

Florida Department of
Environmental Protection

Memorandum

TO: Trina Vielhauer, Bureau of Air Regulation
THROUGH: Jeff Koerner, Air Permitting North Section *JK*
FROM: Syed Arif, Air Permitting North Section *Syed Arif 5/25*
DATE: May 25, 2007
SUBJECT: Draft Air Permit No. PSD-FL-355
Project No. 0570005-021-AC
CF Industries, Inc. - Plant City Phosphate Complex
Sulfuric and Phosphoric Acid Production Increase

This project is subject to PSD preconstruction review. Attached for your review are the following items:

- Written Notice of Intent to Issue Air Permit;
- Public Notice of Intent to Issue Air Permit;
- Technical Evaluation and Preliminary Determination;
- Draft Permit; and
- P.E. Certification.

The Draft Permit authorizes increase in the production rate for B Sulfuric Acid Plant to 1,600 tons per day (TPD) and for A and B Phosphoric Acid Plants to 1,699 TPD and 2,530 TPD of 100-percent rock phosphorus pentoxide, respectively. The proposed project involves upgrading and/or replacement of plant equipment to accomplish the production increases, as described in the permit application. The proposed work will be conducted at CF Industries Plant City Phosphate Complex, which is located in Hillsborough County, Florida. The Technical Evaluation and Preliminary Determination provides a detailed description of the project and the rationale for issuance. The P.E. certification briefly summarizes the proposed project. I recommend your approval of the attached Draft Permit.

Attachments

Are any of these BART units?



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

P.E. Certification Statement

Permittee:

CF Industries, Incorporated
Plant City Phosphate Complex

DEP File No. 0570005-021-AC


Permit No. PSD-FL-355

Project type: CF Industries proposes to modify its existing B Sulfuric Acid Plant (SAP) by increasing the production rate of the plant to 1,600 tons per day (TPD). The production rate increase will be accomplished through several plant improvements related to increasing air flow, increased process cooling, increased catalyst loading, and utilizing high-efficiency cesium-promoted catalyst in the fourth pass of the converter. The B SAP utilizes single-absorption technology. Sulfur dioxide (SO₂) and sulfuric acid mist (SAM) emissions from the B SAP are controlled by a two-stage ammonia scrubber and a Brink's demister. The Department has determined that BACT for the project is an emission limit of 3.5 pounds of SO₂ per ton of 100% sulfuric acid (H₂SO₄) on a three-hour rolling average, 0.075 pounds of SAM per ton of 100% H₂SO₄ and 0.12 pounds of nitrogen oxides (NO_x) per ton of 100% H₂SO₄.

CF Industries is also proposing to modify its existing A and B Phosphoric Acid Plants (PAPs) by increasing the production rate of the A PAP to 1,699 TPD of 100-percent rock phosphorus pentoxide (P₂O₅) and of the B PAP to 2,530 TPD of 100-percent rock P₂O₅. The production rate increase will be accomplished through installation of additional reactor flash cooling equipment, increased evaporation capacity equipment and double-gypsum filtration. Fluoride (F) emissions from the A PAP are controlled by a cyclonic scrubber followed by a horizontal, cross-flow packed scrubber. F emissions from the B PAP are controlled by a horizontal, cross-flow packed scrubber. The Department has determined that BACT for the project is an emission limit of 0.012 pounds of F per ton of P₂O₅ input for both A and B PAPs.

An air quality impact analysis was required for SO₂, NO_x and particulate matter less than or equal to 10 micrometers.

I HEREBY CERTIFY that the engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).


Syed Arif, P.E.
Registration Number: 51861

5/25/07
Date

Department of Environmental Protection
Bureau of Air Regulation
Permitting South Section
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Phone (850) 921-9528
Fax (850) 921-9533



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

May 25, 2007

ELECTRONIC MAIL – RECEIVED RECEIPT REQUESTED

Mr. Herschel E. Morris, Vice President Phosphate Operations/General Manager
CF Industries, Inc.
Post Office Drawer L
Plant City, Florida 33564

Re: Draft Air Permit No. PSD-FL-355
Project No. 0570005-021-AC
Plant City Phosphate Complex
Sulfuric and Phosphoric Acid Production Increase

Dear Mr. Morris:

On May 18, 2005, CF Industries submitted an application for an air construction permit subject to the preconstruction review requirements for the Prevention of Significant Deterioration of Air Quality. The primary purpose of the project is to modify the B Sulfuric Acid Plant and the A and B Phosphoric Acid Plants. This work will be conducted at Plant City Phosphate Complex, which is located in Hillsborough County at 10608 Paul Buchman Highway, Plant City, Florida. Enclosed are the following documents:

- The Written Notice of Intent to Issue Air Permit provides important information regarding: the Permitting Bureau of Air Regulation's intent to issue an air permit for the proposed project; the requirements for publishing a Public Notice of the Bureau of Air Regulation's intent to issue an air permit; the procedures for submitting comments on the Draft Permit; the process for filing a petition for an administrative hearing; and the availability of mediation.
- The Public Notice of Intent to Issue Air Permit is the actual notice that you must have published in the legal advertisement section of a newspaper of general circulation in the area affected by this project.
- The Technical Evaluation and Preliminary Determination summarizes the Bureau of Air Regulation's technical review of the application and provides the rationale for making the preliminary determination to issue a draft permit.
- The proposed Draft Permit includes the specific conditions that will regulate the emissions units covered by the proposed project.

If you have any questions, please contact the Project Engineer, Syed Arif, at 850/921-9528.

Sincerely,

Trina Vielhauer, Chief
Bureau of Air Regulation

Enclosures

TLV/jfk/sa

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

*In the Matter of an
Application for Air Permit by:*

CF Industries, Inc.
Post Office Drawer L
Plant City, Florida 33564

Air Permit No. PSD-FL-355
Air Permit No. 0570005-021-AC
Plant City Phosphate Complex
Sulfuric and Phosphoric Acid
Production Increase
Hillsborough County, Florida

Authorized Representative:

Mr. Herschel E. Morris, Vice President Phosphate Operations/General Manager

Facility Location: The applicant, CF Industries, Inc., operates the existing Plant City Phosphate Complex, which is located in Hillsborough County at 10608 Paul Buchman Highway in Plant City, Florida.

Project: CF Industries proposes to modify its existing B Sulfuric Acid Plant and the A and B Phosphoric Acid Plants by increasing the production rates of those plants. Details of the project are provided in the application and the enclosed Technical Evaluation and Preliminary Determination.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Florida Department of Environmental Protection's Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Bureau of Air Regulation's physical address is 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301 and the mailing address is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Bureau of Air Regulation's phone number is 850/488-0114.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address and phone number listed above.

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of the proposed equipment will not adversely impact air quality and that the project will comply with all applicable provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Public Notice: Pursuant to Section 403.815, F.S. and Rules 62-110.106 and 62-210.350, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Permit (Public Notice). The Public Notice shall be published one time only as soon as possible in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The newspaper used must meet the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Permitting Authority at the address or phone number listed above. Pursuant to Rule 62-110.106(5) and (9), F.A.C., the applicant shall provide proof of publication to the Permitting Authority at the above address within 7 days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

Comments: The Permitting Authority will accept written comments concerning the Draft Permit for a period of 30 days from the date of publication of the Public Notice. Written comments must be post-marked by the close of business (5:00 p.m.), on or before the end of this 30-day period by the Permitting Authority at the above address. As part of his or her comments, any person may also request that the Permitting Authority hold a public meeting on this permitting action. If the Permitting Authority determines there is sufficient interest for a public meeting, it will publish notice of the time, date, and location in the Florida Administrative Weekly and in a newspaper of general circulation in the area affected by the

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

permitting action. For additional information, contact the Permitting Authority at the above address or phone number. If written comments or comments received at a public meeting result in a significant change to the Draft Permit, the Permitting Authority will issue a revised Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

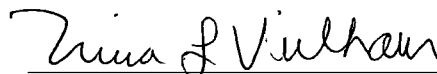
Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000 (Telephone: 850/245-2241; Fax: 850/245-2303). Petitions filed by the applicant or any of the parties listed below must be filed within 14 days of receipt of this Written Notice of Intent to Issue Air Permit. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the attached Public Notice or within fourteen 14 days of receipt of this Written Notice of Intent to Issue Air Permit, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Written Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.



Trina Vielhauer, Chief
Bureau of Air Regulation

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

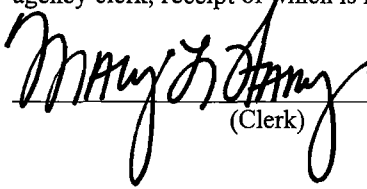
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Intent to Issue Air Permit package (including the Written Notice of Intent to Issue Air Permit, the Public Notice of Intent to Issue Air Permit, the Technical Evaluation and Preliminary Determination, and the Draft Permit) was sent by electronic mail with received receipt requested before the close of business on 5/29/07 to the persons listed below.

Herschel E. Morris, CF Industries, Inc. (hmorris@cfifl.com)
Jim Little, EPA (little.james@epa.gov)
Kathleen Forney, EPA (forney.kathleen@epa.gov)
Dee Morse, NPS (dee_morse@nps.gov)
Cindy Zhang-Torres, DEP-SWD (cindy.zhang-torres@dep.state.fl.us)
Diana Lee, HCEPC (lee@epchc.org)
David Buff, Golder Associates, Inc. (dbuff@golder.com)
Joseph Marini, RMT, Inc. (joseph.marini@rmtinc.com)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.



(Clerk)

5/29/07

(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

Florida Department of Environmental Protection
Division of Air Resource Management, Bureau of Air Regulation

Project No. 0570005-021-AC / Draft Air Permit No. PSD-FL-355
CF Industries, Inc., Plant City Phosphate Complex
Hillsborough County, Florida

Applicant: The applicant for this project is CF Industries, Inc. The applicant's authorized representative and mailing address is: Mr. Herschel E. Morris, Vice President Phosphate Operations/General Manager, CF Industries, Inc., Plant City Phosphate Complex, Post Office Drawer L, Plant City, Florida 33564.

Facility Location: CF Industries, Inc., operates the existing Plant City Phosphate Complex, which is located in Hillsborough County at 10608 Paul Buchman Highway in Plant City, Florida 33565.

Project: CF Industries, Inc. proposes to modify its existing B Sulfuric Acid Plant (SAP) by increasing the production rate of the plant to 1,600 tons per day (TPD). The production rate increase will be accomplished through several plant improvements related to increasing air flow, increased process cooling, increased catalyst loading, and utilizing high-efficiency cesium-promoted catalyst in the fourth pass of the converter. The B SAP utilizes single-absorption technology. CF Industries, Inc. will demonstrate the most stringent Sulfur Dioxide (SO₂) emission limit required for a double-absorption plant with their single-absorption plant. CF Industries is also proposing to modify its existing A and B Phosphoric Acid Plants (PAP) by increasing the production rate of the A PAP to 1,699 TPD of 100-percent rock phosphorus pentoxide (P₂O₅) and of the B PAP to 2,530 TPD of 100-percent rock P₂O₅. The production rate increase will be accomplished through installation of additional reactor flash cooling equipment, increased evaporation capacity equipment and double-gypsum filtration.

Based on the air permit application, the project will result in potential emissions increases of: 46.9 tons per year (TPY) of carbon monoxide (CO); 112.2 TPY of nitrogen oxides (NO_x); 158.3 TPY of particulate matter (PM); 148.8 TPY of particulate matter with a mean diameter of 10 microns or less (PM₁₀); 20.6 TPY of sulfuric acid mist (SAM); 391.1 TPY of SO₂; 4 TPY of volatile organic compounds (VOC) and 19.8 TPY of fluoride (F). As defined in Rule 62-210.200 of the Florida Administrative Code (F.A.C.), the project results in significant net emissions increases for NO_x, PM, PM₁₀, SAM, F, and SO₂. Therefore, the project is subject to preconstruction review for the Prevention of Significant Deterioration (PSD) of Air Quality for these pollutants in accordance with Rule 62-212.400, F.A.C.

For each PSD-significant pollutant, the Department is required to determine the Best Available Control Technology (BACT) for those emission units where a physical change or a change in the method of operation is proposed and approve the applicant's Air Quality Analysis regarding ambient impacts due to the project. The Department's preliminary BACT determinations for these pollutants are: SO₂ and SAM emissions from the B SAP are controlled by a two-stage ammonia scrubber and a Brink's demister. NO_x emissions from the B SAP are controlled by good combustion practices. F emissions from the A PAP are controlled by a cyclonic scrubber followed by a horizontal, cross-flow packed scrubber. F emissions from the B PAP are controlled by a horizontal, cross-flow packed scrubber.

The Department reviewed an air quality analysis prepared by the applicant. The following tables show the maximum predicted PSD increments consumed by all sources in the area, including this project.

Summary of PSD Class II Increment Analysis

<u>Pollutant</u>	<u>Averaging Time</u>	<u>Allowable Increment</u> <u>($\mu\text{g}/\text{m}^3$)</u>	<u>Increment Consumed</u> <u>($\mu\text{g}/\text{m}^3$)</u>	<u>Percent</u>
PM ₁₀	24-hour	30	29.9	99.7%
	Annual	17	5	30%
SO ₂	24-hour	91	26.5	29%
	Annual	20	0	0%

(Public Notice to be Published in the Newspaper)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

The Class II increments represent the increment consumed in the vicinity of the project. Based on the analysis, emissions from the project will not significantly contribute to, or cause a violation of, any state or federal ambient air quality standards.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, and 62-212, F.A.C. The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Florida Department of Environmental Protection's Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Bureau of Air Regulation's physical address is 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301 and the mailing address is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Bureau of Air Regulation's phone number is 850/488-0114.

Project File: A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at:

Dept. of Environmental Protection	Dept. of Environmental Protection	Hillsborough County Environmental Protection Commission
Bureau of Air Regulation	Southwest District	3629 Queen Palm Drive
111 South Magnolia Drive, Suite 4	13051 N. Telecom Parkway	Tampa, Florida 33619-1309
Tallahassee, Florida, 32301	Tampa, Florida 33637-0926	Telephone: 813/627-2600
Telephone: 850/488-0114	Telephone: 813/632-7600	Fax: 813/627-2620
Fax: 850/922-6979	Fax: 813/744-6458	

The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address and phone number listed above. In addition, electronic copies of these documents are available on the following web site: <http://www.dep.state.fl.us/air/eproducts/apds/default.asp>.

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of the proposed equipment will not adversely impact air quality and that the project will comply with all applicable provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Comments: The Permitting Authority will accept written comments concerning the Draft Permit for a period of 30 days from the date of publication of the Public Notice. Written comments must be post-marked by the close of business (5:00 p.m.), on or before the end of this 30-day period by the Permitting Authority at the above address. As part of his or her comments, any person may also request that the Permitting Authority hold a public meeting on this permitting action. If the Permitting Authority determines there is sufficient interest for a public meeting, it will publish notice of the time, date, and location in the Florida Administrative Weekly and in a newspaper of general circulation in the area affected by the permitting action. For additional information, contact the Permitting Authority at the above address or phone number. If written comments or comments received at a public meeting result in a significant change to the Draft Permit, the Permitting Authority will issue a revised Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000 (Telephone: 850/245-2241; Fax: 850/245-2303). Petitions

(Public Notice to be Published in the Newspaper)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of this Public Notice or receipt of a written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Public Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available in this proceeding.

TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

CF INDUSTRIES, INC.

Plant City Phosphate Complex
Plant City, Hillsborough County

B Sulfuric Acid Plant
A and B Phosphoric Acid Plants

DEP File No. 0570005-021-AC
PSD-FL-355

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation

May 23, 2007

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

1. APPLICATION INFORMATION

1.1 *Applicant Name and Address*

CF Industries, Inc.
P.O. Drawer L
Plant City, Florida 33564

Authorized Representative: Mr. Herschel E. Morris, Vice President/General Manager

1.2 *Reviewing and Process Schedule*

05-18-2005: Date of Receipt of Application
06-15-2005: DEP's 1st Completeness Request
06-16-2005: Hillsborough County Completeness Issues
04-06-2006: Date of Receipt of Amended Application
04-26-2006: DEP's 2nd Completeness Request of the Amended Application
05-01-2006: Southwest District Office Completeness Issues
05-05-2006: DEP's Completeness Request for Modeling Issues
07-24-2006: Applicant requested additional time to respond to DEP's Completeness Requests
07-28-2006: Applicant's response to DEP's Completeness Requests of 04-24-2006, 05-01-2006 and 05-05-2006.
08-25-2006: DEP's 3rd Completeness Request of the Amended Application
11-22-2006: Applicant requested additional time to respond to DEP's 3rd Completeness Request
01-18-2007: Applicant's response to DEP's 3rd Completeness Request. Applicant amends the application for the second time
02-15-2007: DEP's 4th Completeness Request of the Amended Application
03-12-2007: DEP's Completeness Request for Modeling Issues of the Amended Application
03-14-2007: Applicant's response to DEP's 4th Completeness Request
03-22-2007: Applicant's response to Modeling Issues. Application Complete

2. FACILITY INFORMATION

2.1 *Facility Location*

CF Industries, Inc. (CFI) is located at 10608 Paul Buchman Highway, Plant City, Hillsborough County. The project site is located about 70 kilometers from the Chassahowitzka National Wildlife Refuge, a Class I Area. The UTM coordinates of this facility are Zone 17; 388.0 km E; 3116.0 km N.

2.2 *Standard Industrial Classification Codes (SIC)*

Major Group No.	28	Chemicals and Allied Products
Industry Group No.	2874	Phosphate Fertilizers

2.3 *Facility Category*

CFI produces sulfuric acid (H₂SO₄), phosphoric acid, monoammonium phosphate (MAP) and diammonium phosphate (DAP).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The sulfuric acid is produced on-site by burning elemental sulfur, converting the resulting sulfur dioxide to sulfur trioxide, and absorbing it into a recirculating sulfuric acid solution. Phosphoric acid is made by acidulation of phosphate rock with sulfuric acid. Waste gypsum is produced and stacked. The phosphoric acid is reacted with other chemicals to make fertilizers.

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM), particulate matter less than or equal to 10 micrometers (PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), or volatile organic compounds (VOC) exceed 100 Tons per year (TPY). The facility is also a Major facility for Hazardous Air Pollutants because emissions of hydrogen fluoride (HF) exceed 10 TPY.

This facility is within an industry included in the list of the Major Facility Categories per Rule 62-210.200(192), Florida Administrative Code (F.A.C). Because emissions from the facility are greater than 100 TPY for at least one criteria pollutant, the facility is also a major facility with respect to Rule 62-210.200(193)(a)1, F.A.C. Prevention of Significant Deterioration (PSD) Review and a BACT determination are required for each pollutant emitted in excess of the Significant Emission Rates listed in Rule 62-210.200(277), F.A.C. These values are: 3 TPY for Fluorides (F), 40 TPY for NO_x, SO₂, and VOC; 25/15 TPY of PM/PM₁₀; 7 TPY of Sulfuric Acid Mist (SAM); and 100 TPY of CO.

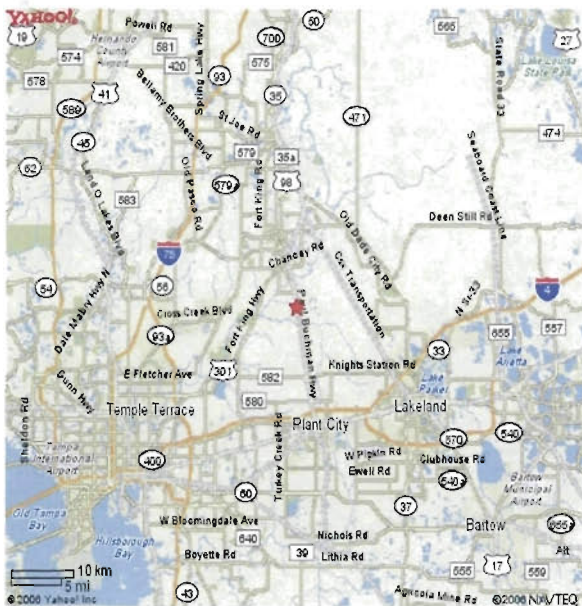


Figure 1 – Location of Facility

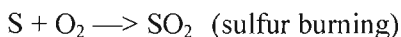


Figure 2 – Regional Location

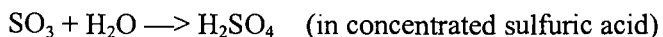
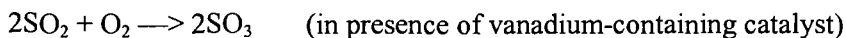
3. PROCESS DESCRIPTION

3.1 *Sulfuric Acid Production*

The plant is a sulfur-burning single absorption sulfuric acid plant. The process is comprised of three distinct steps. These are sulfur combustion and gas preparation; catalytic conversion of sulfur dioxide to sulfur trioxide; and absorption of sulfur trioxide into sulfuric acid. The reactions are as follows:



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A great deal of heat is evolved throughout the process. Its management is an important consideration in optimizing the conversion and absorption steps as well as providing useful energy to the plant. Reaction kinetics and thermodynamics are also important factors. The following is a description of the process:

Atmospheric air is drawn through a filter by the main compressor and then contacted with a recirculating stream of sulfuric acid in the drying tower. The dried air is blown by a steam-driven compressor into a refractory-lined burner where molten sulfur is combusted to produce sulfur dioxide (SO_2). The hot combustion gases are cooled in a waste heat boiler to recover excess heat as steam.

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).

Throughout the conversion, the temperatures are moderated by an intricate arrangement of heat exchangers so that the excess heat is removed. SO_2 emissions are controlled by a two-stage ammonia scrubber. Mist eliminators are used to ensure that sulfuric acid sprays and fine mists are contained, thereby protecting plant equipment and minimizing emissions to the atmosphere.

3.2 Phosphoric Acid Production

Briefly, phosphoric acid is made by reacting wet phosphate rock with sulfuric acid in agitated tanks, filtering the acid, then concentrating the weak phosphoric acid in vacuum evaporators. Waste gypsum (calcium sulfate) from the filtration process is pumped in slurry form with filter wash water to a gypsum pile (stack) where the water is collected and runs off to a cooling pond before being recirculated back to the process. Process water is used not only for filtration but in barometric condensers for vacuum cooling and evaporation. Clarification tanks remove impurities from the phosphoric acid before it is stored or used in making upgraded products. Air emissions of F evolved from the reactor and filter are controlled by scrubbers using pond water.

4. PROJECT DESCRIPTION

This permit addresses the following emissions units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
003	B Sulfuric Acid Plant (SAP)
004	A Phosphoric Acid Plant (PAP)
009	B PAP

The proposed project includes an increase in the production rate of the existing B SAP from 1,300 to 1,600 tons per day (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 permitted process rate to increase from 1,416 to 1,699 TPD of 100-percent rock phosphorus pentoxide (P_2O_5). This will also allow the B PAP permitted process rate to increase from 2,107 to 2,530 TPD of 100-percent rock P_2O_5 .

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The project involves several improvements to increase production capacity of the B 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.

The specific construction items for B SAP 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 and SO₂ emissions at the higher H₂SO₄ 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. An additional cooling tower pump will be added, and the existing pumps will be upgraded.

The specific construction items for A and B PAPs include:

- Install new piping, larger motors, and other Flash Cooler vessel modifications to increase the A PAP Flash Cooler reactor cooling capacity.
- Install a third B PAP Flash Cooler pump and piping to increase the B PAP reactor cooling capacity.
- Install a new sixth evaporator for B PAP.
- Install steam system piping improvements to reduce steam system pressure drop.
- Double-gypsum filtration economic need will be evaluated based on experience at the new higher rates.

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4.1 *Effects on other Emission Units*

Due to the proposed modification to the B 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 to be affected by the proposed modifications.

4.1.1 *Molten Sulfur Handling System*

There will be no physical modifications to the Molten Sulfur Storage and Handling System as part of this project. CF recently received a PSD construction permit (0570009-019-AC/PSD-FL-339) to increase the maximum potential molten sulfur throughput from 930,750 TPY to 965,388 TPY to facilitate an H₂SO₄ production increase at the C and D SAPs. 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 B 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.

4.1.2 *A, 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 H₂SO₄ produced in the B SAP. Therefore, the H₂SO₄ production at the A, C and D SAPs will not be affected due to the proposed project. CFI is also proposing a 24-hour average SO₂ emission rate of 250 lb/hr for the A SAP (EU ID 002), which currently has a 3-hour average SO₂ emission rate of 303.3 lb/hr. The lower emissions rate was used to demonstrate compliance with the 24-hour ambient air quality standard for SO₂ in the modeling analysis.

Currently, most of the H₂SO₄ required for the P₂O₅ production is manufactured onsite. The balance is imported from outside. However, since the potential H₂SO₄ production at the B SAP will be increasing as part of the proposed project, CF will be importing less H₂SO₄ in the future. Trucks and railcars are used to import purchased H₂SO₄. Therefore, fewer trucks will be driven onsite to import purchased H₂SO₄ in the future.

4.1.3 *MAP/DAP Plants*

The facility 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 MAP/DAP plants will not change.

CFI is also proposing more stringent short term limits for PM for the A and Z MAP/DAP plants. The lower emission rate was used to demonstrate compliance with the ambient air quality standard for PM in

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the modeling analysis. The PM emission limit for the A MAP/DAP plant is being reduced from 32.6 lb/hr to 13 lb/hr while the emission limit for the Z MAP/DAP plant is being reduced from 22.6 lb/hr to 15 lb/hr.

4.1.4 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.

CFI is proposing lower emission rate for PM for the A and B shipping baghouses in order to demonstrate compliance with the ambient air quality standard for PM in the modeling analysis. The PM emission limit for the A and B shipping baghouses is being reduced from 5 lb/hr to 1.71 lb/hr. The facility will be required to do initial compliance test and thereafter can show compliance with 5% opacity standard.

4.1.5 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 H₂SO₄ required for the phosphoric acid production is imported from outside and up to 316,000 TPY of H₂SO₄ have been imported in the past. However, due to the increased production of H₂SO₄ at the B SAP from the proposed project, less H₂SO₄ will need to be imported.

To facilitate this increase in H₂SO₄ production at B 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.

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4.2 Project Emissions

The following table compares the current actual emissions to the applicant's proposed maximum emissions in tons/year:

Source Description	Pollutant Emission Rate (TPY)							
	SO ₂	NO _x	CO	PM	PM ₁₀	VOC	SAM	Fluoride
<u>Potential Emissions From Modified/New/Affected Sources</u>								
1. B Sulfuric Acid Plant	1022.0	35.0	--	--	--	--	21.90	--
2. A Phosphoric Acid Plant	--	--	--	--	--	--	--	3.72
3. B Phosphoric Acid Plant	--	--	--	--	--	--	--	5.54
4. Z DAP/MAP Plant	9.5	26.7	15.7	65.7	65.7	1.03	0.16	6.31
5. X DAP/MAP Plant	9.9	28.0	16.5	41.9	41.9	1.08	0.17	6.70
6. Y DAP/MAP Plant	11.0	31.0	18.2	67.0	67.0	1.19	0.19	9.60
7. A & B Storage Buildings	--	--	--	4.8	2.3	--	--	--
8. A Shipping Baghouse	--	--	--	7.5	7.5	--	--	--
9. B Shipping Baghouse	--	--	--	7.5	7.5	--	--	--
10. B Shipping Truck/Railcar Loading	--	--	--	5.7	2.7	--	--	--
11. A Shipping Truck/Railcar Loading	--	--	--	2.9	1.4	--	--	--
12. Truck Traffic ^a	--	--	--	3.1	0.6	--	--	--
<u>Total Potential Emission Rates</u>	1052.4	120.7	50.4	206.1	196.6	3.3	22.4	31.9
<u>Actual Emissions from Current Operations^b</u>								
1. B Sulfuric Acid Plant	661.3	7.65	--	--	--	--	1.86	--
2. A Phosphoric Acid Plant	--	--	--	--	--	--	--	2.43
3. B Phosphoric Acid Plant	--	--	--	--	--	--	--	2.09
4. Z DAP/MAP Plant	0.01	0.39	1.63	15.19	15.19	0.11	--	3.25
5. X DAP/MAP Plant	--	0.11	0.47	11.08	11.08	0.03	--	2.07
6. Y DAP/MAP Plant	0.01	0.34	1.43	16.59	16.59	0.09	--	2.29
7. A & B Storage Buildings	--	--	--	0.09	0.09	--	--	--
8. A Shipping Baghouse	--	--	--	0.89	0.89	--	--	--
9. B Shipping Baghouse	--	--	--	1.81	1.81	--	--	--
10. B Shipping Truck Loading Station	--	--	--	1.55	1.55	--	--	--
11. B Shipping DAP (Railcar Loading)	--	--	--	2.02	2.02	--	--	--
<u>Total Actual Emission Rates</u>	661.3	8.5	3.5	49.2	49.2	0.2	1.9	12.1
TOTAL CHANGE DUE TO PROPOSED PROJECT	391.1	112.2	46.9	156.9	147.4	3.1	20.5	19.8

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Source Description	Pollutant Emission Rate (TPY)							
	SO ₂	NO _x	CO	PM	PM ₁₀	VOC	SAM	Fluoride
<u>Contemporaneous Emission Changes</u>								
C and D Sulfuric Acid Plants PSD (1/2004)	^c	^c	0.00	1.43	1.43	0.92	^c	0.0
<i><u>Total Contemporaneous Emission Changes</u></i>	0.0	0.0	0.0	1.43	1.43	0.92	0.0	0.0
TOTAL NET CHANGE	391.1	112.2	46.9	158.3	148.8	4.0	20.5	19.8
PSD SIGNIFICANT EMISSION RATE	40	40	100	25	15	40	7	3
PSD REVIEW TRIGGERED?	Yes	Yes	No	Yes	Yes	No	Yes	Yes

^a Shows change in emission rate due to the proposed project.

^b Based on actual emissions for 2003 and 2004.

^c Denotes that PSD review was triggered for this pollutant; therefore any previous contemporaneous increases/decreases are wiped clean.

5. RULE APPLICABILITY

5.1 *Prevention of Significant Deterioration*

The proposed project is also subject to permitting, preconstruction review, emissions limits and compliance requirements under the provisions of Chapter 403, Florida Statutes, and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.).

This facility is located in Hillsborough County, an area designated as attainment for all criteria pollutants in accordance with Rule 62-204.360, F.A.C. The proposed project is subject to review under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD), because the potential emission increases for SO₂, SAM, NO_x, PM, PM₁₀ and F exceed the significant emission rates given in Rule 62-210.200, F.A.C. PSD review requires an assessment of air quality impacts and a determination of Best Available Control Technology (BACT).

5.2 *Federal and State Emission Standards*

The emission units affected by this permit modification shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations incorporated therein) and, specifically, the following Chapters and Rules:

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Chapter 62-4	Permits.
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments
Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted by Reference
Rule 62-210.300	Permits Required
Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Rule 62-213	Operation Permits for Major Sources of Air Pollution
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-297.310	General Test Requirements
Rule 62-297.401	Compliance Test Methods
Rule 62-297.520	EPA Continuous Monitor Performance Specifications

The B SAP is subject to the federal new source performance standards (NSPS) for sulfuric acid plants (40 CFR 60, Subpart H), incorporated by reference in Rule 62-204.800, F.A.C.

The A & B PAPs are subject to federal NSPS under 40 CFR 60, Subpart T. Specifically, Subpart T applies to wet-process PAPs and regulates F emissions from such plants. The PAPs are also subject to the emission limitations of Rule 62-296.403(1)(a) F.A.C. pertaining to fluoride emissions from phosphate processing plants. The PAPs are also subject to 40 CFR 63, Subpart AA, National Emission Standards for Hazardous Air Pollutants from Phosphoric Acid Manufacturing Plants. Subpart AA regulates total F emissions from phosphoric acid plants.

6. BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

6.1 *Introduction*

The increases in emissions of F, SO₂, NO_x, SAM, PM, and PM₁₀ will exceed the significant emission rates listed in Rule 62-210.200(Significant Emission Rate), F.A.C. The project is therefore subject to PSD review for F, SO₂, NO_x, SAM, PM, and PM₁₀ in accordance with 62-212.400(PSD), F.A.C. A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-210.200(40) and Rule 62-212.400(10), F.A.C. Rule 62-212.400(10)(c), F.A.C. requires BACT only for those emission units where a physical change or a change in the method of operation is proposed. Since the X, Y and Z DAP/MAP plants are not undergoing a physical change or change in the method of operation, BACT is not required for these units. Therefore, only the B SAP and the A and B PAPs require a BACT analysis. The B SAP emits SO₂, SAM, and NO_x and the PAPs only emit F. Therefore

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only F emissions from the PAPS and SO₂, SAM and NO_x emissions from the B SAP require a BACT analysis.

6.2 BACT Determination Procedure

In accordance with Chapter 62-210.200(BACT), F.A.C., a BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

- Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.
- All scientific, engineering, and technical material and other information available to the Department.
- The emission limiting standards or BACT determination of any other state.
- The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically infeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from this facility for which a BACT determination is required can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as indicated below:

- **Fluorides** (primarily HF). Controlled generally by scrubbing.
- **Combustion Products** (SO₂, NO_x). NO_x controlled generally by good combustion of clean fuels. SO₂ controlled generally by scrubbing when quantities are substantial.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the pollutant control equipment and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO₂, SAM, HF, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

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6.3 BACT Emission Limits Proposed By Applicant

6.3.1 B Sulfuric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
SO ₂	233.3 lb/hr and 1,022 TPY	3.5 lb/ton of 100% H ₂ SO ₄ for 3-hour rolling average	Single-absorption system with two-stage ammonia scrubber
SAM	5.0 lb/hr and 21.9 TPY	0.075 lb/ton of 100% H ₂ SO ₄	Mist eliminator
NO _x	8.0 lb/hr and 35.0 TPY	0.12 lb/ton of 100% H ₂ SO ₄	Good combustion practices

6.3.2 A and B Phosphoric Acid Plants

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	0.85 lb/hr and 3.7 TPY for A PAP	0.012 lb F/ton P ₂ O ₅ input	Packed bed scrubber and wet cyclonic scrubber
F	1.26 lb/hr and 5.5 TPY for B PAP	0.012 lb F/ton P ₂ O ₅ input	Packed bed scrubber

6.4 Sulfur Dioxide BACT Analysis

6.4.1 SO₂ emissions from the B SAP

The B SAP utilizes single absorption technology. In the B SAP, molten sulfur is combusted with dry air in the sulfur furnace. The resulting SO₂ gas is catalytically converted to sulfur trioxide (SO₃) in a 4-bed converter tower. SO₃ is then absorbed in an approximately 98-percent H₂SO₄ stream to form a more concentrated acid in a single stage absorption tower. 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 B SAP currently utilizes a two-stage ammonia scrubber to control SO₂ emissions. The B 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 SO₂ conversion efficiency. Higher conversion efficiency allows the plants to increase production rates by increasing burner SO₂ concentrations while at the same time lowering stack SO₂ emissions.

The proposed BACT for SO₂ is the current single-absorption system with the continued use of the two-stage ammonia scrubber. CFI in their letter to the Department dated July 27, 2006 accepted a BACT emission limit for SO₂ of 3.5 lb/ton, 100-percent H₂SO₄ as a 3-hour rolling average.

6.4.2 Potential Control Method Descriptions

6.4.2.1 Sorbent Injection

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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 300⁰F. In furnace injection, a finely grained sorbent limestone (CaCO₃) 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 2,280⁰F. The sorbent reacts with SO₂ and O₂ to form CaSO₄. CaSO₄ is then captured in a particulate control device together with unused sorbent and fly ash.

Although demonstrated on boilers, sorbent injection has never been used at a sulfuric acid plant to control SO₂. Nor is there a suitable injection location that would not interfere with the H₂SO₄ recovery process.

6.4.2.2 Process Modification

The most common process modification control technique applied to sulfuric acid plants is the double absorption process. In the double absorption process, SO₂ is formed in the furnace (sulfur burner). The SO₂ is then converted to SO₃ gas in the primary converter stages and is sent to an interpass absorber where most of the SO₃ is removed to form H₂SO₄. The remaining unconverted SO₂ is forwarded to the final stages in the converter to convert much of the remaining SO₂ by oxidation to SO₃, whence it is sent to the final absorber for removal of the remaining SO₃. There are no byproducts or waste scrubbing materials created, only additional sulfuric acid.

For the B SAP, this type of SO₂ control would require a new converter and a second absorbing tower to achieve the necessary conversion with the double absorption process. However, CFI agreed to accept the same stringent SO₂ emissions standards with their current set-up that is achievable with the double absorption process. Therefore, the Department did not require conversion to a double absorption process.

6.4.2.3 Flue Gas Desulfurization

The processes that transform gaseous SO₂ 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.

Wet FGD systems using lime or limestone scrubbing are very popular in the U.S. and are the predominant SO₂ control technology used by the utilities industry. A significant impediment to applying a wet FGD system to a sulfuric acid plant is the economic impact, reflected in an increase in capital costs, annual operating costs, and the cost per ton of H₂SO₄ manufactured. No sulfuric acid plant is known to have employed a wet FGD as a control technology. In the PSD permits issued in recent years, FGD systems were dismissed as not being practical or economically feasible.

6.4.3 Previous BACT Determinations

A review was performed of previous SO₂ BACT determinations for H₂SO₄ plants listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of these BACT determinations is presented in the table below:

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Company Name	State	Permit No./ RBLC ID	Permit Issue Date	Throughput TPD	Emission Limit (lb/ton)	Control Equipment
CF Industries, Inc. – Plant City	FL	PSD-FL-339	6/1/2004	2,750	3.5 (3-hr rolling avg.)	Double Absorption & Mist Eliminators
PCS Phosphate Company	NC	NC-0088	9/24/2003	1,850	4.0	Double Absorption & Mist Eliminators
IMC Phosphate New Wales	FL	PSD-FL-325	7/12/2002	3,400	3.5 (24-hr) 4.0 (3-hr)	Double Absorption & Mist Eliminators
Cargill Fertilizer	FL	PSD-FL-315	11/21/2001	3,400	3.5 (24-hr) 4.0 (3-hr)	Double Absorption & Mist Eliminators
US Agri- Chemical Corp.	FL	PSD-FL-278/ FL-0237	2/6/2001	3,000	3.5 (24-hr)	Double Absorption & Mist Eliminators
PCS Phosphate Company	NC	NC-0099	7/14/2000	2,000	4.0	Double Absorption & Mist Eliminators
Cargill Fertilizer Riverview	FL	PSD-FL-209	4/28/1999	2,700	4.0 (3-hr)	Double Absorption & Mist Eliminators
Farmland Hydro	FL	PSD-FL-243/ FL-0129	3/8/1999	2,750	3.5 (24-hr)	Double Absorption & Mist Eliminators

Previous BACT determinations have ranged from 3.5 lb/ton to 4.0 lb/ton, 100-percent H₂SO₄. All of these determinations were for double absorption sulfuric acid plants. CFI will demonstrate the most stringent SO₂ emission limit required for a double-absorption plant with their single-absorption plant. The tail gas ammonia scrubber along with cesium promoted catalyst will help CFI to achieve the low SO₂ emissions limit. The proposed limit of 3.5 lb/ton (3-hr rolling average) is much more restrictive than the current limit of 10 lb/ton, 100-percent H₂SO₄. CF's proposed BACT of single-absorption process with ammonia scrubbing tail gas SO₂ control technology and cesium promoted catalyst in the converter tower is reasonable, based on previous BACT determinations and the unnecessary cost of converting the single-absorption to a double-absorption process.

6.5 Sulfuric Acid Mist BACT Analysis

6.5.1 Proposed Control Technology

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

CF is proposing the continued use of the Brink's demister to control SAM emissions at the B SAP. The proposed emission limit for the B SAP is 0.075 lb/ton, 100-percent H₂SO₄ produced. This emission limit is the most stringent emission limit to date for SAM emissions from a sulfuric acid plant.

6.5.2 Potential Control Method Descriptions

The only known technically feasible add-on SAM controls for sulfuric acid plants 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.

Acid mist removal from sulfuric acid plant tail gases is accomplished almost exclusively with packed fiber mist eliminators. Although a small portion of the SO₃ that leaves the final absorber will be absorbed in the fiber mist eliminators and demister pads, SO₃ emission control depends primarily on proper plant operation. A successful packed fiber tubular mist eliminator using treated glass fibers, known as Brinks mist eliminator 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 coalescing 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 mist 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 sulfuric acid plant would need to be modified at a considerable expense.

The Brownian-type mist eliminator is much more expensive than 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.

6.5.3 Previous BACT Determinations

A review was performed of previous SAM BACT determinations for sulfuric acid plants listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of these BACT determinations is presented in the table below:

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Company Name	State	Permit No./ RBLC ID	Permit Issue Date	Throughput TPD	Emission Limit (lb/ton)	Control Equipment
CF Industries, Inc. – Plant City	FL	PSD-FL-339	6/1/2004	2,750	0.10	Mist Eliminators
PCS Phosphate Company	NC	NC-0088	9/24/2003	1,850	0.10	Vertical Tube Mist Eliminators
IMC Phosphate New Wales	FL	PSD-FL-325	7/12/2002	3,400	0.10	Mist Eliminators
Cargill Fertilizer	FL	PSD-FL-315	11/21/2001	3,400	0.10	Mist Eliminators
US Agri- Chemical Corp.	FL	PSD-FL-278/ FL-0237	2/6/2001	3,000	0.12	Mist Eliminators
PCS Phosphate Company	NC	NC-0099	7/14/2000	2,000	0.15	Fiberglass Packed Mist Eliminators & Mesh Pad
Cargill Fertilizer Riverview	FL	PSD-FL-209	4/28/1999	2,700	0.15	Mist Eliminators
Farmland Hydro	FL	PSD-FL-243/ FL-0129	3/8/1999	2,750	0.15	Mist Eliminators

Previous BACT determinations have ranged from 0.10 to 0.15 lb/ton, 100-percent H₂SO₄. All of the previous BACT determinations have been based on mist eliminators. The proposed BACT for SAM emissions is the use of the existing Brink's demister in the B SAP. The proposed emission limit is 0.075 lb/ton, 100-percent H₂SO₄. This is the most stringent limit established for SAM emissions for any sulfuric acid plant in the country.

The average for the last 5 years of the SAM compliance test data for the B SAP is 0.012 lb/ton, 100-percent H₂SO₄, while the maximum compliance test result was 0.017 lb/ton, 100-percent H₂SO₄. This demonstrates that the mist eliminators are achieving low SAM emission rates. However, the increased production rate associated with the B SAP may lead to higher SAM emissions compared to historical emission rates.

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

6.6 Nitrogen Oxide BACT Analysis

6.6.1 Proposed Control Technology

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The B SAP emits a small amount of NO_x emissions, which is a result of the combustion process. The proposed NO_x emission from the B SAP at CF is 0.12 lb/ton, 100-percent H₂SO₄ produced. The proposed BACT for NO_x is the existing combustion system and good combustion practices. 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. Potential NO_x emissions from this unit are less than 40 tons per year.

6.7.2 Previous BACT Determinations

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 permit for C and D SAPs (PSD-FL-339, 06/01/04). For both of these cases, BACT has been good combustion practice and the NO_x emission limit has been 0.12 lb/ton, 100-percent H₂SO₄ produced.

The proposed BACT is the continued use of good combustion practices. The equivalent NO_x emission rate is 0.12 lb/ton, 100-percent H₂SO₄ produced, which is the same emission rate for the C and D SAPs.

6.8 Fluoride BACT Analysis for A and B PAPs

6.8.1 Proposed Control Technology

The proposed BACT for F emissions from the A and B PAPs is the continued use of the existing control equipment. F 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 49,000 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 gallons per minute (gpm). Total gas pressure drop across the scrubbers is approximately 5 to 20 inches water (H₂O).

F 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 scrubbers approximate normal water flow rate is 1,000 to 2,000 gpm, and normal pressure drop is about 2 to 15 inches H₂O.

6.8.2 Potential Control Method Descriptions

There exists only one type of F abatement method which is a wet scrubber. The different types of 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.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

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 and handle higher liquid rates.

Plate or tray towers are vertical cylinders in which 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. 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 scrubber 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.

Spray chambers operate by delivering liquid droplets through a spray dilution system. The droplets fall through a countercurrent gas stream under the influences 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 and are usually restricted to particulate removal and control of highly soluble gas such as SO₂ and ammonia.

Venturi scrubbers are generally used for controlling particulate matter and SO₂ emissions. Although venture scrubbers are a feasible control technique for controlling F 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.

6.8.2 Economic Analysis

Alternative F controls are not necessary because the existing control equipment at the A and B PAPs are the most common and proven technology for PAPs and already utilize the top-ranked control technology.

6.8.3 Previous BACT Determinations

A review was performed of previous F BACT determinations for phosphoric acid production plants listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of these BACT determinations is presented in the table below:

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Company Name	State	Permit No./ RBLC ID	Permit Issue Date	Throughput	Emission Limit (lb/ton)	Control Equipment
PCS Phosphate Company	NC	NC-0083	7/30/2002	--	0.02	Scrubber
Cargill Fertilizer Inc. - Riverview	FL	PSD-FL-315	11/21/2001	170 TPH	0.012	Cross-flow Packed Scrubbers
White Springs Agricultural Chemicals, Inc.	FL	PSD-FL-297	11/27/2000	110 TPH	0.012	Cross-flow Packed Scrubbers
Cargill Fertilizer/ Bartow	FL	PSD-FL-295	10/13/2000	170 TPH	0.0135	Packed Scrubber using pond water
SF Phosphates Ltd. Co.	MD	MD-384	12/22/1998	--	0.0135	Filter Vacuum Pump Scrubber
Cargill Fertilizer/ Riverview	FL	PSD-FL-231	8/27/1996	170 TPH	0.0135	Packed Scrubber
Cargill Fertilizer/ Bartow	FL	PSD-FL-224	8/24/1995	170 TPH	0.0135	Packed Scrubber

From review of the previous BACT determinations, it is evident that F BACT determinations for PAPs have been based on wet scrubber technology. Previous BACT determinations have been in the range of 0.012 to 0.0135 lb/ton P₂O₅.

Packed towers (Cross-flow packed scrubbers) and wet cyclonic scrubbers are technically feasible for application at the PAPs. The abatement methods with the highest control efficiency are packed towers and tray towers. Packed tower scrubbers are a proven technology and are listed as the most common control technique in previous BACT determinations. Tray towers are not a proven technique for PAPs. The abatement methods with the second highest control efficiencies are wet cyclonic and spray chamber scrubbers. Therefore, CF will utilize a combination of a wet cyclonic scrubber and a packed-bed scrubber to control F emissions at the A PAP, and a single packed-bed scrubber to control F emissions at the B PAP.

Currently, the existing scrubber systems of the A and B PAPs are achieving lower F emission rates than required by the operation permit (0.02 lb/ton P₂O₅, 1.18 lb/hr, 28.3 lb/day and 5.2 TPY for the A PAP, and 0.02 lb/ton P₂O₅, 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 F emissions from the A and B PAPs range from 0.0016 lb/ton P₂O₅ to 0.0173 lb/ton P₂O₅.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

CF's proposed F control technology and emissions limit of 0.012 lb/ton P_2O_5 for A PAP (based on the wet cyclonic scrubber and a packed-bed scrubber) and B PAP (based on a packed-bed scrubber) is the lowest based on recent BACT determinations for the PAPs.

6.9 BACT Determination by the Department

Based on the information provided by the applicant, the above analysis and other information available to the Department, the following emission limits are established as the draft BACT determinations.

The proposed BACT for SO_2 for the B SAP is the current single-absorption system with the continued use of the two-stage ammonia scrubber system. The B SAP will be upgraded by incorporating cesium catalyst in the 4th pass of the converter. ***The proposed BACT emission limit for B SAP is 3.5 lbs of SO_2 per ton of 100% H_2SO_4 , 3-hour rolling average. This equates to 233.4 lb/hr and 1,022 TPY of SO_2 emissions.***

This determination is applicable only to the present project and does not represent a BACT determination for a greenfield site or a new unit at a brownfield site. Such a new project would have to consider all process options and a thorough cost-effectiveness evaluation on the basis of cost per ton of SO_2 removed.

The proposed BACT for SAM emissions is the use of high-efficiency mist eliminators. ***The proposed emission limit for the B SAP is 0.075 lbs of SAM per ton of 100% H_2SO_4 produced. This equates to 5.0 lb/hr and 21.9 TPY of SAM emissions.*** The proposed emission limit is reasonable based on previous BACT determinations, and is consistent with currently established BACT, based on recent PSD permits.

The proposed BACT for NO_x emissions is the continued use of good combustion practices. ***The proposed NO_x emission limit for the B SAP is 0.12 lbs of NO_x per ton of 100% H_2SO_4 . This equates to 8.0 lb/hr and 35.0 TPY of NO_x emissions.***

The proposed BACT for F emissions from the A and B PAPs is the use of wet cyclonic scrubber and a packed-bed cross-flow scrubber with Kimre packing for the A PAP and the use of a packed-bed cross-flow scrubber with Kimre packing for the B PAP. ***The proposed BACT emission limit for F from A and B PAPs is 0.012 lb/ton P_2O_5 input. This equates to 0.85 lb/hr and 3.7 TPY from the A PAP and 1.26 lb/hr and 5.5 TPY from the B PAP.***

6.9.1 Compliance

Compliance with the sulfur dioxide emission limit (3.5 lb/ton, 3-hour rolling average) shall be demonstrated with a certified continuous emission monitor. Start-up excess emissions shall be permitted for three hours for the sulfuric acid plants as endorsed in an agreement titled "Best Operational Start-Up Practices For Sulfuric Acid Plants", which is attached as Appendix A of the permit.

Compliance with the other emission limits shall be demonstrated annually in accordance with the following EPA Reference Methods as contained in 40 CFR 60, Appendix A or as otherwise approved by the Department:

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
B SAP	SO ₂	6 or 6C
	SAM	8
	NO _x	7 or 7E
	VE	9

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
A and B PAP	F	13A or 13B

7. AMBIENT AIR QUALITY ANALYSIS

7.1 *Introduction*

The proposed project will increase emissions of five pollutants at levels in excess of PSD significant amounts: PM/PM₁₀, F, NO_x, SO₂ and SAM. PM₁₀, SO₂ and NO_x are criteria pollutants and have national and state ambient air quality standards (AAQS), PSD increments, significant impact levels and de minimis monitoring levels defined for them. F is a non-criteria pollutant and has only de minimis monitoring levels defined for it. There are no applicable PSD increments, AAQS, significant impact or de minimis monitoring levels for SAM.

7.2 *Major Stationary Sources of PM, NO_x and SO₂ in Hillsborough County*

The current largest stationary sources of air pollution in Hillsborough County are listed below. The information is from annual operating reports submitted to the Department.

MAJOR SOURCES OF PM IN HILLSBOROUGH COUNTY (2005)

Owner/Company	Site Name	Tons per year
Tampa Electric Company	Big Bend Station	1021
Tampa Electric Company	Bayside Power Station	180
<i>CF Industries, Inc.</i>	<i>Plant City Phosphate(Proposed project)</i>	<i>220</i>
New NGC, Inc.	New NGC, Inc.	91
Mosaic Fertilizer	Mosaic – Riverview Facility	68
CF Industries, Inc.	Plant City Phosphate (Existing facility)	55

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

MAJOR SOURCES OF SO₂ IN HILLSBOROUGH COUNTY (2005)

Owner/Company	Site Name	Tons per year
Tampa Electric Company	Big Bend Station	11,392*
Mosaic Fertilizer	Mosaic – Riverview Facility	4511
CF Industries, Inc.	Plant City Phosphate (Existing facility)	4,045
CF Industries, Inc.	Plant City Phosphate(Proposed project)	441
Envirofocus Technologies	Envirofocus Technologies	280
GAF Materials Corp.	GAF Materials Corp.	22
Tampa Electric Company	Bayside Power Station	17*

* See write-up below

MAJOR SOURCES OF NO_x IN HILLSBOROUGH COUNTY (2005)

Owner/Company	Site Name	Tons per year
Tampa Electric Company	Big Bend Station	22,794*
Hills Co. Resource Recovery Facility	Hillsborough Co. Resource Recovery Facility	598
Tampa Electric Company	Bayside Power Station	452*
City of Tampa	McKay Bay Refuse-to-Energy Facility	393
Mosaic Fertilizer	Mosaic – Riverview Facility	183
CF Industries, Inc.	Plant City Phosphate(proposed project)	112
Tampa Electric Company	Hookers Point	99
CF Industries, Inc.	Plant City Phosphate(Existing)	83

* Annual NO_x emissions from the TECO Big Bend Plant have been cut in half since they peaked in the mid-1990s. Annual SO₂ emissions were reduced from 107,000 tons in 1998 to less than 12,000 tons in 2002 following installation of a scrubber on Units 1 and 2. Similarly, SO₂ emissions from the TECO Gannon Power Plant peaked at 67,000 tons in 1997 while NO_x emissions peaked at 40,000 tons in 1995. The Gannon Plant was repowered with cleaner natural gas and is now renamed the Bayside Plant. The Bayside Plant emitted less than 500 tons of NO_x and less than 20 tons of SO₂ in 2005 but produced more electricity than the plant it replaced. These reductions greatly exceed the expected increases from the CF Industries project.

7.3 Air Quality and Monitoring in Hillsborough County

The Environmental Protection Commission of Hillsborough County currently operates twenty-seven monitors at fourteen sites measuring PM₁₀, PM_{2.5}, ozone, CO, lead, toxics, SO₂ and NO₂.

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Measured ambient air quality is given in the table below. Hillsborough County is in attainment for all pollutants at these monitoring sites.

2005 AMBIENT AIR QUALITY NEAR PROJECT SITE

Pollutant	Site Location			Averaging Period	Ambient Concentration				
	City	Site no.	UTM		1st High	2nd High	Mean	Standard	Units
PM ₁₀	Brandon	057-2002	17-3094.200N-	24-hour	37	36	20	150 ^a	ug/m ³
			354.240E	Annual				50 ^b	ug/m ³
PM _{2.5}	Plant City	057-4004	17-3096.710N-	24-hour	49	48	13	35 ^d	ug/m ³
			389.300E	Annual				15 ^e	ug/m ³
SO ₂	Plant City	057-4004	17-3096.710N-	3-hour	15	13	2	500 ^a	ppb
			389.300E	24-hour				100 ^a	ppb
			Annual	20 ^b				ppb	
NO ₂	Plant City	057-4004	17-3096.710N- 389.300E	Annual			7	53 ^b	ppb
CO	Plant City	057-4004	17-3096.710N-	1-hour	2	2		35 ^a	ppm
			389.300E	8-hour				9 ^a	ppm
Ozone	Plant City	057-4004	17-3096.710N-	1-hour	0.104	0.102		0.12 ^c	ppm
			389.300E	8-hour	0.081	0.080		0.085 ^c	ppm

a – Not to be exceeded more than once per year.

b - Arithmetic mean.

c - Not to be exceeded on more than an average of one day per year over a three-year period.

d- Three year average of the 98th percentile of 24-hour concentrations

e- Three year average of the weighted annual mean

The highest measured values of all pollutants are all less than the respective National Ambient Air Quality Standards (NAAQS). Based on local emission trends, it is not likely that ground-level concentrations will approach the NAAQS levels, at least at the monitoring locations. One exception is ozone because it is formed from precursors that are clearly available (NOX and VOC) from local industrial and transportation emissions. The tendency to form ozone is accentuated by hot ambient temperature, solar insolation, high pressure, and relatively low wind speed.

Although the PM_{2.5} concentrations appear to be above the NAAQS for the 24-hour averaging time, the standard is based on the 98th percentile over 3 years as noted above. The 2004, 2005 and 2006 98th percentile of the 24-hour concentrations is 22.9, 30.5 and 22.2 respectively (25.2 average), which is below the 3-year based standard.

7.4 Air Quality Impact Analysis

Preconstruction Ambient Modeling Requirements

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

A preconstruction monitoring analysis is done for those pollutants with listed de minimis impact levels. These are levels, which, if exceeded, would require pre-construction ambient monitoring. For this analysis, the applicant uses the proposed project's emissions at worst load conditions as inputs to the models. As shown in the following table, the maximum predicted impacts for all pollutants with listed de minimis impact levels were greater than these levels except for NO_x. Therefore, pre-construction monitoring is required for those pollutants except for NO_x.

Maximum Project Air Quality Impacts for Comparison to De Minimis Ambient Levels

Pollutant	Avg. Time	Max Predicted Impact ($\mu\text{g}/\text{m}^3$)	De Minimis Level ($\mu\text{g}/\text{m}^3$)	Impact Above De Minimis?
SO ₂	24-hour	16	13	Yes
NO _x	Annual	0.8	14	No
PM ₁₀	24-hour	19	5	Yes
F	24-hour	1.4	0.25	Yes

Significant Impact Analysis

Significant Impact Levels (SILs) are defined for PM/PM₁₀, NO_x and SO₂. A significant impact analysis is performed on each of these pollutants to determine if a project can cause an increase in ground level concentration greater than the SIL for each pollutant. In order to conduct a significant impact analysis, the applicant uses the proposed project's emissions at worst load conditions as inputs to the models. The models used in this analysis and any required subsequent modeling analyses are described below. The highest predicted short-term concentrations and highest predicted annual averages predicted by this modeling are compared to the appropriate SILs for the PSD Class I Chassahowitzka National Wildlife Refuge (CNWR) and the PSD Class II Areas (everywhere except the CNWR).

For the Class II analysis a combination of fence line, near-field and far-field receptors were chosen for predicting maximum concentrations in the vicinity of the project. The fence line receptors consisted of discrete Cartesian receptors spaced at 50-meter intervals around the facility fence line. The remaining receptor grid consisted of densely spaced Cartesian receptors at 100 meters apart starting at the property line and extending to 2 kilometers. Beyond 2 kilometers, Cartesian receptors with a spacing of 150 meters were used out to 3 kilometers from the facility. From 3.5 to 5 kilometers, Cartesian receptors with a spacing of 500 meters were used. For the Class I analysis 58 discrete receptors located at the CNWR border were used.

If this modeling at worst-load conditions shows ground-level increases less than the SILs, then the applicant is not required to conduct any further modeling. If the modeled concentrations from the project exceed the SILs, then additional modeling including emissions from all major facilities or

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projects in the region (multi-source modeling) is required to determine the proposed project's impacts compared to the AAQS or PSD increments.

As part of the application for the proposed modification, the applicant has proposed more stringent short term limits for existing emission sources. These new limits are reflected in the modeling analysis. These new limits are shown in the table below.

Proposed Emission Limits on Existing Sources at CF Industries

Source	Pollutant	Averaging Time	Existing Limit (lb/hr)	Proposed Limit (lb/hr)
A DAP/MAP	PM	3-hour*	32.6	13
Z MAP/DAP	PM	3-hour*	22.6	15
A and B Shipping Baghouse	PM	3-hour*	5	1.71
A Sulfuric Acid Plant	SO ₂	24-hour ⁺	303.3	250

* - Compliance will be demonstrated by 3-hour stack test.

+ - Compliance will be demonstrated with a certified continuous emission monitor

The applicant's initial PM/PM₁₀, NO_x, and SO₂ air quality impact analyses for this project indicated that maximum predicted impacts from all pollutants are less than the applicable SILs for the Class II area (i.e. all areas except CNWR) except for PM₁₀ on a 24-hour and annual basis and SO₂ on a 24-hour and annual basis. These values are tabulated in the table below and compared with existing ambient air quality measurements from the local ambient monitoring network.

Maximum Projected Air Quality Impacts from the CF Industries Modification for Comparison to the PSD Class II Significant Impact Levels

Pollutant	Averaging Time	Max Predicted Impact (ug/m ³)	Significant Impact Level (ug/m ³)	Baseline Concentrations (ug/m ³)	Ambient Air Standards (ug/m ³)	Significant Impact?
SO ₂	Annual	5	1	~5	60	YES
	24-Hour	16	5	~16	260	YES
	3-Hour	24	25	~39	1300	NO
PM ₁₀	Annual	3	1	~20	50	YES
	24-Hour	19	5	~37	150	YES
NO ₂	Annual	0.8	1	~13	100	NO

It is obvious that maximum predicted impacts from the project are much less than the respective AAQS in the area. 3-hour SO₂ and NO_x are also less than the respective significant impact levels that would otherwise require more detailed modeling efforts.

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The nearest PSD Class I area is the CNWR located about 69 km to the north-northwest of the project site. Maximum air quality impacts from the proposed project are summarized in the following table. The results of the initial PM/PM₁₀, NO_x and SO₂ air quality impact analyses for this project indicated that maximum predicted impacts from SO₂, PM₁₀, and NO₂ are less than the applicable SILs for the Class I area. Therefore no further detailed modeling efforts are required.

Maximum Air Quality Impacts from the CF Industries Modification for comparison to the PSD Class I SILs at CNWR

Pollutant	Averaging Time	Max. Predicted Impact at Class I Area (ug/m ³)	Class I Significant Impact Level (ug/m ³)	Significant Impact?
PM ₁₀	Annual	0.005	0.1	NO
	24-hour	0.1	0.2	NO
NO ₂	Annual	0.001	0.1	NO
SO ₂	Annual	0.005	0.1	NO
	24-hour	0.1	0.2	NO
	3-hour	0.4	1	NO

Based on the preceding discussions, the only additional detailed air quality analyses required by the PSD regulations for this project are the following:

- A Preconstruction Monitoring analysis for 24-hour SO₂, 24-Hour PM₁₀ and F
- AAQS and PSD Increment analysis for PM/PM₁₀ and 24-hour and Annual SO₂ in the Class II area;
- Analysis of impacts on soils, vegetation, wildlife, visibility and growth-related air quality impacts;

Models and Meteorological Data Used in the Air Quality Impact Analysis

PSD Class II Area Model: The AERMOD modeling system was used to evaluate the pollutant emissions from the proposed project in the surrounding Class II Area. The AERMOD modeling system incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including the treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD contains two input data processors, AERMET and AERMAP. AERMAP is the terrain processor and AERMET is the meteorological data processor.

A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options. Direction-specific downwash parameters

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

were used for all sources for which downwash was considered. The stacks associated with this project all satisfied the good engineering practice (GEP) stack height criteria.

Two sets of AERMET Meteorological data was used for the analysis. The initial modeling submitted to the Department was completed with a concurrent 5-year period of hourly surface weather observations from the Tampa International Airport and twice-daily upper air soundings from the National Weather Service at Ruskin. The 5-year period was from 1991 to 1995. This dataset was the only available at the time of the application submittal. During the application process, the Department developed a dataset using the same meteorological stations but with a 5-year period of meteorological data which was from 2001 through 2005. The Increment and Ambient Air Quality Analysis modeling was completed twice with each set to ensure compliance.

These stations in the Tampa area were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

In reviewing this permit application, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in *NRDC v. Thomas*, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification should EPA revise the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators. A more detailed discussion of the required analyses follows:

PSD Class I Area Model: The California Puff (CALPUFF) dispersion model was used to evaluate the pollutant emissions from the proposed project in the Class I CNWR. Meteorological data used in this model was from 2001 through 2003.

CALPUFF is a non-steady state, Lagrangian, long-range transport model that incorporates Gaussian puff dispersion algorithms. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, line, area, and volume sources.

The CALPUFF model has the capability to treat time-varying sources, is suitable for modeling domains from tens of meters to hundreds of kilometers, and has mechanisms to handle rough or complex terrain situations. Finally, the CALPUFF model is applicable for inert pollutants as well as pollutants that are subject to linear removal and chemical conversion mechanism.

Multi-source PSD Class II Increment Analysis

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant from a baseline concentration. The maximum predicted annual and 24-hour PM_{10} and annual and 24-hour SO_2 PSD Class II area impacts from this project and all other increment-consuming sources in the vicinity of CF Industries are shown in the following table:

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

PSD Class II Increment Analysis

Pollutant	Averaging Time	2nd Highest-High All Sources Max Predicted Impact ($\mu\text{g}/\text{m}^3$)	Allowable Increment ($\mu\text{g}/\text{m}^3$)	Impact Greater Than Allowable Increment?
PM ₁₀	24-hour	29.9	30	NO
PM ₁₀	Annual	5	17	NO
SO ₂	24-hour	26.5	91	NO
SO ₂	Annual	0	20	NO

AAQS Analysis

For pollutants subject to an AAQS review, the total impact on ambient air quality is obtained by adding a "background" concentration to the maximum modeled concentration (major sources impact). The maximum modeled concentration includes CF Industries emissions along with several other sources in the area such as TECO Big Bend. Unit 1 SO₂ short term emissions modeled for Big Bend are approximately 20 times the amount of CF Industries alone. The "background" concentration takes into account all sources of a particular pollutant that are not explicitly modeled. The results of the AAQS analysis are summarized in the table below. As shown in this table, emissions from the proposed facility are not expected to cause or contribute to a violation of an AAQS.

Ambient Air Quality Impacts

Pollutant	Averaging Time	Major Sources Impact ($\mu\text{g}/\text{m}^3$)	Background Conc. ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	Total Impact Greater Than AAQS?	Florida AAQS ($\mu\text{g}/\text{m}^3$)
PM ₁₀	24-hour	39	37	76	NO	150
PM ₁₀	Annual	7	22	29	NO	50
SO ₂	24-hour	243.9	13	256.9	NO	260
SO ₂	Annual	41.5	5.3	46.8	NO	60

Preconstruction Monitoring Analysis for 24-hour PM₁₀, 24-hour SO₂ and F

The applicant provided a SO₂, F and PM₁₀ Ambient Air Quality Analysis for the area of Hillsborough County closest to the project site. There was a sulfur dioxide monitoring site in Plant City which is in the vicinity of the CF Industries facility. There are several PM monitors in Hillsborough County. The closest monitor is in Brandon. Both SO₂ and PM₁₀ monitors are close to the proposed project and is representative of the air quality in the vicinity of the project. Therefore, placing preconstruction monitors at the project site is not needed, nor required to obtain background air quality concentrations. The air quality in the vicinity of the project is detailed in above sections. The county is in attainment for

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

both SO₂ and PM₁₀. SO₂ and PM₁₀ modeling also shows that the proposed project will not cause a violation of the standard.

The proposed modification will emit F in excess of the de minimis impact levels as stated above. Therefore, the Department will require an ambient air quality monitor for F as a permit condition.

Additional Impact Analysis

Impact Analysis Impacts on Soils, Vegetation, and Wildlife

In the vicinity of the CF Industries facility, NO_x impacts were modeled to be below the significant impact levels therefore, impacts to soils, vegetation and wildlife in the vicinity of the facility are expected to be minimal for NO_x.

Regarding SO₂ and PM₁₀, additional information regarding impacts on soils, vegetation and wildlife were provided. For example, according to the applicant, it has been documented that various sensitive species of plants, such as Legumes and Southern Pine, show visible injury when exposed to SO₂ concentrations over 790 micrograms per cubic meter over the short term. The CF Industries modification will add 24 micrograms per cubic meter over the same short term period.

Regarding F, the applicant reports that sensitive plants show visible damage from 50, 16 and 1.6 micrograms per cubic meter for 1, 3 and 24-hour exposures respectively. Maximum modeled impacts from the proposed modification show 6, 5 and 1.2 micrograms per cubic meter for the 1, 3 and 24-hour averaging times respectively.

Air Quality Related Values

An air quality related values (AQRV) analysis was performed by the applicant. An analysis of nitrogen and sulfur deposition and visibility impacts in the CNWA using the CALPUFF model was done. Based on Federal Land Manager (FLM) criteria, the proposed project had nitrogen and sulfur deposition impacts less than deposition thresholds, therefore no adverse deposition impacts were predicted. The FLM has yet to comment on the proposed project with regards to the AQRV analysis.

Visibility Impacts were also modeled to be below thresholds for visibility impairment.

Growth-Related Air Quality Impacts Due to the Proposed Project

The proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result. Approximately 20 temporary additional workers will be needed during construction. However, the overall number of permanent employees has decreased by the same amount.

Growth-Related Air Quality Impacts Since 1977

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

According to the applicant, population growth in the area of the proposed project, Hillsborough County, has increased 82% from 1977 to 2004. The number of vehicle miles traveled has also increased in the county, 77% from 1977 to 2002.

The manufacturing industry has seen a 6% employee decrease from 1977-2004 but the agricultural industry saw about a 656% rise in employees (1977-2000).

Although, the population and miles traveled in Hillsborough County has increased since 1977, according to the application, air emissions from mobile sources has decreased. Improvements to automobiles and fuels have more than counteracted any increase in mobile sources in Hillsborough. Future improvements along with lower emission vehicles should continue this effect.

Electrical Utility Air Impacts from TECO Big Bend and Gannon in Hillsborough County have also decreased since 1977. Reductions of SO₂ from TECO Big Bend and Gannon, (as stated above) far outweigh any impacts from the proposed modification.

8. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by CF Industries, Inc. the Department has made a preliminary determination that the proposed project will comply with all applicable state air pollution regulations provided that the Department's Best Available Control Technology Determination is implemented and certain conditions are met. The General and Specific Conditions are listed in the attached draft conditions of approval.

Permit Engineer: Syed Arif, P.E.
Meteorologist: Debbie Nelson

DRAFT

PERMITTEE:

CF Industries, Inc.
P.O. Box Drawer L
Plant City, Florida 33564

File No.	0570005-021-AC
Permit No.	PSD-FL-355
SIC No.	2874
Project:	Sulfuric Acid and Phosphoric Acid Production Increase
Expires:	December 31, 2009

Authorized Representative:

Herschel E. Morris
V.P. Phosphate Operations & General Manager

PROJECT AND LOCATION:

This permit authorizes modification of the Plant City Phosphate Complex to increase the production rate of the existing B Sulfuric Acid Plant (SAP) to 1,600 tons per day (TPD) and the A and B Phosphoric Acid Plants (PAP) to 1,699 and 2,530 TPD, respectively. The UTM coordinates are Zone 17; 388 km E; 3116 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

ATTACHED APPENDICES ARE MADE A PART OF THIS PERMIT:

Appendix A Best Operational Start-up Procedures for Sulfuric Acid Plants
Appendix BD BACT Determination
Appendix GC Construction Permit General Conditions

Executed in Tallahassee, Florida

(DRAFT)

Joseph Kahn, Director
Division of Air Resource Management

(Date)

SECTION I. FACILITY INFORMATION

FACILITY DESCRIPTION

The Plant City Phosphate Complex is an agricultural chemicals manufacturing facility. Phosphate rock is reacted with sulfuric acid to make phosphoric acid. The phosphoric acid is further processed into monoammonium phosphate (MAP) and diammonium phosphate (DAP).

PROJECT DESCRIPTION

CF Industries proposes to modify its existing B SAP by increasing the production rate of the plant from 1,300 to 1,600 tons per day (TPD). The production rate increase will be accomplished through several plant improvements related to increasing air flow, increased process cooling, increased catalyst loading, and utilizing high-efficiency cesium-promoted catalyst in the fourth pass of the converter. The B SAP utilizes single-absorption technology. Sulfur dioxide (SO₂) and sulfuric acid mist (SAM) emissions from the B SAP are controlled by a two-stage ammonia scrubber and a Brink's demister.

CF Industries is also proposing to modify its existing A and B PAPs by increasing the production rate of the A PAP from 1,416 to 1,699 TPD of 100-percent rock phosphorus pentoxide (P₂O₅) and of the B PAP from 2,107 to 2,530 TPD of 100-percent rock P₂O₅. The production rate increase will be accomplished through installation of additional reactor flash cooling equipment, increased evaporation capacity equipment and double-gypsum filtration. Fluoride (F) emissions from the A PAP are controlled by a cyclonic scrubber followed by a horizontal, cross-flow packed scrubber. Fluoride emissions from the B PAP are controlled by a horizontal, cross-flow packed scrubber.

REGULATORY CLASSIFICATION

Title III: This facility is a major source of hazardous air pollutants (HAPs).

Title IV: The existing facility has no units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

PSD: The existing facility is a PSD-major stationary source of air pollution in accordance with Rule 62-212.400, F.A.C.

RELEVANT DOCUMENTS:

The permit request and additional information received to make it complete are not a part of this permit; however, the information is listed in the technical evaluation which is issued concurrently with this permit.

SECTION II. EMISSION UNIT(S) ADMINISTRATIVE REQUIREMENTS

1. Regulating Agencies: All documents related to applications for permits to operate, reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District Office, 13051 N. Telecom Parkway, Temple Terrace, Florida 33637-0926. Copies of all such documents shall also be sent to Environmental Protection Commission of Hillsborough County (EPCHC), 3629 Queen Palm Drive, Tampa, Florida 33619-1309. All applications for permits to construct or modify emissions unit(s) subject to the PSD or Nonattainment Area (NAA) review requirements should be submitted to the Florida Department of Environmental Protection (FDEP), Bureau of Air Regulation (BAR), 2600 Blair Stone Road, MS 5505, Tallahassee, Florida 32399-2400 (phone number 850/488-0114).
2. General Conditions: The owner and operator are subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the F.S. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the F.A.C.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and F.A.C. Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, 62-297 and CFR Title 40, Parts 60 and 63, adopted by reference in the F.A.C. regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. Expiration: The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the BAR prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify the Department's Southwest District Office of any delays in completion of the project which would affect the startup day by more than 90 days. [Rule 62-4.090, F.A.C.]
6. Application for Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213.420, F.A.C.]
7. Source Obligation: Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18

SECTION II. EMISSION UNIT(S) ADMINISTRATIVE REQUIREMENTS

months or more, or if construction is not completed within a reasonable time. This provision does not apply to the time period between constructions of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit. [Rule 62-12.400(12)(a), F.A.C.]

8. BACT Determination: For phased construction projects, the determination of best available control technology shall be reviewed and modified as appropriate at the latest reasonable time which occurs no later than 18 months prior to commencement of construction of each independent phase of the project. At such time, the owner or operator of the applicable stationary source may be required to demonstrate the adequacy of any previous determination of best available control technology for the source. [40 CFR 52.21(j)(4)]
9. Annual Reports: Pursuant to Rule 62-210.370(3), F.A.C., Annual Operation Reports, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. Annual operating reports using DEP Form 62-210.900(5) shall be sent to the DEP's Southwest District office and EPCHC by March 1st of each year.
10. Stack Testing Facilities: Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.
11. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
12. Quarterly Reports: Quarterly excess emission reports, in accordance with 40 CFR 60.7(a)(7)(c) shall be submitted to the Department's Southwest District office and EPCHC.

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

SUBSECTION A. FACILITY-WIDE CONDITION

As necessary, the permittee shall take necessary steps (watering, street sweeping, etc.) to prevent and minimize fugitive dust emissions from the plant's paved areas and roads. [Rule 62-212.400(5), F.A.C.]

SUBSECTION B. COMMON CONDITIONS

The Common Conditions listed in this subsection apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
003	B SAP
004	A PAP
009	B PAP

The above emissions units remain subject to all applicable provisions of the 40 CFR 60 New Source Performance Standards for Wet-Process Phosphoric Acid Plants, Subpart T and for Sulfuric Acid (H₂SO₄) Plants, Subpart H; and, 40 CFR 63 Subpart AA, for phosphoric acid plants, as applicable. [Rule 62-204.800, F.A.C.]

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

SUBSECTION C. MODIFIED UNITS

The Specific Conditions listed in this subsection apply to the following modified emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
003	B SAP
004	A PAP
009	B PAP

PREVIOUS APPLICABLE REQUIREMENTS

1. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements. The permittee shall continue to comply with the conditions of the original construction/modification permits which include restrictions and standards regarding capacities, production, operation, fuels, emissions, monitoring, record keeping, reporting, etc. for these units. Unless otherwise specified, the facility remains subject to all of the requirements specified in the current Title V Permit No. 0570005-017-AV. **[Rule 62-4.070(3), F.A.C.]**

AUTHORIZED WORK

2. The permittee is authorized to make the following modifications to the B SAP:
 - a. Modify or replace the existing main blower wheel and turbine in order to increase plant air flow.
 - b. Modify the existing superheater-economizer to improve heat transfer.
 - c. Replace the existing sulfur feed pumps with larger capacity pumps.
 - d. Modify the existing converter to maximize catalyst loading on all passes of the converter.
 - e. Eliminate the quench air injected after pass 2. Install a new superheater between pass 2 and pass 3 to replace the process gas cooling lost with the removal of quench air.
 - f. Install a new superheater after the primary boiler to provide additional cooling capacity.
 - g. Replace the No. 4 catalyst bed with cesium catalyst.
 - h. Replace the packing in the Absorption Tower with a new design low-pressure drop packing.
 - i. Add a third cell to the existing cross flow cooling tower. Add an additional cooling tower pump, and upgrade the existing pumps.
[Design; Application No. 0570005-021-AC]
3. The permittee is authorized to make the following modifications to the A and B PAPs:
 - a. Install new piping, larger motors, and other Flash Cooler vessel modifications to increase the A PAP Flash Cooler reactor cooling capacity.
 - b. Install a third B PAP Flash Cooler pump and piping to increase the B PAP reactor cooling

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

capacity.

- c. Install steam system piping improvements to reduce steam system pressure drop.
- d. Construct a new No. 6 evaporator for the B PAP as described in the application. The proposed new evaporator will be used in configurations which concentrate phosphoric acid from 40 percent P₂O₅ to 54 percent P₂O₅ in either one or two stages.

[Design; Application No. 0570005-021-AC]

PERMITTED CAPACITIES

4. The maximum operation rates shall not exceed:
 - a. B SAP – 1,600 TPD of 100% H₂SO₄ produced;
 - b. A PAP – 70.8 tons per hour (TPH) of 100% P₂O₅ input, 1,699 TPD of 100% P₂O₅ input, and 620,208 tons per consecutive 12 months of 100% P₂O₅ input.
 - c. B PAP – 105.4 TPH of 100% P₂O₅ input, 2,530 TPD of 100% P₂O₅ input, and 923,304 tons per consecutive 12 months of 100% P₂O₅ input.

[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]

5. The subject emission units are allowed to operate continuously (8760 hours/year).

[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]

EMISSION AND PERFORMANCE REQUIREMENTS

6. Emissions of SO₂ from the B SAP shall not exceed 3.5 lb/ton 100% H₂SO₄, 3-hour rolling average, 233.3 lb/hr and 1,022 TPY. **[Rule 62-212.400, F.A.C.]**
7. Emissions of SAM from the B SAP shall not exceed 0.075 lb/ton 100% H₂SO₄, 5.0 lb/hr and 21.9 TPY. **[Rule 62-212.400, F.A.C.]**
8. Emissions of nitrogen oxides (NO_x) from the B SAP shall not exceed 0.12 lb/ton 100% H₂SO₄, 8.0 lb/hr and 35.0 TPY. **[Rule 62-212.400, F.A.C.]**
9. Emissions of total F from the A PAP shall not exceed 0.012 lb/ton P₂O₅ input, 0.85 lb/hr and 3.7 TPY. **[Rule 62-212.400, F.A.C.]**
10. Emissions of total F from the B PAP shall not exceed 0.012 lb/ton P₂O₅ input, 1.26 lb/hr and 5.5 TPY. **[Rule 62-212.400, F.A.C.]**
11. Visible emissions shall not exceed 10 percent opacity from the B SAP. **[Rule 62-212.400, F.A.C.]**
12. Best operational practices to minimize leaks of sulfur dioxide and sulfur trioxide, or other fugitive process emissions shall be adhered to and shall include regular inspections and prompt repair or correction of any leaks or other fugitive emissions. **[Rule 62-296.320, F.A.C.]**

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

13. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices to minimize emissions, in accordance with the agreement titled "Best Operational Start-Up Practices For Sulfuric Acid Plants" is followed. The provisions of the agreement issued by the Department are hereby added to this permit as Appendix A and shall be added to the Title V permit.
[Rule 62-210.700, F.A.C., 40 CFR 60.7]
14. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320, F.A.C.]
15. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly.
[Rule 62-210.650, F.A.C.]
16. The emissions units shall be subject to the following:
 - a. Unless otherwise specified, excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700, F.A.C.]
 - b. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited. [Rule 62-210.700, F.A.C.]
 - c. In case of excess emissions resulting from malfunctions, each source shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700, F.A.C.]

MONITORING AND TESTING REQUIREMENTS

17. A continuous emissions monitoring system (CEMS) shall be installed, calibrated, maintained, operated, and used to determine compliance with the 3-hour rolling average emissions limit for SO₂ from the B SAP. The CEMS shall be installed and certified before the initial performance test and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 2.

The CEMS shall calculate and record emission rates in units of pounds SO₂ per ton of 100 percent sulfuric acid produced. Each operating day, the rolling averages of the SO₂ emission rate for the 3 hours shall be calculated and recorded. Emissions shall be calculated in units of pounds of SO₂ per ton of 100 percent acid produced using one of the methods specified in 40 CFR 60.84. Averages are to be calculated as the arithmetic mean of each monitored operating hour in which sulfur is burned in the unit and at least two emission measurements are recorded

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

at least 15 minutes apart. Data taken during periods of startup, or when the CEMS is out of control as defined in 40 CFR 60, Appendix F, Section 5.2, shall be excluded from the 3-hour rolling averages. Data recorded during periods of shutdown, malfunction, load change, and continuous operating periods shall be included in the calculation of the 3-hour rolling averages.

To the extent the monitoring system is available to record emissions data, the CEMS shall be operated and shall record data at all operating hours when sulfur is burned in the unit, including periods of startup, shutdown, load change, continuous operation and malfunction. Monitor downtimes and excess emissions based on 3-hour averages, which include startup emissions, shall be reported on a quarterly basis using the SUMMARY REPORT in 40 CFR 60.7. A detailed report of the cause, duration, magnitude, and corrective action taken or preventative measures adopted for each excess emission occurrence, and a listing of monitor downtime occurrences shall accompany the SUMMARY REPORT when the total duration of excess emissions is 1% or greater or if the monitoring system downtime is 5% greater of the total monitored operating hours.

The monitoring device shall meet the applicable requirements of Chapter 62-204, F.A.C., 40 CFR 60, Appendix F, and 40 CFR 60.13, including certification of each CEMS in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7(a)(5) Notification Requirements. Data on monitoring equipment specifications, manufacturer, type calibration and maintenance requirements, and the proposed location of each stack probe shall be provided to the Department for review at least 30 days prior to installation of a new CEMS. **[Rules 62-4.070(3), F.A.C. and 62-204.800, F.A.C.]**

18. The permittee shall install, calibrate, operate and maintain monitoring devices that continuously measure and record the total pressure drop across each phosphoric acid plant scrubbing system. Accuracy of the monitoring devices shall be $\pm 5\%$ over the operating range. **[Rules 62-297.310, 62-204.800, F.A.C.; 40 CFR 60.203]**
19. The permittee shall install, calibrate, maintain, and operate monitoring devices which can be used to determine the mass flow of phosphorus-bearing feed material to the phosphoric acid processes. The monitoring devices shall have an accuracy of ± 5 percent over the operating range. The permittee shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in metric ton/hour of phosphorus bearing feed using the flow monitoring device meeting the requirements of 40 CFR 60.203(a), and then by proceeding according to 40 CFR 60.204(b)(3) **[Rule 62-204.800, F.A.C.]**
20. Within 60 days after achieving the new permitted capacity, but not later than 180 days after completing the proposed work, the subject emission units shall be tested for compliance with the emission limits for B SAP and A and B PAPs. For the duration of all tests the emission unit shall be operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than permitted capacity (i.e., 90% of the maximum operating rate allowed by the permit); in this case, subsequent emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

emission unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. **[Rule 62-297.310, F.A.C.]**

21. The Department's Southwest District office and EPCHC in Tampa shall be notified in writing at least 15 days prior to the compliance tests. Written reports of the test results shall be submitted to those offices within 45 days of test completion. **[Rule 62-297.310, F.A.C.]**
22. The procedures for the initial compliance and annual compliance tests for visible emissions, SO₂, NO_x, SAM and F shall be in accordance with EPA Reference Methods 1, 2, 3, 4, 6C, 7E, 8, 9 and 13A or 13B, as appropriate, as published in 40 CFR 60, Appendix A. **[Rules 62-204.800 and 62-297.310(7)(c), F.A.C.]**
23. The permittee shall conduct pre-construction fluorides ambient monitoring for a minimum period of six months and post-construction fluorides ambient monitoring for a minimum period of one year. The data shall comply with the requirements of 40 CFR 52.21(m). The fluorides ambient monitor shall be installed at the latest by January 1, 2009. The fluorides ambient monitor shall be placed within the plant boundary and located downwind of the emission units. The permittee shall submit reports summarizing the results of the collected data to the Bureau of Air Regulation within 45 days of completing the pre-construction and post-construction monitoring periods. **[Rule 62-212.400(5), F.A.C., 40 CFR 52.21(m)]**

RECORDKEEPING AND REPORTING REQUIREMENTS

24. All measurements, records, and other data required to be maintained by this facility shall be retained for at least five (5) years following the data on which such measurements, records, or data are recorded. These data shall be made available to the Department upon request. **[Rule 62-4.070(3), F.A.C.]**
25. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor. **[Rule 62-296.320, F.A.C.]**

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

SUBSECTION D. AFFECTED UNITS

The Specific Conditions listed in this subsection apply to the following affected emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
002	A SAP
010	A Diammonium Phosphate/Monoammonium Phosphate (DAP/MAP) Plant
011	Z DAP/MAP
015	A Shipping Baghouse
018	B Shipping Baghouse

PREVIOUS APPLICABLE REQUIREMENTS

1. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements. The permittee shall continue to comply with the conditions of the original construction/modification permits which include restrictions and standards regarding capacities, production, operation, fuels, emissions, monitoring, record keeping, reporting, etc. for these units. The facility remains subject to all of the requirements specified in the current Title V Permit No. 0570005-017-AV. **[Rule 62-4.070(3), F.A.C.]**

EMISSION AND PERFORMANCE REQUIREMENTS

2. Emissions of particulate matter (PM) from the A and B Shipping Baghouses shall not exceed 1.71 lb/hr each. Visible emissions from the baghouse exhausts shall not exceed 5% opacity. **[Rule 62-212.400(5), F.A.C., Applicant Request]**
3. Emissions of particulate matter (PM) from the A DAP/MAP shall not exceed 13.0 lb/hr and 56.9 TPY. **[Rule 62-212.400(5), F.A.C., Applicant Request]**
4. Emissions of PM from the Z DAP/MAP shall not exceed 15.0 lb/hr and 65.7 TPY. **[Rule 62-212.400(5), F.A.C., Applicant Request]**
5. As determined by CEMS data, emissions of SO₂ from the A SAP shall not exceed 250 lb/hr, 24-hour average. **[Rule 62-212.400(5), F.A.C., Applicant Request]**

TESTING AND REPORTING REQUIREMENTS

6. Within 60 days after achieving the new permitted capacities, but not later than 180 days after completing the proposed work, the subject emission units shall be tested for compliance with the above emission limits. For the duration of all tests the emission unit shall be operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than permitted capacity (i.e., 90% of the maximum operating rate

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

allowed by the permit); in this case, subsequent emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. **[Rule 62-297.310, F.A.C.]**

7. The Department's Southwest District office and EPCHC in Tampa shall be notified in writing at least 15 days prior to the compliance tests. Written reports of the test results shall be submitted to those offices within 45 days of test completion. **[Rule 62-297.310, F.A.C.]**
8. The procedures for the initial compliance and annual compliance tests for PM and visible emissions shall be in accordance with EPA Reference Methods 1, 2, 3, 4, 5 and 9, as appropriate, as published in 40 CFR 60, Appendix A. **[Rules 62-204.800 and 62-297.310(7)(c), F.A.C.]**
9. Initial PM and visible emissions compliance tests are required for the A and B Shipping Baghouses. If the initial tests demonstrate compliance with the PM and opacity standards, subsequent annual PM tests are not required. However, the Compliance Authority may request "special compliance tests" in accordance with the requirements of Rule 62-297.310(7)(b), F.A.C. **[Rules 62-297.620(4) and 62-297.310(7)(b), F.A.C.]**
10. A SAP SO₂ emission limit shall be demonstrated initially and annually with a certified SO₂ CEMS. **[Rules 62-4.070(3), F.A.C. and 62-204.800, F.A.C.]**

APPENDIX A
BEST OPERATIONAL START-UP PRACTICES
FOR SULFURIC ACID PLANTS

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 SO₂ at a rate in excess of the emission limits imposed by the permit or rule, as determined by the CEMs 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 SO₂ 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 of the 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) out of compliance for more than three consecutive hours. 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 startup. 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 SO₂ enters the masses. In no event shall the inlet temperature to the first mass be less than 800°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 SO₂ at a level less than normal, and sufficiently low to promote catalytic conversion to SO₃.
 - 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 H₂SO₄.
5. Warm Restart.

APPENDIX A
BEST OPERATIONAL START-UP PRACTICES
FOR SULFURIC ACID PLANTS

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 technologies 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 H₂SO₄.

DRAFT
APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

CF Industries, Inc.
Plant City Phosphate Complex
PSD-FL-355/0570005-021-AC
Plant City, Hillsborough County

CF Industries, Inc. is proposing to modify the B Sulfuric Acid Plant (SAP) and the A and B Phosphoric Acid Plants (PAPs) at its Plant City Phosphate Complex in Plant City, Florida. The proposed project includes an increase in the production rate of the existing B SAP from 1,300 to 1,600 tons per day (TPD) of 100-percent H₂SO₄. 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 permitted process rate to increase from 1,416 to 1,699 TPD of 100-percent rock phosphorus pentoxide (P₂O₅). This will also allow the B PAP permitted process rate to increase from 2,107 to 2,530 TPD of 100-percent rock P₂O₅.

CF Industries, Inc. is classified as a Major or Title V Source of air pollution based on Rule 62-210.200(184), F.A.C. because emissions of at least one regulated air pollutant exceed 100 tons per year (TPY). The facility is also a major facility for hazardous air pollutants because emissions of hydrogen fluoride (HF) exceed 10 TPY.

As a result of this project, increases in emissions of fluoride (F), sulfur dioxide (SO₂), nitrogen oxides (NO_x), sulfuric acid mist (SAM), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM) and particulate matter less than or equal to 10 micrometers (PM₁₀) from the proposed modifications may occur.

Additionally, based on this modification, potential emissions of F, SO₂, NO_x, SAM, PM, and PM₁₀ will exceed the significant emission rates listed in Rule 62-210.200(277), Florida Administrative Code (F.A.C.). The project is therefore subject to Prevention of Significant Deterioration (PSD) review for F, SO₂, NO_x, SAM, PM, and PM₁₀ in accordance with Rule 62-212.400, F.A.C.

A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-210.200(40) and Rule 62-212.400(10), F.A.C. Rule 62-212.400(10)(c), F.A.C. requires BACT only for those emission units where a physical change or a change in the method of operation is proposed. Since the X, Y and Z DAP/MAP plants are not undergoing a physical change or change in the method of operation, BACT is not required for these units. Therefore, only the B SAP and the A and B PAPs require a BACT analysis. The B SAP emits SO₂, SAM, and NO_x and the PAPs only emit F. Therefore, only F emissions from the PAPs and SO₂, SAM and NO_x emissions from the B SAP require a BACT analysis.

Descriptions of the process, project, BACT determination, air quality effects, and rule applicability are given in the Technical Evaluation and Preliminary Determination, accompanying the Department's Intent to Issue.

The Department specifies the following as BACT:

CF Industries, Inc.
Plant City Phosphate Complex

DEP File No. 0570005-021-AC
Permit No. PSD-FL-355

DRAFT
APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

B Sulfuric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
SO ₂	233.3 lb/hr and 1,022 TPY	3.5 lb/ton of 100% H ₂ SO ₄ for 3-hour rolling average	Single-absorption system with two-stage ammonia scrubber
SAM	5.0 lb/hr and 21.9 TPY	0.075 lb/ton of 100% H ₂ SO ₄	Mist eliminator
NO _x	8.0 lb/hr and 35.0 TPY	0.12 lb/ton of 100% H ₂ SO ₄	Good combustion practices

A Phosphoric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	0.85 lb/hr and 3.7 TPY	0.012 lb F/ton P ₂ O ₅ input	Packed bed scrubber and wet cyclonic scrubber

B Phosphoric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	1.26 lb/hr and 5.5 TPY	0.012 lb F/ton P ₂ O ₅ input	Packed bed scrubber

Compliance with the emission limits shall be demonstrated annually in accordance with the following EPA Reference Methods as contained in 40 CFR 60, Appendix A or as otherwise approved in writing by the Department:

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
B SAP	SO ₂	6 or 6C
	SAM	8
	NO _x	7 or 7E
	VE	9

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
A and B PAP	F	13A or 13B

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- (a) Have access to and copy and records that must be kept under the conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- (a) A description of and cause of non-compliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

- G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- (a) Determination of Best Available Control Technology (*X*)
 - (b) Determination of Prevention of Significant Deterioration (*X*); and
 - (c) Compliance with New Source Performance Standards ().
- G.14 The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Friday, BarbaraIntent: 5/25/07

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:26 PM
To: 'Herschel E. Morris, CF Industries, Inc.'; 'Jim Little, EPA'; 'Kathleen Forney, EPA'; 'Dee Morse, NPS'; Zhang-Torres; 'Diana Lee, HCEPC'; 'David Buff, Golder Associates, Inc.'; 'Joseph Marini, RMT, Inc.'
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: CF Industries, Inc. - 057000-021-AC
Attachments: 0570005.021.AC.D_pdf.zip

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site:
<http://www.adobe.com/products/acrobat/readstep.html>.

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Thank you,

DEP, Bureau of Air Regulation

6/26/2007

Friday, Barbara

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:30 PM
To: 'Kathleen Forney, EPA'; 'Jim Little, EPA'
Cc: Adams, Patty; Arif, Syed
Subject: FW: CF Industries, Inc. - 057000-021-AC
Attachments: 355appA - Draft Permit #0570005-021-AC.PDF; 355BACT- Draft Permit #0570005-021-AC.PDF; 355gc - Draft Permit #0570005-021-AC.PDF; 355INTENT- Draft Permit #0570005-021-AC.PDF; 355PERMIT - Draft Permit #0570005-021-AC.PDF; 355pn - Draft Permit #0570005-021-AC.PDF; 355TEPD - Draft Permit #0570005-021-AC.PDF; Signed Documents for Facility #0570005-021-AC-DRAFT.pdf

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:26 PM
To: 'Herschel E. Morris, CF Industries, Inc.'; 'Jim Little, EPA'; 'Kathleen Forney, EPA'; 'Dee Morse, NPS'; Zhang-Torres; 'Diana Lee, HCEPC'; 'David Buff, Golder Associates, Inc.'; 'Joseph Marini, RMT, Inc.'
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: CF Industries, Inc. - 057000-021-AC

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Thank you,

DEP, Bureau of Air Regulation

6/26/2007

Friday, Barbara

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:30 PM
To: Adams, Patty; Arif, Syed
Subject: FW: CF Industries, Inc.@ - 057000-021-AC ((Auto Response))

-----Original Message-----

From: Joseph Marini [mailto:Joseph.Marini@rmtinc.com]
Sent: Tuesday, May 29, 2007 4:29 PM
To: Harvey, Mary
Subject: Re: CF Industries, Inc.@ - 057000-021-AC ((Auto Response))

I will be on vacation from May 26th to June 3rd. If you have an urgent matter, please call either the Austin Office main number 512-327-9840 and the operator will direct your call or contact Thomas Sullivan at 512-329-3149. Otherwise, I will respond upon my return.

Thanks,
Joseph

Outgoing messages, along with any attachments, are scanned for viruses prior to sending.

NOTICE--This email may contain confidential and privileged information for the sole use of the intended recipient. Any review or distribution by others is strictly prohibited. If you are not the intended recipient, please contact the sender immediately and delete all copies.

Friday, Barbara

From: Harvey, Mary
Sent: Wednesday, May 30, 2007 9:10 AM
To: Arif, Syed; Adams, Patty
Subject: FW: FW: CF Industries, Inc. - 057000-021-AC

Attachments: 355appA - Draft Permit #0570005-021-AC.PDF; 355BACT- Draft Permit #0570005-021-AC.PDF; 355gc - Draft Permit #0570005-021-AC.PDF; 355INTENT- Draft Permit #0570005-021-AC.PDF; 355PERMIT - Draft Permit #0570005-021-AC.PDF; 355pn - Draft Permit #0570005-021-AC.PDF; 355TEPD - Draft Permit #0570005-021-AC.PDF; Signed Documents for Facility #0570005-021-AC-DRAFT.pdf



355appA - Draft Permit #057000...



355BACT- Draft Permit #0570005...



355gc - Draft Permit #0570005-...



355INTENT- Draft Permit #057000...



355PERMIT - Draft Permit #0570...



355pn - Draft Permit #0570005-...



355TEPD - Draft Permit #057000...



Signed Documents for Facility ...

-----Original Message-----

From: Forney.Kathleen@epamail.epa.gov [mailto:Forney.Kathleen@epamail.epa.gov]
Sent: Wednesday, May 30, 2007 7:48 AM
To: Harvey, Mary
Subject: Re: FW: CF Industries, Inc. - 057000-021-AC

Thanks Mary

Katy R. Forney
Air Permits Section
EPA - Region 4
61 Forsyth St., SW
Atlanta, GA 30024

Phone: 404-562-9130
Fax: 404-562-9019

"Harvey, Mary"
<Mary.Harvey@dep.state.fl.us>

05/29/2007 04:29 PM

To
Kathleen Forney/R4/USEPA/US@EPA,
James Little/R4/USEPA/US@EPA
CC

"Adams, Patty"
<Patty.Adams@dep.state.fl.us>,
"Arif, Syed"
<Syed.Arif@dep.state.fl.us>
Subject

FW: CF Industries, Inc. -
057000-021-AC

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:26 PM
To: 'Herschel E. Morris, CF Industries, Inc.'; 'Jim Little, EPA'; 'Kathleen Forney, EPA';
'Dee Morse, NPS'; Zhang-Torres; 'Diana Lee, HCEPC'; 'David Buff, Golder Associates, Inc.';
'Joseph Marini, RMT, Inc.'
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: CF Industries, Inc. - 057000-021-AC

Dear Sir/Madam:

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The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

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Thank you,
DEP, Bureau of Air Regulation

(See attached file: 355appa - Draft Permit #0570005-021-AC.PDF) (See attached file: 355BACT- Draft Permit #0570005-021-AC.PDF) (See attached file: 355gc - Draft Permit #0570005-021-AC.PDF) (See attached file: 355INTENT- Draft Permit #0570005-021-AC.PDF) (See attached file: 355PERMIT - Draft Permit #0570005-021-AC.PDF) (See attached file: 355pn - Draft Permit #0570005-021-AC.PDF) (See attached file: 355TEPD - Draft Permit #0570005-021-AC.PDF) (See attached file: Signed Documents for Facility #0570005-021-AC-DRAFT.pdf)

Friday, Barbara

From: Harvey, Mary
Sent: Wednesday, May 30, 2007 9:15 AM
To: Adams, Patty; Arif, Syed
Subject: FW: CF Industries, Inc. - 057000-021-AC

From: Lee, Diana [mailto:Lee@epchc.org]
Sent: Tuesday, May 29, 2007 4:53 PM
To: Harvey, Mary
Subject: RE: CF Industries, Inc. - 057000-021-AC

Received e-mail.

From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Tuesday, May 29, 2007 4:26 PM
To: Herschel E. Morris, CF Industries, Inc.; Jim Little, EPA; Kathleen Forney, EPA; Dee Morse, NPS; Zhang-Torres; Lee, Diana; David Buff, Golder Associates, Inc.; Joseph Marini, RMT, Inc.
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: CF Industries, Inc. - 057000-021-AC

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Thank you,

DEP, Bureau of Air Regulation

6/25/2007

Friday, Barbara

From: Harvey, Mary
Sent: Wednesday, May 30, 2007 9:16 AM
To: Adams, Patty; Arif, Syed
Subject: FW: CF Industries, Inc. - 057000-021-AC

From: Lee, Diana [<mailto:Lee@epchc.org>]
Sent: Tuesday, May 29, 2007 4:48 PM
To: Harvey, Mary
Subject: Read: CF Industries, Inc. - 057000-021-AC

Your message

To: Lee@epchc.org
Subject:

was read on 5/29/2007 4:48 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:37 PM
To: Adams, Patty; Arif, Syed
Subject: FW: CF Industries, Inc. - 057000-021-AC

From: Zhang-Torres
Sent: Tuesday, May 29, 2007 4:36 PM
To: Harvey, Mary
Subject: Read: CF Industries, Inc. - 057000-021-AC

Your message

To: 'Herschel E. Morris, CF Industries, Inc.'; 'Jim Little, EPA'; 'Kathleen Forney, EPA'; 'Dee Morse, NPS'; Zhang-Torres; 'Diana Lee, HCEPC'; 'David Buff, Golder Associates, Inc.'; 'Joseph Marini, RMT, Inc.'
Cc: Arif, Syed; Adams, Patty; Gibson, Victoria
Subject: CF Industries, Inc. - 057000-021-AC
Sent: 5/29/2007 4:26 PM

was read on 5/29/2007 4:35 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:37 PM
To: Arif, Syed; Adams, Patty
Subject: FW: CF Industries, Inc. - 057000-021-AC

From: Buff, Dave [<mailto:DBuff@GOLDER.com>]
Sent: Tuesday, May 29, 2007 4:37 PM
To: undisclosed-recipients
Subject: Read: CF Industries, Inc. - 057000-021-AC

Your message

To: DBuff@GOLDER.com
Subject:

was read on 5/29/2007 4:37 PM.

Friday, Barbara

From: Harvey, Mary
Sent: Tuesday, May 29, 2007 4:34 PM
To: Adams, Patty; Arif, Syed
Subject: FW: CF Industries, Inc. - 057000-021-AC

-----Original Message-----

From: Dee_Morse@nps.gov [mailto:Dee_Morse@nps.gov]
Sent: Tuesday, May 29, 2007 4:32 PM
To: Harvey, Mary
Subject: CF Industries, Inc. - 057000-021-AC

Return Receipt

Your CF Industries, Inc. - 057000-021-AC
document:

was Dee Morse/DENVER/NPS
received
by:

at: 05/29/2007 02:32:14 PM