunker W/Roto-Clone	13	TECOBA13	-27,900	-28,500	175	53.3	1.7	0.5	78	299	70.0	21.3	0.19	0.02	NO	Yes	No
	Unit 2 Coal Bunker W/Roto-Clone	14	TECOBA14	-27,900	-28,500	175	53.3	1.7	0.5	78	299	70.0	21.3	0.19	0.02	NO	Yes	No
	Unit 3 Coal Bunker W/Roto-Clone	15	TECOBA15	-27,900	-28,500	177	53.9	2.0	0.6	78	299	50.0	15.2	0.19	0.02	NO	Yes	No

TABLE B-2
SUMMARY OF PM_{10} SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	PM_{10} Emission Rate lb/hr	PM_{10} Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
	Unit 4 Coal Bunker W/Roto-Clone	16	TECOBA16	-27,900	-28,500	175	53.3	1.7	0.5	78	299	70.0	21.3	0.19	0.02	NO	Yes	No
	Unit 5 Coal Bunker W/Roto-Clone	17	TECOBA17	-27,900	-28,500	174	53.0	1.2	0.4	78	299	79.0	24.1	0.19	0.02	NO	Yes	No
	Unit 6 Coal Bunker W/Roto-Clone	18	TECOBA18	-27,900	-28,500	175	53.3	1.7	0.5	78	299	70.0	21.3	0.19	0.02	NO	Yes	No
	Bayside Unit 1A – 170 MW combined cycle gas turbine	20	TECOBA20	-27,900	-28,500	150	45.7	19.0	5.8	220	378	60.5	18.4	11.5	1.45	CON	Yes	Yes
	Bayside Unit 1B – 170 MW combined cycle gas turbine	21	TECOBA21	-27,900	-28,500	150	45.7	19.0	5.8	220	378	60.5	18.4	11.5	1.45	CON	Yes	Yes
	Bayside Unit 1C – 170 MW combined cycle gas turbine	22	TECOBA22	-27,900	-28,500	150	45.7	19.0	5.8	220	378	60.5	18.4	11.5	1.45	CON	Yes	Yes
	Bayside Unit 2A – 170 MW combined cycle gas turbine	23	TECOBA23	-27,900	-28,500	150	45.7	19.0	5.8	220	378	60.5	18.4	11.5	1.45	CON	Yes	Yes
	Bayside Unit 2B – 170 MW combined cycle gas turbine	24	TECOBA24	-27,900	-28,500	150	45.7	19.0	5.8	220	378	60.5	18.4	11.5	1.45	CON	Yes	Yes
	Bayside Unit 2C – 170 MW combined cycle gas turbine	25	TECOBA25	-27,900	-28,500	150	45.7	19.0	5.8	220	378	60.5	18.4	11.5	1.45	CON	Yes	Yes
	Bayside Unit 2D – 170 MW combined cycle gas turbine	26	TECOBA26	-27,900	-28,500	150	45.7	19.0	5.8	220	378	60.5	18.4	11.5	1.45	CON	Yes	Yes
1050034	Mosaic Phosphates Inc. (CFMO), Ft. Lonesome																	
	PSD Expanding source		12IMCF	1,500	-48,000	125	38.1	8.0	2.4	151	339	49.7	15.1	-25.20	-3.18	EXP	No	Yes
	PSD Expanding source		13IMCF	1,500	-48,000	125	38.1	8.0	2.4	151	339	55.1	16.8	-24.90	-3.14	EXP	No	Yes
	PSD Expanding source		14IMCF	1,500	-48,000	150	45.7	2.7	0.8	110	316	27.7	8.4	-51.20	-6.45	EXP	No	Yes
1050034	Mosaic Phosphates Inc. (CFMO), Noralyn Mine																	
	Dryer No. 1 @ Noralyn Mine (011)	11	IMCFMO11	26,700	-35,700	76	23.16	6.5	2.0	250	394	56.8	17.3	42.2	5.32	NO	Yes	No
	Dryer No. 2 East @ Noralyn Mine (012)	12	IMCFMO12	26,700	-35,700	55	16.76	9.3	2.8	155	341	29.0	8.8	45.1	5.68	NO	Yes	No
	Silos 1, 2, 3, 12 @ Noralyn Mine (013)	13	IMCFMO13	26,700	-35,700	150	45.72	3.5	1.1	100	311	52.0	15.8	35.0	4.41	NO	Yes	No
	Ball Mill Transfers @ Noralyn Mine (015)	15	IMCFMO15	26,700	-35,700	24	7.32	2	0.6	110	316	26.5	8.1	10.0	1.26	NO	Yes	No
	Ball Mill No. 3 @ Noralyn Mine (016)	16	IMCFMO16	26,700	-35,700	25	7.62	1.5	0.5	75	297	37.7	11.5	10.0	1.26	NO	Yes	No
	Ball Mill No. 4 @ Noralyn Mine (017)	17	IMCFMO17	26,700	-35,700	27	8.23	2	0.6	75	297	15.9	4.8	10.0	1.26	NO	Yes	No
	No. 3 Ball Mill Loadouts @ Noralyn Mine (018)	18	IMCFMO18	26,700	-35,700	25	7.62	1.5	0.5	77	298	37.7	11.5	10.0	1.26	NO	Yes	No
	No. 4 Ball Mill Loadouts @ Noralyn Mine (019)	19	IMCFMO19	26,700	-35,700	29	8.84	1.8	0.5	77	298	19.7	6.0	10.0	1.26	NO	Yes	No
	A Track Railcar Loadout @ Noralyn Mine	20	IMCFMO20	26,700	-35,700	27	8.23	2	0.6	85	303	53.1	16.2	15.0	1.89	NO	Yes	No
	B Track Railcar Loadout @ Noralyn Mine	21	IMCFMO21	26,700	-35,700	27	8.23	1.9	0.6	81	300	71.8	21.9	15.0	1.89	NO	Yes	No
	Transfer Points To Conveyors C31 & C33 @ Noralyn	22	IMCFMO22	26,700	-35,700	40	12.19	1.5	0.5	100	311	47.2	14.4	10.0	1.26	NO	Yes	No
	Material Transfer Sources @ Noralyn	23	IMCFMO23	26,700	-35,700	43	13.11	2	0.6	86	303	26.5	8.1	15.0	1.89	NO	Yes	No
	Dry Phosphate Transfer @ Noralyn Minc (024)	24	IMCFMO24	26,700	-35,700	135	41.15	2.8	0.9	60	289	55.0	16.8	15.0	1.89	NO	Yes	No
0570039	TECO - Big Bend Station																	
	Unit #1 Coal Fired Boiler w/ ESP	1	TECOBB1	-24,850	-41,090	490	149.35	24.0	7.3	294	419	115.9	35.3	121.1	15.259	NO	Yes	No
	Unit #2 Riley-Stoker Coal Boiler w/ Esp	2	TECOBB2	-24,850	-41,090	490	149.35	24.0	7.3	125	325	87.6	26.7	119.9	15.107	NO	Yes	No
	Unit #3 Riley-Stoker Coal Boiler w/ ESP	3	TECOBB3	-24,850	-41,090	499	152.10	24.0	7.3	279	410	47.0	14.3	123.5	15.561	NO	Yes	No
	Unit #4 Coal Boiler W/Belco ESP Psd-Fl-040	4	TECOBB4	-24,850	-41,090	499	152.10	24.0	7.3	156	342	59.0	18.0	43.3	5.456	CON	Yes	Yes
	Combustion Turbine #2 - No. 2 Fuel Oil	5	TECOBB5	-24,850	-41,090	75	22.86	14.0	4.3	928	771	61.0	18.6	33.0	4.158	NO	Yes	No
	Combustion Turbine #3 - No. 2 Fuel Oil	6	TECOBB6	-24,850	-41,090	75	22.86	14.0	4.3	928	771	61.0	18.6	33.0	4.158	NO	Yes	No
	Combustion Turbine #1 - No. 2 Fuel Oil	7	TECOBB7	-24,850	-41,090	35	10.67	11.0	3.4	1010	816	91.9	28.0	33.0	4.158	NO	Yes	No
	Unit No. 1 & No. 2 Fly Ash Silo w/Baghouse	8	TECOBB8	-24,850	-41,090	102	31.09	2.5	0.8	250	394	52.0	15.8	5.16	0.650	NO	Yes	No
	Fly-Ash Silo For Unit #3	9	TECOBB9	-24,850	-41,090	113	34.44	0.9	0.3	250	394	406.0	123.7	3.00	0.378	NO	Yes	No
	Limestone Silo A W/ 2 Baghouses	12	TECOBB12	-24,850	-41,090	101	30.78	0.5	0.2	150	339	46.0	14.0	0.05	0.006	NO	Yes	No
	Limestone Silo B W/ 2 Baghouses	13	TECOBB13	-24,850	-41,090	101	30.78	0.5	0.2	150	339	46.0	14.0	0.05	0.006	NO	Yes	No
	Flyash Silo For Unit #4	14	TECOBB14	-24,850	-41,090	139	42.37	1.6	0.5	140	333	59.0	18.0	0.20	0.025	NO	Yes	No
	Unit 1 Coal Bunker W/Roto-Clone	15	TECOBB15	-24,850	-41,090	179	54.56	1.7	0.5	78	299	69.0	21.0	0.48	0.060	NO	Yes	No
	Unit 2 Coal Bunker W/Roto-Clone	16	TECOBB16	-24,850	-41,090	179	54.56	1.7	0.5	78	299	69.0	21.0	0.48	0.060	NO	Yes	No
	Unit 3 Coal Bunker W/Roto-Clone	17	TECOBB17	-24,850	-41,090	179	54.56	1.7	0.5	78	299	69.0	21.0	0.48	0.060	NO	Yes	No

TABLE B-2
SUMMARY OF PM_{10} SOURCES INCLUDED IN THE AIR MODELING ANALYSES, CFI PLANT CITY

Facility ID	Facility Name / Emission Unit Description	EU ID	ISCST3 ID Name	Relative Location X (m)	Relative Location Y (m)	Stack Parameters: Height ft	Height m	Diameter ft	Diameter m	Temperature °F	Temperature K	Velocity ft/s	Velocity m/s	PM_{10} Emission Rate lb/hr	PM_{10} Emission Rate g/s	PSD Consuming PSD Source? (EXP/CON)	Modeled in AAQS	Modeled in Class II
1030012	Progress Energy Florida - Higgins																	
	FFFSG-SG 1 (Phase II, Acid Rain Unit)	1	FPCHIG1	-51,500	-17,600	174	53.04	12.5	3.8	312	429	27.0	8.2	54.80	6.905	B	Yes	No
	FFFSG-SG 2 (Phase II, Acid Rain Unit)	2	FPCHIG2	-51,500	-17,600	174	53.04	12.5	3.8	310	428	27.0	8.2	52.30	6.590	B	Yes	No
	FFFSG-SG 3 (Phase II, Acid Rain Unit)	3	FPCHIG3	-51,500	-17,600	174	53.04	12.5	3.8	301	423	24.0	7.3	54.80	6.905	B	Yes	No
	CT Peaking Unit-Ctp 1	4	FPCHIG4	-51,500	-17,600	55	16.76	15.1	4.6	850	728	93.1	28.4	20.16	2.540	B	Yes	No
	CT Peaking Unit-Ctp 2	5	FPCHIG5	-51,500	-17,600	56	17.07	15.1	4.6	850	728	93.1	28.4	20.16	2.540	B	Yes	No
	CT Peaking Unit-Ctp 3	6	FPCHIG6	-51,500	-17,600	55	16.76	15.1	4.6	850	728	93.1	28.4	22.47	2.831	B	Yes	No
	CT Peaking Unit-Ctp 4	7	FPCHIG7	-51,500	-17,600	55	16.76	15.1	4.6	850	728	93.1	28.4	22.47	2.831	B	Yes	No
0970014	Progress Energy Florida - Intercession City Plant																	
	Combined CTs 1-6	1-6	ICP16	58,300	10,000	45	13.72	14.6	4.46	760	678	174.9	53.3	258.0	32.51	NO	Yes	No
	Combined CTs 7-10	7-10	ICP710	58,300	10,000	50	15.24	13.8	4.19	1043	835	174.1	53.1	60.0	7.56	CON	Yes	Yes
	CT # 11	11	ICP11	58,300	10,000	75	22.86	19.0	5.79	1034	830	139.4	42.5	17.0	2.14	CON	Yes	Yes
	Simple Cycle CTs P-12, P13 & P-14	18-20	ICP1820	58,300	10,000	56	17.07	16.1	4.91	993	807	117.6	35.8	73.8	9.30	CON	Yes	Yes
1010017	Progress Energy Florida, Inc. - Anclote Power Plant																	
	Steam Turbine Gen. Anclote Unit No.1	1	FPCANC1	-60,590	4,680	499	152.10	24	7.3	320	433	62.0	18.9	620.5	78.18	NO	Yes	No
	Steam Turbine Gen. Anclote Unit No.2	2	FPCANC2	-60,590	4,680	499	152.10	24	7.3	320	433	62.0	18.9	606.3	76.39	NO	Yes	No
0810010	Florida Power & Light - Manatee																	
	Generator Unit 1	1	FPLMAN1	-20,750	-61,850	499	152.1	27.3	8.3	344	446	78.0	23.8	865	108.99	NO	Yes	No
	Generator Unit 2	2	FPLMAN2	-20,750	-61,850	499	152.1	26.2	8.0	325	436	82.5	25.1	865	108.99	NO	Yes	No
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3A	5	FPLMAN5	-20,750	-61,850	120	36.6	22.0	6.7	1116	875	104.8	31.9	17.2	2.17	CON	Yes	Yes
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3B	6	FPLMAN6	-20,750	-61,850	120	36.6	19.0	5.8	202	368	59.0	18.0	17.2	2.17	CON	Yes	Yes
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3C	7	FPLMAN7	-20,750	-61,850	120	36.6	19.0	5.8	202	368	59.0	18.0	17.2	2.17	CON	Yes	Yes
	Gas Turbine (nominal 170 MW) with HRSG- Unit No.3D	8	FPLMAN8	-20,750	-61,850	120	36.6	19.0	5.8	202	368	59.0	18.0	17.2	2.17	CON	Yes	Yes
	IMC Agrico (Pierce)																	
	PSD Expanding source	1	1AGRI	-16,700	-24,300	80	24.38	8	2.4	118	321	69.7	21.2	-40.0	-5.04	E	No	Yes
	PSD Expanding source	2	2AGRI	-16,700	-24,300	95	28.96	5.8	1.8	770	683	48.8	14.9	-31.1	-3.92	E	No	Yes
	Bartow Phosphate Center (Formerly IMC Uranium Recovery)																	
	PSD Expanding source	16	16IMCF	20,400	-33,800	85	25.9	0.7	0.2	75	297	38.1	11.6	-189.7	-23.90	EXP	No	Yes

Note: EXP = PSD expanding source.
CON = PSD consuming source.
NO = Baseline Source, does not affect PSD increment.
ND = No data available.

TABLE B-3

SO_2 PSD BASELINE (1974-1975) EMISSIONS, CF INDUSTRIES

Emission Unit	Emission Factor [a] (lb/10^3 gal)	Activity Factor [b] (10^3 gal/yr)	Annual Emissions (TPY)	Hourly Emissions [c] (lb/hr)
"A" DAP/MAP Plant	392.5	411.11	80.68	18.42
"X" DAP/MAP/GTSP Plant	392.5	612.30	120.16	27.43
"Y" DAP/MAP/GTSP Plant	392.5	409.37	80.34	18.34
"Z" DAP/MAP Plant	392.5	409.37	80.34	18.34
ROP/MGTSP Manufacturing	392.5	314.90	61.80	14.11

Footnotes:

[a] SO_2 emission factor for No. 5 fuel oil combustion, AP-42, Table 1.3-1 (9/98). Assumes that sulfur content of the No. 5 fuel oil is 2.5%.

[b] Based on estimated fuel usage for 1974. See Table B-2.

[c] Based on 8,760 hours per year.

TABLE B-4
ESTIMATED FUEL USAGE FOR 1974, CF INDUSTRIES

Emission Unit	Fuel Usage as Given in Applications	Fuel Usage (a) (gal/hr)	% of Total	Estimated Fuel Usage (b) (gal/yr)
ADAP	4,700 gal/day	195.83	14.53	411,107
X-Train	7,000 gal/day	291.67	21.65	612,304
Y-Train	1,560 lb/hr	195	14.47	409,365
Z-Train	1,560 lb/hr	195	14.47	409,365
Riley Stoker	320 gal/hr	320	23.75	671,778
ROP/MGTSP	3,600 gal/day	150	11.13	314,896
	TOTAL	1,347.5	100	2,828,814

Notes:
(a) Converted from number given in applications. Used a density of 8 lb/gal.
(b) Based on total fuel purchases for calendar year 1974 for the entire facility (2,828,814 gal).

APPENDIX C

CALPUFF MODEL DESCRIPTION AND METHODOLOGY

CALPUFF MODEL DESCRIPTION AND METHODOLOGY

C.1 INTRODUCTION

As part of the new source review requirements under Prevention of Significant Deterioration (PSD) regulations, new sources are required to address air quality impacts at PSD Class I areas. As part of the PSD analysis report submitted to the Florida Department of Environmental Protection (DEP), the air quality impacts due to the potential emissions of the proposed CF Industries, Plant City Facility, modification are required to be addressed at the PSD Class I area of the Chassahowitzka National Wildlife Area (NWA). The Chassahowitzka NWA is located approximately 110 km northwest of the facility site and is the only PSD Class I area located within 200 km of the project site.

The evaluation of air quality impacts are not only concerned with determining compliance with PSD Class I increments but also assessing a source's impact on Air Quality Related Values (AQRVs), such as regional haze. Further, compliance with PSD Class I increments can be evaluated by determining if the source's impacts are less than the proposed U.S. Environmental Protection Agency (EPA) Class I significant impact levels. The significant impact levels are threshold levels that are used to determine the type of air impact analyses needed for the facility. If the new source's impacts are predicted to be less than significant, then the source's impacts are assumed not to have a significant adverse affect on air quality and additional modeling with other sources is not required. However, if the source's impacts are predicted to be greater than the significant impact levels, additional modeling with other sources is required to demonstrate compliance with Class I increments.

Currently there are several air quality modeling approaches recommended by the Interagency Workgroup on Air Quality Models (IWAQM) to perform these analyses. The IWAQM consists of EPA and Federal Land Managers (FLM) of Class I areas who are responsible for ensuring that AQRVs are not adversely impacted by new and existing sources. These recommendations have been summarized in two documents:

- *Interagency Workgroup on Air Quality Models (IWAQM), Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts* (EPA, 1998), referred to as the IWAQM Phase 2 report.
- *Federal Land Managers' Air Quality Related Values Workgroup (FLAG), Phase I Report,* USFS, NPS, USFWS (12/00), referred to as the FLAG document.

For the proposed project, air quality analyses were performed that assess the facility's impacts in the PSD Class I area of the Chassahowitzka NWA using the refined modeling approach from the IWAQM Phase 2 report for:

- Significant impact analysis,
- Regional haze analysis, and
- Total nitrogen deposition.

The refined analysis approach was used instead of the screening analysis approach since the air quality impacts are based on generally more realistic assumptions, including more detailed meteorological data, and are estimated at locations at the Class I area.

C.2 GENERAL AIR MODELING APPROACH

The general modeling approach was based on using the long-range transport model, California Puff model (CALPUFF, Version 5.711a). At distances beyond 50 km, the ISCST3 model is considered to overpredict air quality impacts, because it is a steady-state model. At those distances, the CALPUFF model is recommended for use. The FLM have requested that air quality impacts, such as for regional haze, for a source located more than 50 km from a Class I area be predicted using the CALPUFF model. The Florida DEP has also recommended that the CALPUFF model be used to assess if the source has a significant impact at a Class I area located beyond 50 km from the source. As a result, a significant impact and regional haze analyses were performed using the CALPUFF model to assess the facility's impacts at the Chassahowitzka NWA.

The methods and assumptions used in the CALPUFF model were based on the latest recommendations for a refined analysis as presented in the IWAQM Phase 2 Summary Report and the FLAG documents.

A regional haze analysis was performed to determine the affect that the facility's emissions will have on background regional haze levels at the Chassahowitzka NWA. In the regional haze analysis, the change in visual range, as calculated by a deciview change, was estimated for the facility in accordance with the IWAQM recommendations. Based on those recommendations, the CALPUFF model is used to predict the maximum 24-hour average sulfate (SO_4), nitrate (NO_3), and fine particulate (PM_{10}) concentrations as well as ammonium sulfate [$(NH_4)_2SO_4$] and ammonium nitrate (NH_4NO_3) concentrations. The change in visibility due to a source, estimated as a percentage, is then calculated based on the change from background data.

The following sections present the methods and assumptions used to assess the refined significant impact and regional haze analyses performed for the proposed project. The results of these analyses are presented in Sections 6.0 and 7.0 of the report.

C.3 MODEL SELECTION AND SETTINGS

The CALPUFF air modeling system was used to assess the proposed project's impacts at the PSD Class I area for comparison to the PSD Class I significant impact levels and to the regional haze visibility criteria. CALPUFF is a non-steady state Lagrangian Gaussian puff long-range transport model that includes algorithms for building downwash effects as well as chemical transformations (important for visibility controlling pollutants), and wet/dry deposition. The CALPUFF meteorological and geophysical data preprocessor (CALMET, Version 5.53a), a preprocessor to CALPUFF, is a diagnostic meteorological model that produces a three-dimensional field of wind and temperature and a two-dimensional field of other meteorological parameters. CALMET was designed to process raw meteorological, terrain and land-use databases to be used in the air modeling analysis. The CALPUFF modeling system uses a number of FORTRAN preprocessor programs that extract data from large databases and converts the data into formats suitable for input to CALMET. The processed data produced from CALMET was input to CALPUFF to assess the pollutant specific impact. Both CALMET and CALPUFF were used in a manner that is recommended by the IWAQM Phase 2 and FLAG reports.

C.3.1 CALPUFF MODEL APPROACHES AND SETTINGS

The IWAQM has recommended approaches for performing a Phase 2 refined modeling analyses that are presented in Table C-1. These approaches involve use of meteorological data, selection of receptors and dispersion conditions, and processing of model output.

The specific settings used in the CALPUFF model are presented in Table C-2.

C.3.2 EMISSION INVENTORY AND BUILDING WAKE EFFECTS

The CALPUFF model included the facility's emissions, stack, and operating data as well as building dimensions to account for the effects of building-induced downwash on the emission sources. Dimensions for all significant building structures were processed with the Building Profile Input Program (BPIP), Version 04274, and were included in the CALPUFF model input. Section 6.0 of the PSD report presents a listing of the facility's emissions and structures included in the analysis.

C.4 RECEPTOR LOCATIONS

For the refined analyses, pollutant concentrations were predicted at 58 discrete receptors located at the boundary of the Chassahowitzka NWA area. These receptors are part of the receptor data developed by the FLM for this area.

C.5 METEOROLOGICAL DATA

C.5.1 REFINED ANALYSIS

CALMET was used to develop the gridded parameter fields required for the refined modeling analyses. The follow sections discuss the specific data used and processed in the CALMET model.

C.5.2 CALMET SETTINGS

The CALMET settings contained in Table C-3 were used for the refined modeling analysis. All input data files needed for CALMET were developed by Golder, with the exception of the upper air and sea surface meteorological data files, which were developed by the FDEP.

C.5.3 MODELING DOMAIN

A rectangular modeling domain extending 448 km in the east-west (x) direction and 684 km in the north-south (y) direction was used for the refined modeling analysis. The southwest corner of the domain is the origin and is located at 26.25 degrees north latitude and 85.0 degrees west longitude (east and north UTM coordinates of 77 and 2966.0 km, respectively, zone 17 equivalent). This location is in the Gulf of Mexico approximately 250 km west of Naples, Florida. For the processing of meteorological and geophysical data, the domain contains 112 grid cells in the x-direction and 171 grid cells in the y-direction. The domain grid resolution is 4 km. The air modeling analysis was developed in the UTM coordinate system, Zone 17.

C.5.4 MESOSCALE MODEL – GENERATION 4 (MM4/5) DATA

Pennsylvania State University in conjunction with the NCAR Assessment Laboratory developed the MM4 and MM5 data set, a prognostic wind field or "guess" field, for the United States. The hourly meteorological variables used to create this data set (wind, temperature, dew point depression, and geopotential height for eight standard levels and up to 15 significant levels) are extensive and are available for 1990, 1992, and 1996. The analysis used the MM4 and MM5 data to initialize the CALMET wind field. The MM4 and MM5 data available for 1990 and 1992, respectively, have a horizontal spacing of 80 km and are used to simulate atmospheric variables within the modeling domain. The MM5 data are also available for 1996 and have a horizontal spacing of 36 km.

The 1990 MM4 subset domain and 1992 MM5 subset domain consist of a 11 x 14- cell rectangle, with 80 km grid resolution, extending from the MM4/5 grid points (46,8) to (56,21). These data were processed to create a MM4/5.DAT file, for input to the CALMET model. The 1996 MM5 subset domain consisted of a 21 x 25- cell rectangle, with 36 km grid resolution, extending from the MM5 grid points (117,23) to (137,47).

The MM4 and MM5 data used in the CALMET, although advanced, lacks the fine detail of specific temporal and spatial meteorological variables and geophysical data. These variables were processed into the appropriate format and introduced into the CALMET model through the additional data files obtained from the following sources.

C.5.5 SURFACE DATA STATIONS AND PROCESSING

A summary of the surface and sea-surface station information and locations are presented in Table A-4. The surface station data processed for the CALPUFF analyses consisted of data from up to sixteen NWS stations or Federal Aviation Administration (FAA) Flight Service stations for:

- Tampa, Jacksonville, Daytona Beach, Tallahassee, Vero Beach, Fort Myers, Orlando, Pensacola and Gainesville in Florida;
- Columbus, Macon, Savannah, Augusta, Athens, and Atlanta in Georgia; and
- Charleston in South Carolina.

The surface station parameters include wind speed, wind direction, cloud ceiling height, opaque cloud cover, dry bulb temperature, relative humidity, station pressure, and a precipitation code that is based on current weather conditions. The surface station data were processed into a SURF.DAT file format for CALMET input.

Because the modeling domain extends over water, up to 10 sea surface stations were incorporated in the analysis for each of the years evaluated. Data were obtained from available C-Man stations and NOAA buoys. These data were processed into an over-water surface station format (i.e., SEA*.DAT) for input to CALMET. The over-water station data include wind direction, wind speed and air temperature.

C.5.6 UPPER AIR DATA STATIONS AND PROCESSING

A summary of the upper air station information and locations are presented in Table C-4. Upper air data from the following NWS stations, based on the availability of the upper air data, were used in the modeling analysis:

- Waycross, Georgia (1990, 1992);
- Athens, Georgia (1990, 1992);
- Charleston, South Carolina (1990, 1992, 1996);
- Cape Canaveral (1996)
- Miami (1996)
- Apalachicola, Florida (1990);
- Ruskin, Florida (1990, 1992, 1996);
- Tallahassee, Florida (1992, 1996);
- West Palm Beach (1990, 1992)
- Jacksonville, Florida (1996); and
- Peachtree City, Georgia (1996).

C.5.7 PRECIPITATION DATA STATIONS AND PROCESSING

Precipitation data were processed from a network of hourly precipitation data files collected from primary and secondary NWS precipitation-recording stations located within the latitude and longitudinal limits of the modeling domain. Data for up to 82 stations in Alabama, Georgia and Florida were obtained in NCDC TD-3240 variable format and converted into a fixed-length format. The utility programs PXTRACT and PMERGE were then used to process the data into the format for the PRECIP.DAT file that is used by CALMET.

C.5.8 GEOPHYSICAL DATA PROCESSING

Terrain elevations for each grid cell of the modeling domain were obtained from 1-degree Digital Elevation Model (DEM) files obtained from the U.S. Geographical Survey (USGS) Internet website. The DEM data was extracted for the modeling domain grid using the utility program TERREL. Land-use data were also extracted from 1-degree USGS files and processed using utility programs CTGCOMP and CTGPROC. Both the terrain and land use files were combined into a GEO.DAT file for input to CALMET with the MAKEGEO utility program.

TABLE C-1
REFINED MODELING ANALYSES RECOMMENDATIONS [a]

Model Input/Output	Description
Meteorology	Use CALMET (minimum 6 to 10 layers in the vertical; top layer must extend above the maximum mixing depth expected); horizontal domain extends 50 to 80 km beyond outer receptors and sources being modeled; terrain elevation and land-use data is resolved for the situation.
Receptors	Within Class I area(s) of concern; obtain regulatory concurrence on coverage.
Dispersion	1. CALPUFF with default dispersion settings. 2. Use MESOPUFF II chemistry with wet and dry deposition. 3. Define background values for ozone and ammonia for area.
Processing	1. For PSD increments: use highest, second-highest 3-hour and 24-hour average SO_2 concentrations; highest, second-highest 24-hour average PM_{10} concentrations; and highest annual average SO_2, PM_{10}, or NO_x concentrations. 2. For haze: process, on a 24-hour basis, compute the source extinction from the maximum increase in emissions of SO_2, NO_x, and PM_{10}; compute the daily relative humidity factor [f(RH)], provided from an external disk file; and compute the maximum percent change in extinction using the FLM supplied background extinction data in the FLAG document. 3. For deposition: compute dry and wet fluxes of nitrogen and sulfur emissions on an annual average basis and adjust concentrations using the molecular weight ratios provided in the FLAG document. Compute total sulfur and nitrogen deposition. 4. For significant impact analysis: use highest annual and highest short-term averaging time concentrations for SO_2, NO_x, or PM_{10}.

[a] IWAQM Phase II report (12/98) and FLAG document (12/00)

TABLE C-2
CALPUFF MODEL SETTINGS

Parameter	Setting
Pollutant Species	SO_2, SO_4, NO_x, HNO_3, NO_3, PM_{10}
Chemical Transformation	MESOPUFF II scheme, hourly ozone data
Deposition	Include both dry and wet deposition, plume depletion
Meteorological/Land Use Input	CALMET
Plume Rise	Transitional, Stack-tip downwash, Partial plume penetration
Dispersion	Puff plume element, PG /MP coefficients, rural mode, ISC building downwash scheme
Terrain Effects	Partial plume path adjustment
Output	Create binary concentration file including output species for SO_4, NO_3, PM_{10}, SO_2, and NO_x; process for visibility change using Method 2 and FLAG background extinctions
Model Processing	For haze: highest predicted 24-hour extinction change (%) for the year For deposition: annual average deposition rate For significant impact analysis: highest predicted annual and highest short-term averaging time concentrations for SO_2, NO_x, and PM_{10}.
Maximum Relative Humidity	95%
Background Values	Ozone: 50 ppb; Ammonia: 1 ppb

TABLE C-3
CALMET SETTINGS

Parameter	Setting
Horizontal Grid Dimensions	448 by 684 km, 4 km grid resolution
Vertical Grid	10 layers
Weather Station Data Inputs	Surface, upper air, and precipitation stations
Wind model options	Diagnostic wind model, no kinematic effects
Prognostic wind field model	1990 MM4 and 1992 data, 80 km resolution; 1996 MM5 data, 36 km resolution; used for wind field initialization
Output	Binary hourly grid pattern for meteorological data file for CALPUFF input

TABLE C-4
SURFACE AND UPPER AIR STATIONS USED IN THE NORTH-CENTRAL FLORIDA–SOUTH GEORGIA DOMAIN

Station Name	Station Symbol	WBAN Number	UTM Coordinates Easting (km)	Northing (km)	UTM Zone	Anemometer Height (m)
Surface Stations						
Tampa, FL	TPA	12842	349.195	3094.289	17	10
Jacksonville, FL	JAX	13889	432.809	3374.192	17	10
Daytona Beach, FL	DAB	12834	495.118	3228.056	17	10
Tallahassee, FL	TLH	93805	176.408[a]	3365.835	16	10
Fort Myers. F L	FMY	12835	413.644	2940.405	17	10
Orlando, FL	MCO	12815	468.942	3146.889	17	10
Pensacola, FL	PNS	13899	-95.740[a]	3386.714	16	10
Vero Beach, FL	VRB	12843	557.487	3058.363	17	10
Columbus, GA	CSG	93842	128.871[a]	3604.422	16	10
Charleston, SC	CHS	13880	590.422	3640.405	17	10
Macon, GA	MCN	3813	251.562	3620.929	17	10
Savannah, GA	SAV	3822	481.120	3554.985	17	10
Gainesville, FL	GNV	12816	377.390	3284.126	17	10
Augusta, GA	AGS	3820	410.024	3692.184	17	10
Athens, GA	AHN	13873	285.867	3758.824	17	10
Atlanta, GA	ATL	13874	181.588[a]	3728.434	16	10
Sea Surface Stations						
Venice, FL	VENF1	-	356.24	2995.05	17	-
Cape Canaveral, FL	41009	-	380.25	3152.87	17	-
Tampa West, FL	42036	-	156.41[a]	3158.73	16	-
Cedar Key, FL	CDRF1	-	302.52	3225.20	17	-
Cape San Blas, FL	CSBF1	-	77.89[a]	3290.18	16	-
Folly Island, SC	FBIS1	-	604.09	3616.38	17	-
Keaton Beach, FL	KTNF1	-	249.71	3301.66	17	-
Lake Worth, FL	LKWF1	-	596.57	2943.61	17	-
Savannah, GA	SVLS1	-	530.24	3534.94	17	-
St. Augustine, FL	SAUF1	-	474.89	3303.30	17	-
Upper Air Stations						
Ruskin, FL	TPA	12842	361.961	3064.616	17	NA
Waycross, GA	AYS	13861	366.674	3457.945	17	NA
Athens, GA	AHN	13873	285.866	3758.824	17	NA
Charleston, SC	CHS	13880	590.421	3640.405	17	NA
Cape Canaveral	XMR	12868	544.048	3150.459	17	NA
Miami –FIU	MFL	92803	562.181	2847.983	17	NA
Apalachicola, FL	AQQ	12832	109.807[a]	3295.816	16	NA
Tallahassee, FL	TLH	93805	176.407[a]	3365.835	16	NA
Jacksonville, FL	JAX	13889	432.808	3374.192	17	NA
Peachtree, GA	FFC	53819	155.637[a]	3696.207	16	NA

[a] Equivalent coordinate for Zone 17.

APPENDIX D

VOLUME SOURCE STACK PARAMETERS AND PM_{10} EMISSION RATES FOR THE MODELING OF FUGITIVE EMISSIONS FROM TRUCK TRAFFIC

TABLE D-1
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - 24-HOUR AVERAGE PM_{10} EMISSIONS INCREASE DUE TO THE PROJECT

Volume Source ID	Location X (m)	Location Y (m)	Usage By Types of Trucks [a] Type A	Type B	Type C	Type D	Emissions By Types of Trucks Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Total Emissions (g/s)
TRUCK PATH 1											
TP1VOL01	-443.96	567.68	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL02	-435.73	546.35	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL03	-427.50	525.02	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL04	-419.28	503.69	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL05	-411.05	482.36	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL06	-402.82	461.04	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL07	-394.59	439.71	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL08	-386.36	418.38	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL09	-378.13	397.05	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL10	-369.91	375.72	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL11	-361.68	354.39	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL12	-353.45	333.06	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL13	-344.40	314.49	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL14	-334.69	296.23	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL15	-324.99	277.96	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL16	-315.28	259.70	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL17	-305.58	241.43	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL18	-295.87	223.16	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL19	-286.17	204.90	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL20	-274.81	190.91	2	2	2	2	0.00044	0.00019	0.00009	-0.00044	0.00028
TP1VOL21	-262.07	177.93	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL22	-248.77	158.51	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL23	-236.58	138.22	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL24	-224.40	117.93	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL25	-212.21	97.64	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL26	-200.02	77.35	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL27	-187.83	57.06	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL28	-178.06	35.77	--	2	2	2	--	0.00019	0.00009	-0.00044	-0.00016
TP1VOL29	-170.10	13.90	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL30	-162.46	-8.09	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL31	-154.81	-30.07	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL32	-147.17	-52.06	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL33	-139.53	-74.04	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL34	-122.82	-75.65	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL35	-102.29	-69.99	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL36	-81.77	-64.33	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL37	-61.24	-58.67	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL38	-49.90	-62.36	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL39	-35.94	-65.34	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL40	-25.32	-54.07	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL41	-27.75	-35.16	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL42	-34.64	-16.10	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL43	-41.53	2.96	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL44	-48.42	22.03	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL45	-55.31	41.09	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL46	-75.10	46.85	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL47	-98.84	47.00	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL48	-122.59	47.16	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL49	-138.65	43.68	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL50	-154.38	38.18	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TP1VOL51	-170.11	32.67	--	1	1	1	--	0.00010	0.00004	-0.00022	-0.00008
TRUCK PATH 2											
TP2VOL01	-281.98	175.03	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL02	-298.33	170.76	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL03	-314.69	166.50	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL04	-331.04	162.23	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL05	-347.57	171.01	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL06	-362.62	185.45	2	--	2	--	0.00044	--	0.00009	--	0.00053

TABLE D-1
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - 24-HOUR AVERAGE PM_{10} EMISSIONS INCREASE DUE TO THE PROJECT

Volume Source ID	Location X (m)	Location Y (m)	Usage By Types of Trucks [a] Type A	Type B	Type C	Type D	Emissions By Types of Trucks Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Total Emissions (g/s)
TP2VOL07	-377.67	199.89	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL08	-392.72	214.33	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL09	-407.77	228.77	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL10	-422.82	243.22	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL11	-441.48	242.22	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL12	-461.45	235.05	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL13	-481.42	227.88	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL14	-501.39	220.70	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL15	-521.36	213.53	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL16	-522.98	197.38	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL17	-517.29	177.49	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL18	-511.61	157.61	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL19	-505.93	137.72	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL20	-500.25	117.83	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL21	-493.11	95.75	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL22	-485.71	73.76	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL23	-478.31	51.76	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL24	-470.91	29.77	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL25	-463.50	7.78	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL26	-456.10	-14.22	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL27	-448.70	-36.21	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL28	-441.30	-58.21	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL29	-433.90	-80.20	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL30	-426.50	-102.20	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL31	-419.09	-124.19	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL32	-411.69	-146.19	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL33	-404.29	-168.18	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL34	-396.89	-190.18	2	--	2	--	0.00044	--	0.00009	--	0.00053
TP2VOL35	-389.49	-212.17	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL36	-382.08	-234.16	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL37	-369.75	-242.93	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL38	-353.57	-247.72	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL39	-332.32	-243.42	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL40	-321.34	-225.42	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL41	-323.53	-208.96	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL42	-329.79	-192.58	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL43	-344.20	-190.74	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL44	-362.20	-196.27	1	--	1	--	0.00022	--	0.00004	--	0.00027
TP2VOL45	-380.20	-201.80	1	--	1	--	0.00022	--	0.00004	--	0.00027
		Total By Truck =	119	79	158	79	0.0264	0.0076	0.0069	-0.0174	
		Total PM_{10} Emissions per Truck (lb/day) [b]=	5.02	1.45	1.32	-3.32					
		Total Emissions per Truck (g/s)=	0.0264	0.0076	0.0069	-0.0174					

[a] Truck paths are represented by volume sources. If the trucks follow the same path on their return journey, volumes representing that path segment are used twice.

[b] See Table A-1 for calculations of emissions per truck type.

Note: Type of Trucks:
Type A - Trucks shipping out DAP/MAP.
Type B - Trucks delivering molten sulfur.
Type C - Trucks delivering molten sulfur and and carrying out DAP/MAP on their return journey.
Type D - Trucks delivering H2SO4.

TABLE D-2
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - FUTURE POTENTIAL 24-HOUR AVERAGE PM_{10} EMISSIONS

Volume Source ID	Location X (m)	Location Y (m)	Usage By Types of Trucks [a] Type A	Type B	Type C	Type D	Emissions By Types of Trucks Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Total Emissions (g/s)
TRUCK PATH 1											
TP1VOL01	-443.96	567.68	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL02	-435.73	546.35	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL03	-427.50	525.02	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL04	-419.28	503.69	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL05	-411.05	482.36	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL06	-402.82	461.04	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL07	-394.59	439.71	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL08	-386.36	418.38	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL09	-378.13	397.05	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL10	-369.91	375.72	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL11	-361.68	354.39	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL12	-353.45	333.06	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL13	-344.40	314.49	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL14	-334.69	296.23	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL15	-324.99	277.96	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL16	-315.28	259.70	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL17	-305.58	241.43	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL18	-295.87	223.16	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL19	-286.17	204.90	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL20	-274.81	190.91	2	2	2	2	0.00270	0.00278	0.00127	0.00023	0.00698
TP1VOL21	-262.07	177.93	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL22	-248.77	158.51	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL23	-236.58	138.22	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL24	-224.40	117.93	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL25	-212.21	97.64	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL26	-200.02	77.35	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL27	-187.83	57.06	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL28	-178.06	35.77	--	2	2	2	--	0.00278	0.00127	0.00023	0.00428
TP1VOL29	-170.10	13.90	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL30	-162.46	-8.09	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL31	-154.81	-30.07	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL32	-147.17	-52.06	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL33	-139.53	-74.04	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL34	-122.82	-75.65	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL35	-102.29	-69.99	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL36	-81.77	-64.33	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL37	-61.24	-58.67	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL38	-49.90	-62.36	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL39	-35.94	-65.34	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL40	-25.32	-54.07	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL41	-27.75	-35.16	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL42	-34.64	-16.10	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL43	-41.53	2.96	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL44	-48.42	22.03	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL45	-55.31	41.09	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL46	-75.10	46.85	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL47	-98.84	47.00	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL48	-122.59	47.16	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL49	-138.65	43.68	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL50	-154.38	38.18	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TP1VOL51	-170.11	32.67	--	1	1	1	--	0.00139	0.00063	0.00012	0.00214
TRUCK PATH 2											
TP2VOL01	-281.98	175.03	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL02	-298.33	170.76	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL03	-314.69	166.50	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL04	-331.04	162.23	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL05	-347.57	171.01	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL06	-362.62	185.45	2	--	2	--	0.00270	--	0.00127	--	0.00397

TABLE D-2
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - FUTURE POTENTIAL 24-HOUR AVERAGE PM_{10} EMISSIONS

Volume Source ID	Location X (m)	Location Y (m)	Usage By Types of Trucks [a] Type A	Type B	Type C	Type D	Emissions By Types of Trucks Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Total Emissions (g/s)
TP2VOL07	-377.67	199.89	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL08	-392.72	214.33	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL09	-407.77	228.77	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL10	-422.82	243.22	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL11	-441.48	242.22	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL12	-461.45	235.05	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL13	-481.42	227.88	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL14	-501.39	220.70	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL15	-521.36	213.53	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL16	-522.98	197.38	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL17	-517.29	177.49	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL18	-511.61	157.61	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL19	-505.93	137.72	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL20	-500.25	117.83	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL21	-493.11	95.75	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL22	-485.71	73.76	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL23	-478.31	51.76	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL24	-470.91	29.77	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL25	-463.50	7.78	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL26	-456.10	-14.22	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL27	-448.70	-36.21	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL28	-441.30	-58.21	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL29	-433.90	-80.20	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL30	-426.50	-102.20	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL31	-419.09	-124.19	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL32	-411.69	-146.19	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL33	-404.29	-168.18	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL34	-396.89	-190.18	2	--	2	--	0.00270	--	0.00127	--	0.00397
TP2VOL35	-389.49	-212.17	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL36	-382.08	-234.16	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL37	-369.75	-242.93	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL38	-353.57	-247.72	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL39	-332.32	-243.42	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL40	-321.34	-225.42	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL41	-323.53	-208.96	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL42	-329.79	-192.58	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL43	-344.20	-190.74	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL44	-362.20	-196.27	1	--	1	--	0.00135	--	0.00063	--	0.00198
TP2VOL45	-380.20	-201.80	1	--	1	--	0.00135	--	0.00063	--	0.00198
		Total By Truck =	119	79	158	79	0.1606	0.1099	0.1002	0.0091	
		Total PM_{10} Emissions per Truck (lb/day) [b]=	30.59	20.94	19.08	1.74					
		Total Emissions per Truck (g/s)=	0.1606	0.1099	0.1002	0.0091					

[a] Truck paths are represented by volume sources. If the trucks follow the same path on their return journey, volumes representing that path segment are used twice.

[b] See Table 6-7 for calculations of emissions per truck type.

Note: Type of Trucks:
Type A - Trucks shipping out DAP/MAP.
Type B - Trucks delivering molten sulfur.
Type C - Trucks delivering molten sulfur and and carrying out DAP/MAP on their return journey.
Type D - Trucks delivering H2SO4.

TABLE D-3
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - BASELINE (1974) 24-HOUR AVERAGE PM_{10} EMISSIONS

Volume Source ID	Location X (m)	Location Y (m)	Usage By Types of Trucks [a] Type A	Type B	Type C	Type D	Emissions By Types of Trucks Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Total Emissions (g/s)
TRUCK PATH 1											
TP1VOL01	-443.96	567.68	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL02	-435.73	546.35	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL03	-427.50	525.02	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL04	-419.28	503.69	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL05	-411.05	482.36	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL06	-402.82	461.04	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL07	-394.59	439.71	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL08	-386.36	418.38	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL09	-378.13	397.05	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL10	-369.91	375.72	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL11	-361.68	354.39	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL12	-353.45	333.06	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL13	-344.40	314.49	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL14	-334.69	296.23	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL15	-324.99	277.96	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL16	-315.28	259.70	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL17	-305.58	241.43	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL18	-295.87	223.16	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL19	-286.17	204.90	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL20	-274.81	190.91	2	2	2	2	0.00051	0.00069	0.00032	0.00000	0.00151
TP1VOL21	-262.07	177.93	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL22	-248.77	158.51	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL23	-236.58	138.22	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL24	-224.40	117.93	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL25	-212.21	97.64	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL26	-200.02	77.35	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL27	-187.83	57.06	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL28	-178.06	35.77	--	2	2	2	--	0.00069	0.00032	0.00000	0.00101
TP1VOL29	-170.10	13.90	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL30	-162.46	-8.09	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL31	-154.81	-30.07	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL32	-147.17	-52.06	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL33	-139.53	-74.04	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL34	-122.82	-75.65	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL35	-102.29	-69.99	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL36	-81.77	-64.33	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL37	-61.24	-58.67	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL38	-49.90	-62.36	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL39	-35.94	-65.34	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL40	-25.32	-54.07	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL41	-27.75	-35.16	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL42	-34.64	-16.10	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL43	-41.53	2.96	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL44	-48.42	22.03	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL45	-55.31	41.09	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL46	-75.10	46.85	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL47	-98.84	47.00	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL48	-122.59	47.16	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL49	-138.65	43.68	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL50	-154.38	38.18	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TP1VOL51	-170.11	32.67	--	1	1	1	--	0.00035	0.00016	0.00000	0.00050
TRUCK PATH 2											
TP2VOL01	-281.98	175.03	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL02	-298.33	170.76	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL03	-314.69	166.50	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL04	-331.04	162.23	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL05	-347.57	171.01	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL06	-362.62	185.45	2	--	2	--	0.00051	--	0.00032	--	0.00082

TABLE D-3
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - BASELINE (1974) 24-HOUR AVERAGE PM_{10} EMISSIONS

Volume Source ID	Location X (m)	Y (m)	Usage By Types of Trucks [a] Type A	Type B	Type C	Type D	Emissions By Types of Trucks Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Total Emissions (g/s)
TP2VOL07	-377.67	199.89	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL08	-392.72	214.33	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL09	-407.77	228.77	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL10	-422.82	243.22	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL11	-441.48	242.22	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL12	-461.45	235.05	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL13	-481.42	227.88	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL14	-501.39	220.70	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL15	-521.36	213.53	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL16	-522.98	197.38	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL17	-517.29	177.49	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL18	-511.61	157.61	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL19	-505.93	137.72	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL20	-500.25	117.83	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL21	-493.11	95.75	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL22	-485.71	73.76	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL23	-478.31	51.76	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL24	-470.91	29.77	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL25	-463.50	7.78	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL26	-456.10	-14.22	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL27	-448.70	-36.21	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL28	-441.30	-58.21	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL29	-433.90	-80.20	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL30	-426.50	-102.20	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL31	-419.09	-124.19	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL32	-411.69	-146.19	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL33	-404.29	-168.18	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL34	-396.89	-190.18	2	--	2	--	0.00051	--	0.00032	--	0.00082
TP2VOL35	-389.49	-212.17	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL36	-382.08	-234.16	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL37	-369.75	-242.93	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL38	-353.57	-247.72	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL39	-332.32	-243.42	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL40	-321.34	-225.42	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL41	-323.53	-208.96	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL42	-329.79	-192.58	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL43	-344.20	-190.74	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL44	-362.20	-196.27	1	--	1	--	0.00025	--	0.00016	--	0.00041
TP2VOL45	-380.20	-201.80	1	--	1	--	0.00025	--	0.00016	--	0.00041
		Total By Truck =	119	79	158	79	0.0301	0.0273	0.0249	0.0000	
		Total PM_{10} Emissions per Truck (lb/day) [b]=	5.73	5.21	4.75	0.00					
		Total Emissions per Truck (g/s)=	0.0301	0.0273	0.0249	0.0000					

[a] Truck paths are represented by volume sources. If the trucks follow the same path on their return journey, volumes representing that path segment are used twice.

[b] See Table 6-12 for calculations of emissions per truck type.

Note: Type of Trucks:
Type A - Trucks shipping out DAP/MAP.
Type B - Trucks delivering molten sulfur.
Type C - Trucks delivering molten sulfur and and carrying out DAP/MAP on their return journey.
Type D - Trucks delivering H2SO4.

TABLE D-4
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - FUTURE POTENTIAL ANNUAL AVERAGE PM_{10} EMISSIONS

Volume Source	Location		Usage By Types of Trucks [a]				Emissions By Types of Trucks				Total
ID	X (m)	Y (m)	Type A	Type B	Type C	Type D	Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Emissions (g/s)
TRUCK PATH 1											
TP1VOL01	-443.96	567.68	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL02	-435.73	546.35	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL03	-427.50	525.02	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL04	-419.28	503.69	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL05	-411.05	482.36	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL06	-402.82	461.04	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL07	-394.59	439.71	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL08	-386.36	418.38	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL09	-378.13	397.05	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL10	-369.91	375.72	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL11	-361.68	354.39	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL12	-353.45	333.06	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL13	-344.40	314.49	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL14	-334.69	296.23	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL15	-324.99	277.96	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL16	-315.28	259.70	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL17	-305.58	241.43	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL18	-295.87	223.16	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL19	-286.17	204.90	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL20	-274.81	190.91	2	2	2	2	0.00248	0.00255	0.00116	0.00021	0.00641
TP1VOL21	-262.07	177.93	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL22	-248.77	158.51	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL23	-236.58	138.22	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL24	-224.40	117.93	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL25	-212.21	97.64	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL26	-200.02	77.35	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL27	-187.83	57.06	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL28	-178.06	35.77	--	2	2	2	--	0.00255	0.00116	0.00021	0.00393
TP1VOL29	-170.10	13.90	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL30	-162.46	-8.09	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL31	-154.81	-30.07	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL32	-147.17	-52.06	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL33	-139.53	-74.04	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL34	-122.82	-75.65	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL35	-102.29	-69.99	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL36	-81.77	-64.33	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL37	-61.24	-58.67	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL38	-49.90	-62.36	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL39	-35.94	-65.34	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL40	-25.32	-54.07	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL41	-27.75	-35.16	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL42	-34.64	-16.10	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL43	-41.53	2.96	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL44	-48.42	22.03	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL45	-55.31	41.09	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL46	-75.10	46.85	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL47	-98.84	47.00	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL48	-122.59	47.16	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL49	-138.65	43.68	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL50	-154.38	38.18	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TP1VOL51	-170.11	32.67	--	1	1	1	--	0.00128	0.00058	0.00011	0.00197
TRUCK PATH 2											
TP2VOL01	-281.98	175.03	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL02	-298.33	170.76	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL03	-314.69	166.50	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL04	-331.04	162.23	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL05	-347.57	171.01	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL06	-362.62	185.45	2	--	2	--	0.00248	--	0.00116	--	0.00364

TABLE D-4
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - FUTURE POTENTIAL ANNUAL AVERAGE PM_{10} EMISSIONS

Volume Source ID	Location X (m)	Location Y (m)	Usage By Types of Trucks [a] Type A	Type B	Type C	Type D	Emissions By Types of Trucks Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Total Emissions (g/s)
TP2VOL07	-377.67	199.89	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL08	-392.72	214.33	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL09	-407.77	228.77	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL10	-422.82	243.22	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL11	-441.48	242.22	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL12	-461.45	235.05	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL13	-481.42	227.88	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL14	-501.39	220.70	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL15	-521.36	213.53	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL16	-522.98	197.38	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL17	-517.29	177.49	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL18	-511.61	157.61	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL19	-505.93	137.72	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL20	-500.25	117.83	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL21	-493.11	95.75	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL22	-485.71	73.76	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL23	-478.31	51.76	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL24	-470.91	29.77	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL25	-463.50	7.78	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL26	-456.10	-14.22	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL27	-448.70	-36.21	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL28	-441.30	-58.21	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL29	-433.90	-80.20	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL30	-426.50	-102.20	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL31	-419.09	-124.19	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL32	-411.69	-146.19	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL33	-404.29	-168.18	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL34	-396.89	-190.18	2	--	2	--	0.00248	--	0.00116	--	0.00364
TP2VOL35	-389.49	-212.17	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL36	-382.08	-234.16	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL37	-369.75	-242.93	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL38	-353.57	-247.72	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL39	-332.32	-243.42	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL40	-321.34	-225.42	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL41	-323.53	-208.96	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL42	-329.79	-192.58	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL43	-344.20	-190.74	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL44	-362.20	-196.27	1	--	1	--	0.00124	--	0.00058	--	0.00182
TP2VOL45	-380.20	-201.80	1	--	1	--	0.00124	--	0.00058	--	0.00182
		Total By Truck =	119	79	158	79	0.1474	0.1009	0.0920	0.0084	
		Total PM_{10} Emissions per Truck (TPY) [b]=	5.12	3.51	3.20	0.29					
		Total Emissions per Truck (g/s)=	0.1474	0.1009	0.0920	0.0084					

[a] Truck paths are represented by volume sources. If the trucks follow the same path on their return journey, volumes representing that path segment are used twice.

[b] See Table 6-8 for calculations of emissions per truck type.

Note: Type of Trucks:
- Type A - Trucks shipping out DAP/MAP.
- Type B - Trucks delivering molten sulfur.
- Type C - Trucks delivering molten sulfur and and carrying out DAP/MAP on their return journey.
- Type D - Trucks delivering H2SO4.

TABLE D-5
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - BASELINE (1974) ANNUAL AVERAGE PM_{10} EMISSIONS

Volume Source	Location		Usage By Types of Trucks [a]				Emissions By Types of Trucks				Total
ID	X (m)	Y (m)	Type A	Type B	Type C	Type D	Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Emissions (g/s)
TRUCK PATH 1											
TP1VOL01	-443.96	567.68	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL02	-435.73	546.35	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL03	-427.50	525.02	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL04	-419.28	503.69	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL05	-411.05	482.36	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL06	-402.82	461.04	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL07	-394.59	439.71	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL08	-386.36	418.38	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL09	-378.13	397.05	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL10	-369.91	375.72	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL11	-361.68	354.39	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL12	-353.45	333.06	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL13	-344.40	314.49	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL14	-334.69	296.23	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL15	-324.99	277.96	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL16	-315.28	259.70	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL17	-305.58	241.43	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL18	-295.87	223.16	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL19	-286.17	204.90	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL20	-274.81	190.91	2	2	2	2	0.00046	0.00064	0.00029	0.00000	0.00139
TP1VOL21	-262.07	177.93	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL22	-248.77	158.51	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL23	-236.58	138.22	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL24	-224.40	117.93	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL25	-212.21	97.64	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL26	-200.02	77.35	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL27	-187.83	57.06	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL28	-178.06	35.77	--	2	2	2	--	0.00064	0.00029	0.00000	0.00092
TP1VOL29	-170.10	13.90	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL30	-162.46	-8.09	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL31	-154.81	-30.07	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL32	-147.17	-52.06	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL33	-139.53	-74.04	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL34	-122.82	-75.65	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL35	-102.29	-69.99	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL36	-81.77	-64.33	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL37	-61.24	-58.67	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL38	-49.90	-62.36	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL39	-35.94	-65.34	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL40	-25.32	-54.07	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL41	-27.75	-35.16	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL42	-34.64	-16.10	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL43	-41.53	2.96	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL44	-48.42	22.03	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL45	-55.31	41.09	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL46	-75.10	46.85	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL47	-98.84	47.00	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL48	-122.59	47.16	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL49	-138.65	43.68	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL50	-154.38	38.18	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TP1VOL51	-170.11	32.67	--	1	1	1	--	0.00032	0.00014	0.00000	0.00046
TRUCK PATH 2											
TP2VOL01	-281.98	175.03	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL02	-298.33	170.76	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL03	-314.69	166.50	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL04	-331.04	162.23	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL05	-347.57	171.01	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL06	-362.62	185.45	2	--	2	--	0.00046	--	0.00029	--	0.00075

TABLE D-5
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - BASELINE (1974) ANNUAL AVERAGE PM_{10} EMISSIONS

Volume Source	Location		Usage By Types of Trucks [a]				Emissions By Types of Trucks				Total
ID	X (m)	Y (m)	Type A	Type B	Type C	Type D	Type A (g/s)	Type B (g/s)	Type C (g/s)	Type D (g/s)	Emissions (g/s)
TP2VOL07	-377.67	199.89	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL08	-392.72	214.33	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL09	-407.77	228.77	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL10	-422.82	243.22	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL11	-441.48	242.22	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL12	-461.45	235.05	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL13	-481.42	227.88	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL14	-501.39	220.70	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL15	-521.36	213.53	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL16	-522.98	197.38	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL17	-517.29	177.49	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL18	-511.61	157.61	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL19	-505.93	137.72	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL20	-500.25	117.83	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL21	-493.11	95.75	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL22	-485.71	73.76	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL23	-478.31	51.76	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL24	-470.91	29.77	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL25	-463.50	7.78	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL26	-456.10	-14.22	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL27	-448.70	-36.21	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL28	-441.30	-58.21	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL29	-433.90	-80.20	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL30	-426.50	-102.20	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL31	-419.09	-124.19	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL32	-411.69	-146.19	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL33	-404.29	-168.18	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL34	-396.89	-190.18	2	--	2	--	0.00046	--	0.00029	--	0.00075
TP2VOL35	-389.49	-212.17	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL36	-382.08	-234.16	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL37	-369.75	-242.93	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL38	-353.57	-247.72	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL39	-332.32	-243.42	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL40	-321.34	-225.42	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL41	-323.53	-208.96	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL42	-329.79	-192.58	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL43	-344.20	-190.74	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL44	-362.20	-196.27	1	--	1	--	0.00023	--	0.00014	--	0.00038
TP2VOL45	-380.20	-201.80	1	--	1	--	0.00023	--	0.00014	--	0.00038
		Total By Truck =	119	79	158	79	0.0276	0.0251	0.0229	0.0000	
		Total PM_{10} Emissions per Truck (TPY) [b]=	0.96	0.87	0.80	0.00					
		Total Emissions per Truck (g/s)=	0.0276	0.0251	0.0229	0.0000					

[a] Truck paths are represented by volume sources. If the trucks follow the same path on their return journey, volumes representing that used twice.

[b] See Table 6-13 for calculations of emissions per truck type.

Note: Type of Trucks:
- Type A - Trucks shipping out DAP/MAP.
- Type B - Trucks delivering molten sulfur.
- Type C - Trucks delivering molten sulfur and and carrying out DAP/MAP on their return journey.
- Type D - Trucks delivering H2SO4.

TABLE D-6
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - STACK PARAMETERS

Volume Source ID	Location X (m)	Location Y (m)	Release height (ft)	Release height (m)	Center to Center Distance (ft)	Center to Center Distance (m)	Lateral Dimension (σ_y) (ft)	Lateral Dimension (σ_y) (m)	Vertical Dimension (σ_z) (ft)	Vertical Dimension (σ_z) (m)
TRUCK PATH 1										
TP1VOL01	-443.96	567.68	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL02	-435.73	546.35	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL03	-427.50	525.02	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL04	-419.28	503.69	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL05	-411.05	482.36	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL06	-402.82	461.04	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL07	-394.59	439.71	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL08	-386.36	418.38	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL09	-378.13	397.05	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL10	-369.91	375.72	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL11	-361.68	354.39	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL12	-353.45	333.06	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL13	-344.40	314.49	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL14	-334.69	296.23	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL15	-324.99	277.96	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL16	-315.28	259.70	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL17	-305.58	241.43	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL18	-295.87	223.16	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL19	-286.17	204.90	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL20	-274.81	190.91	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL21	-262.07	177.93	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL22	-248.77	158.51	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL23	-236.58	138.22	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL24	-224.40	117.93	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL25	-212.21	97.64	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL26	-200.02	77.35	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL27	-187.83	57.06	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL28	-178.06	35.77	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL29	-170.10	13.90	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL30	-162.46	-8.09	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL31	-154.81	-30.07	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL32	-147.17	-52.06	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL33	-139.53	-74.04	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL34	-122.82	-75.65	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL35	-102.29	-69.99	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL36	-81.77	-64.33	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL37	-61.24	-58.67	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL38	-49.90	-62.36	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL39	-35.94	-65.34	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL40	-25.32	-54.07	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL41	-27.75	-35.16	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL42	-34.64	-16.10	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL43	-41.53	2.96	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL44	-48.42	22.03	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL45	-55.31	41.09	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL46	-75.10	46.85	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL47	-98.84	47.00	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL48	-122.59	47.16	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL49	-138.65	43.68	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL50	-154.38	38.18	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP1VOL51	-170.11	32.67	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TRUCK PATH 2										
TP2VOL01	-273.07	180.74	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL02	-283.72	175.06	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL03	-299.03	170.05	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13

TABLE D-6
VOLUME SOURCE EMISSION RATES REPRESENTING FUGITIVE TRUCK TRAFFIC EMISSIONS - STACK PARAMETERS

Volume Source	Location		Release height		Center to Center Distance		Lateral Dimension (σ_y)		Vertical Dimension (σ_z)	
ID	X (m)	Y (m)	(ft)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)
TP2VOL04	-314.91	166.59	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL05	-330.80	163.13	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL06	-347.52	171.92	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL07	-362.77	186.08	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL08	-378.03	200.23	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL09	-393.28	214.39	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL10	-408.54	228.54	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL11	-423.79	242.70	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL12	-440.93	242.34	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL13	-459.33	235.92	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL14	-477.73	229.51	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL15	-496.13	223.09	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL16	-514.53	216.68	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL17	-523.48	208.65	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL18	-521.15	187.41	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL19	-514.11	165.75	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL20	-507.07	144.08	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL21	-500.03	122.42	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL22	-493.00	100.76	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL23	-485.96	79.09	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL24	-478.92	57.43	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL25	-471.88	35.76	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL26	-464.85	14.10	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL27	-457.81	-7.57	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL28	-450.77	-29.23	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL29	-443.73	-50.89	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL30	-437.02	-71.15	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL31	-430.26	-91.38	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL32	-423.49	-111.62	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL33	-416.73	-131.85	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL34	-409.97	-152.09	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL35	-403.20	-172.32	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL36	-396.44	-192.56	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL37	-389.68	-212.79	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL38	-382.91	-233.03	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL39	-374.53	-241.39	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL40	-362.50	-246.34	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL41	-340.75	-247.25	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL42	-330.97	-241.46	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL43	-323.66	-231.32	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL44	-322.60	-209.27	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13
TP2VOL45	-328.12	-189.67	7.5	2.29	78.7	24	36.62	11.16	6.98	2.13

Note: Type of Trucks:
Type A - Trucks shipping out DAP/MAP.
Type B - Trucks delivering molten sulfur.
Type C - Trucks delivering molten sulfur and and carrying out DAP/MAP on their return journey.
Type D - Trucks delivering H_2SO_4.

APPENDIX E

BPIP INPUT AND OUTPUT FILES WITH
SOURCE, BUILDINGS, AND RECEPTOR LOCATIONS

BUILDING DIMENSIONS
(BPIP INPUT FILE)

```
'CF Industries - A SAP AND A&B PAP PSD'
'P'
'METERS'  1.00000000
'UTMY'  0.0000
20
'UCONTROL'  1          0.000
    4          6.710
            -221.808        -352.369
            -209.535        -348.143
            -196.135        -387.060
            -208.408        -391.286
'URCLAR2'  1          0.000
    8          6.890
            -176.826        -360.901
            -167.361        -361.478
            -161.164        -368.656
            -161.846        -377.810
            -168.919        -384.319
            -178.178        -383.325
            -184.582        -376.564
            -183.693        -366.993
'URCLAR1'  1          0.000
    8          6.890
            -187.456        -329.413
            -177.949        -329.876
            -171.907        -336.860
            -172.379        -346.371
            -179.657        -352.512
            -188.874        -351.941
            -195.006        -344.659
            -194.444        -335.445
'USTOR1'  1          0.000
    8         20.120
            -236.209        -292.908
            -230.521        -293.282
            -226.775        -297.579
            -227.149        -303.267
            -231.446        -307.013
            -237.431        -306.739
            -240.880        -302.342
            -240.803        -296.754
'USTOR2'  1          0.000
    8         20.120
            -230.988        -309.366
            -225.174        -309.735
            -221.056        -314.023
            -221.629        -320.233
            -226.026        -324.061
            -231.833        -323.679
            -236.054        -319.088
            -235.378        -313.181
'ROPWH'  1          0.000
    4         18.290
            -304.698        -148.461
            -276.257        -138.668
            -236.573        -253.917
            -265.014        -263.710
'ASHIPWH'  1          0.000
    4         20.420
            -429.574         -61.649
            -392.160         -48.766
            -348.459        -175.683
            -385.873        -188.566
'BSHIPWH'  1          0.000
    4         26.520
```

```
                -448.056          57.416
                -402.265          73.183
                -368.868         -23.808
                -414.659         -39.575
'XYZGRAN'  1             0.000
    4            38.710
                -376.900          79.400
                -336.452          93.327
                -308.930          13.399
                -349.378          -0.529
'ADAPGRAN'  1             0.000
    4            28.350
                -313.027         -90.130
                -278.307         -78.175
                -273.258         -92.839
                -307.978        -104.794
'BPAPBELT'  1             0.000
    4            29.260
                -293.506         115.281
                -284.230         118.475
                -272.067          83.150
                -281.343          79.956
'BPAPBYRD'  1             0.000
    4            26.360
                -277.629         100.926
                -254.587         108.860
                -246.753          86.109
                -269.795          78.175
'APAPBYRD'  1             0.000
    4            21.640
                -218.898         -18.586
                -197.350         -11.166
                -189.930         -32.715
                -211.478         -40.135
'APAPBELT'  1             0.000
    4            19.810
                -185.661         -18.055
                -159.026          -8.884
                -155.728         -18.462
                -182.363         -27.633
'ALOADING'  1             0.000  '"A" Railcar & Truck Loading'
    4            12.200
                -348.569         -89.772
                -336.892         -85.751
                -330.296        -104.907
                -341.973        -108.928
'UBLTFILT'  1             0.000
    4            22.860
                -197.731        -287.107
                -183.965        -282.367
                -174.999        -308.406
                -188.765        -313.146
'TANK022'  1             0.000
    8             9.140
                 -23.086          36.017
                 -17.484          35.555
                 -13.644          31.405
                 -14.160          25.711
                 -18.335          21.948
                 -24.004          22.387
                 -27.799          26.626
                 -27.328          32.231
'COGEN'  1             0.000
    4            20.120
                 -49.699         130.150
```

```
              -32.727        135.994
              -18.239         93.919
              -35.211         88.075
'BLD_19'  1             0.000
    4          29.260
             -429.900        -48.000
             -434.256        -35.349
             -418.182        -29.814
             -413.826        -42.465
'ASCREEN'  1            0.000  'A Shipping Screening Building'
    4          30.480
             -361.600       -109.900
             -364.856       -100.445
             -353.888        -96.668
             -350.632       -106.123
17
'ADMP'    0.000          24.380         -302.200         -112.200
'ZDMP'    0.000          41.450         -317.900           45.900
'YDMP'    0.000          41.450         -327.600           74.700
'XDMP'    0.000          41.450         -341.000           94.600
'ASBAG'   0.000          27.430         -351.700         -101.300
'BSBAG'   0.000          10.360         -409.500          -41.000  '"B" Shipping Baghouse'
'PAPA'    0.000          25.900         -203.200           14.100  '"A" Phosphoric Acid Plant'
'PAPB'    0.000          36.300         -268.100           77.700  '"B" Phosphoric Acid Plant'
'SAPA'    0.000          33.530          -74.500           17.800  '"A" Sulfuric Acid Plant'
'JSMTB'   0.000           7.620         -123.560           26.170  'Johnson Scotch Boiler'
'SAPB'    0.000          33.530          -52.300          -47.870  '"B" SAP'
'SAPC'    0.000          60.660            0.000            0.000  '"C" SAP'
'SAPD'    0.000          60.660           53.120           17.940  '"D" SAP'
'MSTK22'  0.000       11.580         -20.500          29.090  'Molten Sulfur Storage Tank 22'
'MSTPTA'  0.000        3.660         -52.340          10.780  'Molten Sulfur Storage Tank 33'
'MSTPTB'  0.000        3.660   -38.390         -29.110  'Molten Sulfur Storage - Truck Pit B'
'PACS'    0.000       24.380  -204.000        -340.000  'Phosphoric Acid Cleanup System'
 'D:\PROJECTS\CF-IND\bpip\CF1.bpv'
'D:\PROJECTS\cargill\greenbay\GB1.isc'
'P'
'METERS'  1.00000000
'UTMN'  0.0000
14
'DAPSTORE'  1             0.000  'DAP/MAP STORAGE'
    4          20.730
                0.000         46.640
              109.730         46.640
              109.730          0.000
               -0.000          0.000
'SHIPLOW'  1            0.000  'SHIPPING BUILDING - LOWER LEVEL'
    4          24.380
               67.090         77.750
               91.470         77.750
               91.470         63.840
               67.090         63.840
'SHIPHIGH'  1             0.000  'SHIPPING BUILDING - HIGH TIER'
    4          34.140
               67.090         63.840
               91.470         63.840
               91.470         52.740
               67.090         52.740
'DAPMAPHI'  1             0.000  'DAP/MAP PLANT UPPER LEVEL'
    4          32.310
              146.650         36.630
              161.290         36.630
              161.290          6.980
              146.650          6.980
'DAPMAPLO'  1             0.000  'DAP/MAP PLANT LOWER LEVEL'
    4          27.430
```

```
                113.950           36.630
                146.650           36.630
                146.650            6.980
                113.950            6.980
'PHOSNO1'  1              0.000  'PHOSPHATE PLANT NO 1'
    8            22.860
                105.530          132.300
                105.530          199.780
                117.730          199.780
                117.730          193.060
                130.180          193.060
                130.180          139.010
                117.730          139.010
                117.730          132.300
'PHOSNO2'  1              0.000  'PHOSPHORIC ACID PLANT NO 2'
    4            22.560
                 92.960          261.150
                115.540          261.150
                115.540          239.350
                 92.960          239.350
'UNGNDTNK'  1             0.000  'UNGROUND TANK COLUMN'
    4            24.690
                 42.200          181.840
                 52.820          181.840
                 52.820          128.510
                 42.200          128.510
'GNDROCKT'  1             0.000  'GROUND ROCK TANK'
    8             9.140
                 64.040          256.520
                 67.820          254.930
                 69.410          251.150
                 67.820          247.370
                 64.040          245.780
                 60.380          247.370
                 58.790          251.150
                 60.380          254.930
'PHSPAD2A'  1             0.000  'PHOS ACID PAD NO 2 LEFT TANK'
    8             9.140
                128.592          303.749
                134.985          300.983
                137.633          294.590
                134.985          288.198
                128.592          285.550
                122.210          288.198
                119.434          294.590
                122.210          300.983
'PHSPAD2B'  1             0.000  'PHOS ACID PAD NO 2 RIGHT TANK'
   32             9.140
                149.824          303.740
                148.039          303.564
                146.322          303.043
                144.740          302.198
                143.354          301.060
                142.216          299.673
                141.370          298.092
                140.850          296.375
                140.674          294.590
                140.850          292.805
                141.370          291.088
                142.216          289.507
                143.354          288.120
                144.740          286.982
                146.322          286.137
                148.039          285.616
                149.824          285.440
```

```
                 151.609          285.616
                 153.325          286.137
                 154.907          286.982
                 156.294          288.120
                 157.432          289.507
                 158.277          291.088
                 158.798          292.805
                 158.974          294.590
                 158.798          296.375
                 158.277          298.092
                 157.432          299.673
                 156.294          301.060
                 154.907          302.198
                 153.325          303.043
                 151.609          303.564
'BLENDTK9'  1              0.000  'PHOS ACID BLEND TANK NO 9'
    8              9.144
                 223.770          165.840
                 230.113          163.163
                 232.910          156.700
                 230.113          150.237
                 223.770          147.560
                 217.307          150.237
                 214.630          156.700
                 217.307          163.163
'PHSPAD1B'  1              0.000  'PHOS ACID PAD 1 RIGHT TANK'
    8              9.144
                 141.890          128.150
                 146.160          126.320
                 147.990          122.050
                 146.160          117.900
                 141.890          115.950
                 137.740          117.900
                 135.790          122.050
                 137.740          126.320
'PHSPAD1A'  1              0.000  'PHOS ACID PAD 1 LEFT TANK'
    8              9.144
                 128.101          128.419
                 132.352          126.422
                 134.360          122.171
                 132.352          117.797
                 128.101          115.922
                 123.727          117.797
                 121.852          122.171
                 123.727          126.422
18
'DAPSHIP'      0.000       40.100        95.400        60.670  'STORAGE AND SHIPPING'
'NAPFRG'       0.000       35.510       132.010        39.800  'NORTH AP FERTILIZER R/G
STACK'
'NAPFMS'       0.000       39.010       159.220        38.950  'NORTH AP FERTILIZER MAIN
STACK'
'SAPFA'        0.000       39.620       127.130         2.460  'SOUTH AP FERTILIZER STACK
A'
'SAPFB'        0.000       39.470       159.340         3.320  'SOUTH AP FERTILIZER STACK
B'
'NPHOS1'       0.000       30.630       121.030       196.850  'PHOS ACID PLANT NO 1 NORTH
STACK'
'SPHOS1'       0.000       30.630       123.710       136.200  'PHOS ACID PLANT NO 1 SOUTH
STACK'
'PHOS2'        0.000       33.530        74.660       258.590  'PHOS ACID NO 2 PLANT STACK'
'GSAP'         0.000       20.120       144.820       271.280  'GREEN SUPER ACID PLANT'
'SATHEAT'      0.000       29.000       144.330       243.830  'SUPER ACID THERMINOL
HEATER'
'SAP4'         0.000       30.630       225.110         292.880  'SULFURIC ACID PLANT NO 4'
'SAP3'         0.000        30.630      225.240         274.330  'SULFURIC ACID PLANT NO 3'
```

'SAP5'	0.000	45.720	365.440	317.160	'SULFURIC ACID PLANT NO 5'
'BLENDTNK'	0.000	6.860	215.600	164.020	'BLEND TANKS NO 9 AND 10 VENT'
'STORPAD1'	0.000	18.080	135.060	122.170	'PHOS ACID STORAGE TANKS PAD NO 1 (R-R)'
'STORPAD2'	0.000	19.130	139.330	294.710	'PHOS ACID STORAGE TANKS PAD NO 2 (N-N)'
'SAP6'	0.000	45.720	467.820	210.880	'SULFURIC ACID PLANT NO 6'
'RAILPIT'	0.000	3.350	-220.100	2.260	'RAILPIT UNLOAD STACK'

BUILDING DIMENSIONS
(BPIP OUTPUT FILE)

CF Industries - A SAP AND A&B PAP PSD

BPIP (Dated: 04274)

DATE : 4/ 3/2006
TIME : 14:51:23
CF Industries - A SAP AND A&B PAP PSD

============================
BPIP PROCESSING INFORMATION:
============================

The P flag has been set for preparing downwash related data for a model run utilizing the PRIME algorithm.

Inputs entered in METERS will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

The UTMP variable is set to UTMY. The input is assumed to be in UTM coordinates. BPIP will move the UTM origin to the first pair of UTM coordinates read. The UTM coordinates of the new origin will be subtracted from all the other UTM coordinates entered to form this new local coordinate system.

Plant north is set to 0.00 degrees with respect to True North.

CF Industries - A SAP AND A&B PAP PSD

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
ADMP	24.38	0.00	96.77	96.77
ZDMP	41.45	0.00	96.77	96.77
YDMP	41.45	0.00	96.77	96.77
XDMP	41.45	0.00	96.77	96.77
ASBAG	27.43	0.00	96.77	96.77
BSBAG	10.36	0.00	96.77	96.77
PAPA	25.90	0.00	96.77	96.77
PAPB	36.30	0.00	96.77	96.77
SAPA	33.53	0.00	50.30	65.00
JSMTB	7.62	0.00	96.77	96.77
SAPB	33.53	N/A	0.00	65.00
SAPC	60.66	0.00	50.30	65.00
SAPD	60.66	N/A	0.00	65.00
MSTK22	11.58	0.00	50.30	65.00
MSTPTA	3.66	0.00	50.30	65.00
MSTPTB	3.66	N/A	0.00	65.00
PACS	24.38	0.00	57.15	65.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 04274)

DATE : 4/ 3/2006
TIME : 14:51:23

CF Industries - A SAP AND A&B PAP PSD

BPIP output is in meters

SO	BUILDHGT	ADMP	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMP	20.42	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMP	28.35	28.35	38.71	38.71	38.71	38.71
SO	BUILDHGT	ADMP	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMP	20.42	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMP	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDWID	ADMP	39.64	38.30	35.80	32.21	27.64	22.23
SO	BUILDWID	ADMP	134.90	21.06	26.62	31.37	35.16	37.89
SO	BUILDWID	ADMP	39.46	39.84	58.12	44.25	55.48	67.97
SO	BUILDWID	ADMP	39.64	38.30	35.80	32.21	27.64	22.23
SO	BUILDWID	ADMP	253.11	21.06	26.62	31.37	35.16	37.89
SO	BUILDWID	ADMP	39.46	39.84	39.01	36.99	38.69	39.77
SO	BUILDLEN	ADMP	31.37	35.16	37.89	39.46	39.84	39.01
SO	BUILDLEN	ADMP	41.91	38.69	39.77	39.64	38.30	35.80
SO	BUILDLEN	ADMP	32.21	27.64	91.14	85.27	90.19	93.86
SO	BUILDLEN	ADMP	31.37	35.16	37.89	39.46	39.84	39.01
SO	BUILDLEN	ADMP	74.12	38.69	39.77	39.64	38.30	35.80
SO	BUILDLEN	ADMP	32.21	27.64	22.23	16.15	21.06	26.62
SO	XBADJ	ADMP	6.29	4.98	3.52	1.96	0.33	-1.30
SO	XBADJ	ADMP	-104.75	-6.83	-10.83	-14.49	-17.72	-20.41
SO	XBADJ	ADMP	-22.48	-23.87	-203.28	-205.59	-208.35	-205.53
SO	XBADJ	ADMP	-37.66	-40.14	-41.41	-41.42	-40.17	-37.70
SO	XBADJ	ADMP	30.63	-31.86	-28.94	-25.14	-20.57	-15.38
SO	XBADJ	ADMP	-9.73	-3.77	2.30	8.29	8.30	7.41
SO	YBADJ	ADMP	-5.32	-1.43	2.51	6.38	10.05	13.41
SO	YBADJ	ADMP	23.62	18.83	20.72	21.97	22.56	22.47
SO	YBADJ	ADMP	21.69	20.25	44.04	15.98	-12.56	-40.72
SO	YBADJ	ADMP	5.32	1.43	-2.51	-6.38	-10.05	-13.41
SO	YBADJ	ADMP	-82.72	-18.83	-20.72	-21.97	-22.56	-22.47
SO	YBADJ	ADMP	-21.69	-20.25	-18.20	-15.60	-12.52	-9.06

SO	BUILDHGT	ZDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	ZDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	ZDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	ZDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDWID	ZDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	ZDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	ZDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDLEN	ZDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	ZDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	ZDMP	94.49	94.25	91.14	85.27	90.19	93.86

SO	BUILDLEN	ZDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	ZDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	ZDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	XBADJ	ZDMP	-51.19	-54.40	-55.95	-55.80	-53.96	-50.48
SO	XBADJ	ZDMP	-45.46	-52.29	-59.00	-63.92	-66.90	-67.85
SO	XBADJ	ZDMP	-66.73	-63.59	-58.51	-51.66	-49.93	-47.43
SO	XBADJ	ZDMP	-43.48	-38.22	-31.80	-24.41	-16.27	-7.65
SO	XBADJ	ZDMP	1.21	-3.19	-8.97	-14.48	-19.55	-24.02
SO	XBADJ	ZDMP	-27.76	-30.66	-32.63	-33.61	-40.26	-46.43
SO	YBADJ	ZDMP	24.72	23.68	21.91	19.48	16.46	12.94
SO	YBADJ	ZDMP	9.02	4.84	0.50	-3.85	-8.09	-12.08
SO	YBADJ	ZDMP	-15.70	-18.84	-21.41	-23.34	-24.55	-25.01
SO	YBADJ	ZDMP	-24.72	-23.68	-21.91	-19.48	-16.46	-12.94
SO	YBADJ	ZDMP	-9.02	-4.84	-0.50	3.85	8.09	12.08
SO	YBADJ	ZDMP	15.70	18.84	21.41	23.34	24.55	25.01

SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	YDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	YDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	YDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDWID	YDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	YDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	YDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDLEN	YDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	YDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	YDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	BUILDLEN	YDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	YDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	YDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	XBADJ	YDMP	-77.87	-78.14	-76.04	-71.63	-65.04	-56.47
SO	XBADJ	YDMP	-46.19	-47.73	-49.30	-49.37	-47.93	-45.05
SO	XBADJ	YDMP	-40.79	-35.29	-28.72	-21.28	-19.88	-18.63
SO	XBADJ	YDMP	-16.81	-14.48	-11.71	-8.58	-5.19	-1.65
SO	XBADJ	YDMP	1.95	-7.74	-18.67	-29.03	-38.51	-46.82
SO	XBADJ	YDMP	-53.71	-58.96	-62.42	-63.99	-70.30	-75.23
SO	YBADJ	YDMP	10.17	4.71	-0.89	-6.46	-11.84	-16.85
SO	YBADJ	YDMP	-21.36	-25.21	-28.30	-30.53	-31.83	-32.17
SO	YBADJ	YDMP	-31.52	-29.92	-27.41	-24.07	-20.00	-15.31
SO	YBADJ	YDMP	-10.17	-4.71	0.89	6.46	11.84	16.85
SO	YBADJ	YDMP	21.36	25.21	28.30	30.53	31.83	32.17
SO	YBADJ	YDMP	31.52	29.92	27.41	24.07	20.00	15.31

SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	XDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	XDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	XDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDWID	XDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	XDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	XDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDLEN	XDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	XDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	XDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	BUILDLEN	XDMP	94.67	92.62	87.74	80.21	70.23	58.12

SO	BUILDLEN	XDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	XDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	XBADJ	XDMP	-95.14	-92.26	-86.57	-78.26	-67.57	-54.82
SO	XBADJ	XDMP	-40.41	-37.99	-35.90	-32.72	-28.54	-23.49
SO	XBADJ	XDMP	-17.73	-11.43	-4.79	2.00	2.04	1.27
SO	XBADJ	XDMP	0.46	-0.36	-1.17	-1.95	-2.67	-3.30
SO	XBADJ	XDMP	-3.84	-17.48	-32.07	-45.68	-57.91	-68.37
SO	XBADJ	XDMP	-76.76	-82.82	-86.36	-87.27	-92.23	-95.13
SO	YBADJ	XDMP	-6.48	-14.69	-22.44	-29.52	-35.69	-40.79
SO	YBADJ	XDMP	-44.64	-47.14	-48.20	-47.80	-45.95	-42.70
SO	YBADJ	XDMP	-38.16	-32.45	-25.76	-18.29	-10.26	-1.91
SO	YBADJ	XDMP	6.48	14.69	22.44	29.52	35.69	40.79
SO	YBADJ	XDMP	44.64	47.14	48.20	47.80	45.95	42.70
SO	YBADJ	XDMP	38.16	32.45	25.76	18.29	10.26	1.91

SO	BUILDHGT	ASBAG	26.52	26.52	30.48	30.48	20.42	28.35
SO	BUILDHGT	ASBAG	20.42	28.35	28.35	28.35	28.35	26.52
SO	BUILDHGT	ASBAG	26.52	26.52	26.52	26.52	38.71	38.71
SO	BUILDHGT	ASBAG	38.71	38.71	30.48	30.48	20.42	28.35
SO	BUILDHGT	ASBAG	28.35	28.35	28.35	28.35	28.35	26.52
SO	BUILDHGT	ASBAG	26.52	30.48	20.42	20.42	20.42	30.48
SO	BUILDWID	ASBAG	144.66	145.79	15.16	14.55	139.49	22.23
SO	BUILDWID	ASBAG	134.90	21.06	26.62	31.37	35.16	118.77
SO	BUILDWID	ASBAG	94.34	81.97	67.11	50.21	55.48	67.97
SO	BUILDWID	ASBAG	78.40	86.44	15.16	14.55	139.49	22.23
SO	BUILDWID	ASBAG	16.15	21.06	26.62	31.37	35.16	169.12
SO	BUILDWID	ASBAG	152.08	14.41	64.46	61.49	60.08	14.22
SO	BUILDLEN	ASBAG	155.41	164.77	15.32	15.09	85.05	39.01
SO	BUILDLEN	ASBAG	41.91	38.69	39.77	39.64	38.30	109.19
SO	BUILDLEN	ASBAG	112.87	113.12	109.94	103.41	90.19	93.86
SO	BUILDLEN	ASBAG	94.67	92.62	15.32	15.09	85.05	39.01
SO	BUILDLEN	ASBAG	36.99	38.69	39.77	39.64	38.30	142.50
SO	BUILDLEN	ASBAG	134.87	13.49	139.31	134.90	138.77	13.23
SO	XBADJ	ASBAG	38.91	23.34	-12.40	-12.95	-82.27	36.12
SO	XBADJ	ASBAG	-61.96	40.03	38.67	36.15	32.52	-162.80
SO	XBADJ	ASBAG	-175.83	-183.52	-185.63	-182.10	-189.02	-194.63
SO	XBADJ	ASBAG	-194.32	-188.10	-2.92	-2.14	-2.77	-75.12
SO	XBADJ	ASBAG	-76.88	-78.72	-78.44	-75.78	-70.82	20.31
SO	XBADJ	ASBAG	40.96	-4.38	-66.04	-71.01	-80.01	-8.60
SO	YBADJ	ASBAG	50.12	71.93	4.24	3.35	10.68	-20.78
SO	YBADJ	ASBAG	-3.56	-0.50	9.82	19.83	29.25	66.44
SO	YBADJ	ASBAG	53.99	32.43	9.89	-12.94	34.30	8.78
SO	YBADJ	ASBAG	-17.00	-42.26	-4.24	-3.35	-10.68	20.78
SO	YBADJ	ASBAG	10.80	0.50	-9.82	-19.83	-29.25	-91.62
SO	YBADJ	ASBAG	-82.85	5.91	41.00	31.22	39.77	6.04

SO	BUILDHGT	BSBAG	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	BSBAG	38.71	26.52	26.52	26.52	26.52	26.52
SO	BUILDHGT	BSBAG	26.52	26.52	26.52	26.52	26.52	26.52
SO	BUILDHGT	BSBAG	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	BSBAG	38.71	26.52	26.52	28.35	28.35	28.35
SO	BUILDHGT	BSBAG	26.52	26.52	26.52	26.52	26.52	26.52
SO	BUILDWID	BSBAG	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	BSBAG	85.27	108.89	112.76	113.20	110.20	103.85
SO	BUILDWID	BSBAG	94.34	81.97	67.11	50.21	63.88	79.19
SO	BUILDWID	BSBAG	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	BSBAG	85.27	108.89	112.76	31.37	35.16	37.89
SO	BUILDWID	BSBAG	94.34	81.97	67.11	50.21	63.88	79.19
SO	BUILDLEN	BSBAG	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	BSBAG	44.25	63.88	79.19	92.09	102.19	109.19
SO	BUILDLEN	BSBAG	112.87	113.12	109.94	103.41	108.89	112.76
SO	BUILDLEN	BSBAG	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	BSBAG	44.25	63.88	79.19	39.64	38.30	35.80

SO	BUILDLEN	BSBAG	112.87	113.12	109.94	103.41	108.89	112.76
SO	XBADJ	BSBAG	50.30	58.59	65.11	69.65	72.07	72.30
SO	XBADJ	BSBAG	70.34	-20.88	-38.56	-55.06	-69.89	-82.60
SO	XBADJ	BSBAG	-92.80	-100.17	-104.51	-105.67	-111.19	-114.18
SO	XBADJ	BSBAG	-144.97	-151.21	-152.85	-149.85	-142.30	-130.42
SO	XBADJ	BSBAG	-114.59	-43.00	-40.63	-143.17	-145.76	-143.91
SO	XBADJ	BSBAG	-20.08	-12.95	-5.43	2.26	2.30	1.43
SO	YBADJ	BSBAG	-50.40	-32.68	-13.96	5.17	24.15	42.40
SO	YBADJ	BSBAG	59.36	56.75	57.80	57.11	54.67	50.58
SO	YBADJ	BSBAG	44.95	37.95	29.80	20.75	11.06	1.04
SO	YBADJ	BSBAG	50.40	32.68	13.96	-5.17	-24.15	-42.40
SO	YBADJ	BSBAG	-59.36	-56.75	-57.80	29.51	7.64	-14.46
SO	YBADJ	BSBAG	-44.95	-37.95	-29.80	-20.75	-11.06	-1.04

SO	BUILDHGT	PAPA	21.64	21.64	28.35	28.35	28.35	0.00
SO	BUILDHGT	PAPA	0.00	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	PAPA	29.26	26.36	26.36	21.64	21.64	21.64
SO	BUILDHGT	PAPA	21.64	21.64	21.64	21.64	0.00	0.00
SO	BUILDHGT	PAPA	0.00	0.00	0.00	0.00	19.81	19.81
SO	BUILDHGT	PAPA	19.81	19.81	21.64	21.64	21.64	21.64
SO	BUILDWID	PAPA	30.98	32.05	35.80	32.21	27.64	0.00
SO	BUILDWID	PAPA	0.00	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	PAPA	27.65	31.37	28.51	23.18	26.07	28.97
SO	BUILDWID	PAPA	30.98	32.05	32.15	31.27	0.00	0.00
SO	BUILDWID	PAPA	0.00	0.00	0.00	0.00	25.60	27.91
SO	BUILDWID	PAPA	29.36	29.93	26.72	23.18	26.07	28.97
SO	BUILDLEN	PAPA	30.98	32.05	37.89	39.46	39.84	0.00
SO	BUILDLEN	PAPA	0.00	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	PAPA	37.08	31.20	28.27	23.18	26.08	28.97
SO	BUILDLEN	PAPA	30.98	32.05	32.15	31.27	0.00	0.00
SO	BUILDLEN	PAPA	0.00	0.00	0.00	0.00	28.27	26.13
SO	BUILDLEN	PAPA	23.19	19.55	26.72	23.18	26.08	28.97
SO	XBADJ	PAPA	-54.85	-53.80	-155.35	-158.43	-156.69	0.00
SO	XBADJ	PAPA	0.00	-159.72	-173.70	-182.40	-185.56	-183.08
SO	XBADJ	PAPA	-134.22	-114.35	-112.41	25.35	25.90	25.27
SO	XBADJ	PAPA	23.87	21.74	18.96	15.59	0.00	0.00
SO	XBADJ	PAPA	0.00	0.00	0.00	0.00	-55.75	-57.39
SO	XBADJ	PAPA	-57.30	-55.46	-47.18	-48.53	-51.97	-54.23
SO	YBADJ	PAPA	-5.71	-12.45	25.10	1.03	-23.07	0.00
SO	YBADJ	PAPA	0.00	56.07	32.30	7.55	-17.43	-41.89
SO	YBADJ	PAPA	14.05	5.86	-11.38	-14.74	-8.10	-1.21
SO	YBADJ	PAPA	5.71	12.45	18.82	24.62	0.00	0.00
SO	YBADJ	PAPA	0.00	0.00	0.00	0.00	19.29	11.77
SO	YBADJ	PAPA	3.89	-4.10	20.93	14.74	8.10	1.21

SO	BUILDHGT	PAPB	29.26	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	PAPB	38.71	38.71	38.71	38.71	38.71	29.26
SO	BUILDHGT	PAPB	29.26	26.36	26.36	26.36	26.36	26.36
SO	BUILDHGT	PAPB	29.26	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	PAPB	38.71	38.71	38.71	38.71	38.71	29.26
SO	BUILDHGT	PAPB	29.26	26.36	26.36	26.36	26.36	26.36
SO	BUILDWID	PAPB	26.69	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	PAPB	85.27	90.19	93.86	94.67	92.62	31.91
SO	BUILDWID	PAPB	27.65	31.37	28.51	35.03	27.83	30.88
SO	BUILDWID	PAPB	26.69	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	PAPB	85.27	90.19	93.86	94.67	92.62	31.91
SO	BUILDWID	PAPB	27.65	31.37	28.51	35.03	27.83	30.88
SO	BUILDLEN	PAPB	37.43	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	PAPB	44.25	55.48	67.97	78.40	86.44	34.63
SO	BUILDLEN	PAPB	37.08	31.20	28.27	43.40	27.58	30.69
SO	BUILDLEN	PAPB	37.43	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	PAPB	44.25	55.48	67.97	78.40	86.44	34.63
SO	BUILDLEN	PAPB	37.08	31.20	28.27	43.40	27.58	30.68

SO	XBADJ	PAPB	-0.08	-101.31	-108.39	-112.17	-112.55	-109.50
SO	XBADJ	PAPB	-103.13	-106.85	-108.80	-107.44	-102.82	-40.79
SO	XBADJ	PAPB	-43.62	-23.92	-24.88	-44.00	-28.34	-31.16
SO	XBADJ	PAPB	-37.35	8.69	20.64	31.96	42.32	51.38
SO	XBADJ	PAPB	58.89	51.38	40.83	29.04	16.38	6.16
SO	XBADJ	PAPB	6.54	-7.28	-3.39	0.60	0.76	0.48
SO	YBADJ	PAPB	18.20	59.60	49.14	37.19	24.11	10.30
SO	YBADJ	PAPB	-3.82	-17.83	-31.30	-43.82	-55.00	11.29
SO	YBADJ	PAPB	7.04	14.69	13.03	5.84	8.57	5.91
SO	YBADJ	PAPB	-18.20	-59.60	-49.14	-37.19	-24.11	-10.30
SO	YBADJ	PAPB	3.82	17.83	31.30	43.82	55.00	-11.29
SO	YBADJ	PAPB	-7.04	-14.69	-13.03	-5.84	-8.57	-5.91

SO	BUILDHGT	SAPA	0.00	0.00	0.00	0.00	0.00	19.81
SO	BUILDHGT	SAPA	19.81	19.81	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPA	20.12	20.12	20.12	20.12	0.00	0.00
SO	BUILDHGT	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPA	0.00	0.00	0.00	0.00	0.00	31.48
SO	BUILDWID	SAPA	23.18	26.08	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPA	37.27	41.95	45.36	47.39	0.00	0.00
SO	BUILDWID	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPA	0.00	0.00	0.00	0.00	0.00	61.05
SO	BUILDLEN	SAPA	59.98	62.23	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPA	47.62	45.88	42.74	38.30	0.00	0.00
SO	BUILDLEN	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	-147.59
SO	XBADJ	SAPA	-148.53	-148.52	0.00	0.00	0.00	0.00
SO	XBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPA	-123.65	-125.35	-123.25	-117.39	0.00	0.00
SO	XBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	24.95
SO	YBADJ	SAPA	3.60	-20.23	0.00	0.00	0.00	0.00
SO	YBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPA	23.55	5.86	-12.02	-29.52	0.00	0.00
SO	YBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPA	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	JSMTB	0.00	0.00	19.81	19.81	21.64	21.64
SO	BUILDHGT	JSMTB	21.64	38.71	38.71	38.71	38.71	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	26.13	23.19	29.44	26.72
SO	BUILDWID	JSMTB	23.18	90.19	93.86	94.67	92.62	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	27.91	29.36	29.44	26.72
SO	BUILDLEN	JSMTB	23.18	55.48	67.97	78.40	86.44	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	-76.00	-79.01	-109.97	-109.29

SO	XBADJ	JSMTB	-105.29	-240.25	-253.34	-258.73	-256.27	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	18.61	7.55	12.28	-4.45
SO	YBADJ	JSMTB	-21.04	58.01	20.23	-18.17	-56.01	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPC	9.14	9.14	9.14	20.12	20.12	0.00
SO	BUILDHGT	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPC	14.28	13.92	14.65	18.72	24.69	0.00
SO	BUILDWID	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPC	14.28	13.83	14.56	44.81	46.76	0.00
SO	BUILDLEN	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00

SO	XBADJ	SAPC	-41.65	-42.43	-42.73	-139.30	-139.61	0.00
SO	XBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPC	8.86	2.78	-3.44	6.40	-14.00	0.00
SO	YBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPC	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	20.12	20.12	20.12
SO	BUILDHGT	MSTK22	20.12	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDWID	MSTK22	14.10	14.60	14.66	14.28	13.83	14.56
SO	BUILDWID	MSTK22	14.85	14.68	14.07	14.10	14.60	14.66
SO	BUILDWID	MSTK22	14.28	13.92	14.65	18.72	24.69	31.46
SO	BUILDWID	MSTK22	37.27	14.60	14.66	14.28	13.83	14.56
SO	BUILDWID	MSTK22	14.85	14.68	14.07	14.10	14.60	14.66
SO	BUILDWID	MSTK22	14.28	13.92	14.65	14.94	14.77	14.15
SO	BUILDLEN	MSTK22	14.10	14.60	14.66	14.28	13.92	14.65
SO	BUILDLEN	MSTK22	14.94	14.77	14.15	14.10	14.60	14.66
SO	BUILDLEN	MSTK22	14.28	13.83	14.56	44.81	46.76	47.92
SO	BUILDLEN	MSTK22	47.62	14.60	14.66	14.28	13.92	14.65
SO	BUILDLEN	MSTK22	14.94	14.77	14.15	14.10	14.60	14.66
SO	BUILDLEN	MSTK22	14.28	13.83	14.56	14.85	14.68	14.07
SO	XBADJ	MSTK22	-7.21	-7.50	-7.56	-7.39	-7.18	-7.55
SO	XBADJ	MSTK22	-7.70	-7.62	-7.30	-7.27	-7.49	-7.48
SO	XBADJ	MSTK22	-7.25	-6.97	-7.29	-104.95	-107.40	-106.90

SO XBADJ	MSTK22	-103.16	-7.11	-7.11	-6.89	-6.74	-7.09
SO XBADJ	MSTK22	-7.23	-7.15	-6.86	-6.83	-7.11	-7.18
SO XBADJ	MSTK22	-7.03	-6.86	-7.27	-7.45	-7.41	-7.14
SO YBADJ	MSTK22	0.22	0.19	0.15	0.11	0.05	0.01
SO YBADJ	MSTK22	-0.03	-0.07	-0.11	-0.16	-0.20	-0.23
SO YBADJ	MSTK22	-0.25	-0.22	-0.23	15.71	1.14	-13.47
SO YBADJ	MSTK22	-27.67	-0.19	-0.15	-0.11	-0.05	-0.01
SO YBADJ	MSTK22	0.03	0.07	0.11	0.16	0.20	0.23
SO YBADJ	MSTK22	0.25	0.22	0.23	0.23	0.23	0.22

SO BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	20.12
SO BUILDHGT	MSTPTA	20.12	20.12	0.00	0.00	9.14	9.14
SO BUILDHGT	MSTPTA	9.14	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	31.46
SO BUILDWID	MSTPTA	37.27	41.95	0.00	0.00	13.83	14.56
SO BUILDWID	MSTPTA	14.85	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	47.92
SO BUILDLEN	MSTPTA	47.62	45.88	0.00	0.00	13.92	14.65
SO BUILDLEN	MSTPTA	14.94	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	-125.21
SO XBADJ	MSTPTA	-126.72	-124.37	0.00	0.00	-42.90	-43.82
SO XBADJ	MSTPTA	-43.42	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	18.37
SO YBADJ	MSTPTA	0.51	-17.37	0.00	0.00	6.39	0.05
SO YBADJ	MSTPTA	-6.29	0.00	0.00	0.00	0.00	0.00
SO YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00

SO BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00

SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	PACS	22.86	22.86	22.86	22.86	22.86	6.89
SO	BUILDHGT	PACS	6.89	6.89	6.89	6.89	20.12	20.12
SO	BUILDHGT	PACS	20.12	20.12	20.12	20.12	6.71	22.86
SO	BUILDHGT	PACS	22.86	22.86	22.86	22.86	22.86	6.89
SO	BUILDHGT	PACS	6.89	6.89	6.89	6.89	20.12	20.12
SO	BUILDHGT	PACS	20.12	20.12	20.12	20.12	6.71	22.86
SO	BUILDWID	PACS	26.09	28.65	30.34	31.10	30.93	23.90
SO	BUILDWID	PACS	24.37	24.10	23.10	23.63	29.01	26.98
SO	BUILDWID	PACS	24.13	20.93	18.79	16.08	19.26	22.73
SO	BUILDWID	PACS	26.09	28.65	30.34	31.10	30.93	23.90
SO	BUILDWID	PACS	24.37	24.10	23.10	23.63	29.01	26.98
SO	BUILDWID	PACS	24.13	20.93	18.79	16.08	19.26	22.73
SO	BUILDLEN	PACS	31.14	30.56	29.06	26.66	23.46	23.90
SO	BUILDLEN	PACS	24.37	24.10	23.10	23.63	26.05	28.34
SO	BUILDLEN	PACS	29.78	30.42	32.07	32.76	42.68	30.78
SO	BUILDLEN	PACS	31.14	30.56	29.06	26.66	23.46	23.90
SO	BUILDLEN	PACS	24.37	24.10	23.10	23.63	26.05	28.34
SO	BUILDLEN	PACS	29.78	30.42	32.07	32.76	42.68	30.78
SO	XBADJ	PACS	29.09	30.45	30.87	30.36	28.93	5.46
SO	XBADJ	PACS	6.86	8.05	8.99	8.62	-49.37	-53.50
SO	XBADJ	PACS	-55.99	-56.78	-56.89	-55.27	7.06	-57.63
SO	XBADJ	PACS	-60.24	-61.01	-59.93	-57.03	-52.39	-29.36
SO	XBADJ	PACS	-31.23	-32.15	-32.09	-32.25	23.33	25.15
SO	XBADJ	PACS	26.21	26.37	24.82	22.51	-49.74	26.85
SO	YBADJ	PACS	-10.03	-2.12	5.85	13.64	21.02	-11.06
SO	YBADJ	PACS	-7.90	-4.50	-0.96	2.68	20.32	13.71
SO	YBADJ	PACS	6.68	-0.65	-7.91	-14.93	-10.06	17.63
SO	YBADJ	PACS	10.03	2.12	-5.85	-13.64	-21.02	11.06
SO	YBADJ	PACS	7.90	4.50	0.96	-2.68	-20.32	-13.71
SO	YBADJ	PACS	-6.68	0.65	7.91	14.93	10.06	-17.63

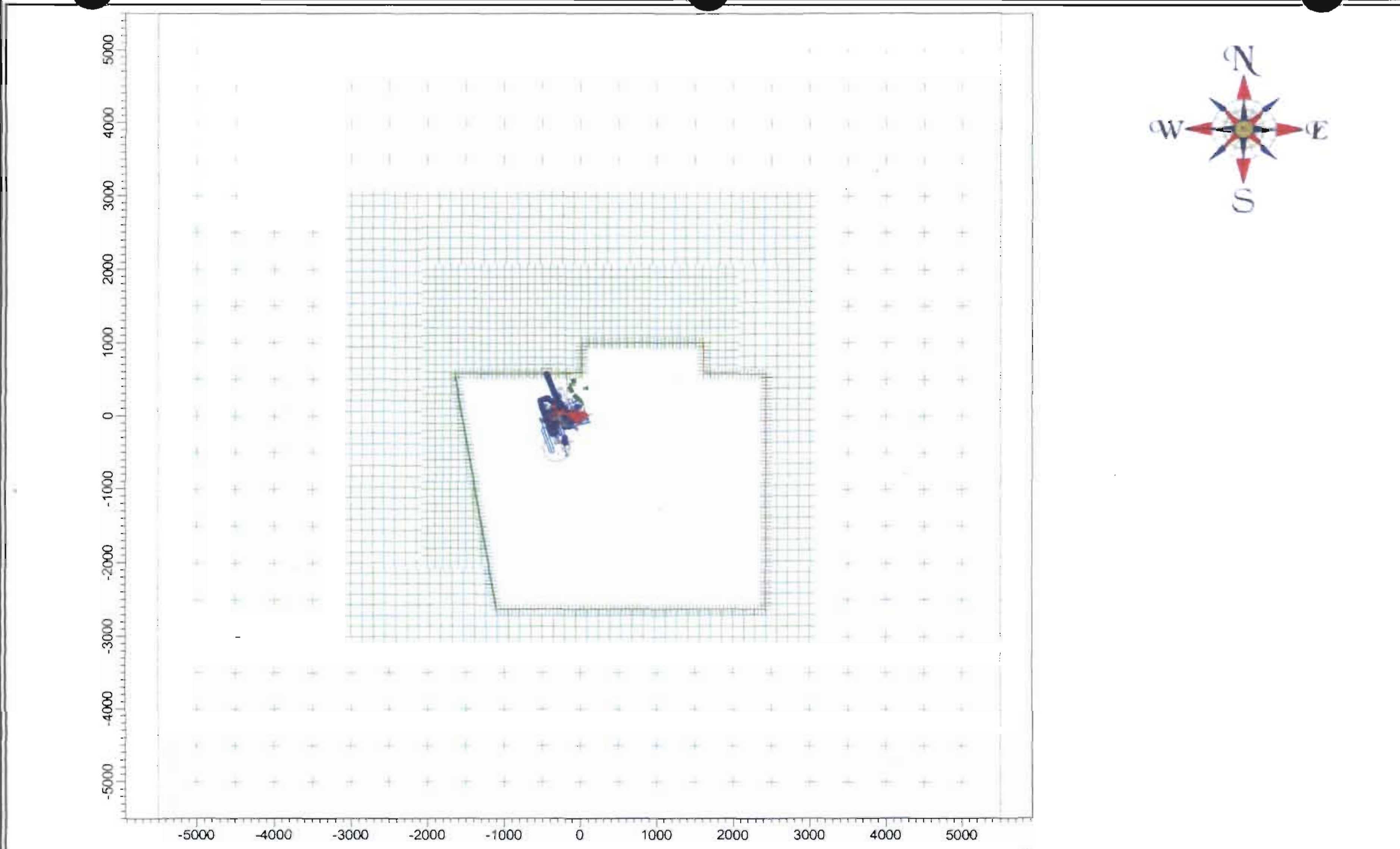


FIGURE E-1
PROPERTY BOUNDARY AND RECEPTOR GRID USED FOR THE AIR MODELING ANALYSES, CFI PLANT CITY
0537696/4.4/PSD Report/Figure E-1
Source: Golder, 2006.

Golder Associates

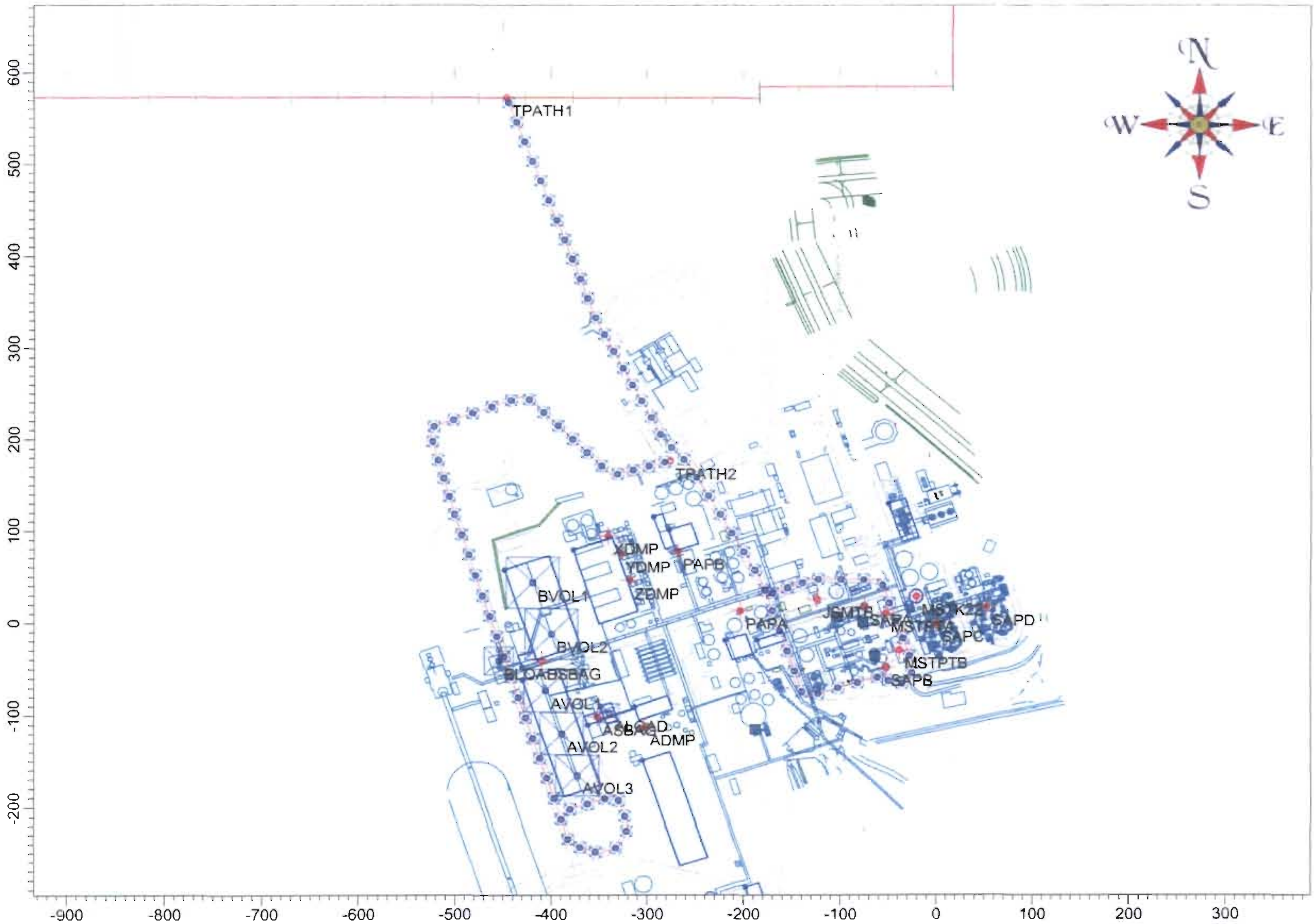


FIGURE E-2
EMISSION SOURCE LOCATIONS - AIR MODELING ANALYSES, CFI PLANT CITY

0537596/4.4/PSD Report/Figure #-2.xls
Source: Golder, 2006.

Golder Associates

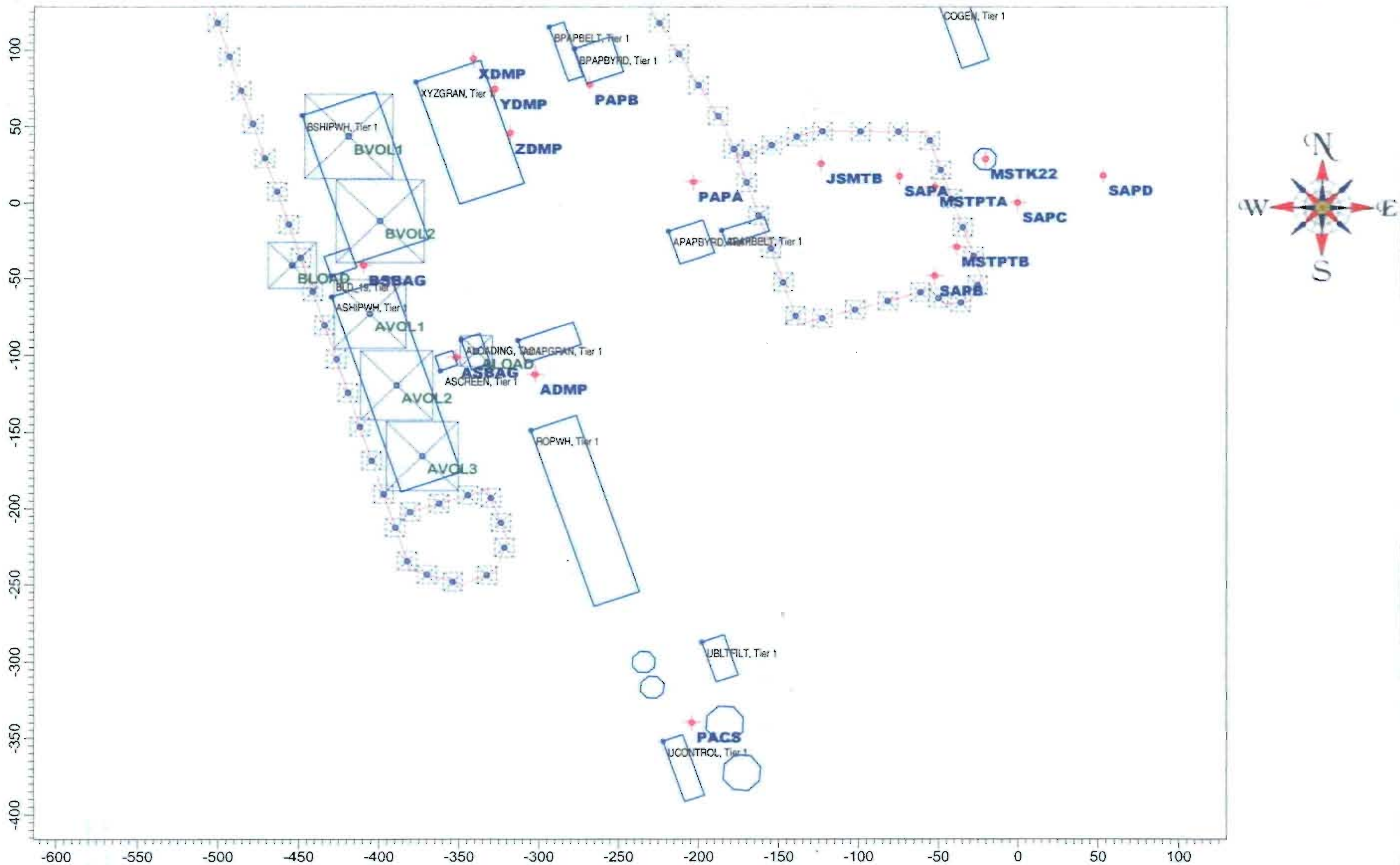


FIGURE E-3
BUILDINGS AND SOURCE LOCATIONS - AIR MODELING ANALYSES, CFI PLANT CITY

0537596/4.4/PSD Report/Figure E-3.xls
Source: Golder, 2006.

Golder Associates

APPENDIX F

AERMOD OUTPUT SUMMARY

AERMOD OUTPUT SUMMARY
SIG ANALYSIS
24-HOUR AND ANNUAL AVERAGE PM_{10} IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :pm24.o91
AERMOD OUTPUT FILE NUMBER 2 :pm24.o92
AERMOD OUTPUT FILE NUMBER 3 :pm24.o93
AERMOD OUTPUT FILE NUMBER 4 :pm24.o94
AERMOD OUTPUT FILE NUMBER 5 :pm24.o95
First title for last output file is: CF INDUSTRIES, A SAP AND A&B PAP PSD, SIG ANALYSIS, 02/20/05
Second title for last output file is: AERMOD MODELING, 24-HOUR AVERAGE PM10 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	POINT				
HIGH 24-Hour					
	1991	16.562	-183.	573.	91013024
	1992	15.923	-329.	573.	92070124
	1993	18.156	-22.	585.	93082024
	1994	17.807	-1338.	-1225.	94112524
	1995	15.909	-329.	573.	95082624
SOURCE GROUP ID:	VOLUME				
HIGH 24-Hour					
	1991	0.382	-329.	573.	91100324
	1992	0.412	913.	1000.	92070724
	1993	0.608	814.	1000.	93072124
	1994	0.372	-280.	573.	94091724
	1995	0.688	-143.	585.	95010124
SOURCE GROUP ID:	TRAFFI				
HIGH 24-Hour					
	1991	0.324	-183.	573.	91122824
	1992	0.411	-183.	573.	92030624
	1993	0.805	-62.	585.	93072124
	1994	0.368	-102.	585.	94112724
	1995	0.385	-329.	573.	95010124
SOURCE GROUP ID:	ALL				
HIGH 24-Hour					
	1991	17.183	-183.	573.	91013024
	1992	16.750	-329.	573.	92070124
	1993	18.460	-22.	585.	93082024
	1994	18.275	-1338.	-1225.	94112524
	1995	16.197	-329.	573.	95082624

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :pman.o91
AERMOD OUTPUT FILE NUMBER 2 :pman.o92
AERMOD OUTPUT FILE NUMBER 3 :pman.o93
AERMOD OUTPUT FILE NUMBER 4 :pman.o94
AERMOD OUTPUT FILE NUMBER 5 :pman.o95
First title for last output file is: CF INDUSTRIES, A SAP AND A&B PAP PSD, SIG ANALYSIS, 02/21/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE PM10 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1991	2.602	-1438.	-642.	91123124
	1992	2.346	-1438.	-642.	92123124
	1993	2.237	-1421.	-739.	93123124
	1994	2.670	-1430.	-690.	94123124
	1995	2.541	-1455.	-544.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERMOD OUTPUT SUMMARY
SIG ANALYSIS
ANNUAL AVERAGE NO_x IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :nosigan.o91
AERMOD OUTPUT FILE NUMBER 2 :nosigan.o92
AERMOD OUTPUT FILE NUMBER 3 :nosigan.o93
AERMOD OUTPUT FILE NUMBER 4 :nosigan.o94
AERMOD OUTPUT FILE NUMBER 5 :nosigan.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 02/28/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE NOX IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1991	1.114	-963.	573.	91123124
	1992	1.003	-817.	573.	92123124
	1993	0.905	-866.	573.	93123124
	1994	0.990	-866.	573.	94123124
	1995	0.915	-1455.	-544.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERMOD OUTPUT SUMMARY
SIG ANALYSIS
3-HOUR, 24-HOUR, AND ANNUAL AVERAGE SO_2 IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2sig3.o91
AERMOD OUTPUT FILE NUMBER 2 :so2sig3.o92
AERMOD OUTPUT FILE NUMBER 3 :so2sig3.o93
AERMOD OUTPUT FILE NUMBER 4 :so2sig3.o94
AERMOD OUTPUT FILE NUMBER 5 :so2sig3.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 02/22/06
Second title for last output file is: AERMOD MODELING, 3-HOUR AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: ALL					
HIGH 3-Hour					
	1991	20.185	-1158.	573.	91052603
	1992	24.079	-866.	573.	92072103
	1993	22.665	1100.	1000.	93072103
	1994	21.205	1013.	1000.	94062324
	1995	22.542	-280.	573.	95082706

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2sig24.o91
AERMOD OUTPUT FILE NUMBER 2 :so2sig24.o92
AERMOD OUTPUT FILE NUMBER 3 :so2sig24.o93
AERMOD OUTPUT FILE NUMBER 4 :so2sig24.o94
AERMOD OUTPUT FILE NUMBER 5 :so2sig24.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 02/22/06
Second title for last output file is: AERMOD MODELING, 24-HOUR AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
HIGH 24-Hour					
	1991	12.918	18.	585.	91030824
	1992	11.673	-102.	585.	92070124
	1993	11.452	18.	585.	93102924
	1994	11.218	-280.	573.	94072024
	1995	15.747	-102.	585.	95082624

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2sigan.o91
AERMOD OUTPUT FILE NUMBER 2 :so2sigan.o92
AERMOD OUTPUT FILE NUMBER 3 :so2sigan.o93
AERMOD OUTPUT FILE NUMBER 4 :so2sigan.o94
AERMOD OUTPUT FILE NUMBER 5 :so2sigan.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 02/22/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: ALL					
Annual					
	1991	4.560	-719.	573.	91123124
	1992	4.146	-622.	573.	92123124
	1993	3.431	-671.	573.	93123124
	1994	4.031	-573.	573.	94123124
	1995	3.702	-671.	573.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

ISCST3 OUTPUT SUMMARY
SIG ANALYSIS
FLUORIDE IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :flsig.o91
AERMOD OUTPUT FILE NUMBER 2 :flsig.o92
AERMOD OUTPUT FILE NUMBER 3 :flsig.o93
AERMOD OUTPUT FILE NUMBER 4 :flsig.o94
AERMOD OUTPUT FILE NUMBER 5 :flsig.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 03/06/06
Second title for last output file is: AERMOD MODELING, SHORT-TERM FLUORIDE IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
HIGH 1-Hour					
	1991	5.847	665.	1000.	91070505
	1992	5.861	700.	1000.	92070722
	1993	5.917	18.	585.	93110518
	1994	5.879	18.	585.	94113001
	1995	5.791	665.	1000.	95110323
HIGH 3-Hour					
	1991	3.323	615.	1000.	91071621
	1992	4.424	714.	1000.	92070724
	1993	4.700	665.	1000.	93072124
	1994	3.598	-1488.	-350.	94080306
	1995	3.377	714.	1000.	95061203
HIGH 8-Hour					
	1991	1.981	-62.	585.	91042724
	1992	1.934	-329.	573.	92070108
	1993	2.064	-1629.	476.	93111608
	1994	1.915	-622.	573.	94072808
	1995	2.429	-102.	585.	95102724
HIGH 24-Hour					
	1991	1.205	-1061.	573.	91071524
	1992	1.087	18.	585.	92021824
	1993	1.371	-22.	585.	93082024
	1994	0.920	18.	585.	94032124
	1995	1.078	18.	585.	95082524

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :flsigan.o91
AERMOD OUTPUT FILE NUMBER 2 :flsigan.o92
AERMOD OUTPUT FILE NUMBER 3 :flsigan.o93
AERMOD OUTPUT FILE NUMBER 4 :flsigan.o94
AERMOD OUTPUT FILE NUMBER 5 :flsigan.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 03/06/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE FLUORIDE IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1991	0.195	-963.	573.	91123124
	1992	0.177	-866.	573.	92123124
	1993	0.160	-866.	573.	93123124
	1994	0.176	-1438.	-642.	94123124
	1995	0.166	-1455.	-544.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

ISCST3 OUTPUT SUMMARY
SIG ANALYSIS
SULFURIC ACID MIST (SAM) IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :samsig.o91
AERMOD OUTPUT FILE NUMBER 2 :samsig.o92
AERMOD OUTPUT FILE NUMBER 3 :samsig.o93
AERMOD OUTPUT FILE NUMBER 4 :samsig.o94
AERMOD OUTPUT FILE NUMBER 5 :samsig.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 03/06/06
Second title for last output file is: AERMOD MODELING, SHORT-TERM H2SO4 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
HIGH 1-Hour					
	1991	10.442	-62.	585.	91081907
	1992	10.333	-400.	900.	92071622
	1993	11.389	-524.	573.	93072824
	1994	9.125	18.	585.	94060620
	1995	9.743	-1061.	573.	95081120
HIGH 3-Hour					
	1991	5.437	-573.	573.	91061924
	1992	6.975	-102.	585.	92060324
	1993	5.678	18.	585.	93033021
	1994	6.059	-183.	573.	94040706
	1995	6.476	-280.	573.	95082706
HIGH 8-Hour					
	1991	4.197	-62.	585.	91013108
	1992	3.944	-102.	585.	92070108
	1993	3.541	18.	585.	93022124
	1994	3.718	-22.	585.	94032508
	1995	4.811	-280.	573.	95082708
HIGH 24-Hour					
	1991	2.190	18.	585.	91030824
	1992	1.813	-476.	573.	92081424
	1993	1.856	18.	585.	93102924
	1994	1.852	-280.	573.	94072024
	1995	2.522	-102.	585.	95082624

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :samsigan.o91
AERMOD OUTPUT FILE NUMBER 2 :samsigan.o92
AERMOD OUTPUT FILE NUMBER 3 :samsigan.o93
AERMOD OUTPUT FILE NUMBER 4 :samsigan.o94
AERMOD OUTPUT FILE NUMBER 5 :samsigan.o95
First title for last output file is: CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS, 03/06/06
Second title for last output file is: AERMOD MODELING, ANNUAL H2SO4 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: ALL					
Annual					
	1991	0.293	-719.	573.	91123124
	1992	0.267	-573.	573.	92123124
	1993	0.220	-622.	573.	93123124
	1994	0.260	-573.	573.	94123124
	1995	0.238	-622.	573.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERMOD OUTPUT SUMMARY
AAQS ANALYSIS
ANNUAL AVERAGE PM_{10} IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :pmanaaq.o91
AERMOD OUTPUT FILE NUMBER 2 :pmanaaq.o92
AERMOD OUTPUT FILE NUMBER 3 :pmanaaq.o93
AERMOD OUTPUT FILE NUMBER 4 :pmanaaq.o94
AERMOD OUTPUT FILE NUMBER 5 :pmanaaq.o95
First title for last output file is: CFI, A SAP AND A&B PAP PSD, AAQS ANALYSIS, 02/27/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE PM10 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1991	7.379	-476.	573.	91123124
	1992	7.165	-476.	573.	92123124
	1993	6.936	-476.	573.	93123124
	1994	7.804	-476.	573.	94123124
	1995	7.127	-476.	573.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERMOD OUTPUT SUMMARY

PSD CLASS II INCREMENT ANALYSIS

ANNUAL AND 24-HOUR AVERAGE PM_{10} IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :pm24psd.o91
AERMOD OUTPUT FILE NUMBER 2 :pm24psd.o92
AERMOD OUTPUT FILE NUMBER 3 :pm24psd.o93
AERMOD OUTPUT FILE NUMBER 4 :pm24psd.o94
AERMOD OUTPUT FILE NUMBER 5 :pm24psd.o95
First title for last output file is: CFI, A SAP AND A&B PAP PSD, PSD CLASS II INCREMENT ANALYSIS, 02/27/06
Second title for last output file is: AERMOD MODELING, 24-HOUR AVERAGE PM10 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
HIGH 24-Hour					
	1991	29.581	-183.	573.	91013024
	1992	31.777	-329.	573.	92070124
	1993	28.115	-232.	573.	93081524
	1994	21.844	-427.	573.	94112924
	1995	27.251	-329.	573.	95082624
HSH 24-Hour					
	1991	25.727	-143.	585.	91030724
	1992	25.050	-280.	573.	92121824
	1993	22.099	-427.	573.	93101624
	1994	20.742	-427.	573.	94020924
	1995	27.034	-329.	573.	95120924

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :pmanpsd.o91
AERMOD OUTPUT FILE NUMBER 2 :pmanpsd.o92
AERMOD OUTPUT FILE NUMBER 3 :pmanpsd.o93
AERMOD OUTPUT FILE NUMBER 4 :pmanpsd.o94
AERMOD OUTPUT FILE NUMBER 5 :pmanpsd.o95
First title for last output file is: CFI, A SAP AND A&B PAP PSD, PSD CLASS II INCREMENT ANALYSIS, 02/27/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE PM10 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1991	5.008	-476.	573.	91123124
	1992	4.842	-476.	573.	92123124
	1993	4.701	-476.	573.	93123124
	1994	5.303	-476.	573.	94123124
	1995	4.833	-476.	573.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERMOD OUTPUT SUMMARY

AAQS ANALYSIS

24-HOUR, AND ANNUAL AVERAGE SO_2 IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2aaq24.o91
AERMOD OUTPUT FILE NUMBER 2 :so2aaq24.o92
AERMOD OUTPUT FILE NUMBER 3 :so2aaq24.o93
AERMOD OUTPUT FILE NUMBER 4 :so2aaq24.o94
AERMOD OUTPUT FILE NUMBER 5 :so2aaq24.o95
First title for last output file is: CF INDUSTRIES, A SAP AND A&B PAP PSD, AAQS ANALYSIS, 02/23/06
Second title for last output file is: AERMOD MODELING, 24-HOUR AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
HIGH 24-Hour					
	1991	235.457	18.	585.	91030824
	1992	215.977	-62.	585.	92062424
	1993	214.066	18.	585.	93102924
	1994	202.225	-280.	573.	94072024
	1995	272.978	-62.	585.	95082624
HSH 24-Hour					
	1991	232.978	18.	585.	91030724
	1992	207.431	-143.	585.	92033024
	1993	199.583	-183.	573.	93010724
	1994	195.638	-329.	573.	94072024
	1995	232.422	-183.	573.	95082624

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2aaqan.o91
AERMOD OUTPUT FILE NUMBER 2 :so2aaqan.o92
AERMOD OUTPUT FILE NUMBER 3 :so2aaqan.o93
AERMOD OUTPUT FILE NUMBER 4 :so2aaqan.o94
AERMOD OUTPUT FILE NUMBER 5 :so2aaqan.o95
First title for last output file is: CF INDUSTRIES, A SAP AND A&B PAP PSD, AAQS ANALYSIS, 02/23/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
Annual					
	1991	39.243	-719.	573.	91123124
	1992	36.837	-573.	573.	92123124
	1993	33.975	-573.	573.	93123124
	1994	35.658	-476.	573.	94123124
	1995	34.373	-573.	573.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERMOD OUTPUT SUMMARY
PSD CLASS II INCREMENT ANALYSIS
24-HOUR, AND ANNUAL AVERAGE SO_2 IMPACTS

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2psd24.o91
AERMOD OUTPUT FILE NUMBER 2 :so2psd24.o92
AERMOD OUTPUT FILE NUMBER 3 :so2psd24.o93
AERMOD OUTPUT FILE NUMBER 4 :so2psd24.o94
AERMOD OUTPUT FILE NUMBER 5 :so2psd24.o95
First title for last output file is: CFI, A SAP AND A&B PAP PSD, PSD CLASS II INCREMENT ANALYSIS, 02/23/06
Second title for last output file is: AERMOD MODELING, 24-HOUR AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID:	ALL				
HIGH 24-Hour					
	1991	30.322	1311.	1000.	91061824
	1992	34.926	-400.	900.	92071624
	1993	58.844	-800.	800.	93072624
	1994	19.751	500.	2000.	94062624
	1995	46.743	-900.	600.	95081124
HSH 24-Hour					
	1991	21.431	1162.	1000.	91081424
	1992	7.799	2426.	-315.	92072924
	1993	22.975	-200.	1000.	93072524
	1994	7.053	2426.	-19.	94101424
	1995	10.756	-1900.	-1900.	95082224

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

AERBOB RELEASE 020304

AERMOD OUTPUT FILE NUMBER 1 :so2psdan.o91
AERMOD OUTPUT FILE NUMBER 2 :so2psdan.o92
AERMOD OUTPUT FILE NUMBER 3 :so2psdan.o93
AERMOD OUTPUT FILE NUMBER 4 :so2psdan.o94
AERMOD OUTPUT FILE NUMBER 5 :so2psdan.o95
First title for last output file is: CFI, A SAP AND A&B PAP PSD, PSD CLASS II INCREMENT ANALYSIS, 02/23/06
Second title for last output file is: AERMOD MODELING, ANNUAL AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995

AVERAGING TIME	YEAR	CONC (ug/m3)	X (m)	Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: ALL					
Annual					
	1991	0.000	0.	0.	91123124
	1992	0.000	0.	0.	92123124
	1993	0.000	0.	0.	93123124
	1994	0.000	0.	0.	94123124
	1995	0.000	0.	0.	95123124

All receptor computations reported with respect to a user-specified origin

GRID	0.00	0.00
DISCRETE	0.00	0.00

EXAMPLE AERMOD INPUT FILE
SIGNIFICANT IMPACT ANALYSIS
24-HOUR AVERAGE PM_{10} IMPACTS

```
**
**
****************************************
** ISCST3 Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE CF INDUSTRIES, A SAP AND A&B PAP PSD, SIG ANALYSIS,   02/20/05
   TITLETWO AERMOD MODELING, 24-HOUR AVERAGE PM10 IMPACTS, TAMPA MET DATA 1991-1995
   MODELOPT DFAULT CONC
   AVERTIME 24
   POLLUTID PM
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Point Source Descriptions **
** ZDMP - "Z" MAP/DAP
** XDMP - "X" MAP/DAP
** YDMP - "Y" MAP/DAP
** ASBAG - "A" Shipping Baghouse
** BSBAG - "B" Shipping Baghouse
** ABSTO - "A" & "B" Storage Buildings Scrubber
**********************************************************************
** Comment - ABSTO is removed in 2004, Future emissions from A & B Storage
** buildings are fugitive emissions and modeled as volume sources
**********************************************************************

** Volume Source Descriptions **
** BVOL1 - B Shipping Building Volume 1
** BVOL2 - B Shipping Building Volume 2
** AVOL1 - A Shipping Building Volume 1
** AVOL2 - A Shipping Building Volume 2
** AVOL3 - A Shipping Building Volume 3
** BLOAD - B Truck/Railcar Loading
** ALOAD - A Truck/Railcar Loading

** Source Location **
** Future Sources --
   LOCATION ZDMPF  POINT  -317.9    45.9  25.0
   LOCATION YDMPF  POINT  -327.6    74.7  25.0
   LOCATION XDMPF  POINT  -341.0    94.6  25.0
   LOCATION ASBAGF POINT  -351.7  -101.3  25.0
   LOCATION BSBAGF POINT  -409.5   -41.1  25.0

   LOCATION BVOL1  VOLUME  -418.85    43.89  25.0
   LOCATION BVOL2  VOLUME  -399.23   -11.89  25.0
   LOCATION AVOL1  VOLUME  -405.55   -72.71  25.0
   LOCATION AVOL2  VOLUME  -388.79  -119.26  25.0
   LOCATION AVOL3  VOLUME  -372.65  -165.25  25.0
   LOCATION BLOADF VOLUME  -454.0   -41.0    25.0
   LOCATION ALOADF VOLUME  -339.0   -97.0    25.0

** Current Sources --
   LOCATION ZDMPC  POINT  -317.9    45.9   25.0
   LOCATION YDMPC  POINT  -327.6    74.7   25.0
   LOCATION XDMPC  POINT  -341.0    94.6   25.0
   LOCATION ASBAGC POINT  -351.7  -101.3   25.0
   LOCATION BSBAGC POINT  -409.5   -41.1   25.0
```

```
   LOCATION ABSTO  POINT  -365.0   -66.9   25.0

   LOCATION BLOADC VOLUME  -454.0   -41.0  25.0
   LOCATION ALOADC VOLUME  -339.0   -97.0  25.0

******************************************************************************
** Fugitive emissions from change in truck traffic due to the proposed
** project are modeled as line source represented by adjacent volume sources
******************************************************************************
** TRUCK PATH 1
SO LOCATION  TP1VOL01  VOLUME   -443.96   567.68    25.0
SO LOCATION  TP1VOL02  VOLUME   -435.73   546.35    25.0
SO LOCATION  TP1VOL03  VOLUME   -427.50   525.02    25.0
SO LOCATION  TP1VOL04  VOLUME   -419.28   503.69    25.0
SO LOCATION  TP1VOL05  VOLUME   -411.05   482.36    25.0
SO LOCATION  TP1VOL06  VOLUME   -402.82   461.04    25.0
SO LOCATION  TP1VOL07  VOLUME   -394.59   439.71    25.0
SO LOCATION  TP1VOL08  VOLUME   -386.36   418.38    25.0
SO LOCATION  TP1VOL09  VOLUME   -378.13   397.05    25.0
SO LOCATION  TP1VOL10  VOLUME   -369.91   375.72    25.0
SO LOCATION  TP1VOL11  VOLUME   -361.68   354.39    25.0
SO LOCATION  TP1VOL12  VOLUME   -353.45   333.06    25.0
SO LOCATION  TP1VOL13  VOLUME   -344.40   314.49    25.0
SO LOCATION  TP1VOL14  VOLUME   -334.69   296.23    25.0
SO LOCATION  TP1VOL15  VOLUME   -324.99   277.96    25.0
SO LOCATION  TP1VOL16  VOLUME   -315.28   259.70    25.0
SO LOCATION  TP1VOL17  VOLUME   -305.58   241.43    25.0
SO LOCATION  TP1VOL18  VOLUME   -295.87   223.16    25.0
SO LOCATION  TP1VOL19  VOLUME   -286.17   204.90    25.0
SO LOCATION  TP1VOL20  VOLUME   -274.81   190.91    25.0
SO LOCATION  TP1VOL21  VOLUME   -262.07   177.93    25.0
SO LOCATION  TP1VOL22  VOLUME   -248.77   158.51    25.0
SO LOCATION  TP1VOL23  VOLUME   -236.58   138.22    25.0
SO LOCATION  TP1VOL24  VOLUME   -224.40   117.93    25.0
SO LOCATION  TP1VOL25  VOLUME   -212.21   97.64     25.0
SO LOCATION  TP1VOL26  VOLUME   -200.02   77.35     25.0
SO LOCATION  TP1VOL27  VOLUME   -187.83   57.06     25.0
SO LOCATION  TP1VOL28  VOLUME   -178.06   35.77     25.0
SO LOCATION  TP1VOL29  VOLUME   -170.10   13.90     25.0
SO LOCATION  TP1VOL30  VOLUME   -162.46   -8.09     25.0
SO LOCATION  TP1VOL31  VOLUME   -154.81   -30.07    25.0
SO LOCATION  TP1VOL32  VOLUME   -147.17   -52.06    25.0
SO LOCATION  TP1VOL33  VOLUME   -139.53   -74.04    25.0
SO LOCATION  TP1VOL34  VOLUME   -122.82   -75.65    25.0
SO LOCATION  TP1VOL35  VOLUME   -102.29   -69.99    25.0
SO LOCATION  TP1VOL36  VOLUME   -81.77    -64.33    25.0
SO LOCATION  TP1VOL37  VOLUME   -61.24    -58.67    25.0
SO LOCATION  TP1VOL38  VOLUME   -49.90    -62.36    25.0
SO LOCATION  TP1VOL39  VOLUME   -35.94    -65.34    25.0
SO LOCATION  TP1VOL40  VOLUME   -25.32    -54.07    25.0
SO LOCATION  TP1VOL41  VOLUME   -27.75    -35.16    25.0
SO LOCATION  TP1VOL42  VOLUME   -34.64    -16.10    25.0
SO LOCATION  TP1VOL43  VOLUME   -41.53    2.96      25.0
SO LOCATION  TP1VOL44  VOLUME   -48.42    22.03     25.0
SO LOCATION  TP1VOL45  VOLUME   -55.31    41.09     25.0
SO LOCATION  TP1VOL46  VOLUME   -75.10    46.85     25.0
SO LOCATION  TP1VOL47  VOLUME   -98.84    47.00     25.0
SO LOCATION  TP1VOL48  VOLUME   -122.59   47.16     25.0
SO LOCATION  TP1VOL49  VOLUME   -138.65   43.68     25.0
SO LOCATION  TP1VOL50  VOLUME   -154.38   38.18     25.0
SO LOCATION  TP1VOL51  VOLUME   -170.11   32.67     25.0

** TRUCK PATH 2
SO LOCATION  TP2VOL01  VOLUME   -281.98   175.03    25.0
SO LOCATION  TP2VOL02  VOLUME   -298.33   170.76    25.0
```

```
SO LOCATION  TP2VOL03  VOLUME   -314.69   166.50    25.0
SO LOCATION  TP2VOL04  VOLUME   -331.04   162.23    25.0
SO LOCATION  TP2VOL05  VOLUME   -347.57   171.01    25.0
SO LOCATION  TP2VOL06  VOLUME   -362.62   185.45    25.0
SO LOCATION  TP2VOL07  VOLUME   -377.67   199.89    25.0
SO LOCATION  TP2VOL08  VOLUME   -392.72   214.33    25.0
SO LOCATION  TP2VOL09  VOLUME   -407.77   228.77    25.0
SO LOCATION  TP2VOL10  VOLUME   -422.82   243.22    25.0
SO LOCATION  TP2VOL11  VOLUME   -441.48   242.22    25.0
SO LOCATION  TP2VOL12  VOLUME   -461.45   235.05    25.0
SO LOCATION  TP2VOL13  VOLUME   -481.42   227.88    25.0
SO LOCATION  TP2VOL14  VOLUME   -501.39   220.70    25.0
SO LOCATION  TP2VOL15  VOLUME   -521.36   213.53    25.0
SO LOCATION  TP2VOL16  VOLUME   -522.98   197.38    25.0
SO LOCATION  TP2VOL17  VOLUME   -517.29   177.49    25.0
SO LOCATION  TP2VOL18  VOLUME   -511.61   157.61    25.0
SO LOCATION  TP2VOL19  VOLUME   -505.93   137.72    25.0
SO LOCATION  TP2VOL20  VOLUME   -500.25   117.83    25.0
SO LOCATION  TP2VOL21  VOLUME   -493.11   95.75     25.0
SO LOCATION  TP2VOL22  VOLUME   -485.71   73.76     25.0
SO LOCATION  TP2VOL23  VOLUME   -478.31   51.76     25.0
SO LOCATION  TP2VOL24  VOLUME   -470.91   29.77     25.0
SO LOCATION  TP2VOL25  VOLUME   -463.50   7.78      25.0
SO LOCATION  TP2VOL26  VOLUME   -456.10   -14.22    25.0
SO LOCATION  TP2VOL27  VOLUME   -448.70   -36.21    25.0
SO LOCATION  TP2VOL28  VOLUME   -441.30   -58.21    25.0
SO LOCATION  TP2VOL29  VOLUME   -433.90   -80.20    25.0
SO LOCATION  TP2VOL30  VOLUME   -426.50   -102.20   25.0
SO LOCATION  TP2VOL31  VOLUME   -419.09   -124.19   25.0
SO LOCATION  TP2VOL32  VOLUME   -411.69   -146.19   25.0
SO LOCATION  TP2VOL33  VOLUME   -404.29   -168.18   25.0
SO LOCATION  TP2VOL34  VOLUME   -396.89   -190.18   25.0
SO LOCATION  TP2VOL35  VOLUME   -389.49   -212.17   25.0
SO LOCATION  TP2VOL36  VOLUME   -382.08   -234.16   25.0
SO LOCATION  TP2VOL37  VOLUME   -369.75   -242.93   25.0
SO LOCATION  TP2VOL38  VOLUME   -353.57   -247.72   25.0
SO LOCATION  TP2VOL39  VOLUME   -332.32   -243.42   25.0
SO LOCATION  TP2VOL40  VOLUME   -321.34   -225.42   25.0
SO LOCATION  TP2VOL41  VOLUME   -323.53   -208.96   25.0
SO LOCATION  TP2VOL42  VOLUME   -329.79   -192.58   25.0
SO LOCATION  TP2VOL43  VOLUME   -344.20   -190.74   25.0
SO LOCATION  TP2VOL44  VOLUME   -362.20   -196.27   25.0
SO LOCATION  TP2VOL45  VOLUME   -380.20   -201.80   25.0

** Source Parameters **
** Future Sources
   SRCPARAM ZDMPF   2.85  41.45  333.0  13.56  2.74
   SRCPARAM YDMPF   1.93  41.45  330.0  16.24  2.74
   SRCPARAM XDMPF   1.73  41.45  330.0  15.47  2.74
   SRCPARAM ASBAGF  0.63  27.43  316.0   0.10  0.52
   SRCPARAM BSBAGF  0.63  10.36  322.0  16.17  0.61

   SRCPARAM BVOL1   0.022   13.25   12.791   12.33
   SRCPARAM BVOL2   0.022   13.25   12.791   12.33
   SRCPARAM AVOL1   0.007   10.20   10.465    9.49
   SRCPARAM AVOL2   0.007   10.20   10.465    9.49
   SRCPARAM AVOL3   0.007   10.20   10.465    9.49
   SRCPARAM BLOADF  0.078    3.05    6.977    2.84
   SRCPARAM ALOADF  0.039    3.00    4.651    2.84

** Current Sources
   SRCPARAM ZDMPC   -0.851  41.45  333.0  13.56  2.74
   SRCPARAM YDMPC   -1.016  41.45  330.0  16.24  2.74
   SRCPARAM XDMPC   -0.457  41.45  330.0  15.47  2.74
   SRCPARAM ASBAGC  -0.054  27.43  316.0   0.10  0.52
```

```
   SRCPARAM BSBAGC  -0.054  10.36  322.0  16.17  0.61
   SRCPARAM ABSTO   -0.352  26.06  300.0  13.97  2.74

   SRCPARAM BLOADC  -0.142   3.05   6.98   2.84
   SRCPARAM ALOADC  -0.000   3.05   4.65   2.84

** TRUCK PATH 1 EMISSIONS
SO SRCPARAM  TP1VOL01   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL02   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL03   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL04   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL05   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL06   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL07   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL08   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL09   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL10   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL11   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL12   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL13   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL14   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL15   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL16   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL17   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL18   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL19   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL20   0.00028    2.29   11.16   2.13
SO SRCPARAM  TP1VOL21   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL22   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL23   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL24   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL25   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL26   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL27   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL28   -0.00016    2.29   11.16   2.13
SO SRCPARAM  TP1VOL29   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL30   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL31   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL32   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL33   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL34   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL35   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL36   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL37   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL38   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL39   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL40   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL41   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL42   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL43   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL44   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL45   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL46   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL47   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL48   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL49   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL50   -0.00008    2.29   11.16   2.13
SO SRCPARAM  TP1VOL51   -0.00008    2.29   11.16   2.13

** TRUCK PATH 2 EMISSIONS
SO SRCPARAM  TP2VOL01   0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL02   0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL03   0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL04   0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL05   0.00053    2.29   11.16   2.13
```

```
SO SRCPARAM  TP2VOL06  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL07  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL08  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL09  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL10  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL11  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL12  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL13  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL14  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL15  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL16  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL17  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL18  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL19  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL20  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL21  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL22  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL23  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL24  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL25  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL26  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL27  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL28  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL29  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL30  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL31  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL32  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL33  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL34  0.00053    2.29   11.16   2.13
SO SRCPARAM  TP2VOL35  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL36  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL37  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL38  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL39  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL40  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL41  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL42  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL43  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL44  0.00027    2.29   11.16   2.13
SO SRCPARAM  TP2VOL45  0.00027    2.29   11.16   2.13

** Building Downwash **
SO BUILDHGT ZDMPC-ZDMPF      38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT ZDMPC-ZDMPF      38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT ZDMPC-ZDMPF      38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT ZDMPC-ZDMPF      38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT ZDMPC-ZDMPF      38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT ZDMPC-ZDMPF      38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDWID ZDMPC-ZDMPF      78.40   86.44   91.86   94.49   94.25   91.14
SO BUILDWID ZDMPC-ZDMPF      85.27   90.19   93.86   94.67   92.62   87.74
SO BUILDWID ZDMPC-ZDMPF      80.21   70.23   58.12   44.25   55.48   67.97
SO BUILDWID ZDMPC-ZDMPF      78.40   86.44   91.86   94.49   94.25   91.14
SO BUILDWID ZDMPC-ZDMPF      85.27   90.19   93.86   94.67   92.62   87.74
SO BUILDWID ZDMPC-ZDMPF      80.21   70.23   58.12   44.25   55.48   67.97
SO BUILDLEN ZDMPC-ZDMPF      94.67   92.62   87.74   80.21   70.23   58.12
SO BUILDLEN ZDMPC-ZDMPF      44.25   55.48   67.97   78.40   86.44   91.86
SO BUILDLEN ZDMPC-ZDMPF      94.49   94.25   91.14   85.27   90.19   93.86
SO BUILDLEN ZDMPC-ZDMPF      94.67   92.62   87.74   80.21   70.23   58.12
SO BUILDLEN ZDMPC-ZDMPF      44.25   55.48   67.97   78.40   86.44   91.86
SO BUILDLEN ZDMPC-ZDMPF      94.49   94.25   91.14   85.27   90.19   93.86
SO XBADJ    ZDMPC-ZDMPF     -51.19  -54.40  -55.95  -55.80  -53.96  -50.48
SO XBADJ    ZDMPC-ZDMPF     -45.46  -52.29  -59.00  -63.92  -66.90  -67.85
SO XBADJ    ZDMPC-ZDMPF     -66.73  -63.59  -58.51  -51.66  -49.93  -47.43
SO XBADJ    ZDMPC-ZDMPF     -43.48  -38.22  -31.80  -24.41  -16.27   -7.65
SO XBADJ    ZDMPC-ZDMPF       1.21   -3.19   -8.97  -14.48  -19.55  -24.02
```

SO XBADJ	ZDMPC-ZDMPF	-27.76	-30.66	-32.63	-33.61	-40.26	-46.43
SO YBADJ	ZDMPC-ZDMPF	24.72	23.68	21.91	19.48	16.46	12.94
SO YBADJ	ZDMPC-ZDMPF	9.02	4.84	0.50	-3.85	-8.09	-12.08
SO YBADJ	ZDMPC-ZDMPF	-15.70	-18.84	-21.41	-23.34	-24.55	-25.01
SO YBADJ	ZDMPC-ZDMPF	-24.72	-23.68	-21.91	-19.48	-16.46	-12.94
SO YBADJ	ZDMPC-ZDMPF	-9.02	-4.84	-0.50	3.85	8.09	12.08
SO YBADJ	ZDMPC-ZDMPF	15.70	18.84	21.41	23.34	24.55	25.01

SO BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDWID	YDMPC-YDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO BUILDWID	YDMPC-YDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO BUILDWID	YDMPC-YDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO BUILDWID	YDMPC-YDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO BUILDWID	YDMPC-YDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO BUILDWID	YDMPC-YDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO BUILDLEN	YDMPC-YDMPF	94.67	92.62	87.74	80.21	70.23	58.12
SO BUILDLEN	YDMPC-YDMPF	44.25	55.48	67.97	78.40	86.44	91.86
SO BUILDLEN	YDMPC-YDMPF	94.49	94.25	91.14	85.27	90.19	93.86
SO BUILDLEN	YDMPC-YDMPF	94.67	92.62	87.74	80.21	70.23	58.12
SO BUILDLEN	YDMPC-YDMPF	44.25	55.48	67.97	78.40	86.44	91.86
SO BUILDLEN	YDMPC-YDMPF	94.49	94.25	91.14	85.27	90.19	93.86
SO XBADJ	YDMPC-YDMPF	-77.87	-78.14	-76.04	-71.63	-65.04	-56.47
SO XBADJ	YDMPC-YDMPF	-46.19	-47.73	-49.30	-49.37	-47.93	-45.05
SO XBADJ	YDMPC-YDMPF	-40.79	-35.29	-28.72	-21.28	-19.88	-18.63
SO XBADJ	YDMPC-YDMPF	-16.81	-14.48	-11.71	-8.58	-5.19	-1.65
SO XBADJ	YDMPC-YDMPF	1.95	-7.74	-18.67	-29.03	-38.51	-46.82
SO XBADJ	YDMPC-YDMPF	-53.71	-58.96	-62.42	-63.99	-70.30	-75.23
SO YBADJ	YDMPC-YDMPF	10.17	4.71	-0.89	-6.46	-11.84	-16.85
SO YBADJ	YDMPC-YDMPF	-21.36	-25.21	-28.30	-30.53	-31.83	-32.17
SO YBADJ	YDMPC-YDMPF	-31.52	-29.92	-27.41	-24.07	-20.00	-15.31
SO YBADJ	YDMPC-YDMPF	-10.17	-4.71	0.89	6.46	11.84	16.85
SO YBADJ	YDMPC-YDMPF	21.36	25.21	28.30	30.53	31.83	32.17
SO YBADJ	YDMPC-YDMPF	31.52	29.92	27.41	24.07	20.00	15.31

SO BUILDHGT	XDMPC-XDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	XDMPC-XDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	XDMPC-XDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	XDMPC-XDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	XDMPC-XDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDHGT	XDMPC-XDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO BUILDWID	XDMPC-XDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO BUILDWID	XDMPC-XDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO BUILDWID	XDMPC-XDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO BUILDWID	XDMPC-XDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO BUILDWID	XDMPC-XDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO BUILDWID	XDMPC-XDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO BUILDLEN	XDMPC-XDMPF	94.67	92.62	87.74	80.21	70.23	58.12
SO BUILDLEN	XDMPC-XDMPF	44.25	55.48	67.97	78.40	86.44	91.86
SO BUILDLEN	XDMPC-XDMPF	94.49	94.25	91.14	85.27	90.19	93.86
SO BUILDLEN	XDMPC-XDMPF	94.67	92.62	87.74	80.21	70.23	58.12
SO BUILDLEN	XDMPC-XDMPF	44.25	55.48	67.97	78.40	86.44	91.86
SO BUILDLEN	XDMPC-XDMPF	94.49	94.25	91.14	85.27	90.19	93.86
SO XBADJ	XDMPC-XDMPF	-95.14	-92.26	-86.57	-78.26	-67.57	-54.82
SO XBADJ	XDMPC-XDMPF	-40.41	-37.99	-35.90	-32.72	-28.54	-23.49
SO XBADJ	XDMPC-XDMPF	-17.73	-11.43	-4.79	2.00	2.04	1.27
SO XBADJ	XDMPC-XDMPF	0.46	-0.36	-1.17	-1.95	-2.67	-3.30
SO XBADJ	XDMPC-XDMPF	-3.84	-17.48	-32.07	-45.68	-57.91	-68.37
SO XBADJ	XDMPC-XDMPF	-76.76	-82.82	-86.36	-87.27	-92.23	-95.13

SO	YBADJ	XDMPC-XDMPF	-6.48	-14.69	-22.44	-29.52	-35.69	-40.79
SO	YBADJ	XDMPC-XDMPF	-44.64	-47.14	-48.20	-47.80	-45.95	-42.70
SO	YBADJ	XDMPC-XDMPF	-38.16	-32.45	-25.76	-18.29	-10.26	-1.91
SO	YBADJ	XDMPC-XDMPF	6.48	14.69	22.44	29.52	35.69	40.79
SO	YBADJ	XDMPC-XDMPF	44.64	47.14	48.20	47.80	45.95	42.70
SO	YBADJ	XDMPC-XDMPF	38.16	32.45	25.76	18.29	10.26	1.91

SO	BUILDHGT	ASBAGC-ASBAGF	26.52	26.52	30.48	30.48	20.42	28.35
SO	BUILDHGT	ASBAGC-ASBAGF	20.42	28.35	28.35	28.35	28.35	26.52
SO	BUILDHGT	ASBAGC-ASBAGF	26.52	26.52	26.52	26.52	38.71	38.71
SO	BUILDHGT	ASBAGC-ASBAGF	38.71	38.71	30.48	30.48	20.42	28.35
SO	BUILDHGT	ASBAGC-ASBAGF	28.35	28.35	28.35	28.35	28.35	26.52
SO	BUILDHGT	ASBAGC-ASBAGF	26.52	30.48	20.42	20.42	20.42	30.48
SO	BUILDWID	ASBAGC-ASBAGF	144.66	145.79	15.16	14.55	139.49	22.23
SO	BUILDWID	ASBAGC-ASBAGF	134.90	21.06	26.62	31.37	35.16	118.77
SO	BUILDWID	ASBAGC-ASBAGF	94.34	81.97	67.11	50.21	55.48	67.97
SO	BUILDWID	ASBAGC-ASBAGF	78.40	86.44	15.16	14.55	139.49	22.23
SO	BUILDWID	ASBAGC-ASBAGF	16.15	21.06	26.62	31.37	35.16	169.12
SO	BUILDWID	ASBAGC-ASBAGF	152.08	14.41	64.46	61.49	60.08	14.22
SO	BUILDLEN	ASBAGC-ASBAGF	155.41	164.77	15.32	15.09	85.05	39.01
SO	BUILDLEN	ASBAGC-ASBAGF	41.91	38.69	39.77	39.64	38.30	109.19
SO	BUILDLEN	ASBAGC-ASBAGF	112.87	113.12	109.94	103.41	90.19	93.86
SO	BUILDLEN	ASBAGC-ASBAGF	94.67	92.62	15.32	15.09	85.05	39.01
SO	BUILDLEN	ASBAGC-ASBAGF	36.99	38.69	39.77	39.64	38.30	142.50
SO	BUILDLEN	ASBAGC-ASBAGF	134.87	13.49	139.31	134.90	138.77	13.23
SO	XBADJ	ASBAGC-ASBAGF	38.91	23.34	-12.40	-12.95	-82.27	36.12
SO	XBADJ	ASBAGC-ASBAGF	-61.96	40.03	38.67	36.15	32.52	-162.80
SO	XBADJ	ASBAGC-ASBAGF	-175.83	-183.52	-185.63	-182.10	-189.02	-194.63
SO	XBADJ	ASBAGC-ASBAGF	-194.32	-188.10	-2.92	-2.14	-2.77	-75.12
SO	XBADJ	ASBAGC-ASBAGF	-76.88	-78.72	-78.44	-75.78	-70.82	20.31
SO	XBADJ	ASBAGC-ASBAGF	40.96	-4.38	-66.04	-71.01	-80.01	-8.60
SO	YBADJ	ASBAGC-ASBAGF	50.12	71.93	4.24	3.35	10.68	-20.78
SO	YBADJ	ASBAGC-ASBAGF	-3.56	-0.50	9.82	19.83	29.25	66.44
SO	YBADJ	ASBAGC-ASBAGF	53.99	32.43	9.89	-12.94	34.30	8.78
SO	YBADJ	ASBAGC-ASBAGF	-17.00	-42.26	-4.24	-3.35	-10.68	20.78
SO	YBADJ	ASBAGC-ASBAGF	10.80	0.50	-9.82	-19.83	-29.25	-91.62
SO	YBADJ	ASBAGC-ASBAGF	-82.85	5.91	41.00	31.22	39.77	6.04

SO	BUILDHGT	BSBAGC-BSBAGF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	BSBAGC-BSBAGF	38.71	26.52	26.52	26.52	26.52	26.52
SO	BUILDHGT	BSBAGC-BSBAGF	26.52	26.52	26.52	26.52	26.52	26.52
SO	BUILDHGT	BSBAGC-BSBAGF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	BSBAGC-BSBAGF	38.71	26.52	26.52	28.35	28.35	28.35
SO	BUILDHGT	BSBAGC-BSBAGF	26.52	26.52	26.52	26.52	26.52	26.52
SO	BUILDWID	BSBAGC-BSBAGF	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	BSBAGC-BSBAGF	85.27	108.89	112.76	113.20	110.20	103.85
SO	BUILDWID	BSBAGC-BSBAGF	94.34	81.97	67.11	50.21	63.88	79.19
SO	BUILDWID	BSBAGC-BSBAGF	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	BSBAGC-BSBAGF	85.27	108.89	112.76	31.37	35.16	37.89
SO	BUILDWID	BSBAGC-BSBAGF	94.34	81.97	67.11	50.21	63.88	79.19
SO	BUILDLEN	BSBAGC-BSBAGF	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	BSBAGC-BSBAGF	44.25	63.88	79.19	92.09	102.19	109.19
SO	BUILDLEN	BSBAGC-BSBAGF	112.87	113.12	109.94	103.41	108.89	112.76
SO	BUILDLEN	BSBAGC-BSBAGF	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	BSBAGC-BSBAGF	44.25	63.88	79.19	39.64	38.30	35.80
SO	BUILDLEN	BSBAGC-BSBAGF	112.87	113.12	109.94	103.41	108.89	112.76
SO	XBADJ	BSBAGC-BSBAGF	50.30	58.59	65.11	69.65	72.07	72.30
SO	XBADJ	BSBAGC-BSBAGF	70.34	-20.88	-38.56	-55.06	-69.89	-82.60
SO	XBADJ	BSBAGC-BSBAGF	-92.80	-100.17	-104.51	-105.67	-111.19	-114.18
SO	XBADJ	BSBAGC-BSBAGF	-144.97	-151.21	-152.85	-149.85	-142.30	-130.42
SO	XBADJ	BSBAGC-BSBAGF	-114.59	-43.00	-40.63	-143.17	-145.76	-143.91
SO	XBADJ	BSBAGC-BSBAGF	-20.08	-12.95	-5.43	2.26	2.30	1.43
SO	YBADJ	BSBAGC-BSBAGF	-50.40	-32.68	-13.96	5.17	24.15	42.40
SO	YBADJ	BSBAGC-BSBAGF	59.36	56.75	57.80	57.11	54.67	50.58

```
SO YBADJ     BSBAGC-BSBAGF       44.95    37.95    29.80    20.75    11.06     1.04
SO YBADJ     BSBAGC-BSBAGF       50.40    32.68    13.96    -5.17   -24.15   -42.40
SO YBADJ     BSBAGC-BSBAGF      -59.36   -56.75   -57.80    29.51     7.64   -14.46
SO YBADJ     BSBAGC-BSBAGF      -44.95   -37.95   -29.80   -20.75   -11.06    -1.04

   SRCGROUP POINT ZDMPF YDMPF XDMPF ASBAGF BSBAGF
   SRCGROUP POINT ZDMPC YDMPC XDMPC ASBAGC BSBAGC ABSTO
   SRCGROUP VOLUME BVOL1 BVOL2 AVOL1 AVOL2 AVOL3 BLOADF ALOADF BLOADC ALOADC
   SRCGROUP TRAFFIC TP1VOL1-TP1VOL51 TP2VOL1-TP2VOL45
   SRCGROUP ALL
SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
** DESCRREC "" ""
   DISCCART        18.20        585.20      25.91     25.91
   DISCCART      -182.90        585.20      25.91     25.91
   DISCCART      -182.90        573.00      25.91     25.91
   DISCCART     -1645.90        573.00      22.99     22.99
   DISCCART     -1097.30      -2633.50      24.38     24.38
   DISCCART      2426.20      -2633.50      26.52     26.52
   DISCCART      2426.20        573.00      28.22     28.22
   ààà
   ààà
   ààà

   DISCCART     -5000.00       5000.00      22.86     22.86
   DISCCART      -450.00        650.00      24.65     24.65
RE FINISHED
**
****************************************
** ISCST3 Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE C:\AMODMET\TPATPA91.SFC
   PROFFILE C:\AMODMET\TPATPA91.PFL
   SURFDATA 12842 1991 TAMPA/INT'L_ARPT
   UAIRDATA 12842 1991 TAMPA/INT'L_ARPT
   PROFBASE 40 FEET
ME FINISHED
**
****************************************
** ISCST3 Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   PLOTFILE 24 ALL 1ST 24PM91.PLT
OU FINISHED
```

EXAMPLE AERMOD INPUT FILE
SIGNIFICANT IMPACT ANALYSIS
3-HOUR AVERAGE SO_2 IMPACTS

```
**
**
****************************************
** ISCST3 Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE CF INDUSTRIES, A&B PAP PSD, SIG ANALYSIS,   02/22/06
   TITLETWO AERMOD MODELING, 3-HOUR AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995
   MODELOPT DFAULT CONC
   AVERTIME 3
   POLLUTID SO2
   RUNORNOT RUN
CO FINISHED
**
****************************************
** ISCST3 Source Pathway
****************************************
**
**
SO STARTING
** Point Source Descriptions
** SAPA - "A" SAP
** ZDMP - "Z" MAP/DAP
** XDMP - "X" MAP/DAP
** YDMP - "Y" MAP/DAP

** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION SAPAF  POINT   -74.5    17.8  25.0
   LOCATION ZDMPF  POINT  -317.9    45.9  25.0
   LOCATION YDMPF  POINT  -327.6    74.7  25.0
   LOCATION XDMPF  POINT  -341.0    94.6  25.0

   LOCATION SAPAC  POINT   -74.5    17.8  25.0
   LOCATION ZDMPC  POINT  -317.9    45.9  25.0
   LOCATION YDMPC  POINT  -327.6    74.7  25.0
   LOCATION XDMPC  POINT  -341.0    94.6  25.0

** Source Parameters **
   SRCPARAM SAPAF   32.34  33.53  302.0  22.80  1.52
   SRCPARAM ZDMPF   0.273  41.45  333.0  13.56  2.74
   SRCPARAM YDMPF   0.316  41.45  330.0  16.24  2.74
   SRCPARAM XDMPF   0.318  41.45  330.0  15.47  2.74

   SRCPARAM SAPAC   -29.41     33.53  302.0  20.94  1.52
   SRCPARAM ZDMPC   -3.91E-4   41.45  333.0  13.56  2.74
   SRCPARAM YDMPC   -3.40E-4   41.45  330.0  16.24  2.74
   SRCPARAM XDMPC   -1.13E-4   41.45  330.0  15.47  2.74

** Building Downwash **
SO BUILDHGT SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00   19.81
SO BUILDHGT SAPAC-SAPAF      19.81   19.81    0.00    0.00    0.00    0.00
SO BUILDHGT SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPAC-SAPAF      20.12   20.12   20.12   20.12    0.00    0.00
SO BUILDHGT SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00   31.48
SO BUILDWID SAPAC-SAPAF      23.18   26.08    0.00    0.00    0.00    0.00
SO BUILDWID SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPAC-SAPAF      37.27   41.95   45.36   47.39    0.00    0.00
SO BUILDWID SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPAC-SAPAF       0.00    0.00    0.00    0.00    0.00    0.00
```

SO	BUILDLEN	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	61.05
SO	BUILDLEN	SAPAC-SAPAF	59.98	62.23	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAC-SAPAF	47.62	45.88	42.74	38.30	0.00	0.00
SO	BUILDLEN	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	-147.59
SO	XBADJ	SAPAC-SAPAF	-148.53	-148.52	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAC-SAPAF	-123.65	-125.35	-123.25	-117.39	0.00	0.00
SO	XBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	24.95
SO	YBADJ	SAPAC-SAPAF	3.60	-20.23	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAC-SAPAF	23.55	5.86	-12.02	-29.52	0.00	0.00
SO	YBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAC-SAPAF	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	ZDMPC-ZDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPC-ZDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPC-ZDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPC-ZDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPC-ZDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPC-ZDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	ZDMPC-ZDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	ZDMPC-ZDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	ZDMPC-ZDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDWID	ZDMPC-ZDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	ZDMPC-ZDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	ZDMPC-ZDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDLEN	ZDMPC-ZDMPF	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	ZDMPC-ZDMPF	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	ZDMPC-ZDMPF	94.49	94.25	91.14	85.27	90.19	93.86
SO	BUILDLEN	ZDMPC-ZDMPF	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	ZDMPC-ZDMPF	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	ZDMPC-ZDMPF	94.49	94.25	91.14	85.27	90.19	93.86
SO	XBADJ	ZDMPC-ZDMPF	-51.19	-54.40	-55.95	-55.80	-53.96	-50.48
SO	XBADJ	ZDMPC-ZDMPF	-45.46	-52.29	-59.00	-63.92	-66.90	-67.85
SO	XBADJ	ZDMPC-ZDMPF	-66.73	-63.59	-58.51	-51.66	-49.93	-47.43
SO	XBADJ	ZDMPC-ZDMPF	-43.48	-38.22	-31.80	-24.41	-16.27	-7.65
SO	XBADJ	ZDMPC-ZDMPF	1.21	-3.19	-8.97	-14.48	-19.55	-24.02
SO	XBADJ	ZDMPC-ZDMPF	-27.76	-30.66	-32.63	-33.61	-40.26	-46.43
SO	YBADJ	ZDMPC-ZDMPF	24.72	23.68	21.91	19.48	16.46	12.94
SO	YBADJ	ZDMPC-ZDMPF	9.02	4.84	0.50	-3.85	-8.09	-12.08
SO	YBADJ	ZDMPC-ZDMPF	-15.70	-18.84	-21.41	-23.34	-24.55	-25.01
SO	YBADJ	ZDMPC-ZDMPF	-24.72	-23.68	-21.91	-19.48	-16.46	-12.94
SO	YBADJ	ZDMPC-ZDMPF	-9.02	-4.84	-0.50	3.85	8.09	12.08
SO	YBADJ	ZDMPC-ZDMPF	15.70	18.84	21.41	23.34	24.55	25.01
SO	BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMPC-YDMPF	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	YDMPC-YDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	YDMPC-YDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	YDMPC-YDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDWID	YDMPC-YDMPF	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	YDMPC-YDMPF	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	YDMPC-YDMPF	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDLEN	YDMPC-YDMPF	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	YDMPC-YDMPF	44.25	55.48	67.97	78.40	86.44	91.86

```
SO BUILDLEN YDMPC-YDMPF          94.49   94.25   91.14   85.27   90.19   93.86
SO BUILDLEN YDMPC-YDMPF          94.67   92.62   87.74   80.21   70.23   58.12
SO BUILDLEN YDMPC-YDMPF          44.25   55.48   67.97   78.40   86.44   91.86
SO BUILDLEN YDMPC-YDMPF          94.49   94.25   91.14   85.27   90.19   93.86
SO XBADJ    YDMPC-YDMPF         -77.87  -78.14  -76.04  -71.63  -65.04  -56.47
SO XBADJ    YDMPC-YDMPF         -46.19  -47.73  -49.30  -49.37  -47.93  -45.05
SO XBADJ    YDMPC-YDMPF         -40.79  -35.29  -28.72  -21.28  -19.88  -18.63
SO XBADJ    YDMPC-YDMPF         -16.81  -14.48  -11.71   -8.58   -5.19   -1.65
SO XBADJ    YDMPC-YDMPF           1.95   -7.74  -18.67  -29.03  -38.51  -46.82
SO XBADJ    YDMPC-YDMPF         -53.71  -58.96  -62.42  -63.99  -70.30  -75.23
SO YBADJ    YDMPC-YDMPF          10.17    4.71   -0.89   -6.46  -11.84  -16.85
SO YBADJ    YDMPC-YDMPF         -21.36  -25.21  -28.30  -30.53  -31.83  -32.17
SO YBADJ    YDMPC-YDMPF         -31.52  -29.92  -27.41  -24.07  -20.00  -15.31
SO YBADJ    YDMPC-YDMPF         -10.17   -4.71    0.89    6.46   11.84   16.85
SO YBADJ    YDMPC-YDMPF          21.36   25.21   28.30   30.53   31.83   32.17
SO YBADJ    YDMPC-YDMPF          31.52   29.92   27.41   24.07   20.00   15.31

SO BUILDHGT XDMPC-XDMPF          38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT XDMPC-XDMPF          38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT XDMPC-XDMPF          38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT XDMPC-XDMPF          38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT XDMPC-XDMPF          38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDHGT XDMPC-XDMPF          38.71   38.71   38.71   38.71   38.71   38.71
SO BUILDWID XDMPC-XDMPF          78.40   86.44   91.86   94.49   94.25   91.14
SO BUILDWID XDMPC-XDMPF          85.27   90.19   93.86   94.67   92.62   87.74
SO BUILDWID XDMPC-XDMPF          80.21   70.23   58.12   44.25   55.48   67.97
SO BUILDWID XDMPC-XDMPF          78.40   86.44   91.86   94.49   94.25   91.14
SO BUILDWID XDMPC-XDMPF          85.27   90.19   93.86   94.67   92.62   87.74
SO BUILDWID XDMPC-XDMPF          80.21   70.23   58.12   44.25   55.48   67.97
SO BUILDLEN XDMPC-XDMPF          94.67   92.62   87.74   80.21   70.23   58.12
SO BUILDLEN XDMPC-XDMPF          44.25   55.48   67.97   78.40   86.44   91.86
SO BUILDLEN XDMPC-XDMPF          94.49   94.25   91.14   85.27   90.19   93.86
SO BUILDLEN XDMPC-XDMPF          94.67   92.62   87.74   80.21   70.23   58.12
SO BUILDLEN XDMPC-XDMPF          44.25   55.48   67.97   78.40   86.44   91.86
SO BUILDLEN XDMPC-XDMPF          94.49   94.25   91.14   85.27   90.19   93.86
SO XBADJ    XDMPC-XDMPF         -95.14  -92.26  -86.57  -78.26  -67.57  -54.82
SO XBADJ    XDMPC-XDMPF         -40.41  -37.99  -35.90  -32.72  -28.54  -23.49
SO XBADJ    XDMPC-XDMPF         -17.73  -11.43   -4.79    2.00    2.04    1.27
SO XBADJ    XDMPC-XDMPF           0.46   -0.36   -1.17   -1.95   -2.67   -3.30
SO XBADJ    XDMPC-XDMPF          -3.84  -17.48  -32.07  -45.68  -57.91  -68.37
SO XBADJ    XDMPC-XDMPF         -76.76  -82.82  -86.36  -87.27  -92.23  -95.13
SO YBADJ    XDMPC-XDMPF          -6.48  -14.69  -22.44  -29.52  -35.69  -40.79
SO YBADJ    XDMPC-XDMPF         -44.64  -47.14  -48.20  -47.80  -45.95  -42.70
SO YBADJ    XDMPC-XDMPF         -38.16  -32.45  -25.76  -18.29  -10.26   -1.91
SO YBADJ    XDMPC-XDMPF           6.48   14.69   22.44   29.52   35.69   40.79
SO YBADJ    XDMPC-XDMPF          44.64   47.14   48.20   47.80   45.95   42.70
SO YBADJ    XDMPC-XDMPF          38.16   32.45   25.76   18.29   10.26    1.91

   SRCGROUP ALL
SO FINISHED
**
****************************************
** ISCST3 Receptor Pathway
****************************************
**
**
RE STARTING
** DESCRREC "" ""
   DISCCART       18.20        585.20      25.91     25.91
   DISCCART     -182.90        585.20      25.91     25.91
   DISCCART     -182.90        573.00      25.91     25.91
   àà
   àà
   àà
```

```
   DISCCART     -5000.00     3000.00     19.81     19.81
   DISCCART     -5000.00     3500.00     21.34     21.34
   DISCCART     -5000.00     4000.00     21.64     21.64
   DISCCART     -5000.00     4500.00     22.77     22.77
   DISCCART     -5000.00     5000.00     22.86     22.86
   DISCCART      -450.00      650.00     24.65     24.65
RE FINISHED
**
****************************************
** ISCST3 Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE C:\AMODMET\TPATPA91.SFC
   PROFFILE C:\AMODMET\TPATPA91.PFL
   SURFDATA 12842 1991 TAMPA/INT'L_ARPT
   UAIRDATA 12842 1991 TAMPA/INT'L_ARPT
   PROFBASE 40 FEET
ME FINISHED
**
****************************************
** ISCST3 Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   PLOTFILE 3 ALL 1ST 3SO91.PLT
OU FINISHED
```

EXAMPLE AERMOD INPUT FILE
AAQS ANALYSIS
24-HOUR AVERAGE PM_{10} IMPACTS

```
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE CFI, A SAP AND A&B PAP PSD, AAQS ANALYSIS,  02/27/06
   TITLETWO AERMOD MODELING, 24-HOUR AVERAGE PM10 IMPACTS, TAMPA MET DATA 1991-1995
   MODELOPT DFAULT CONC
   AVERTIME 24
   POLLUTID PM10
   MULTYEAR H6H YEAR1.SAV
   RUNORNOT RUN
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING

*****----F----U----T----U----R----E----*****
** Future CFI Project Affected Sources
** ZDMP - "Z" MAP/DAP
** XDMP - "X" MAP/DAP
** YDMP - "Y" MAP/DAP
** ASBAG - "A" Shipping Baghouse
** BSBAG - "B" Shipping Baghouse
** BVOL1 - B Shipping Building Volume 1 - Volume Source
** BVOL2 - B Shipping Building Volume 2 - Volume Source
** AVOL1 - A Shipping Building Volume 1 - Volume Source
** AVOL2 - A Shipping Building Volume 2 - Volume Source
** AVOL3 - A Shipping Building Volume 3 - Volume Source
** BLOAD - B Truck/Railcar Loading - Volume Source
** ALOAD - A Truck/Railcar Loading - Volume Source

   LOCATION ZDMP  POINT  -317.9    45.9   25.0
   LOCATION YDMP  POINT  -327.6    74.7   25.0
   LOCATION XDMP  POINT  -341.0    94.6   25.0
   LOCATION ASBAG POINT  -351.7  -101.3   25.0
   LOCATION BSBAG POINT  -409.5   -41.1   25.0

   LOCATION BVOL1  VOLUME  -418.85     43.89   25.0
   LOCATION BVOL2  VOLUME  -399.23    -11.89   25.0
   LOCATION AVOL1  VOLUME  -405.55    -72.71   25.0
   LOCATION AVOL2  VOLUME  -388.79   -119.26   25.0
   LOCATION AVOL3  VOLUME  -372.65   -165.25   25.0
   LOCATION BLOAD  VOLUME  -454.0    -41.0     25.0
   LOCATION ALOAD  VOLUME  -339.0    -97.0     25.0

   SRCPARAM ZDMP   2.85  41.45  333.0  13.56  2.74
   SRCPARAM YDMP   1.93  41.45  330.0  16.24  2.74
   SRCPARAM XDMP   1.73  41.45  330.0  15.47  2.74
   SRCPARAM ASBAG  0.63  27.43  316.0   0.10  0.52
   SRCPARAM BSBAG  0.63  10.36  322.0  16.17  0.61

   SRCPARAM BVOL1   0.022   13.25   12.791   12.33
   SRCPARAM BVOL2   0.022   13.25   12.791   12.33
   SRCPARAM AVOL1   0.007   10.20   10.465    9.49
   SRCPARAM AVOL2   0.007   10.20   10.465    9.49
   SRCPARAM AVOL3   0.007   10.20   10.465    9.49
   SRCPARAM BLOAD   0.078    3.05    6.977    2.84
```

```
   SRCPARAM ALOAD    0.039    3.00    4.651    2.84

** Future Other CFI Sources
** ADMP   - "A" DAP/MAP
** MSTPTA - MOLTEN SULFUR TRUCK PIT A VENT
** MSTPTB - MOLTEN SULFUR TRUCK PIT B VENT
** MSTK22 - MOLTEN SULFUR STORAGE TANK 022
** MSTK33 - MOLTEN SULFUR STORAGE TANK 033 - AREA SOURCE
** MSRCUP - MOLTEN SULFUR RAILCAR UNLOADING - AREA SOURCE
** JSMTB  - JOHNSTON SCOTCH MARINE TYPE BOILER
** PACS   - Phosphoric Acid Cleanup System

   LOCATION JSMTB    POINT  -123.56    26.17    25.0
   LOCATION ADMP     POINT  -302.23  -112.22    25.0
   LOCATION MSTK22   POINT   -20.50    29.09    25.0
   LOCATION MSTPTA   POINT   -52.34    10.78    25.0
   LOCATION PACS     POINT   -204.0   -340.0    25.0
   LOCATION MSTPTB   POINT   -38.39   -29.11    25.0
   LOCATION MSTK33   AREA    -62.41   199.39    25.0
   LOCATION MSRCUP   AREA   -101.29   212.29    25.0


   SRCPARAM JSMTB    0.166   7.62  561.    18.78  1.07
   SRCPARAM ADMP     4.12   24.38  331.    11.21  3.05
** -- next three sources have rain caps: vel set to 0.01 m/s
   SRCPARAM MSTK22   0.017  11.58  373.2    0.01  0.61
   SRCPARAM MSTPTA   0.017   3.66  373.2    0.01  0.20
   SRCPARAM MSTPTB   0.017   3.66  373.2    0.01  0.20
   SRCPARAM PACS     0.118  24.38  316.5   14.15  1.22

** --CFI future area sources
**                ER/Area    RH   X Side  Y Side  Angle   Init Sz
**                (g/s/m2)   (m)    (m)    (m)     (deg)    (m)
**-----------------------------------------------------------------

** Area = X*Y = 16.4^2 = 268.8 m2 (equivalent for tank with 9.25 m radius)
** ER = 0.017 g/s
   SRCPARAM MSTK33   6.324E-5 12.50  16.400   16.4     0.00   0.00

** Area = X*Y = 3.5 * 19 = 66.5 m2
** ER = 0.017 g/s
   SRCPARAM MSRCUP   2.556E-4  0.00   3.500   19.0   -18.66   0.00


*****----T----R----U----C----K----T----R----A----F----F----I----C----*****
************************************************************
** Fugitive emissions from truck traffic are modelled as
** line source represented by adjacent volume sources.
************************************************************
**
************FUTURE TRUCK TRAFFIC****************
** TRUCK PATH 1
SO LOCATION   TP1VOL01   VOLUME    -443.96   567.68    25.0
SO LOCATION   TP1VOL02   VOLUME    -435.73   546.35    25.0
SO LOCATION   TP1VOL03   VOLUME    -427.50   525.02    25.0
SO LOCATION   TP1VOL04   VOLUME    -419.28   503.69    25.0
SO LOCATION   TP1VOL05   VOLUME    -411.05   482.36    25.0
SO LOCATION   TP1VOL06   VOLUME    -402.82   461.04    25.0
SO LOCATION   TP1VOL07   VOLUME    -394.59   439.71    25.0
SO LOCATION   TP1VOL08   VOLUME    -386.36   418.38    25.0
SO LOCATION   TP1VOL09   VOLUME    -378.13   397.05    25.0
SO LOCATION   TP1VOL10   VOLUME    -369.91   375.72    25.0
SO LOCATION   TP1VOL11   VOLUME    -361.68   354.39    25.0
SO LOCATION   TP1VOL12   VOLUME    -353.45   333.06    25.0
SO LOCATION   TP1VOL13   VOLUME    -344.40   314.49    25.0
```

```
SO LOCATION  TP1VOL14  VOLUME  -334.69  296.23  25.0
SO LOCATION  TP1VOL15  VOLUME  -324.99  277.96  25.0
SO LOCATION  TP1VOL16  VOLUME  -315.28  259.70  25.0
SO LOCATION  TP1VOL17  VOLUME  -305.58  241.43  25.0
SO LOCATION  TP1VOL18  VOLUME  -295.87  223.16  25.0
SO LOCATION  TP1VOL19  VOLUME  -286.17  204.90  25.0
SO LOCATION  TP1VOL20  VOLUME  -274.81  190.91  25.0
SO LOCATION  TP1VOL21  VOLUME  -262.07  177.93  25.0
SO LOCATION  TP1VOL22  VOLUME  -248.77  158.51  25.0
SO LOCATION  TP1VOL23  VOLUME  -236.58  138.22  25.0
SO LOCATION  TP1VOL24  VOLUME  -224.40  117.93  25.0
SO LOCATION  TP1VOL25  VOLUME  -212.21  97.64   25.0
SO LOCATION  TP1VOL26  VOLUME  -200.02  77.35   25.0
SO LOCATION  TP1VOL27  VOLUME  -187.83  57.06   25.0
SO LOCATION  TP1VOL28  VOLUME  -178.06  35.77   25.0
SO LOCATION  TP1VOL29  VOLUME  -170.10  13.90   25.0
SO LOCATION  TP1VOL30  VOLUME  -162.46  -8.09   25.0
SO LOCATION  TP1VOL31  VOLUME  -154.81  -30.07  25.0
SO LOCATION  TP1VOL32  VOLUME  -147.17  -52.06  25.0
SO LOCATION  TP1VOL33  VOLUME  -139.53  -74.04  25.0
SO LOCATION  TP1VOL34  VOLUME  -122.82  -75.65  25.0
SO LOCATION  TP1VOL35  VOLUME  -102.29  -69.99  25.0
SO LOCATION  TP1VOL36  VOLUME  -81.77   -64.33  25.0
SO LOCATION  TP1VOL37  VOLUME  -61.24   -58.67  25.0
SO LOCATION  TP1VOL38  VOLUME  -49.90   -62.36  25.0
SO LOCATION  TP1VOL39  VOLUME  -35.94   -65.34  25.0
SO LOCATION  TP1VOL40  VOLUME  -25.32   -54.07  25.0
SO LOCATION  TP1VOL41  VOLUME  -27.75   -35.16  25.0
SO LOCATION  TP1VOL42  VOLUME  -34.64   -16.10  25.0
SO LOCATION  TP1VOL43  VOLUME  -41.53   2.96    25.0
SO LOCATION  TP1VOL44  VOLUME  -48.42   22.03   25.0
SO LOCATION  TP1VOL45  VOLUME  -55.31   41.09   25.0
SO LOCATION  TP1VOL46  VOLUME  -75.10   46.85   25.0
SO LOCATION  TP1VOL47  VOLUME  -98.84   47.00   25.0
SO LOCATION  TP1VOL48  VOLUME  -122.59  47.16   25.0
SO LOCATION  TP1VOL49  VOLUME  -138.65  43.68   25.0
SO LOCATION  TP1VOL50  VOLUME  -154.38  38.18   25.0
SO LOCATION  TP1VOL51  VOLUME  -170.11  32.67   25.0

** TRUCK PATH 2
SO LOCATION  TP2VOL01  VOLUME  -281.98  175.03  25.0
SO LOCATION  TP2VOL02  VOLUME  -298.33  170.76  25.0
SO LOCATION  TP2VOL03  VOLUME  -314.69  166.50  25.0
SO LOCATION  TP2VOL04  VOLUME  -331.04  162.23  25.0
SO LOCATION  TP2VOL05  VOLUME  -347.57  171.01  25.0
SO LOCATION  TP2VOL06  VOLUME  -362.62  185.45  25.0
SO LOCATION  TP2VOL07  VOLUME  -377.67  199.89  25.0
SO LOCATION  TP2VOL08  VOLUME  -392.72  214.33  25.0
SO LOCATION  TP2VOL09  VOLUME  -407.77  228.77  25.0
SO LOCATION  TP2VOL10  VOLUME  -422.82  243.22  25.0
SO LOCATION  TP2VOL11  VOLUME  -441.48  242.22  25.0
SO LOCATION  TP2VOL12  VOLUME  -461.45  235.05  25.0
SO LOCATION  TP2VOL13  VOLUME  -481.42  227.88  25.0
SO LOCATION  TP2VOL14  VOLUME  -501.39  220.70  25.0
SO LOCATION  TP2VOL15  VOLUME  -521.36  213.53  25.0
SO LOCATION  TP2VOL16  VOLUME  -522.98  197.38  25.0
SO LOCATION  TP2VOL17  VOLUME  -517.29  177.49  25.0
SO LOCATION  TP2VOL18  VOLUME  -511.61  157.61  25.0
SO LOCATION  TP2VOL19  VOLUME  -505.93  137.72  25.0
SO LOCATION  TP2VOL20  VOLUME  -500.25  117.83  25.0
SO LOCATION  TP2VOL21  VOLUME  -493.11  95.75   25.0
SO LOCATION  TP2VOL22  VOLUME  -485.71  73.76   25.0
SO LOCATION  TP2VOL23  VOLUME  -478.31  51.76   25.0
SO LOCATION  TP2VOL24  VOLUME  -470.91  29.77   25.0
SO LOCATION  TP2VOL25  VOLUME  -463.50  7.78    25.0
```

```
SO LOCATION  TP2VOL26  VOLUME   -456.10   -14.22    25.0
SO LOCATION  TP2VOL27  VOLUME   -448.70   -36.21    25.0
SO LOCATION  TP2VOL28  VOLUME   -441.30   -58.21    25.0
SO LOCATION  TP2VOL29  VOLUME   -433.90   -80.20    25.0
SO LOCATION  TP2VOL30  VOLUME   -426.50   -102.20   25.0
SO LOCATION  TP2VOL31  VOLUME   -419.09   -124.19   25.0
SO LOCATION  TP2VOL32  VOLUME   -411.69   -146.19   25.0
SO LOCATION  TP2VOL33  VOLUME   -404.29   -168.18   25.0
SO LOCATION  TP2VOL34  VOLUME   -396.89   -190.18   25.0
SO LOCATION  TP2VOL35  VOLUME   -389.49   -212.17   25.0
SO LOCATION  TP2VOL36  VOLUME   -382.08   -234.16   25.0
SO LOCATION  TP2VOL37  VOLUME   -369.75   -242.93   25.0
SO LOCATION  TP2VOL38  VOLUME   -353.57   -247.72   25.0
SO LOCATION  TP2VOL39  VOLUME   -332.32   -243.42   25.0
SO LOCATION  TP2VOL40  VOLUME   -321.34   -225.42   25.0
SO LOCATION  TP2VOL41  VOLUME   -323.53   -208.96   25.0
SO LOCATION  TP2VOL42  VOLUME   -329.79   -192.58   25.0
SO LOCATION  TP2VOL43  VOLUME   -344.20   -190.74   25.0
SO LOCATION  TP2VOL44  VOLUME   -362.20   -196.27   25.0
SO LOCATION  TP2VOL45  VOLUME   -380.20   -201.80   25.0

** TRUCK PATH 1 EMISSIONS
SO SRCPARAM  TP1VOL01  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL02  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL03  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL04  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL05  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL06  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL07  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL08  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL09  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL10  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL11  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL12  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL13  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL14  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL15  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL16  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL17  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL18  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL19  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL20  0.00698    2.29   11.16   2.13
SO SRCPARAM  TP1VOL21  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL22  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL23  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL24  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL25  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL26  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL27  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL28  0.00428    2.29   11.16   2.13
SO SRCPARAM  TP1VOL29  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL30  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL31  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL32  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL33  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL34  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL35  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL36  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL37  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL38  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL39  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL40  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL41  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL42  0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL43  0.00214    2.29   11.16   2.13
```

```
SO SRCPARAM  TP1VOL44   0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL45   0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL46   0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL47   0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL48   0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL49   0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL50   0.00214    2.29   11.16   2.13
SO SRCPARAM  TP1VOL51   0.00214    2.29   11.16   2.13

** TRUCK PATH 2 EMISSIONS
SO SRCPARAM  TP2VOL01   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL02   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL03   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL04   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL05   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL06   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL07   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL08   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL09   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL10   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL11   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL12   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL13   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL14   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL15   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL16   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL17   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL18   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL19   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL20   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL21   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL22   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL23   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL24   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL25   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL26   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL27   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL28   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL29   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL30   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL31   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL32   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL33   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL34   0.00397    2.29   11.16   2.13
SO SRCPARAM  TP2VOL35   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL36   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL37   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL38   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL39   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL40   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL41   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL42   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL43   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL44   0.00198    2.29   11.16   2.13
SO SRCPARAM  TP2VOL45   0.00198    2.29   11.16   2.13

** Other PM Sources - Source Locations **
** Coronet Industries, Inc.
SO LOCATION  CORI1   POINT   5800   -19700   39.6
SO LOCATION  CORI3   POINT   5800   -19700   39.6
SO LOCATION  CORI5   POINT   5800   -19700   39.6
SO LOCATION  CORI6   POINT   5800   -19700   39.6
SO LOCATION  CORI7   POINT   5800   -19700   39.6
SO LOCATION  CORI8   POINT   5800   -19700   39.6
SO LOCATION  CORI9   POINT   5800   -19700   39.6
```

```
SO LOCATION   CORI12   POINT   5800    -19700   39.6
SO LOCATION   CORI13   POINT   5800    -19700   39.6
SO LOCATION   CORI15   POINT   5800    -19700   39.6
SO LOCATION   CORI16   POINT   5800    -19700   39.6
SO LOCATION   CORI17   POINT   5800    -19700   39.6
SO LOCATION   CORI18   POINT   5800    -19700   39.6
SO LOCATION   CORI19   POINT   5800    -19700   39.6
SO LOCATION   CORI20   POINT   5800    -19700   39.6
SO LOCATION   CORI21   POINT   5800    -19700   39.6
SO LOCATION   CORI22   POINT   5800    -19700   39.6
SO LOCATION   CORI23   POINT   5800    -19700   39.6
SO LOCATION   CORI24   POINT   5800    -19700   39.6
SO LOCATION   CORI27   POINT   5800    -19700   39.6
SO LOCATION   CORI28   POINT   5800    -19700   39.6
SO LOCATION   CORI30   POINT   5800    -19700   39.6
SO LOCATION   CORI31   POINT   5800    -19700   39.6
SO LOCATION   CORI32   POINT   5800    -19700   39.6

** Lakeland Electric, C.D. McIntosh, Jr. Power Plant
SO LOCATION   MCINT1   POINT   21000   -9800    39.6
SO LOCATION   MCINT2   POINT   21000   -9800    39.6
SO LOCATION   MCINT3   POINT   21000   -9800    39.6
SO LOCATION   MCINT4   POINT   21000   -9800    39.6
SO LOCATION   MCINT5   POINT   21000   -9800    39.6
SO LOCATION   MCINT6   POINT   21000   -9800    39.6
SO LOCATION   MCINT28  POINT   21000   -9800    39.6

** Lakeland Electric, Larsen Power Plant
SO LOCATION   LARPWR3  POINT   20900   -13500   39.6
SO LOCATION   LARPWR4  POINT   20900   -13500   39.6
SO LOCATION   LARPWR5  POINT   20900   -13500   39.6
SO LOCATION   LARPWR6  POINT   20900   -13500   39.6
SO LOCATION   LARPWR8  POINT   20900   -13500   39.6

** Trademark Nitrogen Corp
SO LOCATION   TRADE1   POINT   -20700  -23400   7.6

** Agrifos Mining, L.L.C. - Nichols
SO LOCATION   AGRNIC1    POINT   10700   -30700   33.5
SO LOCATION   AGRNIC2    POINT   10700   -30700   33.5
SO LOCATION   AGRNIC10   POINT   10700   -30700   33.5
SO LOCATION   AGRNIC11   POINT   10700   -30700   33.5

** IMC-Agrico Co.(Prairie)
SO LOCATION   IMCPR1   POINT   14900   -29000   36.6
SO LOCATION   IMCPR2   POINT   14900   -29000   36.6
SO LOCATION   IMCPR3   POINT   14900   -29000   36.6
SO LOCATION   IMCPR4   POINT   14900   -29000   36.6
SO LOCATION   IMCPR5   POINT   14900   -29000   36.6
SO LOCATION   IMCPR6   POINT   14900   -29000   36.6
SO LOCATION   IMCPR7   POINT   14900   -29000   36.6

**   Cutrale Citrus Juices USA, Inc
SO LOCATION   CCJUSA1    POINT   34460   -12420    51.8
SO LOCATION   CCJUSA3    POINT   34460   -12420    51.8
SO LOCATION   CCJUSA5    POINT   34460   -12420    51.8
SO LOCATION   CCJUSA6    POINT   34460   -12420    51.8
SO LOCATION   CCJUSA7    POINT   34460   -12420    51.8
SO LOCATION   CCJUSA8    POINT   34460   -12420    51.8
SO LOCATION   CCJUSA9    POINT   34460   -12420    51.8
SO LOCATION   CCJUSA10   POINT   34460   -12420    51.8

** Mosaic Phosphates Co. (New Wales)
SO LOCATION   WALES9     POINT   8700    -36600    45.7
SO LOCATION   WALES11    POINT   8700    -36600    45.7
```

```
SO LOCATION  WALES15   POINT   8700    -36600    45.7
SO LOCATION  WALES23   POINT   8700    -36600    45.7
SO LOCATION  WALES24   POINT   8700    -36600    45.7
SO LOCATION  WALES25   POINT   8700    -36600    45.7
SO LOCATION  WALES26   POINT   8700    -36600    45.7
SO LOCATION  WALES27   POINT   8700    -36600    45.7
SO LOCATION  WALES28   POINT   8700    -36600    45.7
SO LOCATION  WALES29   POINT   8700    -36600    45.7
SO LOCATION  WALES31   POINT   8700    -36600    45.7
SO LOCATION  WALES32   POINT   8700    -36600    45.7
SO LOCATION  WALES33   POINT   8700    -36600    45.7
SO LOCATION  WALES34   POINT   8700    -36600    45.7
SO LOCATION  WALES35   POINT   8700    -36600    45.7
SO LOCATION  WALES36   POINT   8700    -36600    45.7
SO LOCATION  WALES37   POINT   8700    -36600    45.7
SO LOCATION  WALES38   POINT   8700    -36600    45.7
SO LOCATION  WALES41   POINT   8700    -36600    45.7
SO LOCATION  WALES43   POINT   8700    -36600    45.7
SO LOCATION  WALES45   POINT   8700    -36600    45.7
SO LOCATION  WALES46   POINT   8700    -36600    45.7
SO LOCATION  WALES47   POINT   8700    -36600    45.7
SO LOCATION  WALES48   POINT   8700    -36600    45.7
SO LOCATION  WALES52   POINT   8700    -36600    45.7
SO LOCATION  WALES54   POINT   8700    -36600    45.7
SO LOCATION  WALES55   POINT   8700    -36600    45.7
SO LOCATION  WALES56   POINT   8700    -36600    45.7
SO LOCATION  WALES59   POINT   8700    -36600    45.7
SO LOCATION  WALES70   POINT   8700    -36600    45.7
SO LOCATION  WALES74   POINT   8700    -36600    45.7
SO LOCATION  WALES75   POINT   8700    -36600    45.7
SO LOCATION  WALES76   POINT   8700    -36600    45.7

** TECO, Hookers Point
SO LOCATION  TECOHKPM  POINT  -30000  -25000     1.5

**   TECO, Bayside Power Station
SO LOCATION  TECOBA7   POINT  -27900  -28500     1.5
SO LOCATION  TECOBA9   POINT  -27900  -28500     1.5
SO LOCATION  TECOBA10  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA11  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA13  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA14  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA15  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA16  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA17  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA18  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA20  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA21  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA22  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA23  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA24  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA25  POINT  -27900  -28500     1.5
SO LOCATION  TECOBA26  POINT  -27900  -28500     1.5

** Mosaic Phosphates Inc. (CFMO), Noralyn Mine
SO LOCATION  IMCFMO11  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO12  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO13  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO15  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO16  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO17  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO18  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO19  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO20  POINT   26700   -35700    42.7
SO LOCATION  IMCFMO21  POINT   26700   -35700    42.7
```

```
SO LOCATION   IMCFM022  POINT   26700    -35700    42.7
SO LOCATION   IMCFM023  POINT   26700    -35700    42.7
SO LOCATION   IMCFM024  POINT   26700    -35700    42.7

** TECO - Big Bend Station
SO LOCATION   TECOBB1   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB2   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB3   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB4   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB5   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB6   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB7   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB8   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB9   POINT   -24850   -41090     2.1
SO LOCATION   TECOBB12  POINT   -24850   -41090     2.1
SO LOCATION   TECOBB13  POINT   -24850   -41090     2.1
SO LOCATION   TECOBB14  POINT   -24850   -41090     2.1
SO LOCATION   TECOBB15  POINT   -24850   -41090     2.1
SO LOCATION   TECOBB16  POINT   -24850   -41090     2.1
SO LOCATION   TECOBB17  POINT   -24850   -41090     2.1

** Progress Energy Florida - Higgins
SO LOCATION   FPCHIG1   POINT   -44500   2300     1.5
SO LOCATION   FPCHIG2   POINT   -44500   2300     1.5
SO LOCATION   FPCHIG3   POINT   -44500   2300     1.5
SO LOCATION   FPCHIG4   POINT   -44500   2300     1.5
SO LOCATION   FPCHIG5   POINT   -44500   2300     1.5
SO LOCATION   FPCHIG6   POINT   -44500   2300     1.5
SO LOCATION   FPCHIG7   POINT   -44500   2300     1.5

** Progress Energy Florida - Intercession City Plant
SO LOCATION   ICP16     POINT   58300    10000    21.3
SO LOCATION   ICP710    POINT   58300    10000    21.3
SO LOCATION   ICP11     POINT   58300    10000    21.3
SO LOCATION   ICP1820   POINT   58300    10000    21.3

** Progress Energy Florida, Inc. - Anclote Power Plant
SO LOCATION   FPCANC1   POINT   -60590    4680    6.1
SO LOCATION   FPCANC2   POINT   -60590    4680    6.1

** Florida Power & Light - Manatee
SO LOCATION    FPLMAN1  POINT   -20750   -61850   15.2
SO LOCATION    FPLMAN2  POINT   -20750   -61850   15.2
SO LOCATION    FPLMAN5  POINT   -20750   -61850   15.2
SO LOCATION    FPLMAN6  POINT   -20750   -61850   15.2
SO LOCATION    FPLMAN7  POINT   -20750   -61850   15.2
SO LOCATION    FPLMAN8  POINT   -20750   -61850   15.2

** Other PM Sources - Source Parameters **
** Coronet Industries, Inc.
SO SRCPARAM         CORI1   1.663   30.48   338     11.89   1.37
SO SRCPARAM         CORI3   1.642   46.33   300     9.45    1.77
SO SRCPARAM         CORI5   1.890   45.72   313     18.29   1.77
SO SRCPARAM         CORI6   0.389   24.69   315     8.84    0.82
SO SRCPARAM         CORI7   0.164   32.61   298     33.53   0.37
SO SRCPARAM         CORI8   0.857   30.48   319     8.53    0.91
SO SRCPARAM         CORI9   0.044   29.57   298     13.41   0.30
SO SRCPARAM         CORI12  0.810   18.90   298     24.69   0.55
SO SRCPARAM         CORI13  0.154   20.42   298     11.28   0.46
SO SRCPARAM         CORI15  0.897   10.36   328     18.90   0.82
SO SRCPARAM         CORI16  0.404   17.37   298     28.65   0.46
SO SRCPARAM         CORI17  0.215   16.46   298     19.81   0.55
SO SRCPARAM         CORI18  0.215   13.72   350     14.02   0.55
SO SRCPARAM         CORI19  0.009   7.62    505     15.24   0.40
SO SRCPARAM         CORI20  0.016   6.10    605     20.12   0.37
```

```
SO SRCPARAM         CORI21  4.321    24.38   308      78.94   1.37
SO SRCPARAM         CORI22  1.767    46.33   300      11.89   1.77
SO SRCPARAM         CORI23  0.630    9.75    296      10.67   0.46
SO SRCPARAM         CORI24  1.767    46.33   295      10.97   1.77
SO SRCPARAM         CORI27  0.048    3.05    339      17.98   0.24
SO SRCPARAM         CORI28  0.026    15.24   294      20.42   0.15
SO SRCPARAM         CORI30  0.188    16.76   293      11.28   0.46
SO SRCPARAM         CORI31  0.035    24.38   294      17.68   0.18
SO SRCPARAM         CORI32  0.239    13.72   394      5.79    0.49

** Lakeland Electric, C.D. McIntosh, Jr. Power Plant
SO SRCPARAM         MCINT1  12.411   45.72   409      24.75   2.74
SO SRCPARAM         MCINT2  0.219    6.10    653      23.47   0.79
SO SRCPARAM         MCINT3  0.219    6.10    653      23.47   0.79
SO SRCPARAM         MCINT4  1.532    10.67   755      24.23   4.11
SO SRCPARAM         MCINT5  14.931   47.85   409      22.31   3.20
SO SRCPARAM         MCINT6  34.398   76.20   348      25.18   5.49
SO SRCPARAM         MCINT28 4.145    25.91   864      25.21   8.53

** Lakeland Electric, Larsen Power Plant
SO SRCPARAM         LARPWR3 11.567   50.29   444      6.40    3.05
SO SRCPARAM         LARPWR4 23.272   50.29   444      6.71    3.05
SO SRCPARAM         LARPWR5 1.000    9.45    700      30.78   3.60
SO SRCPARAM         LARPWR6 1.000    9.45    700      30.78   3.60
SO SRCPARAM         LARPWR8 3.654    47.24   523      26.12   4.88

** Trademark Nitrogen Corp
SO SRCPARAM         TRADE1  42.084   15.24   450      5.45    0.52

** Agrifos Mining, L.L.C. - Nichols
SO SRCPARAM         AGRNIC1    4.801    24.38   344      12.50   2.29
SO SRCPARAM         AGRNIC2    4.801    24.38   344      12.50   2.29
SO SRCPARAM         AGRNIC10   5.040    25.91   300      14.33   1.68
SO SRCPARAM         AGRNIC11   4.158    25.91   297      19.20   1.52

** IMC-Agrico Co.(Prairie)
SO SRCPARAM         IMCPR1  4.070    27.43   311      12.80   0.30
SO SRCPARAM         IMCPR2  1.890    22.86   328      24.08   0.34
SO SRCPARAM         IMCPR3  2.419    22.86   328      40.54   0.34
SO SRCPARAM         IMCPR4  4.082    21.34   358      15.54   1.34
SO SRCPARAM         IMCPR5  2.419    19.81   333      10.06   0.61
SO SRCPARAM         IMCPR6  0.019    15.24   299      23.16   0.15
SO SRCPARAM         IMCPR7  0.302    22.86   328      53.34   0.34

** Cutrale Citrus Juices USA, Inc
SO SRCPARAM         CCJUSA1    4.145    28.35   333      16.76   1.07
SO SRCPARAM         CCJUSA3    4.145    30.48   345      14.94   0.98
SO SRCPARAM         CCJUSA5    2.520    10.06   311      17.37   0.76
SO SRCPARAM         CCJUSA6    2.520    10.06   311      17.37   0.76
SO SRCPARAM         CCJUSA7    2.520    10.36   305      14.94   0.82
SO SRCPARAM         CCJUSA8    2.041    12.19   435      18.29   1.22
SO SRCPARAM         CCJUSA9    0.731    12.19   439      20.12   1.22
SO SRCPARAM         CCJUSA10   3.490    10.06   311      14.94   0.76

** Mosaic Phosphates Co. (New Wales)
SO SRCPARAM         WALES9     3.604    40.54   314      14.94   2.13
SO SRCPARAM         WALES11    1.890    36.58   341      17.37   1.22
SO SRCPARAM         WALES15    0.136    19.81   314      51.51   0.30
SO SRCPARAM         WALES23    0.599    34.75   314      10.06   0.30
SO SRCPARAM         WALES24    0.454    31.39   314      42.67   0.30
SO SRCPARAM         WALES25    0.454    36.27   314      38.71   0.30
SO SRCPARAM         WALES26    0.202    5.49    314      9.45    0.30
SO SRCPARAM         WALES27    4.637    52.43   328      20.21   2.44
SO SRCPARAM         WALES28    0.599    34.75   314      10.06   0.30
SO SRCPARAM         WALES29    0.592    40.54   305      12.92   0.91
```

```
SO SRCPARAM         WALES31   0.454    32.92    300     9.45     0.24
SO SRCPARAM         WALES32   0.970    26.21    378     78.64    0.46
SO SRCPARAM         WALES33   0.970    26.21    408     68.58    0.46
SO SRCPARAM         WALES34   0.118    21.64    325     26.52    0.52
SO SRCPARAM         WALES35   0.118    21.64    311     77.11    0.30
SO SRCPARAM         WALES36   3.759    52.43    314     15.85    1.37
SO SRCPARAM         WALES37   0.454    3.05     311     20.73    0.55
SO SRCPARAM         WALES38   0.945    19.81    311     24.08    0.34
SO SRCPARAM         WALES41   0.630    3.05     311     54.56    0.46
SO SRCPARAM         WALES43   0.454    3.05     314     21.34    0.49
SO SRCPARAM         WALES45   0.806    52.12    316     17.68    1.83
SO SRCPARAM         WALES46   0.806    52.12    316     17.68    1.83
SO SRCPARAM         WALES47   0.532    44.81    353     21.00    1.31
SO SRCPARAM         WALES48   0.126    18.29    300     9.51     1.07
SO SRCPARAM         WALES52   0.599    34.75    314     10.06    0.30
SO SRCPARAM         WALES54   0.970    32.61    339     23.47    1.07
SO SRCPARAM         WALES55   0.648    7.62     333     10.36    1.31
SO SRCPARAM         WALES56   0.764    51.82    316     19.66    1.52
SO SRCPARAM         WALES59   0.630    3.05     311     21.00    0.46
SO SRCPARAM         WALES70   0.088    33.53    316     34.50    0.23
SO SRCPARAM         WALES74   1.802    52.43    314     21.40    1.37
SO SRCPARAM         WALES75   0.239    26.21    394     32.34    0.91
SO SRCPARAM         WALES76   0.239    27.43    328     34.50    0.46

** TECO, Hookers Point
SO SRCPARAM         TECOHKPM  0.945    3.05     704     207.57   0.20

** TECO, Bayside Power Station
SO SRCPARAM         TECOBA7   15.372   10.67    816     28.22    3.35
SO SRCPARAM         TECOBA9   0.018    21.95    450     10.67    0.21
SO SRCPARAM         TECOBA10  0.151    32.61    450     30.18    0.30
SO SRCPARAM         TECOBA11  0.365    31.70    450     17.98    0.61
SO SRCPARAM         TECOBA13  0.024    53.34    299     21.34    0.52
SO SRCPARAM         TECOBA14  0.024    53.34    299     21.34    0.52
SO SRCPARAM         TECOBA15  0.024    53.95    299     15.24    0.61
SO SRCPARAM         TECOBA16  0.024    53.34    299     21.34    0.52
SO SRCPARAM         TECOBA17  0.024    53.04    299     24.08    0.37
SO SRCPARAM         TECOBA18  0.024    53.34    299     21.34    0.52
SO SRCPARAM         TECOBA20  1.449    45.72    378     18.44    5.79
SO SRCPARAM         TECOBA21  1.449    45.72    378     18.44    5.79
SO SRCPARAM         TECOBA22  1.449    45.72    378     18.44    5.79
SO SRCPARAM         TECOBA23  1.449    45.72    378     18.44    5.79
SO SRCPARAM         TECOBA24  1.449    45.72    378     18.44    5.79
SO SRCPARAM         TECOBA25  1.449    45.72    378     18.44    5.79
SO SRCPARAM         TECOBA26  1.449    45.72    378     18.44    5.79

** Mosaic Phosphates Inc. (CFMO), Noralyn Mine
SO SRCPARAM         IMCFMO11  5.317    23.16    394     17.31    1.98
SO SRCPARAM         IMCFMO12  5.683    16.76    341     8.84     2.83
SO SRCPARAM         IMCFMO13  4.410    45.72    311     15.85    1.07
SO SRCPARAM         IMCFMO15  1.260    7.32     316     8.08     0.61
SO SRCPARAM         IMCFMO16  1.260    7.62     297     11.49    0.46
SO SRCPARAM         IMCFMO17  1.260    8.23     297     4.85     0.61
SO SRCPARAM         IMCFMO18  1.260    7.62     298     11.49    0.46
SO SRCPARAM         IMCFMO19  1.260    8.84     298     6.00     0.55
SO SRCPARAM         IMCFMO20  1.890    8.23     303     16.18    0.61
SO SRCPARAM         IMCFMO21  1.890    8.23     300     21.88    0.58
SO SRCPARAM         IMCFMO22  1.260    12.19    311     14.39    0.46
SO SRCPARAM         IMCFMO23  1.890    13.11    303     8.08     0.61
SO SRCPARAM         IMCFMO24  1.890    41.15    289     16.76    0.85

** TECO - Big Bend Station
SO SRCPARAM         TECOBB1   15.259   149.35   419     35.33    7.32
SO SRCPARAM         TECOBB2   15.107   149.35   325     26.70    7.32
SO SRCPARAM         TECOBB3   15.561   152.10   410     14.33    7.32
```

```
SO SRCPARAM       TECOBB4   5.456   152.10  342     17.98   7.32
SO SRCPARAM       TECOBB5   4.158   22.86   771     18.59   4.27
SO SRCPARAM       TECOBB6   4.158   22.86   771     18.59   4.27
SO SRCPARAM       TECOBB7   4.158   10.67   816     28.01   3.36
SO SRCPARAM       TECOBB8   0.650   31.09   394     15.85   0.76
SO SRCPARAM       TECOBB9   0.378   34.44   394     123.75  0.27
SO SRCPARAM       TECOBB12  0.006   30.78   339     14.02   0.15
SO SRCPARAM       TECOBB13  0.006   30.78   339     14.02   0.15
SO SRCPARAM       TECOBB14  0.025   42.37   333     17.98   0.49
SO SRCPARAM       TECOBB15  0.060   54.56   299     21.03   0.52
SO SRCPARAM       TECOBB16  0.060   54.56   299     21.03   0.52
SO SRCPARAM       TECOBB17  0.060   54.56   299     21.03   0.52

** Progress Energy Florida - Higgins
SO SRCPARAM       FPCHIG1   6.905   53.04   429     8.23    3.81
SO SRCPARAM       FPCHIG2   6.590   53.04   428     8.23    3.81
SO SRCPARAM       FPCHIG3   6.905   53.04   423     7.32    3.81
SO SRCPARAM       FPCHIG4   2.540   16.76   728     28.38   4.60
SO SRCPARAM       FPCHIG5   2.540   17.07   728     28.38   4.60
SO SRCPARAM       FPCHIG6   2.831   16.76   728     28.38   4.60
SO SRCPARAM       FPCHIG7   2.831   16.76   728     28.38   4.60

** Progress Energy Florida - Intercession City Plant
SO SRCPARAM       ICP16     32.508  13.72   678     53.31   4.46
SO SRCPARAM       ICP710    7.560   15.24   835     53.07   4.19
SO SRCPARAM       ICP11     2.142   22.86   830     42.49   5.79
SO SRCPARAM       ICP1820   9.299   17.07   807     35.84   4.91

** Progress Energy Florida, Inc. - Anclote Power Plant
SO SRCPARAM       FPCANC1  78.183  152.10  433     18.90   7.32
SO SRCPARAM       FPCANC2  76.394  152.10  433     18.90   7.32

** Florida Power & Light - Manatee
SO SRCPARAM      FPLMAN1  108.99  152.10  446     23.77   8.32
SO SRCPARAM      FPLMAN2  108.99  152.10  436     25.15   7.99
SO SRCPARAM      FPLMAN5    2.167   36.58  875     31.94   6.71
SO SRCPARAM      FPLMAN6    2.167   36.58  368     17.98   5.79
SO SRCPARAM      FPLMAN7    2.167   36.58  368     17.98   5.79
SO SRCPARAM      FPLMAN8    2.167   36.58  368     17.98   5.79

** Building Downwash **
SO BUILDHGT ZDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDWID ZDMP       78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID ZDMP       85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID ZDMP       80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDWID ZDMP       78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID ZDMP       85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID ZDMP       80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDLEN ZDMP       94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN ZDMP       44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN ZDMP       94.49    94.25    91.14    85.27    90.19    93.86
SO BUILDLEN ZDMP       94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN ZDMP       44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN ZDMP       94.49    94.25    91.14    85.27    90.19    93.86
SO XBADJ    ZDMP      -51.19   -54.40   -55.95   -55.80   -53.96   -50.48
SO XBADJ    ZDMP      -45.46   -52.29   -59.00   -63.92   -66.90   -67.85
SO XBADJ    ZDMP      -66.73   -63.59   -58.51   -51.66   -49.93   -47.43
SO XBADJ    ZDMP      -43.48   -38.22   -31.80   -24.41   -16.27    -7.65
SO XBADJ    ZDMP        1.21    -3.19    -8.97   -14.48   -19.55   -24.02
SO XBADJ    ZDMP      -27.76   -30.66   -32.63   -33.61   -40.26   -46.43
```

SO	YBADJ	ZDMP	24.72	23.68	21.91	19.48	16.46	12.94
SO	YBADJ	ZDMP	9.02	4.84	0.50	-3.85	-8.09	-12.08
SO	YBADJ	ZDMP	-15.70	-18.84	-21.41	-23.34	-24.55	-25.01
SO	YBADJ	ZDMP	-24.72	-23.68	-21.91	-19.48	-16.46	-12.94
SO	YBADJ	ZDMP	-9.02	-4.84	-0.50	3.85	8.09	12.08
SO	YBADJ	ZDMP	15.70	18.84	21.41	23.34	24.55	25.01

SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	YDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	YDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	YDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDWID	YDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	YDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	YDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDLEN	YDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	YDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	YDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	BUILDLEN	YDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	YDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	YDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	XBADJ	YDMP	-77.87	-78.14	-76.04	-71.63	-65.04	-56.47
SO	XBADJ	YDMP	-46.19	-47.73	-49.30	-49.37	-47.93	-45.05
SO	XBADJ	YDMP	-40.79	-35.29	-28.72	-21.28	-19.88	-18.63
SO	XBADJ	YDMP	-16.81	-14.48	-11.71	-8.58	-5.19	-1.65
SO	XBADJ	YDMP	1.95	-7.74	-18.67	-29.03	-38.51	-46.82
SO	XBADJ	YDMP	-53.71	-58.96	-62.42	-63.99	-70.30	-75.23
SO	YBADJ	YDMP	10.17	4.71	-0.89	-6.46	-11.84	-16.85
SO	YBADJ	YDMP	-21.36	-25.21	-28.30	-30.53	-31.83	-32.17
SO	YBADJ	YDMP	-31.52	-29.92	-27.41	-24.07	-20.00	-15.31
SO	YBADJ	YDMP	-10.17	-4.71	0.89	6.46	11.84	16.85
SO	YBADJ	YDMP	21.36	25.21	28.30	30.53	31.83	32.17
SO	YBADJ	YDMP	31.52	29.92	27.41	24.07	20.00	15.31

SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMP	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	XDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	XDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	XDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDWID	XDMP	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	XDMP	85.27	90.19	93.86	94.67	92.62	87.74
SO	BUILDWID	XDMP	80.21	70.23	58.12	44.25	55.48	67.97
SO	BUILDLEN	XDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	XDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	XDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	BUILDLEN	XDMP	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	XDMP	44.25	55.48	67.97	78.40	86.44	91.86
SO	BUILDLEN	XDMP	94.49	94.25	91.14	85.27	90.19	93.86
SO	XBADJ	XDMP	-95.14	-92.26	-86.57	-78.26	-67.57	-54.82
SO	XBADJ	XDMP	-40.41	-37.99	-35.90	-32.72	-28.54	-23.49
SO	XBADJ	XDMP	-17.73	-11.43	-4.79	2.00	2.04	1.27
SO	XBADJ	XDMP	0.46	-0.36	-1.17	-1.95	-2.67	-3.30
SO	XBADJ	XDMP	-3.84	-17.48	-32.07	-45.68	-57.91	-68.37
SO	XBADJ	XDMP	-76.76	-82.82	-86.36	-87.27	-92.23	-95.13
SO	YBADJ	XDMP	-6.48	-14.69	-22.44	-29.52	-35.69	-40.79

SO	YBADJ	XDMP	-44.64	-47.14	-48.20	-47.80	-45.95	-42.70
SO	YBADJ	XDMP	-38.16	-32.45	-25.76	-18.29	-10.26	-1.91
SO	YBADJ	XDMP	6.48	14.69	22.44	29.52	35.69	40.79
SO	YBADJ	XDMP	44.64	47.14	48.20	47.80	45.95	42.70
SO	YBADJ	XDMP	38.16	32.45	25.76	18.29	10.26	1.91
SO	BUILDHGT	ASBAG	26.52	26.52	30.48	30.48	20.42	28.35
SO	BUILDHGT	ASBAG	20.42	28.35	28.35	28.35	28.35	26.52
SO	BUILDHGT	ASBAG	26.52	26.52	26.52	26.52	38.71	38.71
SO	BUILDHGT	ASBAG	38.71	38.71	30.48	30.48	20.42	28.35
SO	BUILDHGT	ASBAG	28.35	28.35	28.35	28.35	28.35	26.52
SO	BUILDHGT	ASBAG	26.52	30.48	20.42	20.42	20.42	30.48
SO	BUILDWID	ASBAG	144.66	145.79	15.16	14.55	139.49	22.23
SO	BUILDWID	ASBAG	134.90	21.06	26.62	31.37	35.16	118.77
SO	BUILDWID	ASBAG	94.34	81.97	67.11	50.21	55.48	67.97
SO	BUILDWID	ASBAG	78.40	86.44	15.16	14.55	139.49	22.23
SO	BUILDWID	ASBAG	16.15	21.06	26.62	31.37	35.16	169.12
SO	BUILDWID	ASBAG	152.08	14.41	64.46	61.49	60.08	14.22
SO	BUILDLEN	ASBAG	155.41	164.77	15.32	15.09	85.05	39.01
SO	BUILDLEN	ASBAG	41.91	38.69	39.77	39.64	38.30	109.19
SO	BUILDLEN	ASBAG	112.87	113.12	109.94	103.41	90.19	93.86
SO	BUILDLEN	ASBAG	94.67	92.62	15.32	15.09	85.05	39.01
SO	BUILDLEN	ASBAG	36.99	38.69	39.77	39.64	38.30	142.50
SO	BUILDLEN	ASBAG	134.87	13.49	139.31	134.90	138.77	13.23
SO	XBADJ	ASBAG	38.91	23.34	-12.40	-12.95	-82.27	36.12
SO	XBADJ	ASBAG	-61.96	40.03	38.67	36.15	32.52	-162.80
SO	XBADJ	ASBAG	-175.83	-183.52	-185.63	-182.10	-189.02	-194.63
SO	XBADJ	ASBAG	-194.32	-188.10	-2.92	-2.14	-2.77	-75.12
SO	XBADJ	ASBAG	-76.88	-78.72	-78.44	-75.78	-70.82	20.31
SO	XBADJ	ASBAG	40.96	-4.38	-66.04	-71.01	-80.01	-8.60
SO	YBADJ	ASBAG	50.12	71.93	4.24	3.35	10.68	-20.78
SO	YBADJ	ASBAG	-3.56	-0.50	9.82	19.83	29.25	66.44
SO	YBADJ	ASBAG	53.99	32.43	9.89	-12.94	34.30	8.78
SO	YBADJ	ASBAG	-17.00	-42.26	-4.24	-3.35	-10.68	20.78
SO	YBADJ	ASBAG	10.80	0.50	-9.82	-19.83	-29.25	-91.62
SO	YBADJ	ASBAG	-82.85	5.91	41.00	31.22	39.77	6.04
SO	BUILDHGT	BSBAG	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	BSBAG	38.71	26.52	26.52	26.52	26.52	26.52
SO	BUILDHGT	BSBAG	26.52	26.52	26.52	26.52	26.52	26.52
SO	BUILDHGT	BSBAG	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	BSBAG	38.71	26.52	26.52	28.35	28.35	28.35
SO	BUILDHGT	BSBAG	26.52	26.52	26.52	26.52	26.52	26.52
SO	BUILDWID	BSBAG	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	BSBAG	85.27	108.89	112.76	113.20	110.20	103.85
SO	BUILDWID	BSBAG	94.34	81.97	67.11	50.21	63.88	79.19
SO	BUILDWID	BSBAG	78.40	86.44	91.86	94.49	94.25	91.14
SO	BUILDWID	BSBAG	85.27	108.89	112.76	31.37	35.16	37.89
SO	BUILDWID	BSBAG	94.34	81.97	67.11	50.21	63.88	79.19
SO	BUILDLEN	BSBAG	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	BSBAG	44.25	63.88	79.19	92.09	102.19	109.19
SO	BUILDLEN	BSBAG	112.87	113.12	109.94	103.41	108.89	112.76
SO	BUILDLEN	BSBAG	94.67	92.62	87.74	80.21	70.23	58.12
SO	BUILDLEN	BSBAG	44.25	63.88	79.19	39.64	38.30	35.80
SO	BUILDLEN	BSBAG	112.87	113.12	109.94	103.41	108.89	112.76
SO	XBADJ	BSBAG	50.30	58.59	65.11	69.65	72.07	72.30
SO	XBADJ	BSBAG	70.34	-20.88	-38.56	-55.06	-69.89	-82.60
SO	XBADJ	BSBAG	-92.80	-100.17	-104.51	-105.67	-111.19	-114.18
SO	XBADJ	BSBAG	-144.97	-151.21	-152.85	-149.85	-142.30	-130.42
SO	XBADJ	BSBAG	-114.59	-43.00	-40.63	-143.17	-145.76	-143.91
SO	XBADJ	BSBAG	-20.08	-12.95	-5.43	2.26	2.30	1.43
SO	YBADJ	BSBAG	-50.40	-32.68	-13.96	5.17	24.15	42.40
SO	YBADJ	BSBAG	59.36	56.75	57.80	57.11	54.67	50.58
SO	YBADJ	BSBAG	44.95	37.95	29.80	20.75	11.06	1.04

```
SO YBADJ    BSBAG       50.40   32.68   13.96   -5.17  -24.15  -42.40
SO YBADJ    BSBAG      -59.36  -56.75  -57.80   29.51    7.64  -14.46
SO YBADJ    BSBAG      -44.95  -37.95  -29.80  -20.75  -11.06   -1.04

** Future Other CFI Sources Downwash
SO BUILDHGT ADMP        28.35   28.35   28.35   28.35   28.35   28.35
SO BUILDHGT ADMP        20.42   28.35   28.35   28.35   28.35   28.35
SO BUILDHGT ADMP        28.35   28.35   38.71   38.71   38.71   38.71
SO BUILDHGT ADMP        28.35   28.35   28.35   28.35   28.35   28.35
SO BUILDHGT ADMP        20.42   28.35   28.35   28.35   28.35   28.35
SO BUILDHGT ADMP        28.35   28.35   28.35   28.35   28.35   28.35
SO BUILDWID ADMP        39.64   38.30   35.80   32.21   27.64   22.23
SO BUILDWID ADMP       134.90   21.06   26.62   31.37   35.16   37.89
SO BUILDWID ADMP        39.46   39.84   58.12   44.25   55.48   67.97
SO BUILDWID ADMP        39.64   38.30   35.80   32.21   27.64   22.23
SO BUILDWID ADMP       253.11   21.06   26.62   31.37   35.16   37.89
SO BUILDWID ADMP        39.46   39.84   39.01   36.99   38.69   39.77
SO BUILDLEN ADMP        31.37   35.16   37.89   39.46   39.84   39.01
SO BUILDLEN ADMP        41.91   38.69   39.77   39.64   38.30   35.80
SO BUILDLEN ADMP        32.21   27.64   91.14   85.27   90.19   93.86
SO BUILDLEN ADMP        31.37   35.16   37.89   39.46   39.84   39.01
SO BUILDLEN ADMP        74.12   38.69   39.77   39.64   38.30   35.80
SO BUILDLEN ADMP        32.21   27.64   22.23   16.15   21.06   26.62
SO XBADJ    ADMP         6.29    4.98    3.52    1.96    0.33   -1.30
SO XBADJ    ADMP      -104.75   -6.83  -10.83  -14.49  -17.72  -20.41
SO XBADJ    ADMP       -22.48  -23.87 -203.28 -205.59 -208.35 -205.53
SO XBADJ    ADMP       -37.66  -40.14  -41.41  -41.42  -40.17  -37.70
SO XBADJ    ADMP        30.63  -31.86  -28.94  -25.14  -20.57  -15.38
SO XBADJ    ADMP        -9.73   -3.77    2.30    8.29    8.30    7.41
SO YBADJ    ADMP        -5.32   -1.43    2.51    6.38   10.05   13.41
SO YBADJ    ADMP        23.62   18.83   20.72   21.97   22.56   22.47
SO YBADJ    ADMP        21.69   20.25   44.04   15.98  -12.56  -40.72
SO YBADJ    ADMP         5.32    1.43   -2.51   -6.38  -10.05  -13.41
SO YBADJ    ADMP       -82.72  -18.83  -20.72  -21.97  -22.56  -22.47
SO YBADJ    ADMP       -21.69  -20.25  -18.20  -15.60  -12.52   -9.06


SO BUILDHGT JSMTB        0.00    0.00   19.81   19.81   21.64   21.64
SO BUILDHGT JSMTB       21.64   38.71   38.71   38.71   38.71    0.00
SO BUILDHGT JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID JSMTB        0.00    0.00   26.13   23.19   29.44   26.72
SO BUILDWID JSMTB       23.18   90.19   93.86   94.67   92.62    0.00
SO BUILDWID JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN JSMTB        0.00    0.00   27.91   29.36   29.44   26.72
SO BUILDLEN JSMTB       23.18   55.48   67.97   78.40   86.44    0.00
SO BUILDLEN JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    JSMTB        0.00    0.00  -76.00  -79.01 -109.97 -109.29
SO XBADJ    JSMTB     -105.29 -240.25 -253.34 -258.73 -256.27    0.00
SO XBADJ    JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    JSMTB        0.00    0.00   18.61    7.55   12.28   -4.45
SO YBADJ    JSMTB      -21.04   58.01   20.23  -18.17  -56.01    0.00
SO YBADJ    JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    JSMTB        0.00    0.00    0.00    0.00    0.00    0.00
```

SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	20.12	20.12	20.12
SO	BUILDHGT	MSTK22	20.12	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDWID	MSTK22	14.10	14.60	14.66	14.28	13.83	14.56
SO	BUILDWID	MSTK22	14.85	14.68	14.07	14.10	14.60	14.66
SO	BUILDWID	MSTK22	14.28	13.92	14.65	18.72	24.69	31.46
SO	BUILDWID	MSTK22	37.27	14.60	14.66	14.28	13.83	14.56
SO	BUILDWID	MSTK22	14.85	14.68	14.07	14.10	14.60	14.66
SO	BUILDWID	MSTK22	14.28	13.92	14.65	14.94	14.77	14.15
SO	BUILDLEN	MSTK22	14.10	14.60	14.66	14.28	13.92	14.65
SO	BUILDLEN	MSTK22	14.94	14.77	14.15	14.10	14.60	14.66
SO	BUILDLEN	MSTK22	14.28	13.83	14.56	44.81	46.76	47.92
SO	BUILDLEN	MSTK22	47.62	14.60	14.66	14.28	13.92	14.65
SO	BUILDLEN	MSTK22	14.94	14.77	14.15	14.10	14.60	14.66
SO	BUILDLEN	MSTK22	14.28	13.83	14.56	14.85	14.68	14.07
SO	XBADJ	MSTK22	-7.21	-7.50	-7.56	-7.39	-7.18	-7.55
SO	XBADJ	MSTK22	-7.70	-7.62	-7.30	-7.27	-7.49	-7.48
SO	XBADJ	MSTK22	-7.25	-6.97	-7.29	-104.95	-107.40	-106.90
SO	XBADJ	MSTK22	-103.16	-7.11	-7.11	-6.89	-6.74	-7.09
SO	XBADJ	MSTK22	-7.23	-7.15	-6.86	-6.83	-7.11	-7.18
SO	XBADJ	MSTK22	-7.03	-6.86	-7.27	-7.45	-7.41	-7.14
SO	YBADJ	MSTK22	0.22	0.19	0.15	0.11	0.05	0.01
SO	YBADJ	MSTK22	-0.03	-0.07	-0.11	-0.16	-0.20	-0.23
SO	YBADJ	MSTK22	-0.25	-0.22	-0.23	15.71	1.14	-13.47
SO	YBADJ	MSTK22	-27.67	-0.19	-0.15	-0.11	-0.05	-0.01
SO	YBADJ	MSTK22	0.03	0.07	0.11	0.16	0.20	0.23
SO	YBADJ	MSTK22	0.25	0.22	0.23	0.23	0.23	0.22

SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	20.12
SO	BUILDHGT	MSTPTA	20.12	20.12	0.00	0.00	9.14	9.14
SO	BUILDHGT	MSTPTA	9.14	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	31.46
SO	BUILDWID	MSTPTA	37.27	41.95	0.00	0.00	13.83	14.56
SO	BUILDWID	MSTPTA	14.85	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	47.92
SO	BUILDLEN	MSTPTA	47.62	45.88	0.00	0.00	13.92	14.65
SO	BUILDLEN	MSTPTA	14.94	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	-125.21
SO	XBADJ	MSTPTA	-126.72	-124.37	0.00	0.00	-42.90	-43.82
SO	XBADJ	MSTPTA	-43.42	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	18.37
SO	YBADJ	MSTPTA	0.51	-17.37	0.00	0.00	6.39	0.05
SO	YBADJ	MSTPTA	-6.29	0.00	0.00	0.00	0.00	0.00

SO	YBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	MSTPTB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	PACS	22.86	22.86	22.86	22.86	22.86	6.89
SO	BUILDHGT	PACS	6.89	6.89	6.89	6.89	20.12	20.12
SO	BUILDHGT	PACS	20.12	20.12	20.12	20.12	6.71	22.86
SO	BUILDHGT	PACS	22.86	22.86	22.86	22.86	22.86	6.89
SO	BUILDHGT	PACS	6.89	6.89	6.89	6.89	20.12	20.12
SO	BUILDHGT	PACS	20.12	20.12	20.12	20.12	6.71	22.86
SO	BUILDWID	PACS	26.09	28.65	30.34	31.10	30.93	23.90
SO	BUILDWID	PACS	24.37	24.10	23.10	23.63	29.01	26.98
SO	BUILDWID	PACS	24.13	20.93	18.79	16.08	19.26	22.73
SO	BUILDWID	PACS	26.09	28.65	30.34	31.10	30.93	23.90
SO	BUILDWID	PACS	24.37	24.10	23.10	23.63	29.01	26.98
SO	BUILDWID	PACS	24.13	20.93	18.79	16.08	19.26	22.73
SO	BUILDLEN	PACS	31.14	30.56	29.06	26.66	23.46	23.90
SO	BUILDLEN	PACS	24.37	24.10	23.10	23.63	26.05	28.34
SO	BUILDLEN	PACS	29.78	30.42	32.07	32.76	42.68	30.78
SO	BUILDLEN	PACS	31.14	30.56	29.06	26.66	23.46	23.90
SO	BUILDLEN	PACS	24.37	24.10	23.10	23.63	26.05	28.34
SO	BUILDLEN	PACS	29.78	30.42	32.07	32.76	42.68	30.78
SO	XBADJ	PACS	29.09	30.45	30.87	30.36	28.93	5.46
SO	XBADJ	PACS	6.86	8.05	8.99	8.62	-49.37	-53.50
SO	XBADJ	PACS	-55.99	-56.78	-56.89	-55.27	7.06	-57.63
SO	XBADJ	PACS	-60.24	-61.01	-59.93	-57.03	-52.39	-29.36
SO	XBADJ	PACS	-31.23	-32.15	-32.09	-32.25	23.33	25.15
SO	XBADJ	PACS	26.21	26.37	24.82	22.51	-49.74	26.85
SO	YBADJ	PACS	-10.03	-2.12	5.85	13.64	21.02	-11.06
SO	YBADJ	PACS	-7.90	-4.50	-0.96	2.68	20.32	13.71
SO	YBADJ	PACS	6.68	-0.65	-7.91	-14.93	-10.06	17.63
SO	YBADJ	PACS	10.03	2.12	-5.85	-13.64	-21.02	11.06
SO	YBADJ	PACS	7.90	4.50	0.96	-2.68	-20.32	-13.71
SO	YBADJ	PACS	-6.68	0.65	7.91	14.93	10.06	-17.63

```
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
*************************************************************
** COMMENT - To Avoid Large Run-Time, Only Receptors Up To 2km
** From Grid Center Used in This Analysis
*************************************************************
** Receptors Up to 2KM from Grid Center
   DISCCART        18.20       585.20     25.91    25.91
   DISCCART      -182.90       585.20     25.91    25.91
   DISCCART      -182.90       573.00     25.91    25.91
   ....
   ....
   ....

   DISCCART      2000.00      1600.00     25.3     25.3
   DISCCART      2000.00      1700.00     25.3     25.3
   DISCCART      2000.00      1800.00     25.54    25.54
   DISCCART      2000.00      1900.00     25.78    25.78
   DISCCART      2000.00      2000.00     25.91    25.91
   DISCCART      -450.00       650.00     24.65    24.65
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE C:\AMODMET\TPATPA91.SFC
   PROFFILE C:\AMODMET\TPATPA91.PFL
   SURFDATA 12842 1991 TAMPA/INT'L_ARPT
   UAIRDATA 12842 1991 TAMPA/INT'L_ARPT
   PROFBASE 40 FEET
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE SIXTH
OU FINISHED
```

EXAMPLE AERMOD INPUT FILE
PSD CLASS II INCREMENT ANALYSIS
24-HOUR AVERAGE SO_2 IMPACTS

```
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE CFI, A SAP AND A&B PAP PSD, PSD CLASS II INCREMENT ANALYSIS,   02/23/06
   TITLETWO AERMOD MODELING, 24-HOUR AVERAGE SO2 IMPACTS, TAMPA MET DATA 1991-1995
   MODELOPT DFAULT CONC
   AVERTIME 24
   POLLUTID SO2
   RUNORNOT RUN
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Future CFI Project Affected Sources
** SAPA - "A" SAP
** ZDMP - "Z" MAP/DAP
** XDMP - "X" MAP/DAP
** YDMP - "Y" MAP/DAP

   LOCATION SAPA  POINT   -74.5    17.8  25.0
   LOCATION ZDMP  POINT  -317.9    45.9  25.0
   LOCATION YDMP  POINT  -327.6    74.7  25.0
   LOCATION XDMP  POINT  -341.0    94.6  25.0

   SRCPARAM SAPA   29.4  33.53  302.0  22.80  1.52
   SRCPARAM ZDMP   0.273  41.45  333.0  13.56  2.74
   SRCPARAM YDMP   0.316  41.45  330.0  16.24  2.74
   SRCPARAM XDMP   0.318  41.45  330.0  15.47  2.74


** Future Other CFI Sources
   LOCATION JSMTB    POINT -123.560   26.170   25.0
   LOCATION SAPB     POINT  -52.295  -47.866   25.0
   LOCATION SAPC     POINT    0.000    0.000   25.0
   LOCATION SAPD     POINT   53.123   17.938   25.0
   LOCATION ADMP     POINT -302.233 -112.218   25.0
   LOCATION MSTK22   POINT  -20.504   29.089   25.0
   LOCATION MSTPTA   POINT  -52.340   10.782   25.0
   LOCATION MSTPTB   POINT  -38.385  -29.110   25.0
   LOCATION MSTK33   AREA   -62.410  199.390   25.0
   LOCATION MSRCUP   AREA  -101.290  212.290   25.0

   SRCPARAM JSMTB     5.90   7.62 561. 18.78 1.07
   SRCPARAM SAPB     38.22  33.53 302. 22.80 1.52
   SRCPARAM SAPC     50.53  60.66 343. 14.22 2.44
   SRCPARAM SAPD     50.53  60.66 345. 14.71 2.44
   SRCPARAM ADMP     0.183  24.38 331. 11.21 3.05
** -- next three sources have rain caps: vel set to 0.01 m/s
   SRCPARAM MSTK22   0.017  11.58 373.2 0.01 0.61
   SRCPARAM MSTPTA   0.017   3.66 373.2 0.01 0.20
   SRCPARAM MSTPTB   0.017   3.66 373.2 0.01 0.20

** -- CFI future area sources
**                 ER/Area    RH    X Side  Y Side   Angle   Init Sz
**                 (g/s/m2)   (m)    (m)     (m)     (deg)    (m)
**---------------------------------------------------------------------
```

```
** Area = X*Y = 16.4^2 = 268.8 m2 (equivalent for tank with 9.25 m radius)
** ER = 0.017 g/s
   SRCPARAM MSTK33   6.324E-5 12.50  16.400   16.4      0.00   0.00

** Area = X*Y = 3.5 * 19 = 66.5 m2
** ER = 0.017 g/s
   SRCPARAM MSRCUP   2.556E-4  0.00   3.500   19.0   -18.66   0.00

** 1974 Baseline Sources
** SAPCb  - C SAP STACK
** SAPDb  - D SAP STACK
** SAPAb  - A SAP STACK
** SAPBb  - B SAP STACK
** ADMPb  - A DAP/MAP PLANT
** ZDMPb  - Z DAP/MAP PLANT
** YDMGPb - Y DAP/MAP/GTSP PLANT
** XDMGPb - X DAP/MAP/GTSP PLANT
** RMMANb - ROP/MGTSP Manufacturing
** PITSTANK - MOLTEN SULFUR TRUCK PITS A AND B AND TANK 022 - AREA SOURCE

   LOCATION SAPCb    POINT    0.000    0.000   25.0
   LOCATION SAPDb    POINT   53.123   17.938   25.0
   LOCATION SAPAb    POINT  -74.475   17.821   25.0
   LOCATION SAPBb    POINT  -52.295  -47.866   25.0
   LOCATION ADMPb    POINT -302.233 -112.218   25.0
   LOCATION ZDMPb    POINT -317.860   45.903   25.0
   LOCATION YDMGPb   POINT -327.586   74.705   25.0
   LOCATION XDMGPb   POINT -340.986   94.573   25.0
   LOCATION RMMANb   POINT -272.050 -135.320   25.0
   LOCATION PITSTANK AREA  -37.620  -48.990   25.0

   SRCPARAM ADMPb  -2.32 30.48 326.  8.16 3.05
   SRCPARAM XDMGPb -3.46 38.10 316. 21.24 2.23
   SRCPARAM YDMGPb -2.31 38.10 316. 13.64 2.23
   SRCPARAM ZDMPb  -2.31 38.10 316. 21.24 2.23
   SRCPARAM SAPAb -52.50 24.38 310. 18.96 1.52
   SRCPARAM SAPBb -52.50 24.38 309. 20.85 1.52
   SRCPARAM SAPCb -31.50 60.66 339. 10.50 2.44
   SRCPARAM SAPDb -31.50 60.66 339.  8.45 2.44
   SRCPARAM RMMANb -1.78 41.15 304. 10.33 1.98

** -- CFI 1974 psd baseline area sources
**
** MOLTEN SULFUR STORAGE AND HANDLING AREA SOURCE FOR
** SULFUR TRUCK PITS "A" AND "B", AND STORAGE TANK 022
** Area SourceS
**                  ER/Area    RH    X Side   Y Side   Angle  Init Sz
**                  (g/s/m2)   (m)    (m)      (m)     (deg)    (m)
**------------------------------------------------------------------
** Area = X*Y = 50 * 85 = 4250 m2
** ER = 0.0416 g/s
   SRCPARAM PITSTANK -9.78E-6 0.0 50.0 85.0 -18.658

** Other SO2 Sources - Source Locations **
** Lakeland Electric, C.D. McIntosh, Jr. Power Plant
SO LOCATION    MCINT6   POINT   21000   -9800   39.6
SO LOCATION    MCINT28  POINT   21000   -9800   39.6

** Lakeland Electric, Larsen Power Plant
SO LOCATION    LARPWR7  POINT   20900   -13500   39.6
SO LOCATION    LARPWR8  POINT   20900   -13500   39.6

** Agrifos Mining, L.L.C. - Nichols
SO LOCATION    AGRNIC1  POINT   10700   -30700   33.5
```

```
SO LOCATION    AGRNIC2   POINT   10700   -30700   33.5
SO LOCATION    AGRINK3   POINT   10700   -30700   33.5
SO LOCATION    AGRINK4   POINT   10700   -30700   33.5

** Mosaic Phosphates - Nichols
SO LOCATION    IMCNIC12   POINT  10600   -31800   36.6
SO LOCATION    IMCNIC15   POINT  10600   -31800   36.6
SO LOCATION    IMCNIC16   POINT  10600   -31800   36.6
SO LOCATION    AGRNK1    POINT   10600   -31800   36.6
SO LOCATION    AGRNK2    POINT   10600   -31800   36.6

** Mosaic Fertilizer LLC - Bartow
SO LOCATION    MFBAR1    POINT   21800   -29400   61.0
SO LOCATION    MFBAR12   POINT   21800   -29400   61.0
SO LOCATION    MFBAR21   POINT   21800   -29400   61.0
SO LOCATION    MFBAR32   POINT   21800   -29400   61.0
SO LOCATION    MFBAR33   POINT   21800   -29400   61.0
SO LOCATION    MFBAR51   POINT   21800   -29400   61.0

** Cutrale Citrus Juices USA, Inc
SO LOCATION    CCJUSA3   POINT   34460   -12420   51.8
SO LOCATION    CCJUSA8   POINT   34460   -12420   51.8
SO LOCATION    CCJUSA9   POINT   34460   -12420   51.8

** Mosaic Fertilizer, LLC - Mulberry
SO LOCATION    MFMUL5    POINT   20020   -30990   39.6
SO LOCATION    MFMULX    POINT   20020   -30990   39.6

** Mosaic Phosphates Co. (New Wales)
SO LOCATION    WALES27   POINT   8700    -36600   45.7
SO LOCATION    WALES36   POINT   8700    -36600   45.7
SO LOCATION    WALES42   POINT   8700    -36600   45.7
SO LOCATION    WALES44   POINT   8700    -36600   45.7
SO LOCATION    WALES45   POINT   8700    -36600   45.7
SO LOCATION    WALES46   POINT   8700    -36600   45.7
SO LOCATION    WALES60   POINT   8700    -36600   45.7
SO LOCATION    WALES62   POINT   8700    -36600   45.7
SO LOCATION    WALES63   POINT   8700    -36600   45.7
SO LOCATION    WALES64   POINT   8700    -36600   45.7
SO LOCATION    WALES65   POINT   8700    -36600   45.7
SO LOCATION    WALES66   POINT   8700    -36600   45.7
SO LOCATION    WALES67   POINT   8700    -36600   45.7
SO LOCATION    WALES68   POINT   8700    -36600   45.7
SO LOCATION    WALES69   POINT   8700    -36600   45.7
SO LOCATION    IMCWAL0   POINT   8700    -36600   45.7
SO LOCATION    IMCWAL1   POINT   8700    -36600   45.7

** CF Industries, Inc. - Bartow
SO LOCATION    CFIBAR6    POINT   20300   -33500   54.9
SO LOCATION    CFIBARX1   POINT   20300   -33500   54.9
SO LOCATION    CFIBARX2   POINT   20300   -33500   54.9
SO LOCATION    CFIBARX3   POINT   20300   -33500   54.9
SO LOCATION    CFIBARX4   POINT   20300   -33500   54.9
SO LOCATION    CFIBARX5   POINT   20300   -33500   54.9
SO LOCATION    CFIBARX6   POINT   20300   -33500   54.9

** Mosaic Fertilizer, LLC --Riverview
SO LOCATION    MFRDAP     POINT   -23410  -33620   1.5
SO LOCATION    MFRASG     POINT   -23410  -33620   1.5
SO LOCATION    MFR5DAP    POINT   -23410  -33620   1.5
SO LOCATION    MFRT123    POINT   -23410  -33620   1.5
SO LOCATION    MFR1AFI    POINT   -23410  -33620   1.5
SO LOCATION    MFR2AFI    POINT   -23410  -33620   1.5
SO LOCATION    AMMPLTB    POINT   -23410  -33620   1.5
SO LOCATION    SSFSFPB    POINT   -23410  -33620   1.5
```

```
SO LOCATION     10KVSMB   POINT   -23410  -33620   1.5
SO LOCATION     12KVSMB   POINT   -23410  -33620   1.5
SO LOCATION     70FCONB   POINT   -23410  -33620   1.5
SO LOCATION     80FCONB   POINT   -23410  -33620   1.5
SO LOCATION     GTSPAPB   POINT   -23410  -33620   1.5
SO LOCATION     RKML59B   POINT   -23410  -33620   1.5
SO LOCATION     3CONTDB   POINT   -23410  -33620   1.5
SO LOCATION     4CONTDB   POINT   -23410  -33620   1.5
SO LOCATION     MSPTSB    POINT   -23410  -33620   1.5
SO LOCATION     PTS456B   POINT   -23410  -33620   1.5
SO LOCATION     MSTKTLB   POINT   -23410  -33620   1.5
SO LOCATION     NO4SAPB   POINT   -23410  -33620   1.5
SO LOCATION     NO5SAPB   POINT   -23410  -33620   1.5
SO LOCATION     NO6SAPB   POINT   -23410  -33620   1.5
SO LOCATION     NO7SAPB   POINT   -23410  -33620   1.5
SO LOCATION     NO8SAPB   POINT   -23410  -33620   1.5

** Mosaic Fertilizer, LLC - Green Bay
SO LOCATION     MFGB30    POINT   21500   -35900   51.8
SO LOCATION     MFGB31    POINT   21500   -35900   51.8
SO LOCATION     MFGB32    POINT   21500   -35900   51.8
SO LOCATION     MFGB33    POINT   21500   -35900   51.8
SO LOCATION     MFGB34    POINT   21500   -35900   51.8
SO LOCATION     MFGB35    POINT   21500   -35900   51.8
SO LOCATION     MFGB36    POINT   21500   -35900   51.8
SO LOCATION     MFGB38    POINT   21500   -35900   51.8

** TECO, Hookers Point
SO LOCATION     TECOHK1   POINT   -30000  -25000   1.5
SO LOCATION     TECOHK2   POINT   -30000  -25000   1.5
SO LOCATION     TECOHK3   POINT   -30000  -25000   1.5
SO LOCATION     TECOHK4   POINT   -30000  -25000   1.5
SO LOCATION     TECOHK5   POINT   -30000  -25000   1.5
SO LOCATION     TECOHK6   POINT   -30000  -25000   1.5

** TECO - Big Bend Station
SO LOCATION     TECOBB4   POINT   -24850  -41090   2.1
SO LOCATION     TCBB12B   POINT   -24850  -41090   2.1
SO LOCATION     TCBB3B    POINT   -24850  -41090   2.1

** Mosaic Phosphates Company - So. Pierce
SO LOCATION      MPPIERB  POINT   19500   -44600   42.7

** TECO, Polk Power Station
SO LOCATION     TECOPK1   POINT   14450   -48650   42.7
SO LOCATION     TECOPK3   POINT   14450   -48650   42.7
SO LOCATION     TECOPK4   POINT   14450   -48650   42.7
SO LOCATION     TECOPK9   POINT   14450   -48650   42.7
SO LOCATION     TECOPK10  POINT   14450   -48650   42.7

** Florida Crushed Stone Co., Inc.
SO LOCATION     FCRUSH18  POINT   -26660  46370    39.6
SO LOCATION     FCRUSH20  POINT   -26660  46370    39.6
SO LOCATION     FCRUSH44  POINT   -26660  46370    39.6

** U.S. Agri-Chemicals - Ft. Meade
SO LOCATION     USAGFM16  POINT   28950   -46720   42.7
SO LOCATION     USAGFM17  POINT   28950   -46720   42.7
SO LOCATION     USAGFM28  POINT   28950   -46720   42.7
SO LOCATION     USAGFM29  POINT   28950   -46720   42.7
SO LOCATION     USAGFM0B  POINT   28950   -46720   42.7
SO LOCATION     USAGFM1B  POINT   28950   -46720   42.7

** Progress Energy Florida - Intercession City Plant
SO LOCATION     ICP710    POINT   58300   10000    21.3
```

```
SO LOCATION    ICP11      POINT   58300   10000     21.3
SO LOCATION    ICP1820    POINT   58300   10000     21.3

** Hardee Power Partners - Hardee Power Station
SO LOCATION    HARD1      POINT   17990   -58820    38.1
SO LOCATION    HARD2      POINT   17990   -58820    38.1
SO LOCATION    HARD3      POINT   17990   -58820    38.1
SO LOCATION    HARD5      POINT   17990   -58820    38.1

** Florida Power & Light - Manatee
SO LOCATION    FPLMAN5    POINT   -20750  -61850    15.2
SO LOCATION    FPLMAN6    POINT   -20750  -61850    15.2
SO LOCATION    FPLMAN7    POINT   -20750  -61850    15.2
SO LOCATION    FPLMAN8    POINT   -20750  -61850    15.2

** Progress Energy Florida - Avon Park
SO LOCATION    AVONP1     POINT   63400   -65500    35.1
SO LOCATION    AVONP2     POINT   63400   -65500    35.1


** Other SO2 Sources - Source Parameters **
** Lakeland Electric, C.D. McIntosh, Jr. Power Plant
SO SRCPARAM  MCINT6     550.368 76.20    348      25.18    5.49
SO SRCPARAM  MCINT28    1.008   25.91    864      25.21    8.53

** Lakeland Electric, Larsen Power Plant
SO SRCPARAM  LARPWR7   -13.381  9.45     700      30.78    3.60
SO SRCPARAM  LARPWR8    26.636  47.24    523      26.12    4.88

** Agrifos Mining, L.L.C. - Nichols
SO SRCPARAM  AGRNIC1    32.196  24.38    344      12.50    2.29
SO SRCPARAM  AGRNIC2    31.626  24.38    344      12.50    2.29
SO SRCPARAM  AGRINK3   -13.900  28.35    340      19.23    1.10
SO SRCPARAM  AGRINK4   -0.870   3.96     522      1.80     0.79

** IMC Agrico Company, Nichols Plant
SO SRCPARAM  IMCNIC12  -3.338   24.69    328      3.66     2.29
SO SRCPARAM  IMCNIC15  -1.613   8.23     533      13.72    0.61
SO SRCPARAM  IMCNIC16  -3.226   11.89    533      8.84     0.98
SO SRCPARAM  AGRNK1    -15.246  30.48    308      18.90    1.80
SO SRCPARAM  AGRNK2    -3.805   24.38    339      12.89    1.52

** Mosaic Fertilizer LLC - Bartow
SO SRCPARAM  MFBAR1    9.689   30.18   330     16.15   2.29
SO SRCPARAM  MFBAR12   54.596  60.96   355     18.59   2.07
SO SRCPARAM  MFBAR21   12.919  42.67   329     16.15   3.32
SO SRCPARAM  MFBAR32   54.596  60.96   355     18.59   2.07
SO SRCPARAM  MFBAR33   54.596  60.96   355     18.59   2.07
SO SRCPARAM  MFBAR51   20.811   9.45   483      6.10   1.07

** Cutrale Citrus Juices USA, Inc
SO SRCPARAM  CCJUSA3   23.436  30.48   345     14.94   0.98
SO SRCPARAM  CCJUSA8   21.521  12.19   435     18.29   1.22
SO SRCPARAM  CCJUSA9   3.276   12.19   439     20.12   1.22

** Mosaic Fertilizer, LLC - Mulberry
SO SRCPARAM  MFMUL5    -9.298   31.09   316      7.92    2.68
SO SRCPARAM  MFMULX  -257.594   51.21   356     11.43    2.13

** Mosaic Phosphates Co. (New Wales)
SO SRCPARAM  WALES27   2.306    52.43   328     20.21   2.44
SO SRCPARAM  WALES36   24.192   52.43   314     15.85   1.37
SO SRCPARAM  WALES42   60.896   60.66   350     15.24   2.59
SO SRCPARAM  WALES44   60.896   60.66   350     15.24   2.59
SO SRCPARAM  WALES45   2.772    52.12   316     17.68   1.83
```

```
SO SRCPARAM  WALES46    2.772     52.12    316     17.68    1.83
SO SRCPARAM  WALES60    0.063     12.19    389     0.13     0.61
SO SRCPARAM  WALES62    0.063     12.19    389     0.13     0.61
SO SRCPARAM  WALES63    0.038     12.19    389     0.13     0.61
SO SRCPARAM  WALES64    0.013     12.19    389     0.13     0.61
SO SRCPARAM  WALES65    0.038     12.19    389     0.13     0.61
SO SRCPARAM  WALES66    0.013     12.19    389     0.13     0.61
SO SRCPARAM  WALES67    0.038     7.62     305     0.03     0.03
SO SRCPARAM  WALES68    0.038     7.62     305     0.03     0.03
SO SRCPARAM  WALES69    0.013     7.62     305     0.03     0.03
SO SRCPARAM  IMCWAL0   -34.270    21.03    347     18.59    2.13
SO SRCPARAM  IMCWAL1  -146.000    60.96    350     13.08    2.59

** CF Industries, Inc. - Bartow
SO SRCPARAM  CFIBAR6     50.400   62.79    333      6.40    2.13
SO SRCPARAM  CFIBARX1   -60.896   30.48    350      12.19   1.37
SO SRCPARAM  CFIBARX2   -110.250  30.48    350      10.36   1.68
SO SRCPARAM  CFIBARX3   -107.100  30.48    364      4.27    2.74
SO SRCPARAM  CFIBARX4   -174.825  30.48    358      7.92    2.13
SO SRCPARAM  CFIBARX5   -226.800  62.79    358      10.67   2.13
SO SRCPARAM  CFIBARX6   -170.100  62.79    359      10.36   2.13

** Mosaic Fertilizer, LLC --Riverview
SO SRCPARAM  MFRDAP     4.360     38.40    329     11.28    2.44
SO SRCPARAM  MFRASG     5.815     6.10     489     15.85    1.22
SO SRCPARAM  MFR5DAP    1.600     40.54    315     15.24    2.13
SO SRCPARAM  MFRT123    0.050     10.06    316     6.24     0.25
SO SRCPARAM  MFR1AFI    2.962     38.10    339     17.07    1.83
SO SRCPARAM  MFR2AFI    2.962     38.10    339     17.07    1.83
SO SRCPARAM  AMMPLTB   -4.133     18.29    589     6.93     2.53
SO SRCPARAM  SSFSFPB   -0.025     8.53     308     3.55     0.76
SO SRCPARAM  10KVSMB   -0.003     26.52    321     18.24    0.52
SO SRCPARAM  12KVSMB   -0.005     21.64    330     20.87    0.49
SO SRCPARAM  70FCONB   -5.216     23.77    347     5.24     1.83
SO SRCPARAM  80FCONB   -5.002     23.77    344     5.10     1.83
SO SRCPARAM  GTSPAPB   -8.996     38.40    327     10.65    2.44
SO SRCPARAM  RKML59B   -0.001     20.12    319     17.75    0.61
SO SRCPARAM  3CONTDB   -2.873     20.73    319     13.96    1.07
SO SRCPARAM  4CONTDB   -2.923     20.73    330     18.85    1.07
SO SRCPARAM  MSPTSB    -0.010      2.44    0.0      0.10    1.00
SO SRCPARAM  PTS456B   -0.017      2.44    0.0      0.10    1.00
SO SRCPARAM  MSTKTLB   -0.267     10.97    0.0      0.10    1.00
SO SRCPARAM  NO4SAPB   -35.532    24.38    363     6.23     1.43
SO SRCPARAM  NO5SAPB   -60.480    22.56    360     7.72     1.62
SO SRCPARAM  NO6SAPB   -86.688    21.95    360     9.53     1.80
SO SRCPARAM  NO7SAPB   -189.378   28.04    357     6.80     2.87
SO SRCPARAM  NO8SAPB   -211.554   29.26    352     7.37     3.26

** Mosaic Fertilizer, LLC - Green Bay
SO SRCPARAM  MFGB30     0.151     12.19    322     0.03     0.61
SO SRCPARAM  MFGB31     0.151     12.19    322     0.03     0.61
SO SRCPARAM  MFGB32     0.151     12.19    322     0.03     0.61
SO SRCPARAM  MFGB33     0.013     12.19    322     0.03     0.61
SO SRCPARAM  MFGB34     0.088     12.19    322     0.03     0.61
SO SRCPARAM  MFGB35     0.013     12.19    366     0.03     0.61
SO SRCPARAM  MFGB36     0.013     3.05     366     0.03     0.15
SO SRCPARAM  MFGB38     50.526    45.72    355     9.27     2.74

** TECO, Hookers Point
SO SRCPARAM  TECOHK1   -41.303     85.34    453     24.99    3.44
SO SRCPARAM  TECOHK2   -41.303     85.34    453     24.99    3.44
SO SRCPARAM  TECOHK3   -56.965     85.34    445     19.11    3.66
SO SRCPARAM  TECOHK4   -56.965     85.34    445     19.11    3.66
SO SRCPARAM  TECOHK5   -84.546     85.34    453     24.99    3.44
SO SRCPARAM  TECOHK6   -107.831    85.34    438     22.92    2.87
```

```
** TECO - Big Bend Station
SO SRCPARAM  TECOBB4    447.426  152.10  342      17.98   7.32
SO SRCPARAM  TCBB12B  -2436.000  149.35  422      28.65   7.32
SO SRCPARAM  TCBB3B   -1218.000  149.35  418      14.33   7.32

** Mosaic Phosphates Company - So. Pierce
SO SRCPARAM  MPPIERB   -75.60  43.89  350     26.40   0.00

** TECO, Polk Power Station
SO SRCPARAM  TECOPK1   65.268  45.72  444     23.10   5.79
SO SRCPARAM  TECOPK3   12.096  22.86  464     0.00    1.13
SO SRCPARAM  TECOPK4    4.486   60.66  355     18.29   0.76
SO SRCPARAM  TECOPK9    0.580   34.75  876     18.35   8.84
SO SRCPARAM  TECOPK10   1.159   34.75  876     18.35   8.84

** Florida Crushed Stone Co., Inc.
SO SRCPARAM  FCRUSH18  97.020  97.54  422     21.21   4.88
SO SRCPARAM  FCRUSH20  6.300   91.44  378     14.33   4.88
SO SRCPARAM  FCRUSH44  3.629   97.54  399     10.30   4.27

** U.S. Agri-Chemicals - Ft. Meade
SO SRCPARAM  USAGFM16  63.000  53.34  355     9.75    2.59
SO SRCPARAM  USAGFM17  63.000  53.34  355     9.75    2.59
SO SRCPARAM  USAGFM28  0.062   1.83   405     104.85  0.09
SO SRCPARAM  USAGFM29  0.029   1.83   400     47.85   0.09
SO SRCPARAM  USAGFM0B  -78.800 28.96  314     7.01    3.02
SO SRCPARAM  USAGFM1B  -18.270 28.35  330     17.68   1.52

** Progress Energy Florida - Intercession City Plant
SO SRCPARAM  ICP710   111.888 15.24   835     53.07   4.19
SO SRCPARAM  ICP11    51.282  22.86   830     42.49   5.79
SO SRCPARAM  ICP1820  18.572  17.07   807     35.84   4.91

** Hardee Power Partners - Hardee Power Station
SO SRCPARAM  HARD1    92.534  27.43   386     23.62   4.42
SO SRCPARAM  HARD2    92.534  27.43   391     23.10   4.42
SO SRCPARAM  HARD3    92.534  22.86   803     28.74   5.46
SO SRCPARAM  HARD5    0.668   25.91   810     43.28   4.51

** Florida Power & Light - Manatee
SO SRCPARAM  FPLMAN5  1.676   36.58   875     31.94   6.71
SO SRCPARAM  FPLMAN6  1.676   36.58   368     17.98   5.79
SO SRCPARAM  FPLMAN7  1.676   36.58   368     17.98   5.79
SO SRCPARAM  FPLMAN8  1.676   36.58   368     17.98   5.79

** Progress Energy Florida - Avon Park
SO SRCPARAM  AVONP1  72.702  16.76   728     129.24  3.05
SO SRCPARAM  AVONP2  72.702  16.76   728     129.36  3.05

** Building Downwash **
SO BUILDHGT SAPA       0.00     0.00     0.00     0.00     0.00    19.81
SO BUILDHGT SAPA      19.81    19.81     0.00     0.00     0.00     0.00
SO BUILDHGT SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT SAPA      20.12    20.12    20.12    20.12     0.00     0.00
SO BUILDHGT SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPA       0.00     0.00     0.00     0.00     0.00    31.48
SO BUILDWID SAPA      23.18    26.08     0.00     0.00     0.00     0.00
SO BUILDWID SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPA      37.27    41.95    45.36    47.39     0.00     0.00
SO BUILDWID SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPA       0.00     0.00     0.00     0.00     0.00    61.05
SO BUILDLEN SAPA      59.98    62.23     0.00     0.00     0.00     0.00
```

```
SO BUILDLEN SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPA      47.62    45.88    42.74    38.30     0.00     0.00
SO BUILDLEN SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    SAPA       0.00     0.00     0.00     0.00     0.00  -147.59
SO XBADJ    SAPA    -148.53  -148.52     0.00     0.00     0.00     0.00
SO XBADJ    SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    SAPA    -123.65  -125.35  -123.25  -117.39     0.00     0.00
SO XBADJ    SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    SAPA       0.00     0.00     0.00     0.00     0.00    24.95
SO YBADJ    SAPA       3.60   -20.23     0.00     0.00     0.00     0.00
SO YBADJ    SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    SAPA      23.55     5.86   -12.02   -29.52     0.00     0.00
SO YBADJ    SAPA       0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    SAPA       0.00     0.00     0.00     0.00     0.00     0.00


SO BUILDHGT ZDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT ZDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDWID ZDMP      78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID ZDMP      85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID ZDMP      80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDWID ZDMP      78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID ZDMP      85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID ZDMP      80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDLEN ZDMP      94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN ZDMP      44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN ZDMP      94.49    94.25    91.14    85.27    90.19    93.86
SO BUILDLEN ZDMP      94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN ZDMP      44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN ZDMP      94.49    94.25    91.14    85.27    90.19    93.86
SO XBADJ    ZDMP     -51.19   -54.40   -55.95   -55.80   -53.96   -50.48
SO XBADJ    ZDMP     -45.46   -52.29   -59.00   -63.92   -66.90   -67.85
SO XBADJ    ZDMP     -66.73   -63.59   -58.51   -51.66   -49.93   -47.43
SO XBADJ    ZDMP     -43.48   -38.22   -31.80   -24.41   -16.27    -7.65
SO XBADJ    ZDMP       1.21    -3.19    -8.97   -14.48   -19.55   -24.02
SO XBADJ    ZDMP     -27.76   -30.66   -32.63   -33.61   -40.26   -46.43
SO YBADJ    ZDMP      24.72    23.68    21.91    19.48    16.46    12.94
SO YBADJ    ZDMP       9.02     4.84     0.50    -3.85    -8.09   -12.08
SO YBADJ    ZDMP     -15.70   -18.84   -21.41   -23.34   -24.55   -25.01
SO YBADJ    ZDMP     -24.72   -23.68   -21.91   -19.48   -16.46   -12.94
SO YBADJ    ZDMP      -9.02    -4.84    -0.50     3.85     8.09    12.08
SO YBADJ    ZDMP      15.70    18.84    21.41    23.34    24.55    25.01


SO BUILDHGT YDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT YDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT YDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT YDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT YDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT YDMP      38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDWID YDMP      78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID YDMP      85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID YDMP      80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDWID YDMP      78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID YDMP      85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID YDMP      80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDLEN YDMP      94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN YDMP      44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN YDMP      94.49    94.25    91.14    85.27    90.19    93.86
```

```
SO BUILDLEN YDMP       94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN YDMP       44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN YDMP       94.49    94.25    91.14    85.27    90.19    93.86
SO XBADJ    YDMP      -77.87   -78.14   -76.04   -71.63   -65.04   -56.47
SO XBADJ    YDMP      -46.19   -47.73   -49.30   -49.37   -47.93   -45.05
SO XBADJ    YDMP      -40.79   -35.29   -28.72   -21.28   -19.88   -18.63
SO XBADJ    YDMP      -16.81   -14.48   -11.71    -8.58    -5.19    -1.65
SO XBADJ    YDMP        1.95    -7.74   -18.67   -29.03   -38.51   -46.82
SO XBADJ    YDMP      -53.71   -58.96   -62.42   -63.99   -70.30   -75.23
SO YBADJ    YDMP       10.17     4.71    -0.89    -6.46   -11.84   -16.85
SO YBADJ    YDMP      -21.36   -25.21   -28.30   -30.53   -31.83   -32.17
SO YBADJ    YDMP      -31.52   -29.92   -27.41   -24.07   -20.00   -15.31
SO YBADJ    YDMP      -10.17    -4.71     0.89     6.46    11.84    16.85
SO YBADJ    YDMP       21.36    25.21    28.30    30.53    31.83    32.17
SO YBADJ    YDMP       31.52    29.92    27.41    24.07    20.00    15.31


SO BUILDHGT XDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT XDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT XDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT XDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT XDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDHGT XDMP       38.71    38.71    38.71    38.71    38.71    38.71
SO BUILDWID XDMP       78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID XDMP       85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID XDMP       80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDWID XDMP       78.40    86.44    91.86    94.49    94.25    91.14
SO BUILDWID XDMP       85.27    90.19    93.86    94.67    92.62    87.74
SO BUILDWID XDMP       80.21    70.23    58.12    44.25    55.48    67.97
SO BUILDLEN XDMP       94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN XDMP       44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN XDMP       94.49    94.25    91.14    85.27    90.19    93.86
SO BUILDLEN XDMP       94.67    92.62    87.74    80.21    70.23    58.12
SO BUILDLEN XDMP       44.25    55.48    67.97    78.40    86.44    91.86
SO BUILDLEN XDMP       94.49    94.25    91.14    85.27    90.19    93.86
SO XBADJ    XDMP      -95.14   -92.26   -86.57   -78.26   -67.57   -54.82
SO XBADJ    XDMP      -40.41   -37.99   -35.90   -32.72   -28.54   -23.49
SO XBADJ    XDMP      -17.73   -11.43    -4.79     2.00     2.04     1.27
SO XBADJ    XDMP        0.46    -0.36    -1.17    -1.95    -2.67    -3.30
SO XBADJ    XDMP       -3.84   -17.48   -32.07   -45.68   -57.91   -68.37
SO XBADJ    XDMP      -76.76   -82.82   -86.36   -87.27   -92.23   -95.13
SO YBADJ    XDMP       -6.48   -14.69   -22.44   -29.52   -35.69   -40.79
SO YBADJ    XDMP      -44.64   -47.14   -48.20   -47.80   -45.95   -42.70
SO YBADJ    XDMP      -38.16   -32.45   -25.76   -18.29   -10.26    -1.91
SO YBADJ    XDMP        6.48    14.69    22.44    29.52    35.69    40.79
SO YBADJ    XDMP       44.64    47.14    48.20    47.80    45.95    42.70
SO YBADJ    XDMP       38.16    32.45    25.76    18.29    10.26     1.91

** Future Other CFI Sources Downwash
SO BUILDHGT ADMP       28.35    28.35    28.35    28.35    28.35    28.35
SO BUILDHGT ADMP       20.42    28.35    28.35    28.35    28.35    28.35
SO BUILDHGT ADMP       28.35    28.35    38.71    38.71    38.71    38.71
SO BUILDHGT ADMP       28.35    28.35    28.35    28.35    28.35    28.35
SO BUILDHGT ADMP       20.42    28.35    28.35    28.35    28.35    28.35
SO BUILDHGT ADMP       28.35    28.35    28.35    28.35    28.35    28.35
SO BUILDWID ADMP       39.64    38.30    35.80    32.21    27.64    22.23
SO BUILDWID ADMP      134.90    21.06    26.62    31.37    35.16    37.89
SO BUILDWID ADMP       39.46    39.84    58.12    44.25    55.48    67.97
SO BUILDWID ADMP       39.64    38.30    35.80    32.21    27.64    22.23
SO BUILDWID ADMP      253.11    21.06    26.62    31.37    35.16    37.89
SO BUILDWID ADMP       39.46    39.84    39.01    36.99    38.69    39.77
SO BUILDLEN ADMP       31.37    35.16    37.89    39.46    39.84    39.01
SO BUILDLEN ADMP       41.91    38.69    39.77    39.64    38.30    35.80
SO BUILDLEN ADMP       32.21    27.64    91.14    85.27    90.19    93.86
SO BUILDLEN ADMP       31.37    35.16    37.89    39.46    39.84    39.01
```

SO	BUILDLEN	ADMP	74.12	38.69	39.77	39.64	38.30	35.80
SO	BUILDLEN	ADMP	32.21	27.64	22.23	16.15	21.06	26.62
SO	XBADJ	ADMP	6.29	4.98	3.52	1.96	0.33	-1.30
SO	XBADJ	ADMP	-104.75	-6.83	-10.83	-14.49	-17.72	-20.41
SO	XBADJ	ADMP	-22.48	-23.87	-203.28	-205.59	-208.35	-205.53
SO	XBADJ	ADMP	-37.66	-40.14	-41.41	-41.42	-40.17	-37.70
SO	XBADJ	ADMP	30.63	-31.86	-28.94	-25.14	-20.57	-15.38
SO	XBADJ	ADMP	-9.73	-3.77	2.30	8.29	8.30	7.41
SO	YBADJ	ADMP	-5.32	-1.43	2.51	6.38	10.05	13.41
SO	YBADJ	ADMP	23.62	18.83	20.72	21.97	22.56	22.47
SO	YBADJ	ADMP	21.69	20.25	44.04	15.98	-12.56	-40.72
SO	YBADJ	ADMP	5.32	1.43	-2.51	-6.38	-10.05	-13.41
SO	YBADJ	ADMP	-82.72	-18.83	-20.72	-21.97	-22.56	-22.47
SO	YBADJ	ADMP	-21.69	-20.25	-18.20	-15.60	-12.52	-9.06

SO	BUILDHGT	JSMTB	0.00	0.00	19.81	19.81	21.64	21.64
SO	BUILDHGT	JSMTB	21.64	38.71	38.71	38.71	38.71	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	26.13	23.19	29.44	26.72
SO	BUILDWID	JSMTB	23.18	90.19	93.86	94.67	92.62	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	27.91	29.36	29.44	26.72
SO	BUILDLEN	JSMTB	23.18	55.48	67.97	78.40	86.44	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	-76.00	-79.01	-109.97	-109.29
SO	XBADJ	JSMTB	-105.29	-240.25	-253.34	-258.73	-256.27	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	18.61	7.55	12.28	-4.45
SO	YBADJ	JSMTB	-21.04	58.01	20.23	-18.17	-56.01	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	JSMTB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPB	0.00	0.00	0.00	0.00	0.00	0.00

```
SO BUILDLEN SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPB           0.00    0.00    0.00    0.00    0.00    0.00

SO BUILDHGT SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPC           9.14    9.14    9.14   20.12   20.12    0.00
SO BUILDHGT SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPC          14.28   13.92   14.65   18.72   24.69    0.00
SO BUILDWID SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPC          14.28   13.83   14.56   44.81   46.76    0.00
SO BUILDLEN SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPC         -41.65  -42.43  -42.73 -139.30 -139.61    0.00
SO XBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO XBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPC           8.86    2.78   -3.44    6.40  -14.00    0.00
SO YBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00
SO YBADJ    SAPC           0.00    0.00    0.00    0.00    0.00    0.00

SO BUILDHGT SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDHGT SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDWID SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPD           0.00    0.00    0.00    0.00    0.00    0.00
SO BUILDLEN SAPD           0.00    0.00    0.00    0.00    0.00    0.00
```

SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPD	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	20.12	20.12	20.12
SO	BUILDHGT	MSTK22	20.12	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDHGT	MSTK22	9.14	9.14	9.14	9.14	9.14	9.14
SO	BUILDWID	MSTK22	14.10	14.60	14.66	14.28	13.83	14.56
SO	BUILDWID	MSTK22	14.85	14.68	14.07	14.10	14.60	14.66
SO	BUILDWID	MSTK22	14.28	13.92	14.65	18.72	24.69	31.46
SO	BUILDWID	MSTK22	37.27	14.60	14.66	14.28	13.83	14.56
SO	BUILDWID	MSTK22	14.85	14.68	14.07	14.10	14.60	14.66
SO	BUILDWID	MSTK22	14.28	13.92	14.65	14.94	14.77	14.15
SO	BUILDLEN	MSTK22	14.10	14.60	14.66	14.28	13.92	14.65
SO	BUILDLEN	MSTK22	14.94	14.77	14.15	14.10	14.60	14.66
SO	BUILDLEN	MSTK22	14.28	13.83	14.56	44.81	46.76	47.92
SO	BUILDLEN	MSTK22	47.62	14.60	14.66	14.28	13.92	14.65
SO	BUILDLEN	MSTK22	14.94	14.77	14.15	14.10	14.60	14.66
SO	BUILDLEN	MSTK22	14.28	13.83	14.56	14.85	14.68	14.07
SO	XBADJ	MSTK22	-7.21	-7.50	-7.56	-7.39	-7.18	-7.55
SO	XBADJ	MSTK22	-7.70	-7.62	-7.30	-7.27	-7.49	-7.48
SO	XBADJ	MSTK22	-7.25	-6.97	-7.29	-104.95	-107.40	-106.90
SO	XBADJ	MSTK22	-103.16	-7.11	-7.11	-6.89	-6.74	-7.09
SO	XBADJ	MSTK22	-7.23	-7.15	-6.86	-6.83	-7.11	-7.18
SO	XBADJ	MSTK22	-7.03	-6.86	-7.27	-7.45	-7.41	-7.14
SO	YBADJ	MSTK22	0.22	0.19	0.15	0.11	0.05	0.01
SO	YBADJ	MSTK22	-0.03	-0.07	-0.11	-0.16	-0.20	-0.23
SO	YBADJ	MSTK22	-0.25	-0.22	-0.23	15.71	1.14	-13.47
SO	YBADJ	MSTK22	-27.67	-0.19	-0.15	-0.11	-0.05	-0.01
SO	YBADJ	MSTK22	0.03	0.07	0.11	0.16	0.20	0.23
SO	YBADJ	MSTK22	0.25	0.22	0.23	0.23	0.23	0.22
SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	20.12
SO	BUILDHGT	MSTPTA	20.12	20.12	0.00	0.00	9.14	9.14
SO	BUILDHGT	MSTPTA	9.14	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	31.46
SO	BUILDWID	MSTPTA	37.27	41.95	0.00	0.00	13.83	14.56
SO	BUILDWID	MSTPTA	14.85	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	47.92
SO	BUILDLEN	MSTPTA	47.62	45.88	0.00	0.00	13.92	14.65
SO	BUILDLEN	MSTPTA	14.94	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	MSTPTA	0.00	0.00	0.00	0.00	0.00	0.00

```
SO XBADJ    MSTPTA      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTA      0.00     0.00     0.00     0.00     0.00  -125.21
SO XBADJ    MSTPTA   -126.72  -124.37     0.00     0.00   -42.90   -43.82
SO XBADJ    MSTPTA    -43.42     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTA      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTA      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTA      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTA      0.00     0.00     0.00     0.00     0.00    18.37
SO YBADJ    MSTPTA      0.51   -17.37     0.00     0.00     6.39     0.05
SO YBADJ    MSTPTA     -6.29     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTA      0.00     0.00     0.00     0.00     0.00     0.00


SO BUILDHGT MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00
SO YBADJ    MSTPTB      0.00     0.00     0.00     0.00     0.00     0.00

** 1974 Baseline Downwash
SO BUILDHGT SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT SAPCB         9.14     9.14     9.14     9.14     0.00     0.00
SO BUILDHGT SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDHGT SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPCB        14.28    13.92    14.65    14.94     0.00     0.00
SO BUILDWID SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDWID SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPCB        14.28    13.83    14.56    14.85     0.00     0.00
SO BUILDLEN SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO BUILDLEN SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
SO XBADJ    SAPCB         0.00     0.00     0.00     0.00     0.00     0.00
```

SO	XBADJ	SAPCB	-41.65	-42.43	-42.73	-41.74	0.00	0.00
SO	XBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPCB	8.86	2.78	-3.44	-9.55	0.00	0.00
SO	YBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPCB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPDB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00

SO	XBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPAB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDHGT	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDWID	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	BUILDLEN	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	XBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00
SO	YBADJ	SAPBB	0.00	0.00	0.00	0.00	0.00	0.00

SO	BUILDHGT	ADMPB	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMPB	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMPB	28.35	28.35	38.71	38.71	38.71	38.71
SO	BUILDHGT	ADMPB	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMPB	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDHGT	ADMPB	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDWID	ADMPB	39.66	38.36	35.90	32.35	50.93	40.51
SO	BUILDWID	ADMPB	16.37	23.72	30.59	31.22	35.05	37.81
SO	BUILDWID	ADMPB	39.43	39.85	58.53	44.71	54.98	67.54
SO	BUILDWID	ADMPB	39.66	38.36	35.90	32.35	50.93	40.51
SO	BUILDWID	ADMPB	16.37	23.72	30.59	31.22	35.05	37.81
SO	BUILDWID	ADMPB	39.43	39.85	39.05	37.07	38.64	39.75
SO	BUILDLEN	ADMPB	31.22	35.05	37.81	39.43	68.57	70.59
SO	BUILDLEN	ADMPB	37.07	73.58	75.29	39.66	38.36	35.90
SO	BUILDLEN	ADMPB	32.35	27.81	91.28	85.51	90.00	93.76
SO	BUILDLEN	ADMPB	31.22	35.05	37.81	39.43	68.57	70.59
SO	BUILDLEN	ADMPB	37.07	73.58	75.29	39.66	38.36	35.90
SO	BUILDLEN	ADMPB	32.35	27.81	22.43	16.37	20.86	26.44
SO	XBADJ	ADMPB	6.27	4.95	3.49	1.91	-28.44	-32.89
SO	XBADJ	ADMPB	-2.95	-41.73	-46.34	-14.47	-17.70	-20.39
SO	XBADJ	ADMPB	-22.47	-23.86	-203.01	-205.32	-207.82	-205.00
SO	XBADJ	ADMPB	-37.49	-40.00	-41.30	-41.34	-40.13	-37.70

SO	XBADJ	ADMPB	-34.12	-31.84	-28.96	-25.19	-20.67	-15.51
SO	XBADJ	ADMPB	-9.88	-3.95	2.10	8.08	8.29	7.39
SO	YBADJ	ADMPB	-5.36	-1.48	2.44	6.29	21.51	22.35
SO	YBADJ	ADMPB	16.27	20.15	18.54	21.88	22.48	22.39
SO	YBADJ	ADMPB	21.63	20.21	43.67	15.68	-12.79	-40.86
SO	YBADJ	ADMPB	5.36	1.48	-2.44	-6.29	-21.51	-22.35
SO	YBADJ	ADMPB	-16.27	-20.15	-18.54	-21.88	-22.48	-22.39
SO	YBADJ	ADMPB	-21.63	-20.21	-18.17	-15.58	-12.52	-9.08

SO	BUILDHGT	ZDMPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	ZDMPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	ZDMPB	78.04	86.18	91.69	94.43	94.29	91.28
SO	BUILDWID	ZDMPB	85.51	90.00	93.76	94.67	92.71	87.92
SO	BUILDWID	ZDMPB	80.47	70.57	58.53	44.71	54.98	67.54
SO	BUILDWID	ZDMPB	78.04	86.18	91.69	94.43	94.29	91.28
SO	BUILDWID	ZDMPB	85.51	90.00	93.76	94.67	92.71	87.92
SO	BUILDWID	ZDMPB	80.47	70.57	58.53	44.71	54.98	67.54
SO	BUILDLEN	ZDMPB	94.67	92.71	87.92	80.47	70.57	58.53
SO	BUILDLEN	ZDMPB	44.71	54.98	67.54	78.04	86.18	91.69
SO	BUILDLEN	ZDMPB	94.43	94.29	91.28	85.51	90.00	93.76
SO	BUILDLEN	ZDMPB	94.67	92.71	87.92	80.47	70.57	58.53
SO	BUILDLEN	ZDMPB	44.71	54.98	67.54	78.04	86.18	91.69
SO	BUILDLEN	ZDMPB	94.43	94.29	91.28	85.51	90.00	93.76
SO	XBADJ	ZDMPB	-51.72	-54.98	-56.58	-56.46	-54.62	-51.12
SO	XBADJ	ZDMPB	-46.07	-52.34	-59.01	-63.88	-66.80	-67.70
SO	XBADJ	ZDMPB	-66.55	-63.37	-58.26	-51.39	-49.38	-46.88
SO	XBADJ	ZDMPB	-42.96	-37.72	-31.34	-24.01	-15.95	-7.41
SO	XBADJ	ZDMPB	1.36	-2.64	-8.53	-14.17	-19.37	-23.99
SO	XBADJ	ZDMPB	-27.88	-30.92	-33.02	-34.12	-40.62	-46.88
SO	YBADJ	ZDMPB	24.85	23.72	21.86	19.33	16.22	12.62
SO	YBADJ	ZDMPB	8.63	4.38	0.00	-4.38	-8.63	-12.62
SO	YBADJ	ZDMPB	-16.22	-19.33	-21.86	-23.71	-24.85	-25.24
SO	YBADJ	ZDMPB	-24.85	-23.72	-21.86	-19.33	-16.22	-12.62
SO	YBADJ	ZDMPB	-8.63	-4.38	0.00	4.38	8.63	12.62
SO	YBADJ	ZDMPB	16.22	19.33	21.86	23.72	24.85	25.24

SO	BUILDHGT	YDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	YDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	YDMGPB	78.04	86.18	91.69	94.43	94.29	91.28
SO	BUILDWID	YDMGPB	85.51	90.00	93.76	94.67	92.71	87.92
SO	BUILDWID	YDMGPB	80.47	70.57	58.53	44.71	54.98	67.54
SO	BUILDWID	YDMGPB	78.04	86.18	91.69	94.43	94.29	91.28
SO	BUILDWID	YDMGPB	85.51	90.00	93.76	94.67	92.71	87.92
SO	BUILDWID	YDMGPB	80.47	70.57	58.53	44.71	54.98	67.54
SO	BUILDLEN	YDMGPB	94.67	92.71	87.92	80.47	70.57	58.53
SO	BUILDLEN	YDMGPB	44.71	54.98	67.54	78.04	86.18	91.69
SO	BUILDLEN	YDMGPB	94.43	94.29	91.28	85.51	90.00	93.76
SO	BUILDLEN	YDMGPB	94.67	92.71	87.92	80.47	70.57	58.53
SO	BUILDLEN	YDMGPB	44.71	54.98	67.54	78.04	86.18	91.69
SO	BUILDLEN	YDMGPB	94.43	94.29	91.28	85.51	90.00	93.76
SO	XBADJ	YDMGPB	-78.39	-78.72	-76.66	-72.27	-65.68	-57.10
SO	XBADJ	YDMGPB	-46.78	-47.77	-49.28	-49.30	-47.81	-44.88
SO	XBADJ	YDMGPB	-40.58	-35.05	-28.46	-20.99	-19.33	-18.08
SO	XBADJ	YDMGPB	-16.28	-13.98	-11.26	-8.20	-4.89	-1.43
SO	XBADJ	YDMGPB	2.07	-7.21	-18.26	-28.75	-38.36	-46.82

SO	XBADJ	YDMGPB	-53.84	-59.24	-62.83	-64.51	-70.67	-75.68
SO	YBADJ	YDMGPB	10.27	4.73	-0.97	-6.63	-12.09	-17.19
SO	YBADJ	YDMGPB	-21.76	-25.67	-28.80	-31.06	-32.37	-32.70
SO	YBADJ	YDMGPB	-32.03	-30.40	-27.83	-24.43	-20.28	-15.51
SO	YBADJ	YDMGPB	-10.27	-4.73	0.97	6.63	12.09	17.19
SO	YBADJ	YDMGPB	21.76	25.67	28.80	31.06	32.37	32.70
SO	YBADJ	YDMGPB	32.03	30.40	27.83	24.43	20.28	15.51

SO	BUILDHGT	XDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDHGT	XDMGPB	38.71	38.71	38.71	38.71	38.71	38.71
SO	BUILDWID	XDMGPB	78.04	86.18	91.69	94.43	94.29	91.28
SO	BUILDWID	XDMGPB	85.51	90.00	93.76	94.67	92.71	87.92
SO	BUILDWID	XDMGPB	80.47	70.57	58.53	44.71	54.98	67.54
SO	BUILDWID	XDMGPB	78.04	86.18	91.69	94.43	94.29	91.28
SO	BUILDWID	XDMGPB	85.51	90.00	93.76	94.67	92.71	87.92
SO	BUILDWID	XDMGPB	80.47	70.57	58.53	44.71	54.98	67.54
SO	BUILDLEN	XDMGPB	94.67	92.71	87.92	80.47	70.57	58.53
SO	BUILDLEN	XDMGPB	44.71	54.98	67.54	78.04	86.18	91.69
SO	BUILDLEN	XDMGPB	94.43	94.29	91.28	85.51	90.00	93.76
SO	BUILDLEN	XDMGPB	94.67	92.71	87.92	80.47	70.57	58.53
SO	BUILDLEN	XDMGPB	44.71	54.98	67.54	78.04	86.18	91.69
SO	BUILDLEN	XDMGPB	94.43	94.29	91.28	85.51	90.00	93.76
SO	XBADJ	XDMGPB	-95.63	-92.81	-87.17	-78.88	-68.19	-55.43
SO	XBADJ	XDMGPB	-40.98	-38.02	-35.88	-32.65	-28.43	-23.34
SO	XBADJ	XDMGPB	-17.55	-11.22	-4.55	2.26	2.56	1.79
SO	XBADJ	XDMGPB	0.96	0.10	-0.76	-1.60	-2.39	-3.10
SO	XBADJ	XDMGPB	-3.72	-16.96	-31.66	-45.39	-57.75	-68.35
SO	XBADJ	XDMGPB	-76.88	-83.07	-86.74	-87.77	-92.56	-95.55
SO	YBADJ	XDMGPB	-6.37	-14.66	-22.51	-29.67	-35.93	-41.09
SO	YBADJ	XDMGPB	-45.01	-47.56	-48.67	-48.30	-46.46	-43.20
SO	YBADJ	XDMGPB	-38.64	-32.90	-26.16	-18.63	-10.53	-2.11
SO	YBADJ	XDMGPB	6.37	14.66	22.51	29.67	35.93	41.09
SO	YBADJ	XDMGPB	45.01	47.56	48.67	48.30	46.46	43.20
SO	YBADJ	XDMGPB	38.64	32.90	26.16	18.63	10.53	2.11

SO	BUILDHGT	RMMANB	28.35	18.29	18.29	18.29	18.29	20.42
SO	BUILDHGT	RMMANB	20.42	20.42	20.42	28.35	28.35	28.35
SO	BUILDHGT	RMMANB	28.35	28.35	38.71	38.71	38.71	28.35
SO	BUILDHGT	RMMANB	28.35	18.29	18.29	18.29	18.29	20.42
SO	BUILDHGT	RMMANB	18.29	18.29	18.29	28.35	28.35	28.35
SO	BUILDHGT	RMMANB	28.35	28.35	28.35	28.35	28.35	28.35
SO	BUILDWID	RMMANB	39.66	123.27	131.38	135.49	135.49	139.39
SO	BUILDWID	RMMANB	135.12	138.66	139.84	41.21	50.58	37.81
SO	BUILDWID	RMMANB	39.43	39.85	58.53	44.71	54.98	39.75
SO	BUILDWID	RMMANB	39.66	123.27	131.38	135.49	135.49	251.74
SO	BUILDWID	RMMANB	123.27	129.59	134.79	41.21	50.58	37.81
SO	BUILDWID	RMMANB	39.43	39.85	39.05	37.07	38.64	39.75
SO	BUILDLEN	RMMANB	31.22	132.88	125.82	114.94	100.57	65.20
SO	BUILDLEN	RMMANB	42.70	59.33	80.43	74.72	71.88	35.90
SO	BUILDLEN	RMMANB	32.35	27.81	91.28	85.51	90.00	26.44
SO	BUILDLEN	RMMANB	31.22	132.88	125.82	114.94	100.57	117.41
SO	BUILDLEN	RMMANB	63.19	78.01	96.17	74.72	71.88	35.90
SO	BUILDLEN	RMMANB	32.35	27.81	22.43	16.37	20.86	26.44
SO	XBADJ	RMMANB	23.78	-118.70	-108.22	-94.45	-77.82	-125.98
SO	XBADJ	RMMANB	-125.97	-142.34	-157.52	-83.27	-87.48	-58.08
SO	XBADJ	RMMANB	-60.44	-60.96	-238.11	-237.35	-235.81	-56.94
SO	XBADJ	RMMANB	-55.00	-14.18	-17.60	-20.49	-22.75	8.57
SO	XBADJ	RMMANB	-25.16	-43.58	-63.53	8.54	15.60	22.18
SO	XBADJ	RMMANB	28.09	33.15	37.20	40.11	36.29	30.49

```
SO YBADJ    RMMANB      28.37  -35.45  -43.98  -51.18  -56.83   72.87
SO YBADJ    RMMANB      55.54   36.53   16.41   34.39   26.10   27.31
SO YBADJ    RMMANB      19.93   11.94   29.08   -4.78  -38.50  -21.10
SO YBADJ    RMMANB     -28.37   35.45   43.98   51.18   56.83 -129.04
SO YBADJ    RMMANB      62.82   62.98   61.23  -34.39  -26.10  -27.31
SO YBADJ    RMMANB     -19.93  -11.94   -3.58    4.88   13.19   21.10

   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
**************************************************************
** COMMENT - To Avoid Large Run-Time, Only Receptors Up To 2km
** From Grid Center Used in This Analysis
**************************************************************
** Receptors Up to 2KM from Grid Center
   DISCCART        18.20       585.20     25.91    25.91
   DISCCART      -182.90       585.20     25.91    25.91
   DISCCART      -182.90       573.00     25.91    25.91
   DISCCART     -1645.90       573.00     22.99    22.99
   ....
   ....
   ....
   DISCCART      2000.00      1700.00     25.3     25.3
   DISCCART      2000.00      1800.00     25.54    25.54
   DISCCART      2000.00      1900.00     25.78    25.78
   DISCCART      2000.00      2000.00     25.91    25.91
   DISCCART      -450.00       650.00     24.65    24.65
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE C:\AMODMET\TPATPA91.SFC
   PROFFILE C:\AMODMET\TPATPA91.PFL
   SURFDATA 12842 1991 TAMPA/INT'L_ARPT
   UAIRDATA 12842 1991 TAMPA/INT'L_ARPT
   PROFBASE 40 FEET
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST 2ND
OU FINISHED
```