

Memorandum

Florida Department of Environmental Protection

TO: Trina Vielhauer
THRU: Al Linero *aal*
FROM: Syed Arif
DATE: April 23, 2004
SUBJECT: CF Industries, Inc. – Plant City Phosphate Complex
DEP File No. 0570005-019-AC, PSD-FL-339

Attached is the Public Notice package to modify the existing “C” and “D” Sulfuric Acid Plants (SAP) at its phosphate fertilizer manufacturing facility located in Plant City, Florida. The proposed changes will increase the production rate for each plant to 2,750 tons per day. The proposed project involves upgrading and/or replacement of plant equipment to accomplish the production increases, as described in the permit application.

The Department proposed 3.5 lb/ton, 3-hr. rolling average for SO₂ and 0.10 pounds of Sulfuric Acid Mist per ton of product as BACT for this project. The BACT limit of 3.5 pounds per ton 100% H₂SO₄, 3-hour rolling average for SO₂ proposed by the Department is the most stringent limit established to date for a sulfuric acid plant in Florida. The BACT emission limit established for SO₂ will be complied with a certified continuous emission monitor.

The project is subject to Prevention of Significant Deterioration (PSD) review for sulfur dioxide, nitrogen oxides and sulfuric acid mist in accordance with 62-212.400, F.A.C. A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-212.400 and 62-296, F.A.C.

The double absorption process including installation of cesium promoted catalyst and mist eliminators will control sulfur dioxide and sulfuric acid mist emissions from the sulfuric acid plants. An air quality impact analysis was required for sulfur dioxide and nitrogen oxides.

April 23 is Day 3 for the project. The project is being expedited as requested by the applicant. CF is planning for the “C” SAP to undergo turnaround in the first week of June. The Department will be able to issue the final permit prior to the start of the turnaround for C SAP if no adverse comments are received from the public during the 30 days comment period.

As discussed with Al and as he advised C.F. Industries in December, our major source determination for hazardous air pollutants is built into the permit.

I recommend your approval and signature.

AAL/sa

Attachments



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

P.E. Certification Statement

Permittee:

CF Industries, Incorporated
Plant City Phosphate Complex

DEP File No. 0570005-019-AC

Permit No. PSD-FL-339

Project type: Permit for increased production rate from 2,600 tons per day (TPD) to 2,750 TPD for the "C" and "D" Sulfuric Acid Plants. The proposed project involves upgrading and/or replacement of plant equipment to accomplish the production increases, as described in the permit application. The Department proposed 3.5 lb/ton, 3-hr rolling average for SO₂ and 0.10 pounds of SAM per ton of product as BACT for this project. The applicant will install cesium promoted catalyst in the entire 4th pass of the converter to achieve the proposed emission limit for SO₂. The BACT emission limit established for SO₂ will be complied with a continuous emission monitor. The double absorption process and mist eliminators will control sulfur dioxide and sulfuric acid mist emissions from the sulfuric acid plants. An air quality impact analysis was required for sulfur dioxide and nitrogen oxides.

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 4/22/04
Syed Arif, P.E. Date
Registration Number: 51861

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

"More Protection, Less Process"

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Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

April 27, 2004

CERTIFIED MAIL - RETURN 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 Permit No. 0570005-019-AC (PSD-FL-339)
Sulfuric Acid Production Increase
Plant City Phosphate Complex

Dear Mr. Morris:

Enclosed is one copy of the Draft Air Construction Permit pursuant to the rules for the Prevention of Significant Deterioration (PSD) for the "C" and "D" Sulfuric Acid Plants located at the Plant City Phosphate Complex, 10608 Paul Buchman Highway 640, Plant City, Hillsborough County. Also enclosed are: the Technical Evaluation and Preliminary Determination; the draft Best Available Control Technology determination; the Department's Intent to Issue an Air Construction Permit; and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT."

The "PUBLIC NOTICE" must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements of Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, Permitting South Section, at the above letterhead address. If you have any other questions, please contact Syed Arif, P.E., at 850/921-9528 or Mr. Linero at 850/921-9523.

Sincerely,

Trina L. Vielhauer, Chief,
Bureau of Air Regulation

TLV/sa

Enclosures

"More Protection, Less Process"

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In the Matter of an
Application for Permit by:

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

DEP File No. 0570005-019-AC
Draft Permit No. PSD-FL-339
Plant City Phosphate Complex
Hillsborough County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of DRAFT Permit attached) pursuant to the rules for the Prevention of Significant Deterioration of Air Quality (PSD) for the proposed project, detailed in the application specified above and the attached Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, CF Industries, Inc., submitted an application on January 22, 2004 (complete on April 2, 2004) to the Department for an air construction permit to modify the "C" and "D" Sulfuric Acid Plants at its phosphate fertilizer manufacturing facility located in Plant City. The facility is located at 10608 Paul Buchman Highway, Plant City, Hillsborough County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that a PSD review, a determination of Best Available Control Technology (BACT), and an air construction permit are required for the proposed work.

The Department intends to issue this Air Construction Permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT." The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting 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 Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the Final Air Construction Permit in accordance with the conditions of the attached Draft PSD permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of PUBLIC NOTICE. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the Draft Air Construction Permit, the permitting authority shall issue a Revised Draft Air Construction Permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen 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 will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would

justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.



Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE AIR CONSTRUCTION PERMIT (including the PUBLIC NOTICE, Technical Evaluation and Preliminary Determination, Draft BACT Determination, and the DRAFT permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 4/28/04 to the person(s) listed:

- Herschel E. Morris, CF Industries, Inc.*
- Gregg Worley, EPA
- John Bunyak, NPS
- Gerry Kissel, DEP-SWD
- Jerry Campbell, HCEPC
- David Buff, Golder Associates, Inc.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


(Clerk) 4/28/04
(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0570005-019-AC (PSD-FL-339)
CF Industries, Plant City Phosphate Complex

Hillsborough County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit pursuant to the rules for the Prevention of Significant Deterioration of Air Quality (PSD) to CF Industries, Inc. to modify existing sulfuric acid plants at its Plant City Phosphate Complex located in Plant City, Hillsborough County. A Best Available Control Technology (BACT) determination was required for sulfur dioxide, sulfuric acid mist and nitrogen oxides pursuant to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD). The applicant's name and address are CF Industries, Inc., 10608 Paul Buchman Highway, Plant City, Florida 33565.

CF Industries proposes to modify its existing "C" and "D" sulfuric acid plants to increase the production rate of each plant to 2,750 tons per day. The main modification at each plant involves replacement of all conventional vanadium catalyst in the final pass of each converter with cesium promoted vanadium catalyst. Other upgrades and equipment replacement will be performed as described in the permit application.

The Department has determined that BACT for the project is an emission limit of 3.5 pounds of sulfur dioxide (SO₂) per ton of 100% sulfuric acid (H₂SO₄) on a three-hour rolling average and 0.10 pounds of sulfuric acid mist per ton of 100% H₂SO₄ as BACT for this project. The double absorption process including installation of cesium promoted catalyst and mist eliminators assures maximum conversion of SO₂ to product.

An air quality impact analysis was required for SO₂ and nitrogen oxides (NO_x). Except for the SO₂ 3-hour averaging time, no significant impacts were predicted in the vicinity of the project or in PSD Class I Chassahowitzka National Wilderness Area located approximately 69 km away at its closest point. A PSD Class I increment analysis was performed for the SO₂ 3-hour averaging time. Based on the required analyses, the Department has reasonable assurance that the proposed project will not cause or significantly contribute to a violation of any PSD increment in the Class I area.

The Department will issue the Final Air Construction Permit in accordance with the conditions of the Draft Air Construction Permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen 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 will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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 Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

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 Bureau of Air Regulation 111 South Magnolia Drive, Suite 4, Tallahassee, Florida, 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Dept. of Environmental Protection Southwest District 3804 Coconut Palm Drive Tampa, Florida 33619-8218 Telephone: 813/744-6100 Fax: 813/744-6084	Hillsborough County Environmental Protection Commission 1410 North 21 st Street Tampa, Florida 33605 Telephone: 813/272-5960 Fax: 813/272-5157
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The complete project file includes the application, technical evaluations, Draft Permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, Permitting South Section at 111 South Magnolia Drive, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

CF INDUSTRIES, INC.

Plant City Phosphate Complex
Plant City, Hillsborough County

“C” and “D” Sulfuric Acid Plants

DEP File No. 0570005-019-AC
PSD-FL-339

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

April 27, 2004

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

01-22-2004: Date of Receipt of Application
02-20-2004: DEP's 1st Completeness Request
03-11-2004: Applicant's response to DEP's 1st Completeness Request
03-29-2004: DEP's 2nd Completeness Request
04-20-2004: Applicant's response to DEP's 2nd Completeness Request. Application Complete

2. FACILITY INFORMATION

2.1 Facility Location

The agricultural chemicals manufacturing facility is located at 10608 Paul Buchman Highway, Plant City, Hillsborough County. The project site is located about 69 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

This agricultural chemicals facility makes sulfuric acid (H₂SO₄), phosphoric acid, monoammonium phosphate (MAP) and diammonium phosphate (DAP).

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/PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), or volatile organic compounds (VOC) exceed 100 TPY.

This industry is included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 100 TPY for at least one criteria pollutant, the facility is also a major facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD). Per Table 62-212.400-2, modifications at the facility resulting in emissions increases greater than PSD significant levels, require review per the PSD rules and a determination of Best Available Control Technology (BACT) per Rule 62-212, F.A.C.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The facility is also classified as a “Major Source” per 40 CFR 63.2, Definitions [adopted and incorporated by reference by the Department at Paragraph 62-204.800(11)(d)] because it consists of a group of stationary sources located within a contiguous area and under common control that emit or have the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

If additional testing and modeling demonstrate that the facility is not and has never been a major source of hazardous air pollutants since at least June 10, 2002, the permittee shall have the right to request that the Department revise the permit to remove those requirements and conditions that are applicable because the facility is a major source of hazardous air pollutants as determined by the Department.

3. PROCESS DESCRIPTION

Sulfuric Acid Production

The plants are sulfur-burning double absorption sulfuric acid plants. This is the most common process for producing sulfuric acid in the U.S. phosphate fertilizer industry and it continues to be improved and employed at both existing and new installations in the U.S. and throughout the world.

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.

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. 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 (SO₂). The hot combustion gases are cooled in a waste heat boiler to recover excess heat as steam.

The gas stream is then introduced into a converter packed with catalyst. In a series of steps, the SO₂ and excess oxygen from the combustion air are progressively converted to SO₃. The gases containing SO₃, some unconverted SO₂, oxygen, and atmospheric nitrogen are conveyed to an “interpass tower” where the SO₃ is absorbed into a stream of concentrated sulfuric acid and reacted with excess water to further strengthen the acid. By removing most SO₃ in the interpass absorber, the equilibrium favors further conversion of the remaining SO₂ to SO₃. The remaining SO₂, not previously oxidized, is passed over a final converter bed of catalyst and the SO₃ produced is then absorbed in H₂SO₄. This is accomplished in the final pass of the converter. The resulting gas stream is conveyed to the high-efficiency “final tower” where most of the remaining SO₃ reacts with water in a 98-99 percent sulfuric acid stream.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Throughout the conversion, the temperatures are moderated by an intricate arrangement of heat exchangers so that the excess heat is removed. Mist eliminators are used to insure that sulfuric acid sprays and fine mists are contained, thereby protecting plant equipment and minimizing emissions to the atmosphere.

4. PROJECT DESCRIPTION

This permit addresses the following emissions units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	"C" Sulfuric Acid Plant (SAP)
008	"D" Sulfuric Acid Plant (SAP)

The proposed project includes an increase in the production rate of the existing "C" and "D" SAPs to 2750 tons per day (TPD), each. Currently the "C" and "D" SAPs are permitted to produce up to 2,600 TPD of 100-percent H₂SO₄. The project involves upgrading and/or replacement of plant equipment to accomplish the production increases, as described in the permit application. The primary improvement will be the incorporation of cesium promoted vanadium catalyst into the 4th pass of each converter (beds 4a and 4b).

Cesium promoted vanadium catalyst is similar to the traditional vanadium catalyst except that cesium salts are added to lower the activation temperature and increase SO₂ conversion efficiency. Modern formulations of cesium promoted catalyst also include greater vanadium concentration and special shaping to further improve reaction kinetics and to minimize pressure drop across the plant. Higher conversion efficiency allows the plants to increase production rates by increasing SO₂ concentrations from the furnace to the conversion/absorption steps while at the same time lowering stack SO₂ emissions. Some additional changes include:

- Replacement of the "C" SAP drying and final absorption towers packing (currently 15 feet of 3 inch ceramic Intalox saddles) with 14 feet of Monsanto WavePak packing plus 14 inches of 3-inch Intalox saddles for mist collection to reduce the load on the mist eliminators. The packing in the remaining four absorption towers may be replaced with "in kind" packing as the current packing exhibits high pressure drop and requires replacement.
- Changes to the main blower turbine by increasing the turbine horsepower by 9 percent. The main blower silencer will be modified to reduce pressure drop.
- Replacement of the existing "C" and "D" SAPs No. 1 hot gas heat exchangers of cross flow design with a lower pressure drop, radial flow design heat exchangers. The remaining four gas heat exchangers in "C" and "D" SAPs will be replaced as they reach the end of their service lives.
- Installation of a bypass around the "C" and "D" SAPs superheater/economizers.
- Installation of a new tube side bypass on the "C" and "D" SAPs No. 3 cold gas heat exchangers.
- Installation of onsite oxygen generation, storage, and injection equipment suitable to add oxygen to the "C" and "D" SAPs production process.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

- Alterations will be made to the boilers, boiler water feed pumps, de-aerator feed pumps, and acid cooling systems in both the “C” and “D” SAPs, in order to accommodate the increased heat load and steam production.

There will be no physical modifications to the Molten Sulfur Storage and Handling System as part of this project. To accommodate the increased potential sulfuric acid production, CF is requesting an increase in the maximum annual molten sulfur throughput from 930,750 tons per year (TPY) to 965,388 TPY. Maximum annual molten sulfur throughput is based on maximum daily sulfuric acid production of 8,100 TPD 100% H₂SO₄ for all four SAPs.

4.1 Effects on other Emission Units

Sulfuric acid is used as a raw material in the “A” and “B” Phosphoric Acid Plants (PAPs). Although the potential sulfuric acid production may increase, CF claims it will not produce any additional phosphoric acid as a result of this project. CF currently purchases sulfuric acid since the SAPs are not currently capable of producing enough sulfuric acid to meet the demands of the PAPs. Since the late 1980’s, the production rate of phosphoric acid has exceeded the availability of sulfuric acid. In order to maximize fertilizer production, up to 316,000 TPY of purchased sulfuric acid has been imported annually to makeup the imbalance. CF will purchase less sulfuric acid in the future to offset the additional sulfuric acid produced in the “C” and “D” SAPs. Therefore, the Department accepts CF Industries conclusion that PAPs will not be affected by the proposed project.

Trucks are used to import molten sulfur and purchased sulfuric acid. Since the potential sulfuric acid production will be increase as part of the proposed project, CF will purchase less sulfuric acid. Therefore, fewer trucks will be driven onsite to import the purchased sulfuric acid. Although the potential amount of molten sulfur may increase, and therefore the number of molten sulfur trucks driven onsite may increase, this increase will be offset by the reduced number of sulfuric acid trucks driven onsite. And since the number of sulfuric acid trucks driven onsite will be decreasing by a factor of three, the magnitude of truck traffic onsite will be reduced by the proposed project.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

4.2 Project Emissions

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

Source Description	SO ₂	NO _x	SAM
<u>Potential Emissions From Modified Sources^a</u>			
"C" Sulfuric Acid Plant	1,757	60	50
"D" Sulfuric Acid Plant	1,757	60	50
<i>Total Potential Emission Rates</i>	3,514	120	100
<u>Actual Emissions From Current Operations^b</u>			
"C" Sulfuric Acid Plant	1,502	19	16
"D" Sulfuric Acid Plant	1,485	11	15
<i>Total Actual Emission Rates</i>	2,987	30	31
TOTAL NET CHANGE	527	90	69
PSD SIGNIFICANT EMISSION RATE^c	40	40	7
PSD REVIEW TRIGGERED?	Yes	Yes	Yes
^a – Potential emissions based on BACT review ^b – Actual emissions are based on 10/2001 through 9/2003 data ^c – PSD significant emission levels based on Rule 62-212, FAC			

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

5. RULE APPLICABILITY

The project 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 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 sulfur dioxide, sulfuric acid mist and nitrogen oxides exceed the significant emission rates given in Chapter 62-212, Table 62-212.400-2, F.A.C. PSD review requires an assessment of air quality impacts and a determination of Best Available Control Technology (BACT).

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:

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

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

6. SOURCE IMPACT ANALYSIS

6.1 Air Quality and Monitoring in Hillsborough County

The Hillsborough County Environmental Protection Commission operates thirty monitors at eighteen sites measuring PM₁₀, PM_{2.5}, ozone, CO, lead, SO₂ and NO₂.

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

2002 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	Tampa	057-1070	17-3096.500N-	24-hour	48	47	27	150 ^a	ug/m ³		
			357.000E	Annual				50 ^b	ug/m ³		
SO ₂	Plant City	057-4004	17-3096.710N-	3-hour	43	33	3	500 ^a	ppb		
			389.300E	24-hour				14	8	100 ^a	ppb
			Annual						20 ^b	ppb	
NO ₂	Tampa	057-1065	17-3086.060N-	Annual			11	53 ^b	ppb		
CO	Tampa	057-1070	17-3096.500N-	1-hour	5	5		35 ^a	ppm		
			357.000E	8-hour				5	4	9 ^a	ppm
Ozone	Plant City	057-4004	17-3096.710N-	1-hour	0.109	0.091		0.12 ^c	ppm		
			389.300E	8-hour	0.083	0.076		0.08 ^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.

6.2 Major Stationary Sources of NO_x and SO₂ in Hillsborough County

MAJOR SOURCES OF SO₂ IN HILLSBOROUGH COUNTY (2002)

Owner/Company	Site Name	Tons per year
Tampa Electric Company	F.J. Gannon Station (now Bayside)	52,918 (400)*
Tampa Electric Company	Big Bend Station	11,668*
Cargill Fertilizer, Inc.	Cargill – Riverside Facility	4,423
CF Industries, Inc.	Plant City Phosphate (Existing facility)	4,249
Gulf Coast Recycling, Inc.	Gulf Coast Recycling, Inc.	577
<i>CF Industries, Inc.</i>	<i>Plant City Phosphate(Proposed project)</i>	526

* See write-up below

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

MAJOR SOURCES OF NO_x IN HILLSBOROUGH COUNTY (2002)

Owner/Company	Site Name	Tons per year
Tampa Electric Company	Big Bend Station	28,976*
Tampa Electric Company	F.J. Gannon Station (now Bayside)	23,313 (600)*
Hillsborough Co. Resource Recovery Facility	Hillsborough Co. Resource Recovery Facility	587
Tampa Electric Company	Hookers Point Station	498
City of Tampa	McKay Bay Refuse-to-Energy Facility	383
Cargill Fertilizer, Inc.	Cargill – Riverside Facility	211
Kinder Morgan Port Sitton Terminal, LLC.	Hartford Terminal	146
CF Industries, Inc.	Plant City Phosphate(Proposed project)	110*

* 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. Following the CFJ, the Gannon Plant was repowered with cleaner natural gas and is now renamed the Bayside Plant. The Bayside Plant will emit less than 600 tons of NO_x and less than 400 tons of SO₂ in 2004 but produce more electricity than the plant it replaced.

These reductions greatly exceed the expected increases from the CF Industries project.

6.3 Air Quality Analysis

As stated in the application, the proposed project will increase emissions of SO₂, SAM and NO_x in excess of PSD significant amounts. SAM is a non-criteria pollutant and has no AAQS or PSD increments defined for it; therefore, an air quality impact analysis was required only for SO₂ and NO_x. For SAM, the BACT requirements will establish the emission limits for this project. The PSD regulations require an analysis of impacts on ambient air, soils, vegetation, visibility, growth-related air quality impacts and impacts on the air quality related values. The PSD regulations require the following air quality analyses for this project:

- Significant impact analysis for SO₂ and NO_x in the Class II and Class I area;
- AAQS and PSD Increment analysis for 3-hour average SO₂ in the Class I area;
- Analysis of impacts on soils, vegetation, wildlife, visibility and growth-related air quality impacts;

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Based on the required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or significantly contribute to a violation of any AAQS or PSD increment. However, the following EPA-directed stack height language is included: “In approving this permit, 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 if and when EPA revises 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.”

6.4 Determination of Air Quality Monitoring Exemption

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review unless otherwise exempted or satisfied. The monitoring requirement may be satisfied by using existing representative monitoring data, if available. An exemption to the monitoring requirement may be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimis concentration. In addition, if EPA has not established an acceptable monitoring method for the specific pollutant, monitoring may not be required.

The table below shows that predicted SO₂ and NO_x impacts from the project are predicted to be below the de minimis level. Preconstruction ambient air quality monitoring is not required for these pollutants.

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

Pollutant	Avg. Time	Max Predicted Impact (µg/m ³)	De Minimis Level (µg/m ³)	Impact Above De Minimis?
SO ₂	24-hour	1.8	13	No
NO _x	Annual	0.2	14	No

6.5 Models and Meteorological Data Used in the Air Quality Impact Analysis

PSD Class II Area Model

The applicant and the Department used the EPA-approved Industrial Source Complex Short-Term (ISCST3) dispersion model to evaluate the pollutant emissions from the proposed project. The model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST3 model allows for the separation of sources, building wake downwash,

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

and various other input and output features. 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 were used for all sources for which downwash was considered.

Meteorological data used in the ISCST3 model consisted of a consecutive 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport, Florida (surface data) and Ruskin, Florida (upper air data). The 5-year period of meteorological data was from 1991 through 1995. These NWS stations 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.

Since five years of data were used in ISCST3, the highest-second-high (HSH) short-term predicted concentrations were compared with the appropriate AAQS or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards. For determining the project's significant impact area in the vicinity of the facility, both the highest short-term predicted concentrations and the highest predicted yearly averages were compared to their respective significant impact levels.

PSD Class I Area Model

Since the PSD Class I CNWA is greater than 50 km from the proposed facility, long-range transport modeling was required for the Class I impact assessment. The California Puff (CALPUFF) dispersion model was used to evaluate the potential impact of the proposed pollutant emissions on the PSD Class I increments and on two Air Quality Related Values (AQRV): regional haze and nitrogen deposition. 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. It is also 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 mechanisms.

The meteorological data used in the CALPUFF model was processed by the California Meteorological (CALMET) model. The CALMET model utilizes data from multiple meteorological stations and produces a three-dimensional modeling grid domain of hourly temperature and wind fields. The wind field is enhanced by the use of terrain data, which is also input into the model. Two-dimensional fields such as mixing heights, dispersion properties, and surface characteristics are produced by the CALMET model as well. For this project, 1990 MM4, 1992 MM5 and 1996 MM5 meteorological data was used in the analysis. Surface meteorological data from Tampa, Daytona, Orlando, Gainesville, Vero Beach and Fort Myers and Upper Air data from Ruskin, West Palm Beach and Apalachicola were used in addition to the MM data in the analysis. Precipitation data were obtained through 27 meteorological stations throughout the central and southern sections of Florida.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

6.6 Significant Impact Analysis

Initially, the applicant conducts modeling using only the proposed project's emissions changes. If this modeling shows significant impacts, further modeling is required to determine the project's impacts on the AAQS or PSD increments. To determine the SO₂ and NO_x significant impact areas for the proposed project, concentrations were predicted using Cartesian Receptors. The receptor grid was comprised of property boundary receptors spaced at 50-m intervals, receptors from the property boundary out to 2km spaced at 100-m intervals, receptors from 2-3 km spaced at 150-m intervals and receptors from 3-5 km spaced at 500-m intervals.

Thirteen discrete receptors were located in the Chassahowitzka National Wilderness Area (CNWA) which is a PSD Class I area located approximately 69 km to the northwest of the project at its closest point. For each pollutant subject to PSD and also subject to PSD increment and/or AAQS analyses, this modeling compares maximum predicted impacts due to the project with PSD significant impact levels to determine whether significant impacts due to the project are predicted in the vicinity of the facility or in the CNWA.

The tables below show the results of this modeling. The results of the modeling indicated that the maximum predicted Class II ambient air impacts were below the significant levels for SO₂ and NO₂. Therefore, no further Class II AAQS and PSD increment analyses in the vicinity of the project were required for this project. The results of the modeling indicated that the maximum predicted Class I ambient air impacts were below the significant levels for SO₂ and NO₂ except for 3-Hour SO₂. Therefore, further Class I AAQS and PSD increment analyses in the vicinity of the CWNA were required for this project.

Maximum Project Air Quality Impacts for Comparison to PSD Class II Significant Impact Levels in the Vicinity of the Facility

Pollutant	Averaging Time	Maximum Predicted Impact (µg/m ³)	Significant Impact Level (µg/m ³)	Significant Impact
SO ₂	Annual	0.5	1	No
	24-hour	2	5	No
	3-hour	22	25	No
NO _x	Annual	0.2	1	No

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Maximum Project Air Quality Impacts in the CNWA for Comparison to PSD Class I Significant Impact Levels

Pollutant	Averaging Time	Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$)	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	Significant Impact
SO ₂	Annual	0.01	0.1	No
	24-hour	0.18	0.2	No
	3-hour	1.5	1.0	Yes
NO ₂	Annual	0.002	0.1	No

6.7 Multi-source PSD Class I Increment Analysis

The maximum predicted 3-Hour SO₂ PSD Class I area impacts from this project and all other increment-consuming sources in the vicinity of the CWNA are shown in the following table. As shown, the impacts from all sources in the area were greater than the PSD Class I increment, which in turn, is still much lower than the AAQS. Although, there are modeled increment violations, the contribution from the proposed project during the 3-hour increment violations is well below the significant impact level. Therefore, the proposed project will not contribute significantly to any Class I violations.

Ultimately, it is expected that the emission reductions from the TECO projects will expand increment and reduce the modeled violations (to which the proposed project does not contribute).

PSD Class I Increment Analysis - CNWA

Pollutant	Averaging Time	Highest-Second Highest Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$)	Impact Greater Than Allowable Increment?	Allowable Increment ($\mu\text{g}/\text{m}^3$)	CF Project Contribution ($\mu\text{g}/\text{m}^3$)	PSD Class I Significant Impact Level ($\mu\text{g}/\text{m}^3$)
SO ₂	3-hour	28.26	Yes	25	0.0	1

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

6.8 Additional Impact Analysis

Impact Analysis Impacts on Soils, Vegetation, and Wildlife

In the vicinity of the CF Industries facility, NO₂ and SO₂ 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 example, according to the applicant, it has been documented that lichen species exhibit SO₂ damage when exposed to 200-400 µg/m³ for 6 hours per week for 10 weeks. The maximum SO₂ impacts from this project are predicted to be 22 µg/m³ on a 3-hour average, therefore, it can be concluded that this project will have an insignificant impact on vegetation such as lichens.

An air quality related values (AQRV) analysis was performed by the applicant. An analysis of nitrogen and sulfur deposition impacts in the CNWA using the CALPUFF model was also done. Based on Federal Land Manager (FLM) criteria, the proposed project had nitrogen and sulfur deposition impacts equal to or 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.

Impact on Visibility

A regional haze analysis using the CALPUFF model to determine visibility impacts in the CNWA Class I area was required by the U.S. Fish and Wildlife Service (FWS). No significant impacts were predicted.

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. No additional workers will be needed at the modified facility.

Growth-Related Air Quality Impacts Since 1977

According to the applicant, Residential growth in the area of the proposed project, Hillsborough County, has increased 65% from 1977 to 2000. The number of vehicle miles traveled has also increased in the county, 77% from 1977 to 2001. During this time period, the number of those employed in the county grew about 113%.

The applicant addressed industrial growth in Hillsborough County as well. The manufacturing industry has only seen a 19% employee increase from 1977-2000 but the agricultural industry saw about a 656% rise in employees (1977-1999).

Although, the population and miles traveled in Hillsborough County has increased since 1977, according to the application, air emissions from mobile sources has decreased. Carbon Monoxide has decreased by 60%, VOC has decreased by 64% and Nitrogen Oxides has decreased by 28%. 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.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

7. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by the applicant, 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. II
Meteorologist: Debbie Nelson

PERMITTEE:

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

File No.	0570005-019-AC
Permit No.	PSD-FL-339
SIC No.	2874
Project:	Sulfuric Acid Increase
Expires:	April 30, 2006

Authorized Representative:

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

PROJECT AND LOCATION:

Permit for the construction /modification of the Plant City Phosphate Complex to increase production rate of the existing "C" and "D" Sulfuric Acid Plants to 2,750 tons per day, each. 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

Michael G. Cooke, Director
Division of Air Resources
Management

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).

This permit is issued to allow an increase in the production rate of the existing "C" and "D" Sulfuric Acid Plants to 2,750 tons per day, each; and a proportionate increase in the sulfur feed rate to the two plants.

REGULATORY CLASSIFICATION

The facility is classified as a major source of air pollution or Title V source because it has the potential to emit at least 100 tons per year of sulfur dioxide and nitrogen oxides.

The facility is also classified as a "Major Source" per 40 CFR 63.2, Definitions [adopted and incorporated by reference by the Department at Paragraph 62-204.800(11)(d)] because it consists of a group of stationary sources located within a contiguous area and under common control that emit or have the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

If additional testing and modeling demonstrate that the facility is not and has never been a major source of hazardous air pollutants since at least June 10, 2002, the permittee shall have the right to request that the Department revise the permit to remove those requirements and conditions that are applicable because the facility is a major source of hazardous air pollutants as determined by the Department.

PERMIT SCHEDULE:

- 01-22-2004: Date of Receipt of Application
- 04-20-2004: Application Complete
- 04-27-2004: Mailed Intent to Issue Permit
- 05-xx-2004: Notice published in the _____

RELEVANT DOCUMENTS:

The documents listed form the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Application received 01-22-2004
- Department's incompleteness letters dated 02-20-2004 and 03-29-2004
- Applicant's letters received 02-23-2004, 03-11-2004 and 04-20-2004
- Technical Evaluation and Preliminary Determination dated 04-27-2004
- Best Available Control Technology determination (issued concurrently with permit)

AIR CONSTRUCTION PERMIT 0570005-019-AC (PSD-FL-339)

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, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218. All applications for permits to construct or modify an emissions unit(s) *subject to the Prevention of Significant Deterioration or Nonattainment (NA) review requirements* should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), 2600 Blair Stone Road, MS 5505, Tallahassee, Florida 32399-2400 (phone number 850/488-0114).
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix G of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [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 Florida Administrative Code.
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 Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (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: This air construction permit shall expire on **April 30, 2006** [Rule 62-210.300(1), F.A.C.]. The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation 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: An application for a Title V operating permit, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Southwest District Office. [Chapter 62-213, F.A.C.]
7. Annual Reports: Pursuant to Rule 62-210.370(2), 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(4) shall be sent to the DEP's Southwest District office by March 1st of each year.
8. Stack Testing Facilities: Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.

SECTION II. EMISSION UNIT(S) ADMINISTRATIVE REQUIREMENTS

9. Quarterly Reports: Quarterly excess emission reports, in accordance with 40 CFR 60.7 (a)(7) (c) (1997 version), shall be submitted to the DEP's Southwest District office.

10. 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.]



SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

COMMON CONDITIONS: 40 CFR 60 - NEW SOURCE PERFORMANCE STANDARDS

This permit addresses the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	"C" Sulfuric Acid Plant
008	"D" Sulfuric Acid Plant

These emission units shall comply with all applicable requirements of 40 CFR 60, General provisions, Subpart A, adopted by reference in Rule 62-204.800(7), F.A.C.

- 40 CFR 60.7, Notification and record keeping
- 40 CFR 60.8, Performance tests
- 40 CFR 60.11, Compliance with standards and maintenance requirements
- 40 CFR 60.12, Circumvention
- 40 CFR 60.13, Monitoring requirements
- 40 CFR 60.19, General notification and reporting requirements

The "C" and "D" Sulfuric Acid Plants are subject to the applicable requirements of the New Source Performance Standards (NSPS) under 40 CFR 60 Subpart H, Standards of Performance for Sulfuric Acid Plants.

SPECIFIC CONDITIONS :

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

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	"C" SAP
008	"D" SAP

1. Unless otherwise indicated, the construction and operation of the subject agricultural chemicals production facilities shall be in accordance with the capacities and specifications stated in the application. **[Rule 62-210.300, F.A.C.]**
2. The subject emissions units shall comply with all applicable provisions for Sulfuric Acid Plants, Subpart H, as applicable. **[Rule 62-204.800 F.A.C.]**
3. The maximum operation rates for C and D SAPs, each, shall not exceed 2,750 TPD 100% H₂SO₄. **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**
4. The maximum molten sulfur utilization rate for the C and D SAPs, each, shall neither exceed 898 TPD nor 327,755 TPY. (Based on the maximum permitted sulfuric acid production rate of 2,750 TPD of 100% H₂SO₄)
[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

5. The subject emission units are allowed to operate continuously (8760 hours/year).
[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]
6. Sulfur dioxide (SO₂) emissions shall not exceed the following values for each sulfuric acid plant: [Rule 62-212.400, F.A.C.]:

Sulfuric Acid Plant	lb/ton of 100% H ₂ SO ₄ *	lb/hr *	TPY
"C"	3.5	401	1,757
"D"	3.5	401	1,757

* 3-hour rolling average based on CEMS data as described below.

7. Sulfuric acid mist emissions shall not exceed the following for each plant:
[Rule 62-210.200, F.A.C.]:

Sulfuric Acid Plant	lb/ton of 100% H ₂ SO ₄ *	lb/hr *	TPY
"C"	0.10	11	50
"D"	0.10	11	50

* In stack testing as described below.

8. Emissions of nitrogen oxides from "C" and "D" Sulfuric Acid Plants, each, shall not exceed 0.12 lb/ton 100% H₂SO₄, 14 lb/hr and 60 tpy. [Rule 62-212.400, F.A.C.]
9. Visible emissions shall not exceed 10 percent opacity from the sulfuric acid plants.
[Rule 62-212.400, F.A.C.]
10. The permittee shall install approximately 165,000 liters of cesium promoted vanadium catalyst in the 4th converter pass of the "C" and "D" sulfuric acid plants. A change to non-cesium promoted catalyst or switch to another SO₂ control strategy shall not occur without the Department's review and approval and shall require submittal of a permit modification request to revise the Best Available Control Technology Determination.
[Rules 62-4.070 and 62-212.400, F.A.C.]
11. 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.]
12. 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]

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

13. 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. 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 (2001 version) or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 2 (2001 version).

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 at least 15 minutes apart. Data taken during periods of startup, or when sulfur is not burned in the unit, 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.]**

14. The subject emission units shall be tested for compliance with the above emission limits within 60 days following achievement of 2600 tons per day of sulfuric acid or within 60 days following the startup after installing the cesium promoted vanadium catalyst, whichever is sooner. 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

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

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 30 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. **[Rule 62-297.310, F.A.C.]**

15. The Department's Southwest District office and Environmental Protection Commission of Hillsborough County (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.]**
16. The procedures for the initial compliance and annual compliance tests for SO₂, NO_x and sulfuric acid mist, shall be in accordance with EPA Reference Methods 1, 2, 3, 4, 6C, 7E, 8 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.]**
17. 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.]**
18. 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.]**
19. 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.]**
20. The subject emissions units shall be subject to the following:
 - 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.]**
 - 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.]**
 - Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest. **[Rule 62-210.700, F.A.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.]**

AIR CONSTRUCTION PERMIT 0570005-019-AC (PSD-FL-339)

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

21. The permittee shall submit an Annual Operating Report using DEP Form 62-210.900(4) to the Department's Southwest District office and EPCHC by March 1 of the following year for the previous year's operation. **[Rule 62-210.370, F.A.C.]**
22. The permittee shall submit to the Bureau of Air Regulation (BAR) SO₂ emissions data for both "C" and "D" Sulfuric Acid Plants on a quarterly basis. The data submitted shall be SO₂ CEMS 3-hour rolling averages data. It shall be submitted in a graphical presentation against time. The production rate for each plant shall also be indicated on the same graph. The data shall be submitted for a period of three years (12 quarters) after start-up of each plant. The anticipated start-up date for the "C" SAP shall be in the summer of 2004. The anticipated start-up date for the D SAP shall be in the fall of 2004. The permittee shall notify the Bureau of Air Regulation of any changes to the construction activities schedule that would affect the applicability of this requirement. **[Rule 62-212.400, F.A.C.]**
23. Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified.
24. In conjunction with extension of the 18-month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of best available control technology for the source.
25. An application for a Title V permit revision shall be submitted, upon completion of construction, pursuant to Chapter 62-213, FAC, to the Department's Southwest District Office. **[Rule 62-213, 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.

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

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

b. Absorbing Towers.

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

5. Warm Restart.

a. Converter

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

- (1) The first two catalyst masses inlet and outlet temperatures must be at a minimum of 700°F ; or
- (2) Two of the four inlet and outlet temperatures must be greater than or equal to 800°F ; or
- (3) The inlet temperature of the first catalyst must be greater than or equal to 600°F and the outlet temperature greater than or equal to 800°F . Also, the inlet and outlet temperatures of the second catalyst must be greater than or equal to 700°F .

Failure to meet one of the above conditions, requires use of cold start-up procedures.

To allow for 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 H_2SO_4 .

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

CF Industries, Inc.
Plant City Phosphate Complex
PSD-FL-339 / 0570005-019-AC
Hillsborough County

The project proposed by CF Industries, Inc. will increase the permitted production rate of the existing "C" and "D" Sulfuric Acid Plants (SAPs) from 2,600 to 2,750 tons per day. Several improvements to increase production capacity of the "C" and "D" SAPs are proposed, including:

- Replacement of potassium or sodium promoted vanadium catalyst with installation of cesium promoted vanadium catalyst;
- Replacement of the "C" SAP final and drying absorption tower packing with low pressure drop packing;
- Installation of a new tube side bypass on the No. 3 cold gas heat exchanger;
- Installation of a bypass around the superheater/economizer, replacement of the existing No. 1 cross flow hot gas heat exchanger with a low pressure drop radial heat exchanger; and
- Installation of onsite oxygen generation, storage, and injection equipment suitable.

To accommodate the increase in sulfuric acid production, CF Industries is also requesting an increase in the maximum throughput rate of the Molten Sulfur Storage and Handling System from 930,750 tons per year (TPY) to 965,388 TPY. There will be no physical changes to the Molten Sulfur Storage and Handling System as part of this project. Only the permitted annual throughput rate will increase.

The proposed modification will result in a significant increase in emissions of sulfur dioxide (SO₂), sulfuric acid mist (SAM) and nitrogen oxides (NO_x). The project is subject to Prevention of Significant Deterioration (PSD) review in accordance with Rule 62-212.400, Florida Administrative Code (F.A.C.). A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-212.400 and 62-296, F.A.C. Descriptions of the process, project, air quality effects, and rule applicability are given in the Technical Evaluation and Preliminary Determination, accompanying the Department's Intent to Issue.

DATE OF RECEIPT OF COMPLETE BACT APPLICATION:

Original application received on January 22, 2004. BACT application was complete on April 20, 2004.

BACT DETERMINATION PROCEDURE:

In accordance with Chapter 62-212, F.A.C., this 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 what 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 the following:

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

- 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 and 63 - 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 unfeasible 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 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:

- **Combustion Products** (SO₂, NO_x, PM). Controlled generally by good combustion of clean fuels.
- **Products of Incomplete Combustion** (CO, VOC). Controlled generally by proper combustion.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted 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, H₂SO₄, fluorides, 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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BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

BACT EMISSION LIMITS PROPOSED BY APPLICANT:

The applicant proposed the following emission limits from the "C" and "D" sulfuric acid plants.

POLLUTANT	EMISSION LIMIT (lb/hr)	LIMIT BASIS (lb/ton H₂SO₄)	CONTROL TECHNOLOGY
SO ₂	441	3.5; 24-hr basis 3.85; 3-hr basis	Double Absorption Process
SAM	11	0.10	Fiber Mist Eliminators
NO _x	16	0.14	Good Combustion Practice

The applicant has proposed to use the existing double absorption process and incorporation of cesium promoted catalyst in the entire 4th pass of the converter to achieve the proposed limits for the sulfuric acid plants.

BACT POLLUTANT ANALYSIS

The process by which sulfuric acid is produced is the same process by which SO₂ and sulfuric acid emissions are controlled.

The SAPs utilize double absorption technology. Molten sulfur with physical characteristics much like fuel oil sulfur is burned in a furnace with dried atmospheric oxygen to produce SO₂. The SO₂ is catalytically oxidized to sulfur trioxide (SO₃) over a bed of vanadium pentoxide. The SO₃ is then absorbed in a recirculating stream of sulfuric acid (H₂SO₄) to produce additional H₂SO₄.

The remaining SO₂, not previously oxidized, is passed over a final converter bed of catalyst and the SO₃ produced is then absorbed in H₂SO₄ in a second absorber. SO₂ and sulfuric acid mist emissions result from the process, as well as a small amount of NO_x.

The control equipment for the SAPs consists of two systems in series. The first system is integral to the H₂SO₄ production process and is the double contact process where the converted SO₃ emissions from the sulfur combustion are absorbed by water in a tower. This process is at least 99 percent efficient at absorbing SO₃. This system is considered process equipment and not considered control equipment. The second system is a high-velocity mist eliminator, which causes moisture (droplets containing sulfuric acid mist) from the double-contact process to be removed from the air stream by impingement. This process is at least 90 percent efficient at removing SAM from the air stream and, therefore, recovering the product.

The proposed project includes an increase in the production rate of the existing "C" and "D" SAPs to 2,750 tons per day, each. It involves upgrading and/or replacement of plant equipment to accomplish the production increases, as described in the permit application. The primary improvement will be the incorporation of cesium promoted vanadium catalyst into the 4th pass of the converter (beds 4a and 4b).

Cesium promotion allows operation at lower temperature and thus a more complete approach to equilibrium in the final pass (i.e. more SO₂ gets converted to SO₃). The particular formulations

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available in recent years have optimized shapes that are basically hollow cylinders with ribbed sides. They have star, daisy, or asterisk shapes when viewed from the end. They also have greater vanadium concentration than conventional catalysts.

The result is that installation of this catalyst allows greater production due to lower operating pressure and temperature, and higher activity. If production is not increased, the catalyst allows for lower emissions. Emissions increase on a lb/hr basis and on a lb/ton of product basis. Therefore a lb/ton limit directly affects maximum production.

In a modification for the purpose of increasing production, a balance is required so that the benefits of the more effective catalyst do not accrue only to production or only to lower emissions which would defeat the purpose of the modification.

According to the applicant, "C" SAP will undergo turnaround initially in the first week of June 2004. CF Industries, Inc. has selected Haldor Topsoe to provide the cesium promoted catalyst for "C" SAP. The cesium catalyst product is a VK69 12mm daisy design product. In quoting from a letter from Haldor Topsoe to the applicant dated April 7, 2004, "Our modeling indicates that with 165,000 liters of VK69 cesium catalyst installed in the 4A and 4B converter beds the emissions at the start of run immediately after a turnaround would be 3.12 lbs of SO₂ per ton of acid produced and after 3 years at the end of a turnaround cycle the emissions would be 3.43 lbs of SO₂ per ton of acid produced".

Based on this analysis, the Department has reasonable assurance that the "C" SAP can meet a **BACT limit of 3.5 lbs of SO₂ per ton of 100% acid, 3-hour rolling average.** This is less than the present NSPS based limit of 4 lb/ton applicable to the "C" SAP.

According to the applicant the "D" SAP will be undergoing turnaround in the fall of 2004. They have requested that they should be given the option of utilizing other catalyst vendors and products if those vendors can guarantee equal or better performance than the Haldor Topsoe product. The Department has no objection to that request, as long as the applicant installs 165,000 liters of cesium promoted catalyst in the 4th pass of the "D" SAP converter and meets the same **BACT limit of 3.5 lbs of SO₂ per ton of 100% acid, 3-hour rolling average.**

In an effort to determine the performance of an acid plant utilizing cesium promoted catalyst in the entire 4th pass of a converter, the Department will require the applicant to provide continuous emission monitor results on a quarterly basis for three years (turnaround cycle) for both "C" and "D" SAPs. The data can be presented in a graphical representation against time, indicating the production rate as well as 3-hour rolling averages of SO₂ emissions. This requirement will be included as a specific condition in the permit. The data can be used by the Department for any future SO₂ BACT determinations of sulfuric acid plants.

Recent SAM compliance test data for "C" and "D" SAPs indicates that the average SAM emissions are between 0.03 and 0.05 lb/ton. These SAM levels are less than the proposed allowable emissions of 0.10 lb/ton for the "C" and "D" SAPs. For reference the present limit is 0.15 lb SAM/ton in accordance with the NSPS for sulfuric acid plants. High efficiency mist eliminators will be used to achieve the BACT emission limit for SAM.

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BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

The applicant accepted the NO_x emission limit of 0.12 lb/ton of acid produced. This is the current BACT limit established for other acid plants. The Department agrees with the applicant that continued use of good combustion practices is considered BACT for NO_x.

Control options involving production of by-products or wastes have been rejected as BACT. There is no indication that add-on control methods are competitive with process improvements that result in production of additional sulfuric acid. Recovery of sulfuric acid mist is an economic necessity as well as an environmental requirement.

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 employing the top-down BACT approach.

The proposed BACT for SO₂ for the "C" and "D" SAPs is the current double-absorption system with the addition of 165,000 liters of Haldor Topsoe cesium catalyst in the 4th pass of the "C" SAP converter and equivalent cesium catalyst that guarantees equal or better performance than Topsoe's product for the "D" SAP. The proposed BACT limit for "C" and "D" SAP is 3.5 lbs of SO₂ per ton of 100% H₂SO₄, 3-hour rolling average.

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 SO₂ removed.

The proposed BACT for SAM emissions is the use of high-efficiency mist eliminators. The proposed emission limit for the "C" and "D" SAP is 0.10 lbs of SAM per ton of 100% H₂SO₄. 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 is 0.12 lbs of NO_x per ton of 100% H₂SO₄.

POLLUTANT	EMISSION LIMIT (lb/hr)	LIMIT BASIS (lb/ton H₂SO₄)	CONTROL TECHNOLOGY
SO ₂	401	3.5 3-hr rolling average	Double Absorption Process, cesium-promoted vanadium catalyst in the entire 4 th bed.
SAM	11	0.10	Fiber Mist Eliminators
NO _x	14	0.12	Good Combustion Practice

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

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.

Annual compliance testing with the sulfur dioxide, sulfuric acid mist and nitrogen oxides limits shall be demonstrated using EPA Reference Methods 1, 2, 3, 4, 6C, 7E, 8 and 9 as appropriate, and contained in 40 CFR 60, Appendix A.

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Syed Arif, P.E., Permit Engineer _____
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended By:

Approved By:

Trina L. Vielhauer, Chief
Bureau of Air Regulation

Michael G. Cooke, Director
Division of Air Resources Management

Date:

Date:

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 (*X*).
- 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.

PLACE STICKER AT TOP OF ENVELOPE
RIGHT OF RETURN ADDRESS

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none">Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.Print your name and address on the reverse so that we can return the card to you.Attach this card to the back of the mailpiece, or on the front if space permits.	A. Signature <i>x James Jack</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee
	B. Received by (Printed Name) C. Date of Delivery <i>8/20</i>
1. Article Addressed to: Mr. E. Edwards CF Industries, Inc. Post Office Drawer L Plant City, Florida 33564	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No
	3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.
	4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes
2. Article Number (Transfer from service label) <i>7000 1670 0013 3109 9489</i>	
PS Form 3811, August 2001	Domestic Return Receipt 102595-02-M-1540

U.S. Postal Service CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided)	
OFFICIAL USE	
Postage \$	Postmark Here
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees \$	
Sent To <i>T. Edwards, CFI</i>	
Street, Apt. No. or P.O. Box No. <i>Post Drawer L</i>	
City, State, ZIP+4 <i>Plant City, FL - 33564</i>	
PS Form 3800, May 2000 See Reverse for Instructions	

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF RETURN ADDRESS

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Mr. Herschel E. Morris
Vice President
Phosphate Operations/General
Manager
Post Office Drawer L
Plant City, Florida 33564

COMPLETE THIS SECTION ON DELIVERY

A. Signature *James Jack* Agent Addressee
 B. Received by (*Printed Name*) _____ C. Date of Delivery *5/20/01*

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
 Certified Mail Express Mail
 Registered Return Receipt for Merchandise
 Insured Mail C.O.D.

4. Restricted Delivery? (*Extra Fee*) Yes

2. Article Number **7000 1670 0013 3109 9793**
 (Transfer from service label)

E526 BOTE ET00 029T 0007

U.S. Postal Service
CERTIFIED MAIL RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

Sent to *Mr. Herschel E. Morris*
 Street, Apt. No., or PO Box No. *Post Office Drawer L*
 City, State, ZIP+4 *Plant City FL 33564*

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Mr. Herschel E. Morris
 Vice President
 Phosphate Operation/General Manager
 CF Industries, Inc.
 Post Office Drawer L
 Plant City, Florida 33564

COMPLETE THIS SECTION ON DELIVERY

A. Signature Agent
Donna Lewis Addressee

B. Received by (Printed Name) C. Date of Delivery
Donna Lewis 5-4-04

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
 Certified Mail Express Mail
 Registered Return Receipt for Merchandise
 Insured Mail C.O.D.

4. Restricted Delivery? (Extra Fee) Yes

2. Article Number (Transfer from service label) 7000 1670 0013 3109 9595

**U.S. Postal Service
 CERTIFIED MAIL RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)**

7000 1670 0013 3109 9595

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

Sent To
 Mr. Herschel E. Morris
 Street, Apt. No., or PO Box No.
 Post Office Drawer L
 City, State, ZIP+4
 Plant City, Florida 33564