

SK - Address 3



KOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX/377-7158

KA 173-00-02

January 17, 2001

1. Explain that there is ongoing program of monitoring couple of paragraphs Amb. Monitoring Network
2. Must point out that it is ongoing
Send map to Stan Krivis + me

*Supply
emission
values*

Mr. Syed Arif, P.E.
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Rd
Tallahassee, FL 32399-2400

Subject: Response to EPA Comments
U.S. Agri-Chemicals Corp.
File No. 1050051-009-AC, PSD-FL-278

*Location
Duration
Method of Monitoring
Was it QA'd*

*Need
more
info*

Dear Mr. Arif:

We have reviewed EPA's comments dated December 15, 2000, regarding the above referenced project. Our responses are in the order of the issues raised.

ITEM 1: Pre-construction Ambient Fluoride Monitoring

Regarding pre-construction fluorides monitoring, USAC does have some available data. Enclosed is the summary of the ambient fluorides monitoring data from 1996-present, collected in conjunction with USAC's Gyp Stack Expansion. It should be noted that on a daily basis, over 75 percent of the lab results indicate fluoride levels below detection level, and over 93 percent are within 10 percent of the detection level. All of the ambient concentration levels summarized are well below the 24-hr FDEP Reference Air Concentration level of 6 micrograms per cubic meter.

ITEM 2: Additional Fluoride Impacts

The potential fluoride emissions at the existing USAC facility will increase as a result of the proposed project. However, the actual fluoride emission increases are not expected to be significant. As the current ambient fluoride concentration levels are below detection levels and as actual emissions will likely remain unchanged, no adverse impacts are expected on soils, vegetation, wildlife and visibility.

*Questions not
answered*

*.25
Deminimis*

do SCREEN3 to show cone.

ITEM 3: Class I Area PSD Modeling Protocol

Regarding Class I area SO2 modeling, the rationale used in the modeling was discussed with Ellen Porter and John Notar of the National Park Service.

Was this approved by the NPS

*Question
I
doesn't
answer
anything*

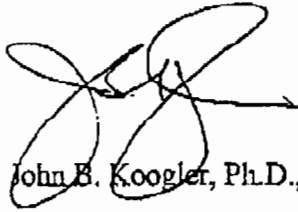
Mr. Syed Arif, P.E.
Florida Department of
Environmental Protection

January 17, 2001

If you have any questions, please do not hesitate to call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES



John B. Koogler, Ph.D., P.E.

JBK:par
Enc.

c: J. Girardin, USAC
R. Brmk, USAC

USAC Gyp Stack Expansion Ambient Gaseous Fluorides Monitoring

NOTES:

1. BDL = Below Detection Level (5 ug or 2.1 ppb)
2. Florida DEP 24-hr No Threat Level is 6 ug/m3
3. Lab results and ambient concentrations are presented as a daily average.

sample date	lab result ug	concentration
		ug/m3
7/11/96	10.5	3.4
7/12/96	BDL	
7/13/96	BDL	
7/14/96	BDL	
7/15/96	5.5	1.8
7/16/96	BDL	
7/17/96	BDL	
7/18/96	BDL	
8/6/96	BDL	
8/7/96	BDL	
8/8/96	BDL	
8/9/96	BDL	
8/10/96	BDL	
8/11/96	BDL	
8/12/96	BDL	
8/13/96	BDL	
9/5/96	BDL	
9/6/96	BDL	
9/7/96	BDL	
9/8/96	BDL	
9/9/96	BDL	
9/10/96	BDL	
9/11/96	BDL	
9/12/96	BDL	
10/16/96	5.5	1.8
11/21/96	BDL	
12/17/96	BDL	
1/27/97	5.1	1.6
2/5/97	5.5	1.7
3/4/97	BDL	
4/20/97	BDL	
5/27/97	BDL	
6/3/97	5.4	1.7
7/18/97	5.7	1.7
8/6/97	BDL	
9/17/97	BDL	
10/9/97	BDL	
11/4/97	BDL	
12/1/97	BDL	
1/28/98	BDL	
2/12/98	BDL	

*What
method
did you use*

27 - 1996

USAC Gyp Stack Expansion Ambient Gaseous Fluorides Monitoring

NOTES:

1. BDL = Below Detection Level (5 ug or 2.1 ppb)
2. Florida DEP 24-hr No Threat Level is 6 ug/m³
3. Lab results and ambient concentrations are presented as a daily average.

sample date	lab result ug	concentration
		ug/m ³
3/13/98	5.4	1.7
4/2/98	BDL	
5/4/98	BDL	
6/22/98	BDL	
7/16/98	6.4	2.0
8/12/98	7.6	2.3
9/15/98	5.6	1.7
10/8/98	BDL	
11/17/98	BDL	
12/30/98	BDL	
1/27/99	BDL	
2/25/99	BDL	
3/10/99	BDL	
4/22/99	5.5	1.7
5/24/99	5.1	1.6
6/1/99	BDL	
7/14/99	5.4	1.7
8/26/99	BDL	
9/23/99	5.1	1.6
1/20/00	5	1.5
2/18/00	BDL	
3/14/00	BDL	
4/5/00	BDL	
4/6/00	BDL	
5/3/00	5.6	1.7
5/4/00	BDL	
6/14/00	BDL	
6/15/00	BDL	
7/13/00	BDL	
7/14/00	BDL	
8/21/00	BDL	
8/22/00	BDL	
9/18/00	5.1	1.6
9/19/00	BDL	
10/17/00	BDL	
10/18/00	BDL	
11/15/00	5.1	1.6
11/16/00	BDL	



KA 173-00-02

January 26, 2001

RECEIVED

JAN 29 2001

BUREAU OF AIR REGULATION

Mr. Syed Arif, P.E.
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Rd
Tallahassee, FL 32399-2400

Subject: Additional Information on Fluorides Monitoring
U.S. Agri-Chemicals Corp.
File No. 1050051-009-AC, PSD-FL-278

Dear Mr. Arif:

The following additional comments are submitted to satisfy FDEP/EPA review of the fluorides monitoring data submitted to you last week. As previously indicated, air dispersion modeling for fluorides was not necessary for the proposed project as actual ambient air concentration data for the plant is available.

The fluorides monitoring data submitted to FDEP is from an ambient monitor located inside USAC's northern property boundary (see attached map). The Regional Planning Council has required the ambient fluoride monitoring as a condition of the Gyp Stack expansion approval. The ongoing monitoring program will continue for several more years, in accordance with the conditions imposed by the Regional Planning Council. In this instance, the available ambient fluoride data facilitate an ambient air assessment for the proposed project.

The monitor is a model G2DT, dual filter tape unit from Research Appliance Company. Eight 3-hour samples (24-hour period) are collected once a month by a qualified lab technician. Pembroke Labs, which is certified by HRS and FDEP, analyzes the tape in accordance with NIOSH Method 212, using a pre-approved Quality Control Protocol.

The sampling results (see attached table) indicate the date of the sample, the sample weight and the corresponding ambient air fluoride concentration as a 24-hour average. For purposes of the current review, the tabulated ambient concentration level was compared with the 24-hour Ambient Reference Concentration (ARC) level of 6 micrograms per cubic meter, previously used as a guideline by the Department to determine adverse impacts of fluorides. It should be noted that all of the tabulated concentration levels are well below the ARC. It is our understanding that the FDEP no longer uses ARCs as part of a permit application review. However, this comparison is made herein specifically to satisfy EPA's concerns.

Mr. Syed Arif, P.E.
Florida Department of
Environmental Protection

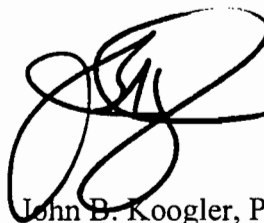
January 26, 2001

Regarding Class I area SO2 modeling, the rationale used in the modeling was accepted for the proposed project by Ellen Porter and John Notar of the National Park Service.

If you have any questions, please do not hesitate to call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES



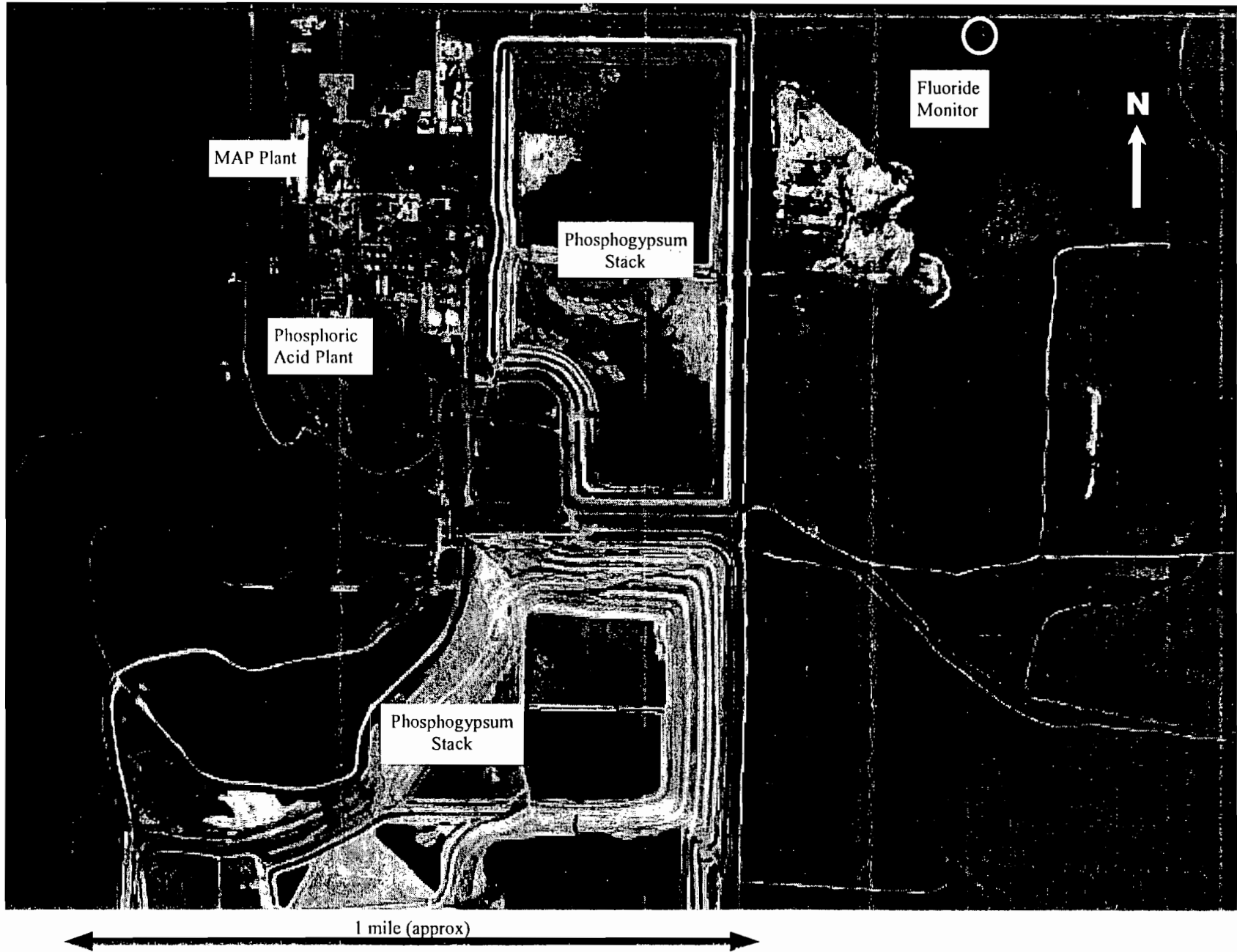
John B. Koogler, Ph.D., P.E.

JBK:par
Enc.

c: J. Girardin, USAC
R. Brunk, USAC
S. Kriv, EPA
C. Halladay

BEST AVAILABLE COPY

U.S. Agri-Chemicals
Fluoride Monitoring Station



USAC Gyp Stack Expansion Ambient Gaseous Fluorides Monitoring

NOTES:

1. BDL = Below Detection Level (5 ug or 2.1 ppb)
2. Florida DEP 24-hr No Threat Level is 6 ug/m3
3. Lab results and ambient concentrations are presented as a daily average.

sample date	lab result ug	concentration
		ug/m3
7/11/96	10.5	3.4
7/12/96	BDL	
7/13/96	BDL	
7/14/96	BDL	
7/15/96	5.5	1.8
7/16/96	BDL	
7/17/96	BDL	
7/18/96	BDL	
8/6/96	BDL	
8/7/96	BDL	
8/8/96	BDL	
8/9/96	BDL	
8/10/96	BDL	
8/11/96	BDL	
8/12/96	BDL	
8/13/96	BDL	
9/5/96	BDL	
9/6/96	BDL	
9/7/96	BDL	
9/8/96	BDL	
9/9/96	BDL	
9/10/96	BDL	
9/11/96	BDL	
9/12/96	BDL	
10/16/96	5.5	1.8
11/21/96	BDL	
12/17/96	BDL	
1/27/97	5.1	1.6
2/5/97	5.5	1.7
3/4/97	BDL	
4/20/97	BDL	
5/27/97	BDL	
6/3/97	5.4	1.7
7/18/97	5.7	1.7
8/6/97	BDL	
9/17/97	BDL	
10/9/97	BDL	
11/4/97	BDL	
12/1/97	BDL	
1/28/98	BDL	
2/12/98	BDL	

USAC Gyp Stack Expansion Ambient Gaseous Fluorides Monitoring

NOTES:

1. BDL = Below Detection Level (5 ug or 2.1 ppb)
2. Florida DEP 24-hr No Threat Level is 6 ug/m3
3. Lab results and ambient concentrations are presented as a daily average.

sample date	lab result ug	concentration
		ug/m3
3/13/98	5.4	1.7
4/2/98	BDL	
5/4/98	BDL	
6/22/98	BDL	
7/16/98	6.4	2.0
8/12/98	7.6	2.3
9/15/98	5.6	1.7
10/8/98	BDL	
11/17/98	BDL	
12/30/98	BDL	
1/27/99	BDL	
2/25/99	BDL	
3/10/99	BDL	
4/22/99	5.5	1.7
5/24/99	5.1	1.6
6/1/99	BDL	
7/14/99	5.4	1.7
8/26/99	BDL	
9/23/99	5.1	1.6
1/20/00	5	1.5
2/18/00	BDL	
3/14/00	BDL	
4/5/00	BDL	
4/6/00	BDL	
5/3/00	5.6	1.7
5/4/00	BDL	
6/14/00	BDL	
6/15/00	BDL	
7/13/00	BDL	
7/14/00	BDL	
8/21/00	BDL	
8/22/00	BDL	
9/18/00	5.1	1.6
9/19/00	BDL	
10/17/00	BDL	
10/18/00	BDL	
11/15/00	5.1	1.6
11/16/00	BDL	



KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ■ FAX/377-7158

KA 173-02-03

July 6, 2005

RECEIVED

JUL 11 2005

BUREAU OF AIR REGULATION

Mr. Syed Arif, P.E.
Florida Dept. of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Fluoride Monitoring Results
FDEP Permit 1050051-009-AC, PSD-FL-278
US Agri-Chemicals Corporation – Ft. Meade Facility

Dear Mr Arif,

Enclosed is the fluoride monitoring data summary, as required by provisions of the above referenced permit.

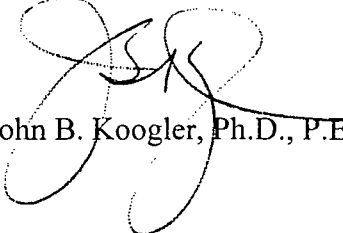
As you may recall, the monitoring data were required to be gathered to determine if there may be an adverse ambient air impact resulting from the expansion of the phosphoric acid production facility. Construction on the project was completed and the required compliance test was performed in December 2003. Although previously submitted, summaries of the pertinent compliance tests are attached for your convenience.

The attached monthly monitoring data, collected from July 2003 through May 2005 using the approved protocol, indicate results below the detectable limit of 2.1 ppb. Therefore, it can be concluded that there is no adverse ambient air impact resulting from the project.

If you have any questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES


John B. Koogler, Ph.D., P.E.

JBK:par
Encl.

C: Ron Brunk, USAC

USAC Ft. Meade Plant Fluoride Ambient Monitoring Summary

Date	F monitoring result
7/22/03	BDL
8/28/03	BDL
9/1/03	BDL
10/8/03	BDL
11/12/03	BDL
12/9/03	BDL
12/9-11	PAD test
1/11/04	BDL
2/21/04	BDL
3/13/04	BDL
4/14/04	BDL
5/5/04	BDL
6/9/04	BDL
7/14/04	BDL
8/30/04	BDL
9/13/04	BDL
10/30/04	BDL
11/11/04	BDL
11/29-02	PAD test
12/8/04	BDL
1/10/05	BDL
2/15/05	BDL
3/14/05	BDL
4/13/05	BDL
5/11/05	BDL

Plant Summary

This compliance test report covers U.S. Agri-Chemicals' (USAC) phosphoric acid plant
PAD-A Title V Permit No. 1050051 (Emission Unit ID No. 005)

In order to collect information to support request for permit revision, USAC conducted emission studys on
December 11, 2003 . The results for the tested unit are as follows:

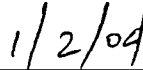
Actual	Permitted	
0.020	0.60	lbs of fluorides per hour
0.0004	0.012	lbs of fluorides per ton of equivalent P2O5 feed
0.47	14.40	lbs of fluorides per day
45.9	55.00	max. feedrate (tons P2O5/hour), 24 hr. average
38.3	54.4-283	scrubber water flow GPM
10.2	11.2-19.4	scrubber pressure drop "H2O

The test methods and procedures were in accordance with EPA 40 CFR, Part 60 methods 1, 2, 4, 9, and 13B with modifications as allowed by the Department. The tests were conducted by Eugene Williams and Mike Connelly and the report was prepared by Susanne Allen and Ron Brunk.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate, and complete.



Phong T. Vo, General Manager
Engineering and Technical Services



Date

Plant Summary

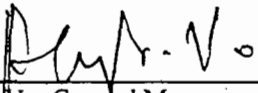
This compliance test report covers U.S. Agri-Chemicals' (USAC) phosphoric acid plant
PAD-B Title V Permit No. 1050051 (Emission Unit ID No. 020)

In order to collect information to support request for permit revision, USAC conducted emission studies on
December 9, 2003 . The results for the tested unit are as follows:

Actual	Permitted	
0.056	0.60	lbs of fluorides per hour
0.0012	0.012	lbs of fluorides per ton of equivalent P2O5 feed
1.35	14.40	lbs of fluorides per day
46.9	50.00	feedrate average (tons P2O5/hour), 30 day rolling average
56.1	48-283	scrubber water flow GPM
10.4	9.8-19.4	scrubber pressure drop "H2O

The test methods and procedures were in accordance with EPA 40 CFR, Part 60 methods 1, 2, 4, 9, and 13B with modifications as allowed by the Department. The tests were conducted by Eugene Williams and Mike Connelly and the report was prepared by Susanne Allen and Ron Brunk.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate, and complete.



Phong T. Vo, General Manager
Engineering and Technical Services

1/2/04

Date

Plant Summary

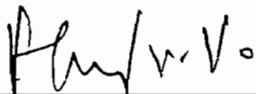
This compliance test report covers U.S. Agri-Chemicals' (USAC) phosphoric acid plant
PAD-T Title V Permit No. 1050051 (Emission Unit ID No. 021)

In order to collect information to support request for permit revision, USAC conducted emission studies on
December 10, 2003 . The results for the tested unit are as follows:

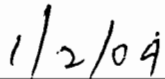
Actual	Permitted	
0.055	1.0	lbs of fluorides per hour
1.32	24.0	lbs of fluorides per day
90.7	110.0	max. feedrate (tons P2O5/hour), 24 hr. average
67.9	70.4-329	scrubber water flow GPM
3.9	5.5-18.3	scrubber pressure drop "H2O

The test methods and procedures were in accordance with EPA 40 CFR, Part 60 methods 1, 2, 4, 9, and 13B with modifications as allowed by the Department. The tests were conducted by Eugene Williams and Mike Connelly and the report was prepared by Susanne Allen and Ron Brunk.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate, and complete.



Phong T. Vo, General Manager
Engineering and Technical Services



Date

Plant Summary

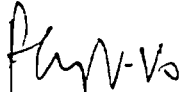
This compliance test report covers U.S. Agri-Chemicals' (USAC) phosphoric acid plant
PAD-A Title V Permit No. 1050051 (Emission Unit ID No. 005)

In order to collect information to support request for permit revision, USAC conducted emission studies on
December 2, 2004 . The results for the tested unit are as follows:

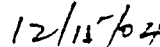
Actual	Permitted	
0.050	0.60	lbs of fluorides per hour
0.0011	0.012	lbs of fluorides per ton of equivalent P2O5 feed
1.20	14.40	lbs of fluorides per day
45.2	55.00	max. feedrate (tons P2O5/hour), 24 hr. average
63.9	54.4-283	scrubber water flow GPM
11.8	11.2-19.4	scrubber pressure drop "H2O

The test methods and procedures were in accordance with EPA 40 CFR, Part 60 methods 1, 2, 4, 9, and 13B with modifications as allowed by the Department. The tests were conducted by Eugene Williams and Mike Connelly and the report was prepared by Susanne Allen and Ron Brunk.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate, and complete.



Phong T. Vo, General Manager
Engineering and Technical Services



Date

Plant Summary

This compliance test report covers U.S. Agri-Chemicals' (USAC) phosphoric acid plant
PAD-B Title V Permit No. 1050051 (Emission Unit ID No. 020)

In order to collect information to support request for permit revision, USAC conducted emission studies on
November 29, 2004. The results for the tested unit are as follows:

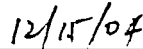
Actual	Permitted	
0.038	0.60	lbs of fluorides per hour
0.0009	0.012	lbs of fluorides per ton of equivalent P2O5 feed
0.91	14.40	lbs of fluorides per day
43.9	50.00	feedrate average (tons P2O5/hour). 30 day rolling average
51.4	48-283	scrubber water flow GPM
11.1	9.8-19.4	scrubber pressure drop "H2O

The test methods and procedures were in accordance with EPA 40 CFR, Part 60 methods 1, 2, 4, 9, and 13B with modifications as allowed by the Department. The tests were conducted by Eugene Williams and Mike Connelly and the report was prepared by Susanne Allen and Ron Brunk.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate, and complete.



Phong T. Vo, General Manager
Engineering and Technical Services



Date

Plant Summary

This compliance test report covers U.S. Agri-Chemicals' (USAC) phosphoric acid plant
PAD-T Title V Permit No. 1050051 (Emission Unit ID No. 021)

In order to collect information to support request for permit revision, USAC conducted emission studies on
December 1, 2004 . The results for the tested unit are as follows:

Actual	Permitted	
0.057	1.0	lbs of fluorides per hour
1.38	24.0	lbs of fluorides per day
87.8	110.0	max. feedrate (tons P2O5/hour), 24 hr. average
81.9	70.4-329	scrubber water flow GPM
6.6	5.5-18.3	scrubber pressure drop "H2O

The test methods and procedures were in accordance with EPA 40 CFR, Part 60 methods 1, 2, 4, 9, and 13B with modifications as allowed by the Department. The tests were conducted by Eugene Williams and Mike Connelly and the report was prepared by Susanne Allen and Ron Brunk.

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate, and complete.

Phong T. Vo

Phong T. Vo, General Manager
Engineering and Technical Services

12/15/04

Date

(3) Attainment Demonstration. As part of the initial application for the permit required pursuant to Rule 62-296.600(3), F.A.C., the owner or operator of a facility subject to the requirements of this rule shall demonstrate to the Department that, after the application of RACT, the facility shall not cause or contribute to a violation of the ambient air quality standard for lead as set forth in Rule 62-272.300, F.A.C. The demonstration shall be made using air quality models as provided in Rule 62-210.500, F.A.C., and shall address both stack and fugitive emissions.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 8-8-94, Formerly 17-296.603, Amended 1-1-96.

62-296.604 Electric Arc Furnace Equipped Secondary Steel Manufacturing Operations.

(1) Emission Limiting Standards. No owner or operator of a secondary steel manufacturing operation subject to Rule 62-296.600, F.A.C., shall cause, allow or permit the discharge of lead into the atmosphere in excess of the following emission standards, in grains of lead per dry standard cubic foot as a weighted average of the exhaust from the entire control equipment system, nor shall visible emissions exceed the following standards, in percent opacity:

(a) Electric arc furnace control device: 0.0002 grains and 3% opacity.

(b) Melt shop building roof ventilators: 6% opacity.

(2) Collection Systems. Collection systems representing RACT shall be installed and operated to capture, contain, and control lead emissions resulting from all lead-emitting processes including charging, melting, tapping, and casting. No lead emissions shall be vented to the outside of any enclosed or partially enclosed process unless RACT is employed to control such emission.

(3) Attainment Demonstration. As part of the initial application for the permit required pursuant to Rule 62-296.600(3), F.A.C., the owner or operator of a facility subject to the requirements of this rule shall demonstrate to the Department that, after the application of RACT, the facility shall not cause or contribute to a violation of the ambient air quality standard for lead as set forth in Rule 62-272.300, F.A.C. The demonstration shall be made using air quality models as provided in Rule 62-210.500, F.A.C., and shall address both stack and fugitive emissions.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 8-8-94, Formerly 17-296.604, Amended 1-1-96.

62-296.605 Lead Oxide Handling Operations.

No owner or operator of a lead oxide handling operation subject to Rule 62-296.600, F.A.C., shall cause, allow, or permit visible emissions in excess of 3% opacity.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 8-8-94, Formerly 17-296.605.

62-296.700 Reasonably Available Control Technology (RACT) Particulate Matter.

(1) Applicability.

(a) Any existing emissions unit that emits particulate matter and is located in a particulate matter air quality maintenance area or in the area of influence of such an air quality maintenance area, except an emissions unit which has received a determination of Best Available Control Technology pursuant to Rule 17-2.630 (repealed) or 62-296.330, F.A.C., or received a permit in connection with Rule 17-2.500 (transferred), 17-2.510 (transferred), 62-212.400 or 62-212.500, F.A.C., shall limit the emission of particulate matter through the application of Reasonably Available Control Technology (RACT) as specified in Rules 62-296.701 through 62-296.712, F.A.C., or Rules 62-296.401 through 62-296.415, F.A.C.

(b) [Reserved]

(2) Exemptions. The following facilities and emissions units which are located within a particulate matter air quality maintenance area or area of influence are exempt from the provisions of this rule:

(a) Any facility with total maximum allowable emissions of particulate matter of less than 15 tons per year and 5 pounds per hour.

(b) Any facility whose owner or operator demonstrates to the Department that the impact within the designated air quality maintenance area of the total maximum allowable particulate matter emissions from such facility will not exceed 1 ug/m³, annual average, and 5 ug/m³, 24-hour average.

(c) Any emissions unit which has total allowable emissions of particulate matter of less than one ton per year.

(d) Any emissions unit of unconfined particulate matter which is located more than five kilometers outside the boundary of a particulate matter air quality maintenance area.

(e) Any emissions unit of unconfined particulate matter from open stockpiling of materials, vehicular traffic and other emissions from roads and plant grounds, or construction activities.

(f) Any moveable drop transfer point where the discharge point and receiving point of the materials being handled must be moved in relationship to each other, either continuously or intermittently, such that enclosure of the drop transfer point with a device to control emissions of particulate matter is not practicable.

(3) Specific RACT Emission Limiting Standards for Stationary Emissions Units. The specific particulate matter emission limiting standards set forth in Rules 62-296.401 through 62-296.414, F.A.C., have been found to represent the application of RACT for each emissions unit category listed in those rules, except for those emissions unit categories listed in Rules 62-296.701 through 62-296.712, F.A.C. For those emissions unit categories the particulate matter emission standards in Rules 62-296.701 through 62-296.712, F.A.C., have been found to represent the application of RACT.

(4) Maximum Allowable Emission Rates.

(a) Emissions Unit Data. The new or revised operating permit for each emissions unit subject to the provisions of this rule shall specify:

1. The maximum heat input rate, charging rate, production rate, through-put rate, and/or materials handling rate, as appropriate;

The maximum heat input rate, charging rate, production rate, through-put rate, or materials handling rate shall be the maximum rate at which the emissions unit is capable of being operated on a continuous basis.

2. The maximum dry standard volumetric flow rate for each emission point, when applicable:

The maximum dry standard volumetric flow rate for each emissions unit or component emissions unit operation shall be the minimum dry standard volumetric flow rate that is necessary to safely and properly vent or operate the emissions unit when it is operated at its maximum continuous operating rate.

3. The control device through which each gas stream is vented and the emission point from which each gas stream is discharged to the open air;

4. The height above ground, exit diameter, UTM coordinates, and nature of each emission point through which particulate is or may be vented;

5. The exit gas temperature, actual volumetric flow rate and moisture content of each particulate bearing gas stream that is or may be vented to the open air;

6. Pertinent operating or control equipment parameters, such as pH of scrubber solution, pressure drop in scrubber, pressure on spray nozzle, etc., when such information is needed to confirm the control device is operating normally;

7. The permitted operating schedule (hrs./day, days/wk., wk./yr.)

(b) Maximum Emission Rates. The new or revised operating permit for each emissions unit shall specify the maximum allowable emission rate for each emissions unit or group of commonly vented emissions units sources in accordance with the following provisions:

1. The maximum allowable emission rate expressed in lbs/hr, lbs/day and tons/yr (or other equivalent units) shall be determined for each emissions unit (for example, each drop transfer point, screening operation, kiln, or dryer) by applying the appropriate emission limitation contained in Rules 62-296.401 through 62-296.414, F.A.C., or Rules 62-296.701 through 62-296.712, F.A.C., to the maximum applicable emissions unit operation rate or dry standard volumetric flow rate and the permitted operating schedule as specified in the operating permit pursuant to the provisions of Rule 62-296.700(4)(a), F.A.C.

2. If several emissions units are vented through a common control device or emission point, the maximum allowable emission rate for the common emission point shall be the sum of the individual maximum allowable emission rates for each emissions unit vented by the emission point.

3. The owner or operator of an emissions unit or a group of emissions units that is subject to an emission limitation set forth in Rules 62-296.701 through 62-296.712, F.A.C., and that is vented through more than one emission point, shall, subject to the approval of the Department, prorate the total allowable emission for such emissions unit among all emission points that vent the affected emissions unit such that a specific maximum allowable emission rate is assigned to each emission point.

The operating permits for emissions units shall be revised in accordance with Rule 62-296.700(4), F.A.C., to reflect the maximum allowable emission rates for each emission point.

4. The operating permit shall specify whether compliance shall be determined by measuring the emissions vented from each individual emissions unit or by measuring the emissions from the common emission point. In determining whether compliance shall be determined for each emissions unit individually or for a group of commonly vented emissions units at the common emission point, the department shall consider the following factors:

a. If all emissions units that are vented through a common emission point are subject to the same type of emission limiting standard (i.e., grains per dry standard cubic foot (gr/dscf)) and are all part of the same system of unit operations such that when one emissions unit is in operation the other emissions units will also normally be in operation, the Department may specify that compliance be determined at the common point of emission.

b. If the various emissions units that are vented through a common emission point are parts of different operating systems or are subject to different types of emission limiting standards (i.e., gr/dscf, lbs/ton of feed, lbs/MMBTU, percent opacity, etc.). The Department may specify that compliance with the various emission standards be determined separately for each emissions unit operation.

(5) Circumvention. No owner or operator of an emissions unit subject to the requirements of Rules 62-296.401 through 62-296.414, F.A.C., or Rules 62-296.701 through 62-296.712, F.A.C., establishing maximum concentrations of emissions of particulate matter in the exhaust gas from the emissions unit shall circumvent the provisions of an applicable emission limitation by increasing the volume of gas in any exhaust or group of exhausts for the purpose of reducing the stack gas concentration. This includes allowing dilution air to enter the system through leaks, open vents, or similar means.

(6) Operation and Maintenance Plan. The new or revised operating permit for each emissions unit subject to the provisions of this rule shall specify an operation and maintenance plan for the particulate control devices, the collection systems and the processing systems.

(a) Air Pollution Control Devices and Collection Systems. The plan shall include a schedule for the maintenance and inspection of each control device and collection system and a schedule for recording performance parameters of the control devices, collection systems and auxiliary equipment. Records of inspections, maintenance and performance data of control devices and auxiliary equipment shall be retained by the emissions unit for a minimum of two years and shall be made available to the Department upon request. The performance parameters shall include such physical, chemical or electrical characteristics as are applicable to the particular emissions unit and which are indicators of the condition, operating rates and efficiencies. Such parameters may include, but shall not be limited to, the following indicators for:

1. Scrubbers
 - Pressure drop, total
 - Pressure drop, scrubber
 - Pressure drop, mist eliminator
 - Liquor feed rate
 - Liquor feed composition and pH
 - Liquor feed solids and undissolved solids contents
 - Water makeup rate
 - Fan(s) current at rated voltage
 - Pump(s) current at rated voltage
 - Gas flowrate
 - Gas temperatures, inlet and outlet (minimum)
2. Baghouses
 - Bag pressure drop
 - Gas flowrate: direct method preferred; indirect method acceptable
 - Air to cloth ratio
 - Bag Weave
 - Bag material
 - Gas temperature, inlet and outlet
 - Bag cleaning conditions:
 - Pulse: Air pressure
 - Shake: shaker motor current
 - Reverse: reverse air fan current
 - Bag cleaning cycle:
 - Shake: duration, frequency, and delay periods
 - Reverse: duration, frequency, and delay periods
3. Electrostatic Precipitators.

The following information shall be recorded unless otherwise agreed to by the Department:

- Primary voltage
- Primary current
- Secondary current
- Spark rate

Additional information, including but not limited to the following, may be required to be included as descriptive information in the operation and maintenance plan, but shall not be required to be recorded routinely unless the Department determines that a precipitator's ability to achieve compliance with applicable emission limiting standards is questionable:

- Secondary voltage
- Rapper frequency, plate
- Rapper Vibrator frequency, wire
- Rapper duration, plate
- Rapper Vibrator duration, wire
- Gas temperature, inlet and outlet
- Estimated gas flowrate
- Static pressure

(b) Control Equipment Data. The Operation and Maintenance plan shall include identification of control device(s) for each emissions unit subject to provisions of this rule including but not limited to the following appropriate design specifications and other descriptive data:

1. Manufacturer
2. Model name and number
3. Type: scrubber, baghouse, electrostatic precipitator, dry scrubber, etc.

4. Design flow rate (liquid and/or gas)
5. For EPS's: primary and secondary voltage and current
6. Efficiency rating at design capacity
7. Pressure drop
8. Liquid to gas ratio
9. Scrubbing liquor composition

(c) Processing or Materials Handling Systems.

1. Appropriate parameters of processing or materials handling systems provide a measure of the rate of operations. The operation and maintenance plan shall include performance parameters which indicate the rate of operation, process weight through-put, the fuel or other energy source, the materials being processed or other physical or chemical characteristics, as applicable. Such parameters may include, but shall not be limited to the following:

- a. Weight per unit time of raw materials input;
- b. Process temperature or pressure;
- c. Fuel or fuel mixture;
- d. Chemical or physical data on product or raw materials;
- e. Air to fuel ratio or percent excess oxygen;
- f. Electrical power use rate by auxiliary equipment.

2. The plan shall contain inspection and maintenance schedules including periodic assessments of the condition of manholes, ducting, breaching, hoods, conveyor and elevator housing, loading sheds and other equipment, and a schedule for recording of performance parameter data.

(d) Fossil Fuel Steam Generators. The operation and maintenance plan for fossil fuel steam generators may include, but shall not be limited to, the following:

- Steam flow
- Fuel type (e.g., gas, oil, coal, or mixtures thereof)
- Consumption rate for type(s) of fuel(s) burned
- Fuel oil temperature (if applicable)

(e) Records of inspection, maintenance and performance parameter data shall be retained for a minimum of two years and shall be made available to the Department upon request.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(a)FS. History(g), 17-296.700, Amended 11-23-94, 1-1-96.

62-296.701 Portland Cement Plants.

(1) Applicability. The emission limitations set forth in Rule 62-296.701, F.A.C., shall apply to kilns and clinker coolers which are part of a Portland Cement Plant.

(2) Emission Limitations.

(a) Kilns – No owner or operator of a Portland Cement kiln shall cause, permit, or allow the emission of particulate matter in excess of 0.50 pounds per ton to the kiln (dry basis, excluding fuel), or visible emissions the density of which is greater than 20 percent opacity.

(b) Clinker coolers – No owner or operator of a Portland Cement clinker cooler shall cause, permit, or allow the emission of particulate matter in excess of 0.25 pounds per ton of feed to the kiln (dry basis, excluding fuel), or visible emissions the density of which is greater than 20 percent opacity.

(3) Alternate Emission Limitations.

(a) Applicability. The alternate emission limitations set forth in Rule 62-296.701(3)(b), F.A.C., shall apply to the Portland Cement plants located in Hillsborough County south of State Highway 60 in Tampa.

(b) Emission Limitations.

1. Clinker Kilns All Portland Cement plants shall not cause, permit, or allow the emission of particulate matter from Clinker Kilns in excess of 95 lbs./hr. as determined by EPA Method 5 nor in excess of 40 lbs./hr. as determined by EPA Method 17, or visible emissions the density of which is greater than 20 percent opacity as measured using a certified in-stack transmissometer. When method 17 is used the stack temperature shall not exceed 500 degrees Fahrenheit.

2. Clinker Coolers – All Portland Cement plants shall not cause, permit, or allow the emission of particulate matter from Clinker Coolers in excess of 45 lbs/hr as determined by EPA Method 5, or visible emissions the density of which is greater than 20 percent opacity as determined by EPA Method 9.

(4) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) For emissions units subject to the visible emissions standard in Rule 62-296.701(2), F.A.C., the test method shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) A transmissometer shall be used to determine compliance with the visible emission standard in Rule 62-296.701(3), F.A.C. The transmissometer shall be calibrated in accordance with Rule 62-297.520, F.A.C., and 40 C.F.R. 60.13.

(c) The test method for particulate emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(d) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)1., Amended 6-29-93, Formerly 17-296.701, Amended 11-23-94, 1-1-96.

62-296.702 Fossil Fuel Steam Generators.

(1) Applicability. The emission limitations set forth in Rule 62-296.702, F.A.C., shall apply to fossil fuel steam generating facilities including one or more boilers which individually or in combination have a heat input greater than or equal to 30 million British thermal units per hour.

(2) Emission Limitations.

(a) Particulate Matter. No owner or operator of a fossil fuel steam generator shall cause, permit, or allow the emission of particulate matter in excess of 0.10 pounds per million BTU except as provided for in Rules 62-296.405 or 62-296.406, F.A.C., and Rule 62-210.700

(b) Visible Emissions. No owner or operator of a fossil fuel fired steam generator shall allow visible emissions the density of which is greater than 20 percent opacity except as provided for in Rule 62-210.700, F.A.C., Excess Emissions, and in Rule 62-296.405, F.A.C., for fossil-fuel steam generators with a heat input of greater than 250 million BTU per hour.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. A transmissometer may be used and calibrated in accordance with Rule 62-297.520, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 17, EPA Method 5B, or EPA Method 5F, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet. EPA Method 5 may be used with the filter temperature at no more than 320 degrees Fahrenheit. For EPA Method 17, stack temperature shall be less than 375 degrees Fahrenheit. The owner or operator may use EPA Method 5 to demonstrate compliance. EPA Method 3 or 3A with Orsat analysis shall be used when oxygen based F factor computed according to EPA Method 19 is used in lieu of heat input. Use Acetone wash with Method 5 or 17.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)2., 17-296.702, Amended 11-23-94, 1-1-96.

62-296.703 Carbonaceous Fuel Burners.

(1) Applicability. The emission limitations set forth in Rule 62-296.703, F.A.C., shall apply to Carbonaceous Fuel Burning Equipment that has a total heat input capacity of 30 million BTU's per hour or greater.

(2) Emission Limitations.

(a) Particulate Matter. No owner or operator of Carbonaceous fuel burning equipment shall cause, permit, or allow the emission of particulate matter from such equipment in excess of 0.2 pounds per million BTU heat input of Carbonaceous fuel plus 0.1 pounds per million BTU heat input of fossil fuel.

(b) Visible Emissions. No owner or operator of carbonaceous fuel burning equipment shall cause, permit, or allow visible emissions the density of which is greater than 30 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet. For EPA Method 5, the filter temperature may not exceed 320 degrees Fahrenheit.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)3., 17-296.703, Amended 11-23-94, 1-1-96.

62-296.704 Asphalt Concrete Plants.

(1) Applicability. The emission limitations set forth in Rule 62-296.704, F.A.C., shall apply to any facility used to manufacture asphalt concrete by heating and drying aggregate and mixing with asphalt cements, excluding unloading and storage of raw materials.

(2) Emission Limitations. No owner or operator of an asphalt concrete plant shall cause, permit, or allow the emission of particulate matter in excess of 0.06 gr/dscf, or visible emissions the density of which is greater than 20 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5 or EPA Method 5A, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)4., 17-296.704, Amended 11-23-94, 1-1-96.

62-296.705 Phosphate Processing Operations.

(1) Applicability. The emission limitations set forth in Rule 62-296.705, F.A.C., shall apply to all unit operations and auxiliary equipment which are an integral part of the process used to manufacture the finished products specified in paragraphs (a) through (f) below, including reactors, dryers, coolers, concentrators, screens, elevators, conveyor belts, grinders, and other unit operations, which exist as part of the manufacturing system from the point of introduction of raw materials feed into the process to the point of discharge of the finished product to the storage materials handling system;

(a) Diammonium phosphate (DAP);

(b) Run of pile triple super phosphate (ROPTSP);

(c) Granular triple super phosphate (GTSP);

(d) Normal super phosphate (NSP);

(e) Monoammonium phosphate (MAP);

(f) Phosphate animal feed ingredient (AFI).

(2) Emission Limitations.

(a) No owner or operator of a phosphate processing facility shall cause, permit or allow total emissions of particulate matter from the affected unit operations and auxiliary equipment in excess of 0.30 pounds per ton of product or visible emissions the density of which is greater than 20 percent opacity from the above listed operations ((a) through (f)).

(b) No owner or operator of a phosphate rock dryer or phosphate rock grinding operation which is not an integral part of the operations described in Rule 62-296.705(1)(a) through (f), F.A.C., shall cause, permit or allow total emissions of particulate matter from the dryer or grinder in excess of 0.20 lb/ton of products or visible emissions the density of which is greater than 20 percent opacity.

(c) No owner or operator of a concentrator which is part of a phosphate processing facility shall cause, permit or allow total emissions of particulate matter from the concentrator in excess of 15 pounds per hour or visible emissions the density of which is greater than 20 percent opacity.

(d) No owner or operator of a Diammonium Phosphate cooler producing less than 50 tons per hour of product shall cause, permit, or allow total emissions of particulate matter in excess of 0.60 pound per ton of product or visible emissions the density of which is greater than 20 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5 or EPA Method 5A, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)5., 17-296.705, Amended 11-23-94, 1-1-96.

62-296.706 Glass Manufacturing Process.

(1) Applicability. The emission limitations set forth in Rule 62-296.706, F.A.C., shall apply to glass melting furnaces producing container glass.

(2) Emission Limitations. No owner or operator of a glass melting furnace shall cause, permit, or allow emissions of particulate matter in excess of the following standards:

(a) Gas fired furnaces – 1.3 pounds per ton of glass produced.

(b) Oil fired furnaces – 1.5 pounds per ton of glass produced.

(c) Visible emissions – 20 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5 or EPA Method 5A, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)6., 17-296.706, Amended 11-23-94, 1-1-96.

62-296.707 Electric Arc Furnaces.

(1) Applicability. The emission limitations set forth in Rule 62-296.707, F.A.C., shall apply to all furnaces that heat materials with electric arcs from carbon electrodes, including phosphorus electric arc furnaces.

(2) Emission Limitations. No owner or operator of an electric arc furnace shall cause, permit, or allow emissions of particulate matter in excess of the following standards:

(a) Phosphorus electric arc furnaces – 0.035 gr/dscf or any visible emissions (greater than five percent opacity) from a control device, except during tapping periods. No visible emissions greater than 60 percent opacity shall be allowed during the tapping period.

(b) All other electric arc furnaces – 0.010 gr/dscf or any visible emissions (greater than five percent opacity) from a control device, except during charging and tapping periods. No visible emissions greater than 20 percent opacity shall be allowed from the shop during charging periods. No visible emissions greater than 40 percent opacity shall be allowed during tapping periods.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5 or EPA Method 5D, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)7., 17-296.707, Amended 11-23-94, 1-1-96.

62-296.708 Sweat or Pot Furnaces.

(1) Applicability. The emission limitations set forth in Rule 62-296.708, F.A.C., shall apply to indirectly heated furnaces which are temperature controlled for the differential melting of scrap or combined metal products or which melt metals for coating or reclamation.

(2) Emission Limitations. No owner or operator of a sweat or pot furnace shall cause, permit, or allow emissions of particulate matter in excess of 0.05 gr/dscf, or visible emissions greater than 10 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)8., 17-296.708, Amended 11-23-94, 1-1-96.

62-296.709 Lime Kilns.

(1) Applicability. The emission limitations set forth in Rule 62-296.709, F.A.C., shall apply to all lime kilns associated with a kraft pulp mill.

(2) Emission Limitations. No owner or operator of a lime kiln shall cause, permit, or allow emissions of particulate matter in excess of that calculated by applying the formula $E = 3.59P^{0.62}$ for each kiln, where E is the emission rate in pounds per hour for each and P is the process weight in tons per hour; or visible emissions greater than 10 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)9., 17-296.709, Amended 11-23-94, 1-1-96.

62-296.710 Smelt Dissolving Tanks.

(1) Applicability. The emission limitations set forth in Rule 62-296.710, F.A.C., shall apply to all smelt dissolving tanks associated with a kraft pulp mill.

(2) Emission Limitations. No owner or operator of a smelt dissolving tank shall cause, permit or allow emissions of particulate matter in excess of that calculated by applying the formula $E = 3.59P0.62$ for each, where E is the emission rate in pounds per hour and P is the process weight in tons per hour; or visible emissions greater than 10 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)10., 17-296.710, Amended 11-23-94, 1-1-96.

62-296.711 Materials Handling, Sizing, Screening, Crushing and Grinding Operations.

(1) Applicability. The emission limitations set forth in Rule 62-296.711, F.A.C., shall apply to the handling, sizing, screening, crushing, or grinding of the materials such as, but not limited to, cement, clinker, fly ash, coke, gypsum, shale, lime, sulfur, phosphatic materials, slag, and grain or grain products, including but not limited to the following types of operations:

(a) Loading or unloading of materials to or from such containers as railcars, trucks, ships, and storage structures;

(b) Conveyor systems other than portable conveyor systems;

(c) Storage of materials in storage structures, such as silos or enclosed bins, which have a storage capacity of fifty cubic yards or more;

(d) crushing and/or grinding operations;

(e) sizing and/or rescreening operations;

(f) static drop transfer points where the discharge point and receiving point of the materials being handled are not moving in relationship to one another.

The emission limitations set forth in Rule 62-296.711, F.A.C., shall not apply to emissions from materials handling, sizing, screening, crushing and grinding operations governed by Rule 62-296.705, F.A.C., Phosphate Process Operations or Rule 62-296.704, F.A.C., Asphalt Concrete Plants.

(2) Emission Limitations.

(a) No owner or operator of an emissions unit governed by Rule 62-296.711, F.A.C., shall cause, permit, or allow any visible emissions (five percent opacity) from such emissions unit except that at the point where material is being discharged to the hold of a ship from a conveyor system. When the conveyor and/or hatch covering is moved, an opacity of 10 percent will be allowed.

(b) If, in order to comply with the requirements of paragraph (a) above, it is necessary to totally or partially enclose an operation and exhaust particulate laden gases through a vent or stack, emissions of particulate from such vent or stack shall not exceed 0.03 gr/dscf.

(c) An owner or operator may request the Department to determine that the emission standards of Rule 62-296.711(2)(a) and (b), F.A.C., do not constitute RACT for a facility. If the Department finds that the emission standards do not represent RACT, the Department shall make a determination of RACT for that facility.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) A visible emissions test indicating no visible emissions (5 percent opacity) may be submitted in lieu of a particulate stack test for materials handling emissions units subject to this rule, where the emissions unit is equipped with a baghouse.

(d) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)11., 17-296.711, Amended 11-23-94, 1-1-96.

62-296.712 Miscellaneous Manufacturing Process Operations.

(1) Applicability. The emission limitations and other requirements of Rule 62-296.712, F.A.C., shall apply to miscellaneous manufacturing process operations for which a specific RACT emission limitation has not been established in Rules 62-296.401 through 62-296.415, F.A.C., or Rules 62-296.701 through Rule 62-296.711, F.A.C., including but not limited to such operations as heat treating furnaces, waste heat evaporators, corebaking ovens, mixing kettles, blast furnaces, puddling furnaces, dryers, stills, roasters, and all other methods or forms of manufacturing or processing which emit particulate matter.

(2) Emission Limitations. No owner or operator of a miscellaneous manufacturing process operation shall cause, permit, or allow emissions of particulate matter in excess of 0.03 gr/dscf, or any visible emissions greater than 5 percent opacity. However the owner or operator may exceed these emission limits if he utilizes a pollution control device or system for control of particulate matter which has an actual particulate matter collection efficiency of at least 98 percent.

If Rule 62-296.712, F.A.C., is the least restrictive standard, the opacity standard for the emissions unit shall be the average opacity level achieved during the initial compliance test which establishes compliance with the standard, plus 5 percent opacity.

(3) Test Methods and Procedures. All emissions tests performed pursuant to the requirements of this rule shall comply with the following requirements.

(a) The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.

(b) The test method for particulate matter emissions shall be EPA Method 5, incorporated and adopted by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet.

(c) A visible emissions test indicating no visible emissions (5 percent opacity) may be submitted in lieu of a particular stack test for materials handling emissions subject to this rule, where the emissions unit is equipped with a baghouse.

(d) Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.650(2)(c)12., 17-296.712, Amended 11-23-94, 1-1-96.



KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

4014 NW THIRTEENTH STREET
 GAINESVILLE, FLORIDA 32609
 352/377-5822 • FAX/377-7158

KA 173-99-02

February 1, 2000

RECEIVED

FEB 03 2000

BUREAU OF AIR REGULATION

Mr. Al Linero, P.E.
 Florida Department of
 Environmental Protection
 Twin Towers Office Building
 2600 Blair Stone Rd
 Tallahassee, FL 32399-2400

Subject: Sulfuric Acid Plant Production Increase
 US Agri-Chemicals Corporation
 File PSD-FL-278, 1050051-009-AC

Dear Mr. Linero:

This is in response to your letter requesting additional information on the above referenced project. The issues are addressed in the order presented in your letter.

1. The past actual annual production and the maximum daily production are as follows:

Year	Annual Sulfuric Acid Production (tons)	
	Plant 1	Plant 2
1999	787,393	793,569
1998	792,803	789,623
1997	780,322	785,799
1996	793,853	761,309
1995	774,296	802,232

Maximum daily production of Plant 1 and Plant 2 was 2488 tons and 2426 tons, respectively. The proposed maximum operating rate of 3000 tons per day represents about a 20 percent increase.

2. Plants 1 and 2 were built by Monsanto and use Monsanto LP110 and LP120 catalysts. After the modification, each converter will hold approximately 400,000 liters of catalyst.

3. The requested ambient air impact analysis is presented in the attached report.

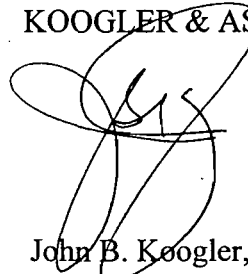
4. The requested Best Available Control Technology analysis is presented in the attached report.
5. The past sulfuric acid mist and sulfur dioxide emissions are as follows:

Year	Emissions (lb/ton acid)			
	Plant 1		Plant 2	
	SAM	SO ₂	SAM	SO ₂
1999	0.043	2.95	0.038	3.76
1998	0.049	2.42	0.046	2.47
1997	0.028	2.27	0.035	2.46
1996	0.042	2.03	0.047	2.23
1995	0.024	1.73	0.026	2.38

If you have any questions, please do not hesitate to call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES



John B. Keogler, Ph.D., P.E.

JBK:par
Enc.

c: Ron Brunk, USAC

REPORT IN SUPPORT OF PSD APPLICATION
FOR
INCREASE IN SULFURIC ACID PRODUCTION

U.S. AGRI-CHEMICALS CORPORATION
FT. MEADE FACILITY

REPORT PREPARED BY
KOOGLER & ASSOCIATES
4014 NW 13TH STREET
GAINESVILLE, FLORIDA
(352) 377-5822

JANUARY, 2000

TABLE OF CONTENTS

	PAGE
1.0 BEST AVAILABLE CONTROL TECHNOLOGY	4
1.1 Emission Standards for Sulfuric Acid Plants	4
1.2 Control Technologies	5
1.2.1 Sulfur Dioxide Control	5
1.2.2 Sulfuric Acid Mist Control	9
1.2.3 Nitrogen Oxides Control	10
1.3 Conclusion	11
2.0 AIR QUALITY REVIEW	12
2.1 Air Quality Modeling	12
2.1.1 Significant Impact Analysis	12
2.1.2 Class II Area AAQS and PSD Increment Analysis	13
3.0 GOOD ENGINEERING PRACTICE STACK HEIGHT	29
4.0 IMPACTS ON SOILS, VEGETATION AND VISIBILITY	29
4.1 Impacts on Soils and Vegetation	29
4.2 Growth Related Impacts	30
4.3 Visibility Impacts	30
4.4 Impacts on Air Quality Related Values for Class I Area	30
5.0 CONCLUSION	36
REFERENCES	
APPENDICES	
A. Calculations	
B. Air Modeling	

LIST OF FIGURES

PAGE

FIGURE 2-1 RECEPTOR LOCATIONS 14

LIST OF TABLES

TABLE 2-1	AIR QUALITY MODELING PARAMETERS	15
TABLE 2-2	SUMMARY OF SIGNIFICANT IMPACT ANALYSIS	16
TABLE 2-3	SULFUR DIOXIDE EMITTING FACILITIES 20 D TABLE	17
TABLE 2-4	CLASS II AREA SULFUR DIOXIDE AAQS SOURCE INVENTORY	18
TABLE 2-5	CLASS I and CLASS II AREA SULFUR DIOXIDE PSD SOURCE INVENTORY	21
TABLE 2-6	SUMMARY OF CLASS II AREA SULFUR DIOXIDE IMPACT ANALYSIS	27
TABLE 2-7	SUMMARY OF CLASS I AREA SULFUR DIOXIDE IMPACT ANALYSIS	28
TABLE 4-1	VISIBILITY IMPACT ANALYSIS	33
TABLE 4-2	SENSITIVITY OF VEGETATION TO SO ₂	34

1.0 BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is required to control air pollutants emitted from newly constructed major sources or from modification to the major emitting facilities if the modification results in significant increase in the emission rate of regulated pollutants.

USAC proposes about a 20 percent increase in the production rate of the two existing double absorption sulfuric acid plants. The proposed maximum production rate for each unit, of 3000 tons per day, was previously permitted under PSD-FL-107. However, the plants had not achieved that level of production. This case-by-case BACT review acknowledges that the proposed project involves a marginal increase in production to achieve a previously permitted federally enforceable operating rate.

The sulfur dioxide (SO₂), sulfuric acid mist (SAM) and nitrogen oxides (NO_x) emissions increases from the proposed project were determined to represent a significant increase. These pollutants are present in the tail gas from all contact process sulfuric acid plants. In a typical plant with a double absorption system, the sulfur dioxide in the tail gas is less than 4 pounds per ton of acid produced and the acid mist is less than 0.15 pounds per ton of acid produced. The nitrogen oxides that are present in the tail gas are formed in the sulfur burners as a result of the fixation of atmospheric nitrogen. Stack tests indicate nitrogen oxides emissions from Plant 1 and 2 of about 0.07 and 0.08 pound per ton of acid produced, respectively.

1.1 EMISSION STANDARDS FOR SULFURIC ACID PLANTS

Federal New Source Performance Standards (NSPS) for sulfuric acid plants became effective on August 17, 1971. These standards, codified in 40 CFR 60, Subpart H, limit sulfur dioxide emissions to no more than 4.0 pounds per ton of 100 percent acid produced. Sulfuric acid mist emissions are limited to no more than 0.15 pounds per ton of 100 percent acid produced. Additionally, opacity of the emissions from new or modified sulfuric acid plants is limited to less than 10 percent. There are no emission standards under NSPS for nitrogen oxides from sulfuric acid plants.

EPA's most recent review of the New Source Performance Standards for sulfuric acid plants in 1985 (EPA-450/3-85-012), concluded that because of variations in sulfur dioxide emissions as a function of catalyst age, the level of SO₂ emissions as specified in the current NSPS should not be changed.

For sulfuric acid mist, EPA concluded that a more stringent acid mist standard would not be practical because of the need to provide a margin of safety due to in-plant operating fluctuations, which introduce variable quantities of moisture into the sulfuric acid production line.

There has been no change in EPA philosophy related to sulfuric acid plants since the 1985 review. A review of BACT/LAER determinations published in the EPA Clearinghouse indicates that no new control alternatives have been applied to the double absorption sulfuric acid plants for reduction in sulfur dioxide emission nor for reduction of sulfuric acid mist emissions. No control technologies for nitrogen oxides are discussed in either the NSPS review or in BACT/LAER determinations as there is typically no control of NO_x from the double absorption sulfuric acid plants.

1.2 CONTROL TECHNOLOGIES

Sulfur dioxide and sulfuric acid mist emissions from sulfuric acid plants can be controlled by various processes. The process of choice for sulfur dioxide control has been double absorption and the process of choice for controlling sulfuric acid mist emission has been one of the various types of fiber mist eliminators. These processes have been selected based on cost, product recovery, the formation of no undesirable by-products and the fact that neither introduces operating processes that are foreign to plant personnel.

In EPA's review of NSPS for sulfuric acid plants in March 1985 (EPA-450/3-85-012), 46 sulfuric acid plants built between 1971 and 1985 were reviewed. Of these 46 plants, 40 used the double absorption process for sulfur dioxide control with the remaining six using some type of acid gas scrubbing. All 46 plants used the high efficiency mist eliminators for acid mist control. The control of nitrogen oxides in sulfuric acid plants has not been addressed to date because the low concentration of nitrogen oxides in the tail gases of sulfuric acid plants (10-20 parts per million) does not lend itself to cost effective controls.

Also in the 1985 EPA review, several potential control technologies that had been used to control sulfur dioxide and sulfuric acid mist emissions from sulfuric acid plants were addressed. The alternatives included the double absorption process, ammonia scrubbing, sodium sulfite-bisulfite scrubbing, and molecular sieves for sulfur dioxide control and filter type mist eliminators and electrostatic precipitators for sulfuric acid mist control. A review of the EPA BACT/LAER Clearinghouse information indicated that no other control alternatives for sulfur dioxide and sulfuric acid mist have been as consistently considered for sulfuric acid plants prior to or since the 1985 NSPS review as the double absorption process and fiber mist eliminators, respectively. The limits typically selected with a margin of safety for sulfur dioxide and sulfuric acid mist have been 4.0 and 0.15 pounds per ton, respectively. More recent determinations in Florida have limited sulfur dioxide emissions to 3.5 pounds per ton of acid; and, limited sulfuric acid mist emissions to 0.12 pound per ton acid. No control alternatives were addressed for nitrogen oxides control in either the 1985 EPA NSPS review or in the BACT/LAER Clearinghouse.

1.2.1 Sulfur Dioxide Control

The control alternatives for sulfur dioxide have been summarized based upon information compiled by EPA in the 1985 NSPS review for sulfuric acid plants, information recently submitted to FDEP by companies with similar sulfuric acid plants during review of production increase requests (refer to PSD-FL-225, 229, 235, 238, and 250).

1.2.1.1 Double Absorption Process

The first major improvement in sulfuric acid plant technology was the introduction of the double absorption process. The second absorber tower on double absorption sulfuric acid plants is essentially a sulfur dioxide control device. The second tower adds about 20 percent to the cost of a plant and it increases operating costs by reducing the amount of high pressure steam that can be recovered and by increasing the pressure drop across the plant. The second absorption stage, in reducing sulfur dioxide emissions, results in the recovery of about 25-26 pounds of sulfur dioxide per ton of acid produced. This sulfur dioxide is converted to sulfuric acid, resulting in about a two percent increase in acid production. Based on this information, it becomes apparent

that the second absorption stage is added for sulfur dioxide control, not for increased acid production.

As a sulfur dioxide control system, the double absorption process has become the system of choice within the sulfuric acid industry since the promulgation of NSPS in 1971. Several single absorption plants have also been converted to double absorption plants in order to comply with sulfur dioxide emission standards.

The double absorption process offers the following advantages over other SO₂ control technologies:

- a. 99.7 percent of the sulfur is converted to sulfuric acid compared with about 97.7 percent conversion with a single absorption plant;
- b. there are no by-products produced;
- c. there are no new operating processes that plant personnel must become familiar with;
- d. the process permits higher inlet sulfur dioxide concentrations resulting in a reduction in equipment size;
- e. there is no reduction in overall plant operating time or efficiency; and
- f. there is no increase in manpower requirements.

A double absorption plant typically operates at a sulfur dioxide emission rate in the range of 2-4 pounds per ton of acid, in compliance with the NSPS. EPA set the standard at 4.0 pounds per ton of acid to account for fluctuations that invariably occur in operating plants.

Since the adoption of the NSPS, there have been some design and operating changes in sulfur burning sulfuric acid plants as well as changes and improvements in catalyst technology. At the time the NSPS were adopted, the SO₂ concentration in the gas stream leaving the sulfur burner was in the range of 9.0-9.5 percent. In recent years, changes in plant design have increased the sulfur dioxide concentration at the burner exit to 11.5-11.7 percent.

It should be noted that sulfuric acid plants operating in conjunction with smelters or spent acid regeneration plants still operate with a feed gas sulfur dioxide concentration in the range of 7-9 percent. Because of this difference in the concentration of sulfur dioxide in the feed gas, it is not possible to compare the performance of a sulfur burning sulfuric acid plant as operated in Florida with a sulfuric acid plant operating at a smelter or a spent acid recovery plant.

The second improvement in sulfuric acid plant technology has been in catalyst performance. Changes have occurred in the composition of the vanadium/sodium/potassium catalyst and in the physical shape of the catalyst; from a pellet (4 and 6 millimeters in diameter by 8-15 millimeters long) to a ring-type structure. The change in the composition of the catalyst plus the change in the catalyst shape has resulted in a catalyst with a higher activity and a much lower pressure drop.

Another factor that determines the sulfur dioxide emission rate from a double absorption sulfur burning sulfuric acid plant is the specific design of the plant. For maximum sulfuric acid production the blower of the sulfuric acid plant will be set to operate at the maximum sustainable rate. The sulfur feed rate to the sulfur burner will then be increased until either the sulfuric acid production rate, or the sulfur dioxide emission rate, permit limit is reached.

1.2.1.2 Addition of a Catalyst Bed to a Double Absorption Sulfuric Acid Plant

Most double absorption sulfur burning sulfuric acid plants consist of a sulfur burner, three catalyst beds to convert SO₂ to SO₃ an intermediate absorption tower, a fourth catalyst bed, a final absorption tower, acid mist control and a heat recovery system. These plants are referred to as 3 by 1 (three catalyst beds followed by one catalyst bed) plants. The predominance of this type of plant is dictated by the fact that this arrangement has been determined to be the most cost-effective design. The conversion of sulfur dioxide produced in the sulfur burner to sulfur trioxide in the catalyst bed and the subsequent absorption of the sulfur trioxide determines the conversion efficiency of a plant (conversion of sulfur to sulfuric acid). As the only release of unconverted sulfur is sulfur dioxide (and a small amount of acid mist) in the stack gas, the conversion efficiency also determines the emissions from the plant.

The conversion from sulfur dioxide to sulfur trioxide is a complex reaction. The equilibrium concentrations of this reaction are determined in part by temperature, the oxygen:sulfur dioxide ratio and the sulfur trioxide concentration. The approach to this equilibrium is a function of temperature, reaction time and the activity of the catalyst. Lower temperatures promote a higher conversion of sulfur dioxide to sulfur trioxide; however, lower temperatures reduce the reaction rate. Increasing the contact time to compensate for a reduced reaction rate at lower temperatures requires more catalyst (greater contact time). The overall conversion process is a complex balance between these and possibly other factors in a temperature range between approximately 770°F and 1150°F and in a time period of approximately 1.5 seconds. The lower temperature limit is determined by the activation temperature of the catalyst. Conventional catalysts have a minimum activation temperature of approximately 770°F (a practical operating minimum of 790°F). The upper temperature limit of the catalyst is about 1150°F. Approximately 90-94 percent of the sulfur dioxide is converted to sulfur trioxide in the first three catalyst beds. The gas stream then passes through an intermediate absorption tower where the sulfur trioxide is absorbed resulting in a shift in the equilibrium curve favoring further conversion of sulfur dioxide to sulfur trioxide. The additional conversion in the fourth catalyst bed raises the final overall conversion to 99.7 percent.

The addition of one or more catalyst beds following the final bed (without the addition of a third absorption tower) will theoretically result in a fractional increase in conversion efficiency. The increase is limited by the slope of the equilibrium curve as 100 percent conversion is approached and by the fact that the temperature required to reach the higher conversion approaches the lower activation limits of the catalyst.

In practice, however, it has been observed that there is little measurable improvement in conversion between a 3 by 1 plant and a 3 by 2 plant.

1.2.1.3 Ammonia Scrubbing

Five sulfuric acid plants constructed between 1971 and 1985 used ammonia scrubbing for sulfur dioxide control. None of these plants were double absorption plants. The process can be effective for reducing sulfur dioxide emissions to below 4.0 pounds per ton and also for controlling sulfuric acid mist emissions. The major disadvantages of ammonia scrubbing are:

- a. a waste by-product is produced;

- b. the scrubbing system is a high maintenance item and requires additional manpower for operation;
- c. no sulfuric acid production increase benefits are achieved with the scrubbing system; and,
- d. the environmental liabilities of introducing a potential Hazardous Air Pollutant release point at another location in the plant.

Ammonia scrubbing uses anhydrous ammonia and water in a scrubbing system to convert sulfur dioxide to ammonium sulfite/bisulfite and eventually to ammonium sulfate. The ammonium sulfate can be crystallized and sold as a market commodity, if possible, or disposed of as waste. Furthermore, similar sulfur dioxide emissions levels can be achieved by addition of more catalyst in the converters, without the above disadvantages and without the associated capital, operating and maintenance costs. Therefore, ammonia scrubbing is rejected for the proposed project.

1.2.1.4 Other Scrubbing Technologies

Between 1971 and 1985, two sulfuric acid plants were constructed employing sodium sulfite-bisulfite scrubbing to control sulfur dioxide emissions. One of the plants was subsequently converted to ammonia scrubbing and the second plant has never been used. As a result, sodium sulfite-bisulfite scrubbing is not considered a demonstrated sulfur dioxide control alternative.

Other scrubbing liquors that have a potential for reducing sulfur dioxide emissions include caustic, sodium carbonate, calcium oxide and hydrogen peroxide. Without going through a detailed cost analysis to evaluate these scrubbing technologies, it can be stated that each requires additional capital investment and result in many of the direct and indirect annual costs associated with ammonia scrubbing. Because of higher chemical costs and/or waste disposal costs, these other technologies are expected to be even more costly than ammonia scrubbing. For this reason, these technologies are also rejected for the proposed project.

1.2.1.5 Molecular Sieves

A molecular sieve was installed at one sulfuric acid plant in Florida for sulfur dioxide control. The system was effective for controlling sulfur dioxide; however, extensive operating problems were experienced as the molecular sieve also absorbed nitrogen oxides. The regeneration of sieves resulted in the formation of nitric acid within the sulfuric acid plant. The nitric acid/sulfuric acid mixture resulted in severe corrosion problems that caused the molecular sieve system to be abandoned. As a result, molecular sieves are not considered a viable alternative for sulfur dioxide control in sulfuric acid plants.

1.2.1.6 Catalyst Use

Some changes in catalyst composition and shape have occurred since the NSPS were adopted. The first major change was a change in catalyst shape. The catalyst went from pellets that were 4.0 millimeters and 6.0 millimeters in diameter by 8-15 millimeters long to a ring-type catalyst. The major effect of this shape change was to reduce the pressure drop through the sulfuric plants both initially and over time. The results of this improvement were to extend the time between plant turnarounds from approximately nine months to 18 months or more and to reduce blower operating costs.

A change in catalyst composition, beyond changes in the vanadium content of the catalyst, has been the reintroduction of the cesium-promoted catalyst. The cesium catalyst is a 6-8 percent vanadium catalyst with a portion of the potassium promoter replaced by cesium. The introduction of cesium reduces the activation temperature of the catalyst by approximately 20°F (from about 770°F to 750°F). At temperatures above approximately 770°F, the performance of the cesium catalyst and the conventional catalyst are about the same.

The advantage of the cesium catalyst is that it allows the startup of a sulfuric acid plant at a lower entrance gas temperature. This is a distinct advantage for sulfuric acid plants operating at smelters and spent acid recovery plants where there are frequent plant startups and shutdowns. In sulfuric acid plants that are operating at a steady-state, the potential advantage of using a cesium catalyst is that the temperature (normally of the last catalyst bed) can be reduced about 20°F. The disadvantage of the cesium-promoted catalyst is that it is about three times more expensive than conventional catalyst. Furthermore, recent FDEP determinations based on available data indicate that the addition of more conventional catalyst, in plants capable of accommodating such increase, is expected to achieve the same level of sulfur dioxide reduction as cesium-promoted catalyst. USAC proposes to add about 84,600 liters of conventional catalyst to each plant, at a total cost of almost \$400,000. This will allow the 20 percent production increase and maintain the sulfur dioxide emissions in compliance with a more stringent BACT limit of 3.5 pounds per ton of acid produced.

1.2.1.7 Centaur Process

This technology, licensed by Calgon Carbon and Monsanto Enviro-Chem, uses low temperature wet carbon in place of the conventional fourth pass and second absorption tower. While this process has been marketed for small plants (1000 tons per day), the process has neither been optimized, nor been recommended for larger plants.

1.2.2 Sulfuric Acid Mist Control

Control alternatives that were reviewed by EPA in the 1985 New Source Performance Standards review are summarized in the following sections.

1.2.2.1 Fiber Mist Eliminators

The 46 new sulfuric acid plants constructed between 1971 and 1985, all used the fiber-type mist eliminators for sulfuric acid mist control. Operations demonstrated that these types of mist eliminators can control sulfuric acid mist emissions to less than 0.15 pounds per ton of sulfuric acid.

The mist eliminators are the choice of control for sulfuric acid mist within the sulfuric acid industry because they require very little operation and maintenance attention and because of the small space requirement associated with these devices. The disadvantage of this type of mist eliminator is that the pressure drop across the elements varies from five to 15 inches of water; resulting in an increase in operating utility costs. USAC currently utilizes the high efficiency mist eliminators, resulting in sulfuric acid mist emissions that are consistently below NSPS.

1.2.2.2 Electrostatic Precipitators

Electrostatic precipitators (ESPs) have the potential for controlling sulfuric acid mist emissions from sulfuric acid plants; however, there is no demonstrated application of ESPs. The disadvantages associated with ESPs and hence, the reason they have not been used, include the initial cost, size requirements, operating and maintenance requirements and the potential for corrosion.

1.2.3 Nitrogen Oxides Control

The combustion of sulfur in the acid plant is a relatively low temperature process at oxygen levels that are, out of necessity, relatively high. The gas temperature exiting a sulfur furnace is in the range of 2000°F with an oxygen concentration in the range of 9.2 percent. If the oxygen concentration is decreased (and the sulfur dioxide concentration correspondingly increased), the catalyst in sulfuric acid plants becomes ineffective and sulfur dioxide to sulfur trioxide conversion efficiency drops off markedly. The temperature of the exit gas is strictly a function of the heat of combustion of sulfur at the air flow rate necessary to provide approximately 9.2 percent oxygen and 11.7 percent sulfur dioxide in the furnace exit gas.

Compared to a fossil fuel fired combustion source, the temperature of a sulfur furnace is generally lower and the oxygen content of the combustion gas is generally higher. As a result of the relatively low combustion temperature, the nitrogen oxides concentration in the gas stream leaving the sulfur furnace is inherently quite low; in the range of 20 parts per million (v/v). This compares with NO_x concentrations of several hundred parts per million in stack gases from typical fossil fuel combustion sources. As a result, there has historically not been any emphasis placed on controlling NO_x emissions from the sulfuric acid plants. For purposes of this analysis, control technologies for NO_x will be briefly reviewed as they might apply to sulfur burning sulfuric acid plants.

Flue gas recirculation and low-NO_x burners are not applicable. Flue gas recirculation would not be practical as reducing oxygen levels below 9.2 percent will be counterproductive as previously discussed. The low-NO_x burner is not applicable for the reason that combustion temperatures are already relatively low and further refinements to the combustion process will not be productive in further reducing the NO_x concentration in the furnace exit gas. Furthermore, low-NO_x burners for sulfur furnaces do not exist.

Add-on control devices include selective catalytic and non-catalytic NO_x reduction. Both involve the introduction of ammonia to the stack gas. If introduced, the ammonia would first react with any sulfuric acid mist that is present, producing an ammonium sulfite/bisulfite/sulfate aerosol. These aerosols will plug the mist eliminator normally used in sulfuric acid plants if the NO_x control system is installed prior to the mist eliminator. If installed after the mist eliminator, the aerosols will be extremely difficult to remove from the gas stream and will result in a very visible plume from the sulfuric acid plant. Therefore, add-on NO_x control alternatives are rejected for the proposed project.

1.3 BACT CONCLUSION

All recent BACT determinations by FDEP for sulfur burning double absorption sulfuric acid plants have concluded that the double absorption process for sulfur dioxide control and the fiber mist eliminators for sulfuric acid mist control represent BACT. No control has been imposed for NOx emissions. These determinations were based on case-by-case analyses taking into account environmental, energy and economic impacts, the degree of emission reduction and the demonstrated availability of the control technology.

It should be kept in mind that USAC is requesting only about a 20 percent increase in production rate in order to achieve a production rate already permitted by FDEP under PSD-FL-107. Further, the emissions data indicate that the existing technology is capable of meeting the sulfur dioxide and sulfuric acid mist emissions recently determined by FDEP to be BACT for other similar sources.

Therefore, for sulfur dioxide emissions control, USAC proposes the use of the existing double absorption system. Additional conventional catalyst will be utilized to meet a BACT limit of 3.5 pounds sulfur dioxide per ton of acid. This reflects the most stringent limit imposed on an existing double absorption plant.

For sulfuric acid mist emissions control, USAC proposes the use of the existing high efficiency mist eliminators. The existing equipment will meet a BACT limit of 0.12 pound acid mist per ton of acid. This reflects the most stringent limit imposed on an existing double absorption plant.

For nitrogen oxide emissions, no add on controls are proposed. The resulting emissions level of 0.12 pound nitrogen oxides per ton of acid corresponds to the limit imposed on other double absorption plants.

2.0 AIR QUALITY REVIEW

The air quality review required of a PSD construction permit application potentially requires both air quality modeling and air quality monitoring. Air quality monitoring is required when the impact of air pollutant emission increases associated with a proposed project exceed the de minimis impact levels, or in cases where an applicant wishes to define existing ambient air quality by monitoring rather than by air quality modeling. The air quality modeling is required to provide assurance that the air pollutant emissions associated with the project, combined with all other applicable air pollutant emission rates associated with other sources affecting the project area, will not cause or contribute to an exceedance of the applicable ambient air quality standards.

The air quality review for the proposed project was limited to SO₂ and NO_x. In accordance with FDEP guidance, SAM emission increases are addressed under BACT as there is no corresponding applicable air quality standard.

2.1 AIR QUALITY MODELING

2.1.1 Significant Impact Analysis

The emission rate used for Significant Impact Analysis (SIA) air quality modeling purposes represents the proposed SO₂ emission rates. Table 2-1 contains modeling input parameters used in the ambient air quality impacts analysis. The average SO₂ emission rate was used in the modeling, corresponding to the averaging periods of the air quality standards.

The air impact analysis was conducted using the Industrial Source Complex-Short Term air quality model, Version 96113 (ISC-ST3), in accordance with guidelines established by EPA and published in the document, Guideline for Air Quality Modeling. The meteorological data used with the model were for Tampa, Florida and represented the period 1987-1991. The Class I area SIA was conducted using the CALPUFF model with one full year (1990) of meteorological data.

The SIA modeling included discrete receptors at the facility property boundary and additional receptors established by a polar grid extending up to 24 kilometers. Receptors in the vicinity of the source are presented in Figure 2-1.

The results of the SIA modeling, summarized in Table 2-2, demonstrate that the predicted ambient air quality impact of the SO₂ emission increases from the proposed project for the Class I and II areas are greater than significant. The maximum predicted impacts associated with NO_x emissions from the proposed project are less than significant. Consequently, additional SO₂ modeling was required to determine compliance with the ambient air quality standards and allowable Class I and II area PSD increments.

need to look at using most recent model - 991

*has 100m spacing
OK*

2.1.2 AAQS and PSD Increment Analysis

The Ambient Air Quality Standards (AAQS) Analysis and the PSD Increment (PSD) Analysis were conducted to determine the combined ambient air impact of the proposed project and other nearby SO₂ emitting sources on the Class II area. The significant facilities to be included in the analysis were determined based on the "20 D Rule" using the facility emission inventory most recently utilized by FDEP, with recent updates provided by FDEP staff.

A list of the significant facilities near the proposed project is presented in Table 2-3. The corresponding sources at the significant facilities that contribute to the ambient air concentration and the PSD increment consumption/expansion in the Class II area are presented in Tables 2-4 and 2-5, respectively. Although the ISC model is not recommended for modeling sources beyond 50 kilometers, some of the borderline sources were included to be conservative.

The results of the AAQS and PSD increment analysis indicate that the maximum predicted 3-hour, 24-hour and annual period impacts for the AAQS and Class II area PSD increment are within the standards, as shown in Table 2-6.

The Class I area PSD increment analysis for SO₂ was conducted using CALPUFF, a long range transport model, using 1990 meteorological data. Details of the CALPUFF input data are presented in Appendix B. The SIA using CALPUFF resulted in significant SO₂ impacts for only the 3-hour and 24-hour periods. Therefore additional modeling, using CALPUFF, was conducted for those averaging periods in order to determine the PSD increment consumption by all sources in FDEP's emission inventory.

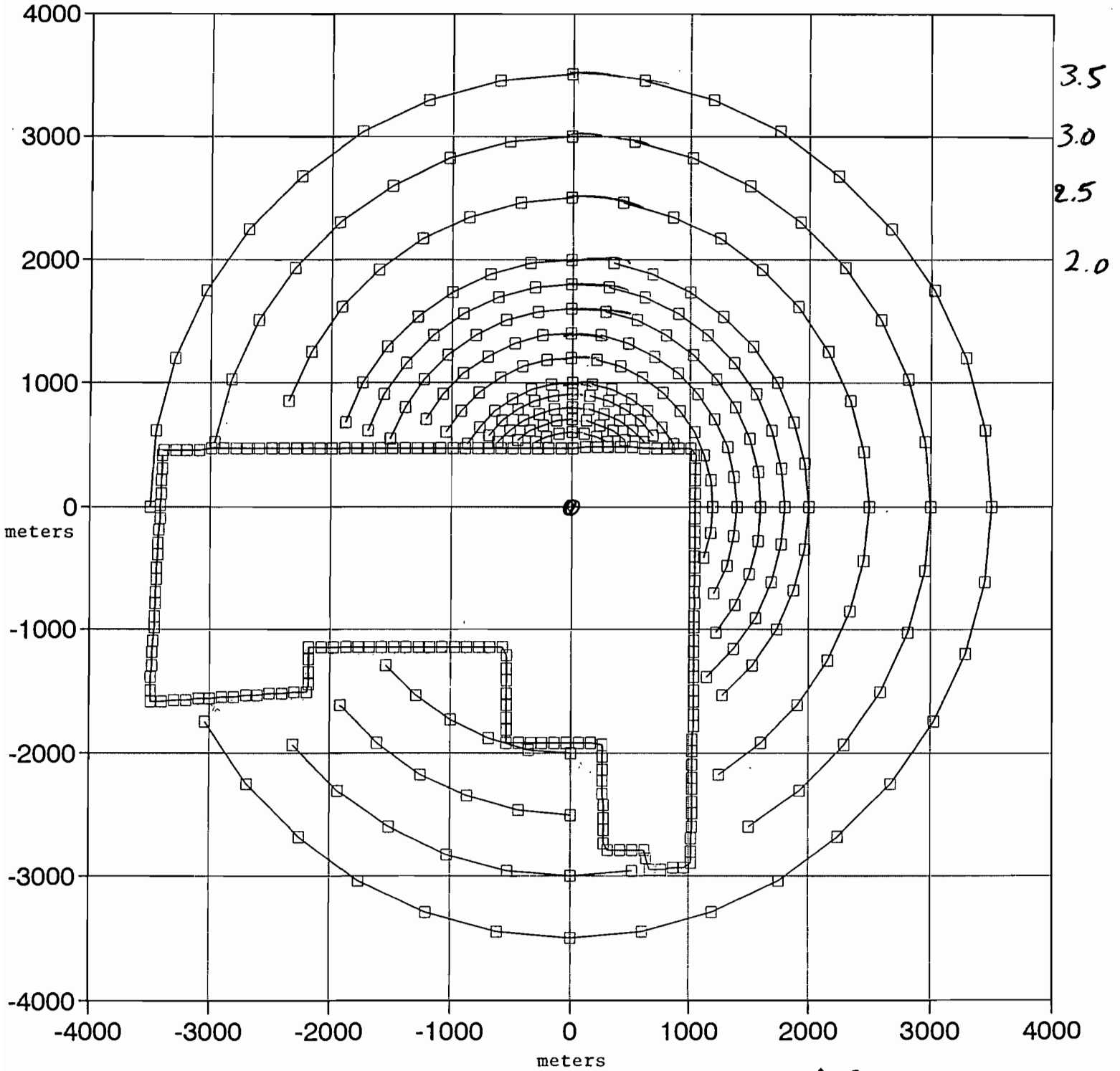
*CALPUFF
one year
of met data*

The modeling was simplified by limiting the analysis to days when the predicted impacts from the proposed project were significant. The results of the modeling, presented in Table 2-7, indicated that the PSD increment contributions from sources in FDEP's Class I area inventory, are negative (increment-expanding) on days when the predicted impacts from the proposed project are significant. The CALPUFF modeling results indicated that the Class I area PSD increment would not be exceeded by the proposed project; and, that the proposed project would not significantly contribute to any predicted violations of the PSD increment.

where?

Screening

Figure 2-1
Receptor Locations
US AGRICHEMICALS CORPORATION



Spacing is 100m on fence line Ok

Property boundaries: within 500m of origin on north side,
3.5 km on west side and within 3 km on south side
They go out 3.5

TABLE 2-1

AIR QUALITY MODELING PARAMETERS

U.S. AGRI-CHEMICALS CORP.
POLK COUNTY, FLORIDA

Emission Unit	Stack		Stack Gas		Emission Rate	
	Ht (m)	Dia (m)	Vel (mps)	Temp (°K)	SO2 (g/s)	NOX (g/s)
<u>Existing</u>					29.14	Put in max
UNIT 1	53.05	2.59	10.80	344.11	35.15	1.51
UNIT 2	53.05	2.59	10.80	344.11	35.15	1.51
<u>Proposed</u>						
UNIT 1	53.05	2.59	13.50	344.11	55.13	1.89
UNIT 2	53.05	2.59	13.50	344.11	55.13	1.89

Temp same?

Something like

437.50

*793,853 ÷
351 days
÷ 24 x 2.95
x .126 =
35,039 g/s*

NOTES:

1. Building downwash effects included using EPA approved BPIP program.
2. Existing sulfur dioxide emissions are based on past operations data.
3. Proposed sulfur dioxide emissions are based on requested allowable emission rates.

437.5 lbs/hr

Put in Max hourly

TABLE 2-2

SUMMARY OF SULFUR DIOXIDE
SIGNIFICANT IMPACT ANALYSIS

U.S. AGRI-CHEMICALS CORP.
POLK COUNTY, FLORIDA

*What is
SIA?*

MET. DATA	CLASS I AREA SO2 IMPACTS (1)				CLASS II AREA SO2 IMPACTS (1)			
	ANNUAL NOX	SO2	3-HR SO2	24-HR SO2	ANNUAL NOX	SO2	3-HR SO2	24-HR SO2
ISC3 RESULTS								
1987	0.0004	0.023	2.36	0.52	0.019 ✓	1.78 ✓	78.91	18.44
1988	0.0006	0.031	2.69	0.49	0.013	1.14	84.29	18.99
1989	0.0007	0.037	3.40	0.54	0.017	1.82	87.43	23.03
1990	0.0004	0.019	2.27	0.47	0.019	1.80	82.94	20.95
1991	0.0004	0.023	2.04	0.47	0.018	1.59	88.97	21.67
CLASS I AREA CALPUFF RESULTS								
1990	0.0003	0.016	1.47	0.31				
Max.	0.0007	0.037	3.40	0.54	0.019	1.82	88.97	23.03
SIGNIFICANT IMPACT LEVEL								
	(Proposed)				(Final)			
	0.1	0.1	1.0	0.2	1.0	1.0	25.0	5.0

NOTE:

- (1) The impacts represent the highest-high impact in micrograms per cubic meter (ug/m3), resulting from the proposed project.

Table 2-3
Sulfur Dioxide Emitting Facilities

SO2 "20 D" SOURCE INVENTORY US-AGRI CHEMICALS CORP.				Source Location		415.940	3068.930	
SOURCE DESCRIPTION	DESIGNATION	UTM Coordinates (km)		SO2 TPY	Distance (Km)	20-D Emission (TPY)	Significant?	
		EAST	NORTH					
ASPHALT PAVERS	BOTH	359.900	3162.400	78	109	2180	NO	
ASPHALT PAVERS	BOTH	361.400	3168.400	61	113	2269	NO	
ATLANTIC SUGAR	NAAQS	553.300	2945.000	567	185	3700	NO	
AUBURNDALE	BOTH	420.800	3103.300	221	35	694	NO	
BORDEN	PSD	394.800	3069.600	225	21	423	NO	
BREWSTER/IMPERIAL	PSD	404.800	3069.500	670	11	223	YES	
CARGILL/GARDINIER MINE	NAAQS	415.300	3063.300	670	6	113	YES	
CARGILL/GARDINIER	BOTH	363.400	3082.400	11779	54	1085	YES	
CARGILL/SEMINOLE/W.R. GRACE	BOTH	409.770	3086.990	14931	19	382	YES	
CF BARTOW	BOTH	408.500	3082.500	29567	15	310	YES	
CF PLANT CITY	BOTH	388.000	3116.000	9452	55	1095	YES	
CITRUS WORLD	NAAQS	441.000	3087.300	2062	31	621	YES	
CLM CHLORIDE METALS	BOTH	361.800	3088.300	731	58	1150	NO	
COCA COLA - AUBURNDALE	NAAQS	421.600	3103.700	1393	35	705	YES	
CONSOLIDATED MINERALS	NAAQS	393.800	3096.300	943	35	704	YES	
COUCH CONST-ODESSA (ASPHALT)	BOTH	340.700	3119.500	252	91	1813	NO	
COUCH CONST-ZEPHYRHILLS (ASP)	BOTH	390.300	3129.400	123	66	1314	NO	
DOLIME	PSD	404.813	3069.548	355	11	223	YES	
DRIS PAVING (ASPHALT)	BOTH	340.600	3119.200	8	91	1811	NO	
ER JAHNA	BOTH	386.700	3155.800	29	92	1833	NO	
ESTECH/SWIFT	PSD	411.500	3074.200	4856	72	138	YES	
EVANS	BOTH	383.300	3135.800	2188	74	1488	YES	
FARMLAND	BOTH	410.516	3079.624	8545	12	240	YES	
FDOC	BOTH	382.200	3166.100	104	103	2057	NO	
FLA MINING & MATERIALS	BOTH	356.200	3169.900	50	117	2346	NO	
FLORIDA GRUSHED STONE	BOTH	360.008	3162.398	3423	109	2179	YES	
FPC ANCLOTE	NAAQS	324.400	3118.700	116916	104	2084	YES	
FPC BARTOW	NAAQS	342.400	3082.600	62685	75	1496	YES	
FPC BAYBORO	NAAQS	338.800	3071.300	6881	72	1544	YES	
FPC CRYSTAL RIVER	<u>BOTH</u>	334.200	3204.500	133484	158	3166	YES	
FPC DEBARY	BOTH	467.500	3197.200	16224	138	2765	YES	
FPC HIGGINS	NAAQS	336.500	3098.400	12082	85	1695	YES	
FPC INT. CITY	BOTH	446.300	3126.000	8168	65	1293	YES	
FPC OSCEOLA	BOTH	446.300	3126.000	16958	65	1293	YES	
FPC POLK	BOTH	414.400	3073.910	859	5	104	YES	
FPL ET MYERS	NAAQS	422.100	2952.900	26872	116	2324	YES	
FPL MANATEE	NAAQS	367.200	3054.100	83410	51	1019	YES	
GAINESVILLE REGIONAL UTILITIES	BOTH	365.500	3292.700	197	229	4588	NO	
GEN. PORT. CEMENT	PSD	358.000	3090.600	4602	62	1237	YES	
GOLD BOND	NAAQS	347.300	3082.700	320	70	1400	NO	
GULF COAST LEAD	NAAQS	364.000	3093.500	1711	57	1149	YES	
HARDEE	BOTH	404.800	3057.400	9657	16	321	YES	
HILLS. CO. RESOURCE RECOVERY	BOTH	368.200	3092.700	744	53	1067	NO	
HOSP CORP OF AM	BOTH	333.400	3141.000	6	110	2192	NO	
IMC - AGRICO /NICHOLS/CONSERV	BOTH	398.400	3084.200	3495	23	465	YES	
IMC-AGRICO/NEW WALES	BOTH	396.600	3078.900	11416	22	435	YES	
IMC-AGRICO/NORALYN	NAAQS	414.700	3080.300	504	11	229	YES	
IMC-AGRICO/PIERCE	PSD	404.100	3078.950	1646	16	310	YES	
IMC-AGRICO/SO. PIERCE	BOTH	407.500	3071.300	5114	9	175	YES	
KISSIMEE KANE IS.	BOTH	447.680	3127.920	1023	67	1340	NO	
KISSIMEE UTIL	BOTH	460.100	3129.300	1563	75	1496	YES	
LAFARGE CORP.	NAAQS	357.7	3090.6	20293	62	1243	YES	
LAKE CO. COGEN. FACILITY PROP	BOTH	434.000	3198.800	175	131	2622	NO	
LAKELAND LARSEN	BOTH	409.300	3102.800	4944	35	690	YES	
LAKELAND MCINTOSH	BOTH	409.200	3106.200	30563	38	757	YES	
MOBIL BIG-4	BOTH	394.850	3069.770	591	21	422	YES	
MOBIL NICHOLS	BOTH	398.300	3084.300	971	23	468	YES	
MOBILE ELECTROPHOS	PSD	405.600	3079.400	3337	15	294	YES	
MULBERRY COGENERATION	BOTH	413.600	3080.600	466	12	238	YES	

3204

→ p-bshud
be yes

**Table 2-3
Sulfur Dioxide Emitting Facilities**

SO2 '20 D' SOURCE INVENTORY US-AGRI CHEMICALS CORP.				Source Location	415.940	3068.930	
SOURCE DESCRIPTION	DESIGNATION	UTM Coordinates (km)		SO2 TPY	Distance (Km)	20-D Emission (TPY)	Significant?
		EAST	NORTH				
MULBERRY PROSPHATES/ROYSTE	BOTH	406.753	3085.151	5312	19	373	YES
NEW PORT RICHEY HOSP	BOTH	331.200	3124.500	3	101	2027	NO
NITRAM	NAAQS	363.100	3089.000	108	57	1130	NO
OMAN CONST (ASPHALT)	BOTH	359.800	3164.900	73	111	2224	NO
ORLANDO UTIL STANTON	BOTH	483.500	3150.600	24100	106	2120	YES
OVERSTREET PAV. (ASPHALT)	BOTH	355.900	3143.700	128	96	1918	NO
PANDA KATHLEEN	BOTH	398.700	3101.400	25	37	735	NO
PASCO CO. COGEN. FACILITY PROP	BOTH	385.600	3139.000	175	76	1527	NO
PASCO COUNTY RRF	BOTH	347.100	3139.200	490	98	1967	NO
PINELLAS RRF	BOTH	335.300	3084.400	2165	82	1642	YES
PINEY POINT/ROYSTER	NAAQS	348.700	3057.300	1719	68	1365	YES
REEDY CREEK GENERATORS	BOTH	442.000	3139.000	127	75	1495	NO
REEDY CREEK SERVICES	BOTH	443.000	3144.300	5	80	1602	NO
RIDGE COGENERATION	BOTH	416.700	3100.400	480	31	630	NO
SEBRING UTIL	BOTH	464.300	3035.400	3868	59	1177	YES
SECI HARDEE	BOTH	404.900	3057.400	452	16	319	YES
STAUFFER	PSD	325.600	3116.700	2265	102	2044	YES
SUGAR CANE GROWERS	NAAQS	534.900	2953.300	4936	166	3318	YES
SULFUR TERMINALS	NAAQS	358.000	3090.000	104	62	1233	NO
TAMPA GENERAL HOSP	NAAQS	356.400	3091.000	59	63	1270	NO
TAMPA MCKAY BAY RRF	BOTH	360.000	3091.000	744	60	1203	NO
TECO BIG BEND	BOTH	361.900	3075.000	415986	54	1088	YES
TECO GANNON	NAAQS	360.000	3087.500	127495	59	1179	YES
TECO HOOKERS POINT	NAAQS	358.000	3091.000	13535	62	1240	YES
TECO POLK POWER	BOTH	402.488	3066.914	4031	14	272	YES
THATCHER GLASS	NAAQS	361.800	3088.300	177	58	1150	NO
USS AGRI-CHEM BARTOW	PSD	413.200	3086.300	1580	18	352	YES
USSAC FT MEADE	BOTH	415.940	3068.930	3377	0	0	YES

Table 2-4
Class II Area Sulfur Dioxide Emitting Facilities

SOURCE DESCRIPTION	A A Q S						
	Emissions	UTM COORDINATES (km)		Height	Temp.	Velocity	Diameter
	(g/s)	EAST	NORTH	(m)	(K)	(m/s)	(m)
CARGILL/GARDINIER MINE ROCK DRYER	17.60	415.300	3063.300	19.20	290.0	7.00	2.90
CARGILL/GARDINIER DAP (U55)	0.96	363.400	3082.400	40.50	320.0	16.09	2.13
CARGILL/GARDINIER GTSP (UAA)	1.90	363.400	3082.400	38.40	328.0	11.56	2.44
CARGILL/GARDINIER SAP #7 (U04)	46.20	363.400	3082.400	45.60	340.0	12.64	2.29
CARGILL/GARDINIER SAP #8 (U05)	52.50	363.400	3082.400	45.60	339.0	13.93	2.44
CARGILL/GARDINIER SAP #9 (INCR IN9 OF8/9 U06)	67.20	363.400	3082.400	45.60	350.0	12.66	2.74
CARGILL/GARDINIER NaSiF MFG (U41)	0.16	363.400	3082.400	12.20	333.1	13.37	2.80
CARGILL/SEMINOLE/W.R. GRACE DAP 4 - Bartow	0.30	409.770	3086.990	40.20	316.0	26.20	2.10
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	143.64	409.770	3086.990	60.96	347.0	34.00	1.52
CF BARTOW DAP 1-3	3.97	408.500	3082.500	36.40	339.0	16.11	2.13
CF BARTOW DAP 1-3	7.93	408.500	3082.500	36.40	339.0	16.11	2.13
CF BARTOW H2SO4 5 (2400 TPD)	50.40	408.500	3082.500	63.41	361.0	10.88	2.13
CF BARTOW H2SO4 6 (2400 TPD)	50.40	408.500	3082.500	63.41	370.0	7.28	2.13
CF BARTOW H2SO4 7 (2000 TPD)	42.00	408.500	3082.500	67.10	351.0	9.80	2.40
CF PLANT CITY Zephyrhills (U01)	19.98	388.000	3116.000	7.62	560.8	17.74	1.07
CF PLANT CITY (U22)	0.12	388.000	3116.000	2.44	373.0	0.33	0.61
CF PLANT CITY DAP A (U10)	3.00	388.000	3116.000	28.70	326.0	7.90	3.00
CF PLANT CITY DAP X (U16)	13.20	388.000	3116.000	54.90	325.0	9.80	2.80
CF PLANT CITY DAP Z (U11)	13.20	388.000	3116.000	54.90	331.0	13.10	2.80
CF PLANT CITY GTSP X (U12)	13.20	388.000	3116.000	54.90	314.0	7.90	2.80
CF PLANT CITY H2SO4 A&B (U02&03)	88.20	388.000	3116.000	33.50	316.0	19.50	1.52
CF PLANT CITY PROPOSED C & D (U07-08)	109.20	388.000	3116.000	60.35	353.0	17.77	2.44
CF PLANT CITY Y-GTSP (U17)	11.33	388.000	3116.000	54.9	333.1	13.37	2.8
CF PLANT CITY (U23-24)	0.17	388.000	3116.000	3.7	373.1	1.65	0.09
CF PLANT CITY (U22)	0.11	388.000	3116.000	2.4	373.1	1.63	0.27
CITRUS WORLD DRYER 1	11.8	441.000	3087.300	22.90	323.0	10.70	1.00
CITRUS WORLD DRYER 2	23.74	441.000	3087.300	22.90	325.0	12.20	0.80
CITRUS WORLD DRYER 3	23.74	441.000	3087.300	24.40	313.0	21.90	0.80
COCA COLA - AUBURNDALE U01	18.00	421.600	3103.700	28.35	333.2	16.76	1.07
COCA COLA - AUBURNDALE U03	0.52	421.600	3103.700	30.48	344.8	14.93	0.98
COCA COLA - AUBURNDALE U08	21.52	421.600	3103.700	12.19	434.8	18.29	1.22
CONSOLIDATED MINERALS	0.12	393.800	3096.300	6.10	605.2	20.21	0.37
CONSOLIDATED MINERALS FLUID BED REACTOR	11.57	393.800	3096.300	46.33	299.7	12.14	1.77
CONSOLIDATED MINERALS KILNS 3, 4 & 5	15.43	393.800	3096.300	46.33	298.0	13.17	1.77
EVANS BOILER	28.70	383.300	3135.800	12.20	505.0	11.90	1.00
EVANS DRYER	34.00	383.300	3135.800	25.90	346.0	17.30	1.00
EVANS PACKING	0.20	383.300	3135.800	12.30	466.2	9.20	0.40
FARMLAND	2.33	410.330	3079.655	28.96	605.2	3.58	1.68
FARMLAND SULFUR SYSTEM (EXISTING)	0.39	410.330	3079.655	12.19	366.3	2.67	0.61
FARMLAND SULFUR SYSTEM (PROPOSED)	0.16	410.330	3079.655	12.19	366.3	2.67	0.61
FARMLAND 3 & 4 H2SO4 (2100 TPD)	88.20	410.330	3079.655	30.48	355.0	12.02	2.29
FARMLAND 5 H2SO4 (2800 TPD)	58.80	410.330	3079.655	45.72	355.0	13.42	2.44
FARMLAND 6 H2SO4 (2800 TPD)	57.75	410.516	3079.624	45.72	355.0	10.60	2.74
FPC BARTOW PEAKING 1-4	192.89	342.400	3082.600	13.70	772.0	22.30	5.30
FPC BARTOW PIPELINE HEATER (U04)	1.80	342.400	3082.600	9.10	541.0	5.20	0.90
FPC BARTOW UNIT 1 & 2 (U01&02)	896.80	342.400	3082.600	91.40	429.0	36.30	2.70
FPC BARTOW UNIT 3 (U03)	710.54	342.400	3082.600	91.40	408.0	34.40	3.40
FPC BAYBORO PEAKING 1-4	197.80	338.800	3071.300	12.20	755.0	6.40	7.00
FPC HIGGINS OTHER UNITS	25.21	336.500	3098.400	16.76	727.4	113.47	4.60
FPC HIGGINS UNIT 3	129.90	336.500	3098.400	53.00	423.0	7.30	3.80
FPC HIGGINS UNITS 1&2	192.20	336.500	3098.400	53.00	429.0	8.20	3.80
FPC INT. CITY PROP TURBINES/7EA AT 20 DEG F	124.40	446.300	3126.000	15.24	819.8	56.21	4.21
FPC INT. CITY PROP TURBINES/7FA AT 20 DEG F	110.40	446.300	3126.000	15.24	880.8	32.07	7.04
FPC OSCEOLA PEAKING 1-6	273.06	446.300	3126.000	7.90	703.7	18.06	4.24
FPC OSCEOLA PEAKING 7-10	111.88	446.300	3126.000	15.20	834.8	0.05	4.21
FPC OSCEOLA PEAKING 11-12	102.56	446.300	3126.000	15.2	895.9	0.03	7.04

Table 2-4
Class II Area Sulfur Dioxide Emitting Facilities

SO2 FAAQS SOURCE INVENTORY		A A Q S					
US-AGRI CHEMICALS CORP.							
SOURCE DESCRIPTION	Emissions (g/s)	UTM COORDINATES (km		Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
		EAST	NORTH				
FPC POLK	24.7	414.400	3073.910	34.40	400.0	40.50	4.10
FPL MANATEE UNIT 1 & 2 (U01&02)	2397.80	367.200	3054.100	152.10	426.0	17.10	8.00
GULF COAST LEAD (U01)	48.45	364.000	3093.500	29.57	344.1	37.59	0.61
GULF COAST LEAD	0.75	364.000	3093.500	8.84	309.1	20.85	0.34
HARDEE	277.60	404.800	3057.400	22.90	389.0	23.90	4.88
IMC - AGRICO /NICHOLS/CONSERVE (2500 TPD @	52.50	398.400	3084.200	45.70	352.0	12.00	2.30
IMC - AGRICO /NICHOLS/CONSERVE DAP DRYER	1.01	398.400	3084.200	24.40	333.0	23.10	1.07
IMC - AGRICO /NICHOLS/CONSERVE DRYER	3.34	398.400	3084.200	24.69	327.4	3.77	2.29
IMC-AGRICCO/NEW WALES AFI PLANT	0.20	396.600	3078.900	52.40	322.0	13.10	2.40
IMC-AGRICCO/NEW WALES DAP	5.54	396.600	3078.900	36.60	319.1	20.15	1.83
IMC-AGRICCO/NEW WALES DAP 1	3.70	396.700	3079.400	40.50	314.0	14.90	2.10
IMC-AGRICCO/NEW WALES GTSP	9.20	396.700	3079.400	40.50	316.0	20.40	1.80
IMC-AGRICCO/NEW WALES MULTIPHOS	4.80	396.600	3078.900	52.40	314.0	15.80	1.40
IMC-AGRICCO/NEW WALES SAP #1,2,3 (3 AT 2900	182.85	396.600	3078.900	61.00	350.0	15.31	2.60
IMC-AGRICCO/NEW WALES SAP #4,5 (2 AT 2900 TP	121.90	396.600	3078.900	60.70	350.0	15.31	2.60
IMC-AGRICCO/NORALYN	13.30	414.700	3080.300	18.30	341.0	8.50	2.80
IMC-AGRICCO/NORALYN	1.20	414.700	3080.300	23.20	394.0	17.10	2.00
IMC-AGRICCO/SO. PIERCE DAP PLANT	4.41	407.500	3071.330	38.10	328.0	14.60	3.10
IMC-AGRICCO/SO. PIERCE GTSP PLANT	16.60	407.500	3071.300	42.70	305.0	10.40	2.70
IMC-AGRICCO/SO. PIERCE H2SO4 (2 @ 2700 TPD)	125.99	407.500	3071.300	44.18	350.0	13.29	2.74
KISSIMMEE UTIL (EXISTING)	32.10	460.100	3129.300	18.30	422.0	38.00	3.66
KISSIMMEE UTIL (U05)	2.09	460.100	3129.300	16.2	477.6	2.87	0.85
KISSIMMEE UTIL (U09&10)	3.69	460.100	3129.300	8.5	505.4	2.43	0.91
KISSIMMEE UTIL (U11-15)	7.05	460.100	3129.300	13.4	505.4	1.92	0.73
LAFARGE CORP.	583.37	357.7	3090.6	44.50	494.8	40.24	2.44
LAKELAND LARSEN	0.20	409.300	3102.800	9.75	699.7	171.38	1.52
LAKELAND LARSEN 4	93.37	409.300	3102.800	50.29	433.0	5.64	3.05
LAKELAND LARSEN 5	0.40	409.300	3102.800	50.29	444.1	6.47	3.05
LAKELAND LARSEN 6	0.35	409.300	3102.800	50.29	444.1	6.47	3.05
LAKELAND LARSEN 7	18.71	409.300	3102.800	50.29	444.1	6.86	3.05
LAKELAND LARSEN CT	29.11	409.300	3102.800	30.48	783.2	28.22	5.79
LAKELAND MCINTOSH	8.32	409.200	3106.200	10.97	791.3	0.39	2.80
LAKELAND MCINTOSH	2.94	409.200	3106.200	6.10	652.4	23.54	0.79
LAKELAND MCINTOSH 1	341.56	409.300	3106.200	45.72	419.1	23.96	2.74
LAKELAND MCINTOSH 2	25.68	409.200	3106.200	47.55	402.4	21.29	3.17
LAKELAND MCINTOSH 3	500.10	409.200	3106.200	76.20	350.0	19.70	4.88
MOBIL BIG-4 BOILER (UAA)	0.60	394.800	3069.770	8.20	505.0	7.57	0.41
MOBIL BIG-4 DRYER (U01)	16.38	394.850	3069.770	30.50	334.0	7.26	1.82
MOBIL NICHOLS DRYER 1	12.73	398.300	3084.300	25.90	342.0	14.10	2.29
MOBIL NICHOLS DRYER 2	12.73	398.300	3084.300	25.90	342.0	14.10	2.29
MOBIL NICHOLS DRYER 4	2.44	398.300	3084.300	25.90	339.0	16.05	2.29
MULBERRY COGENERATION CT	13.40	413.600	3080.600	38.10	377.0	9.31	1.98
MULBERRY PROSPHATES/ROYSER (1700 TPD @	35.70	406.700	3085.200	61.00	360.0	12.20	2.13
MULBERRY PROSPHATES/ROYSER DAP	9.30	406.700	3085.200	31.10	316.0	7.90	2.70
MULBERRY PROSPHATES/ROYSER SAP	25.70	406.753	3085.151	60.96	343.2	10.01	1.81
PINELLAS RRF	62.24	335.300	3084.400	49.10	522.0	27.72	2.74
PINEY POINT/ROYSER DAP	7.40	348.700	3057.300	61.00	328.0	15.50	3.00
PINEY POINT/ROYSER SAP	42.02	348.700	3057.300	60.98	350.0	8.08	2.36
SEBRING UTIL 1 & 2	111.20	464.300	3035.400	45.70	446.0	24.10	1.80
SECI HARDEE (50% I)	13.00	404.900	3057.400	27.40	414.0	14.09	5.79
TECO BIG BEND TURBINE 1 (U07)	11.30	361.900	3075.000	10.70	816.0	136.20	1.50
TECO BIG BEND TURBINE 2&3 (U05&06)	79.12	361.900	3075.000	22.86	770.8	18.74	4.27
TECO BIG BEND UNIT 1&2 (U01&02)	3309.00	361.900	3075.000	149.35	404.7	13.74	7.32
TECO BIG BEND UNIT 2 (U02)	3275.32	361.900	3075.000	149.35	404.7	13.02	7.32
TECO BIG BEND UNIT 3 (U03)	3372.92	361.900	3075.000	149.35	410.2	14.47	7.32
TECO BIG BEND UNIT 4 (U04)	654.70	361.900	3075.000	149.40	342.2	19.81	7.32

Table 2-4
Class II Area Sulfur Dioxide Emitting Facilities

SO2 FAAQS SOURCE INVENTORY US-AGRI CHEMICALS CORP.		A A Q S					
SOURCE DESCRIPTION	Emissions (g/s)	UTM COORDINATES (km)		Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
		EAST	NORTH				
TECO GANNON 1 & 2 (U01&02)	760.86	360.000	3087.500	93.27	420.8	30.85	3.05
TECO GANNON 3 (U03)	483.96	360.000	3087.500	93.27	419.7	38.64	3.23
TECO GANNON 4 (U04)	567.71	360.000	3087.500	93.27	426.9	22.97	3.05
TECO GANNON 5 (U05)	691.28	360.000	3087.500	93.27	423.6	23.18	4.45
TECO GANNON 6 (U06)	1149.41	360.000	3087.500	93.27	433.0	24.74	5.36
TECO GANNON TURBINE (U07)	11.90	360.000	3087.500	10.67	816.3	136.61	1.52
TECO HOOKERS POINT 1 & 2 (U01&02)	82.60	358.000	3091.000	85.30	419.0	6.10	3.40
TECO HOOKERS POINT 3 & 4 (U03&04)	114.00	358.000	3091.000	85.30	434.0	7.90	3.70
TECO HOOKERS POINT 5 (U05)	84.60	358.000	3091.000	85.30	448.0	11.00	3.40
TECO HOOKERS POINT 6 (U06)	107.90	358.000	3091.000	85.30	434.0	22.30	2.90
TECO POLK POWER	49.68	402.450	3067.350	45.72	400.0	16.76	5.79
TECO POLK POWER	8.20	402.328	3067.472	60.70	1033.0	10.70	1.40
TECO POLK POWER	5.42	402.488	3066.954	22.86	812.0	27.43	5.49
TECO POLK POWER	1.27	402.298	3067.297	60.70	1033.0	9.10	1.10
TECO POLK POWER	0.30	402.420	3067.320	6.10	533.0	13.10	0.91
TECO POLK POWER	0.016	402.016	3067.640	22.90	1000.0	20.00	1.20
TECO POLK POWER 4 CC	17.60	402.450	3067.216	45.72	389.0	16.15	4.42
TECO POLK POWER 5 CT	33.40	402.488	3066.914	22.86	785.0	31.39	5.49
USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	92.48	415.940	3068.930	53.40	355.0	10.00	2.59

Table 2-5
Class I AND CLASS II Area Sulfur Dioxide Emitting PSD Facilities

SOURCE DESCRIPTION	PSD - CLASS I						
	Emissions	UTM COORDINATES (km)		Height	Temp.	Velocity	Diameter
	(g/s)	EAST	NORTH	(m)	(K)	(m/s)	(m)
Class 1 SO2 SOURCE INVENTORY US-AGRI CHEMICALS CORP.							
ASPHALT PAVERS 3 (0700-1800)	2.25	359.900	3162.400	12.20	377.0	10.58	1.37
ASPHALT PAVERS 4 (0700-1800)	1.76	361.400	3168.400	8.50	357.4	10.95	1.08
AUBURNDALE @ 0.5% SULFUR	6.35	420.800	3103.300	48.80	411.0	14.30	5.49
BORDEN DRYER	-6.48	394.800	3069.600	30.48	344.0	14.79	1.82
BORDEN DRYER	-5.29	414.500	3109.000	17.07	333.0	8.26	2.34
BREWSTER/IMPERIAL DRYER	-19.26	404.800	3069.500	27.44	339.0	15.25	2.29
CARGILL/GARDINIER DRYER	-28.89	363.400	3082.400	20.73	310.0	13.12	1.07
CARGILL/GARDINIER SAP #4,5,6	-187.70	363.400	3082.400	22.60	363.0	7.00	1.52
CARGILL/GARDINIER SAP #7	-26.25	363.400	3082.400	45.60	340.0	12.64	2.29
CARGILL/GARDINIER SAP #8	-41.16	363.400	3082.400	45.60	339.0	13.93	2.44
CARGILL/GARDINIER SAP #9	-54.60	363.400	3082.400	45.60	350.0	10.30	2.74
CARGILL/GARDINIER SAP #9 (INCR IN9 OF8/9 U06)	67.20	363.400	3082.400	45.60	350.0	12.66	2.74
CARGILL/SEMINOLE/W.R. GRACE DRYER	-39.66	409.770	3086.990	15.24	327.0	17.32	2.04
CARGILL/SEMINOLE/W.R. GRACE SAP #1 & #2	-216.00	409.770	3086.990	45.72	352.0	16.50	1.37
CARGILL/SEMINOLE/W.R. GRACE SAP #3	-52.50	409.770	3086.990	45.72	311.0	16.70	1.52
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	-121.07	409.770	3086.990	60.96	347.0	25.10	1.52
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	143.64	409.770	3086.990	60.96	347.0	34.00	1.52
CF BARTOW DAP 1-3	3.97	408.500	3082.500	36.40	339.0	16.11	2.13
CF BARTOW H2SO4 1 (400 TPD)	-60.90	408.500	3082.500	30.49	350.0	12.20	1.37
CF BARTOW H2SO4 2 (500 TPD)	-110.25	408.500	3082.500	30.49	350.0	10.37	1.68
CF BARTOW H2SO4 3 (600 TPD)	-107.10	408.500	3082.500	30.49	364.0	4.27	2.74
CF BARTOW H2SO4 4 (900 TPD)	-174.83	408.500	3082.500	30.49	358.0	7.93	2.13
CF BARTOW H2SO4 5 (2400 TPD)	50.40	408.500	3082.500	63.41	361.0	10.88	2.13
CF BARTOW H2SO4 5 (900 TPD)	-226.80	408.500	3082.500	63.41	358.0	10.67	2.13
CF BARTOW H2SO4 6 (2400 TPD)	50.40	408.500	3082.500	63.41	370.0	7.28	2.13
CF BARTOW H2SO4 6 (900 TPD)	-170.10	408.500	3082.500	63.41	359.0	10.37	2.13
CF BARTOW H2SO4 7 (2000 TPD)	42.00	408.500	3082.500	67.10	351.0	9.80	2.40
CF PLANT CITY BASELINE A & B	-105.00	388.000	3116.000	23.80	316.0	18.80	1.52
CF PLANT CITY BASELINE C & D	-100.80	388.000	3116.000	60.35	353.0	16.40	2.44
CF PLANT CITY H2SO4 A&B (U02&03)	88.20	388.000	3116.000	33.50	316.0	19.50	1.52
CF PLANT CITY PROPOSED C & D (U07-08)	109.20	388.000	3116.000	60.35	353.0	17.77	2.44
CLM CHLORIDE METALS	13.00	361.800	3088.300	30.00	375.0	20.10	0.61
COUCH CONST-ODESSA (ASPHALT)	7.25	340.700	3119.500	9.14	436.0	22.30	1.40
COUCH CONST-ZEPHYRHILLS (ASPHALT)	3.54	390.300	3129.400	6.10	422.0	21.00	1.38
DOLIME BOILER	-4.52	404.813	3069.548	27.43	494.1	7.25	0.61
DOLIME DRYER	-5.68	404.813	3069.548	27.43	333.0	20.67	1.52
DRIS PAVING (ASPHALT)	0.23	340.600	3119.200	12.20	339.0	6.47	3.05
ER JAHNA (LIME DRYER)	0.82	386.700	3155.800	10.67	327.0	8.99	1.83
ESTECH/SWIFT DRYER	-23.94	411.500	3074.200	18.29	339.0	8.47	2.95
ESTECH/SWIFT DRYER	-22.80	411.500	3074.200	18.75	340.0	5.06	2.95
ESTECH/SWIFT SAP (610 TPD & 29 LB/TON)	-92.87	411.500	3074.200	30.79	358.0	3.90	2.13
EVANS PACKING	0.20	383.300	3135.800	12.30	466.2	9.20	0.40
FARMLAND 1,2 H2SO4	-83.98	410.330	3079.655	30.48	311.0	20.18	1.37
FARMLAND 3 & 4 H2SO4 (1620 TPD)	-67.16	410.330	3079.655	30.48	355.0	9.27	2.29
FARMLAND 3 & 4 H2SO4 (2100 TPD)	88.20	410.330	3079.655	30.48	355.0	12.02	2.29
FARMLAND 3 H2SO4	-44.1	410.268	3079.660	30.48	355.0	20.18	1.37
FARMLAND 5 H2SO4 (2400 TPD)	-50.40	410.330	3079.655	45.72	355.0	11.55	2.44
FARMLAND 5 H2SO4 (2800 TPD)	58.80	410.330	3079.655	45.72	355.0	13.42	2.44
FARMLAND 6 H2SO4 (2800 TPD)	57.75	410.516	3079.624	45.72	355.0	10.60	2.74
FDOC BOILER #3	2.99	382.200	3166.100	9.14	478.0	4.57	0.61
FLA MINING & MATERIALS KILN 2	1.45	356.200	3169.900	32.01	394.0	9.90	4.27
FLORIDA CRUSHED STONE KILN 1	98.40	360.008	3162.398	97.60	442.0	23.23	4.88
FPC CRYSTAL RIVER 1	-314.00	334.200	3204.500	152.00	422.0	42.10	4.57
FPC CRYSTAL RIVER 2	-1859.00	334.200	3204.500	153.00	422.0	42.10	4.88
FPC CRYSTAL RIVER 4	1008.80	334.200	3204.500	182.90	398.0	21.00	6.90
FPC CRYSTAL RIVER 5	1008.80	334.200	3204.500	182.90	398.0	21.00	6.90
FPC DEBARY PROP TURBINES AT 20 DEG F	466.40	467.500	3197.200	15.24	819.8	56.21	4.21
FPC INT. CITY PROP TURBINES/7EA AT 20 DEG F	124.40	446.300	3126.000	15.24	819.8	56.21	4.21
FPC INT. CITY PROP TURBINES/7FA AT 20 DEG F	110.40	446.300	3126.000	15.24	880.8	32.07	7.04

Table 2-5
Class I AND CLASS II Area Sulfur Dioxide Emitting PSD Facilities

Class 1 SO2 SOURCE INVENTORY US-AGRI CHEMICALS CORP.	PSD - CLASS I						
	Emissions (g/s)	UTM COORDINATES (km)		Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
SOURCE DESCRIPTION		EAST	NORTH				
FPC OSCEOLA PEAKING 11-12	102.56	446.300	3126.000	15.2	895.9	0.03	7.04
FPC OSCEOLA PEAKING 7-10	111.88	446.300	3126.000	15.20	834.8	0.05	4.21
FPC POLK	24.7	414.400	3073.910	34.40	400.0	40.50	4.10
GAINESVILLE REGIONAL UTILITIES	5.65	365.500	3292.700	15.80	811.0	46.02	4.30
GEN. PORT. CEMENT KILN 4	-62.99	358.000	3090.600	35.97	505.2	17.61	2.74
GEN. PORT. CEMENT KILN 5	-69.30	358.000	3090.600	45.42	494.1	5.80	3.81
HARDEE	277.60	404.800	3057.400	22.90	389.0	23.90	4.88
HILLS. CO. RESOURCE RECOVERY	21.40	368.200	3092.700	50.00	491.0	18.30	1.80
HOSP CORP OF AM BOILER #1	0.08	333.400	3141.000	10.98	533.0	4.00	0.31
HOSP CORP OF AM BOILER #2	0.08	333.400	3141.000	10.98	533.0	4.00	0.31
IMC - AGRICO /NICHOLS/CONSERVE (2 @ 1300 TPD & 4 LB/TO	-54.60	398.400	3084.200	30.50	308.0	18.90	1.80
IMC - AGRICO /NICHOLS/CONSERVE (2000 TPD @ 4 LB/TON)	-42.00	398.400	3084.200	45.70	352.0	10.30	2.30
IMC - AGRICO /NICHOLS/CONSERVE (2500 TPD @ 4 LB/TON)	52.50	398.400	3084.200	45.70	352.0	12.00	2.30
IMC - AGRICO /NICHOLS/CONSERVE ROCK DRYER	-3.88	398.400	3084.200	24.40	339.0	12.90	1.52
IMC-AGRIC/O/NEW WALES AFI PLANT	0.20	396.600	3078.900	52.40	322.0	13.10	2.40
IMC-AGRIC/O/NEW WALES DAP	5.54	396.600	3078.900	36.60	319.1	20.15	1.83
IMC-AGRIC/O/NEW WALES MULTIPHOS	4.80	396.600	3078.900	52.40	314.0	15.80	1.40
IMC-AGRIC/O/NEW WALES ROCK DRYER	-34.27	396.600	3078.900	21.00	347.0	18.60	2.13
IMC-AGRIC/O/NEW WALES SAP #1,2,3 (3 AT 2900 TPD)	182.85	396.600	3078.900	61.00	350.0	15.31	2.60
IMC-AGRIC/O/NEW WALES SAP #1,2,3 BASELINE	-146.00	396.600	3078.900	61.00	350.0	14.28	2.60
IMC-AGRIC/O/NEW WALES SAP #4,5 (2 AT 2900 TPD)	121.90	396.600	3078.900	60.70	350.0	15.31	2.60
IMC-AGRIC/O/PIERCE DRYERS 1,2	-24.32	404.100	3078.950	24.38	339.0	12.94	1.52
IMC-AGRIC/O/PIERCE DRYERS 3,4	-23.00	404.100	3078.950	24.38	339.0	18.82	2.43
IMC-AGRIC/O/SO. PIERCE DAP PLANT	4.41	407.500	3071.300	38.10	328.0	14.60	3.10
IMC-AGRIC/O/SO. PIERCE H2SO4 (2 @ 2700 TPD)	125.99	407.500	3071.300	44.18	350.0	13.29	2.74
IMC-AGRIC/O/SO. PIERCE H2SO4 (2 @1800 TPD)	-75.60	407.500	3071.300	45.73	350.0	26.40	1.60
KISSIMMEE KANE IS. @ 0.3% SULFUR	29.40	447.680	3127.920	12.20	654.0	29.10	3.05
KISSIMMEE UTIL (EXISTING)	32.10	460.100	3129.300	18.30	422.0	38.00	3.66
LAKE CO. COGEN. FACILITY PROPOSED	5.04	434.000	3198.800	30.48	384.3	17.13	3.35
LAKELAND LARSEN CT	29.11	409.300	3102.800	30.48	783.2	28.22	5.79
LAKELAND MCINTOSH 3	500.10	409.200	3106.200	76.20	350.0	19.70	4.88
MOBIL BIG-4 BOILER (UAA)	0.60	394.800	3069.770	8.20	505.0	7.57	0.41
MOBIL BIG-4 DRYER (U01)	16.38	394.850	3069.770	30.50	334.0	7.26	1.82
MOBIL NICHOLS 75 HP BOILER	-0.87	398.300	3084.300	4.00	522.0	1.80	0.80
MOBIL NICHOLS CALCINER	-13.89	398.300	3084.300	28.40	340.0	19.24	1.09
MOBIL NICHOLS DRYER 4	2.44	398.300	3084.300	25.90	339.0	16.05	2.29
MOBILE ELECTROPHOS 400HP BOILER	-6.53	405.600	3079.400	7.32	464.0	3.23	0.91
MOBILE ELECTROPHOS 600HP BOILER	-10.05	405.600	3079.400	6.10	464.0	7.71	0.91
MOBILE ELECTROPHOS CALCINER	-7.11	405.600	3079.400	25.61	306.0	6.97	2.13
MOBILE ELECTROPHOS COKE DRYER	-3.17	405.600	3079.400	18.29	322.0	22.87	0.70
MOBILE ELECTROPHOS FURNACE (31.25 TPH ROCK @ 0.3% S)	-47.25	405.600	3079.400	29.27	314.0	8.52	2.13
MOBILE ELECTROPHOS ROCK DRYER	-21.81	405.600	3079.400	18.29	350.0	6.79	1.83
MULBERRY COGENERATION CT	13.40	413.600	3080.600	38.10	377.0	9.31	1.98
MULBERRY PROSPHATES/ROYSTER (1003 TPD @ 29 LB/TON)	-152.71	406.700	3085.200	51.00	356.0	9.90	2.13
MULBERRY PROSPHATES/ROYSTER (1700 TPD @ 4 LB/TON)	35.70	406.700	3085.200	61.00	360.0	12.20	2.13
MULBERRY PROSPHATES/ROYSTER SAP	25.70	406.753	3085.151	60.96	343.2	10.01	1.81
NEW PORT RICHEY HOSP BLR#1	0.06	331.200	3124.500	10.98	544.0	3.88	0.31
NEW PORT RICHEY HOSP BLR#2	0.03	331.200	3124.500	10.98	544.0	3.88	0.31
OMAN CONST (ASPHALT)	2.09	359.800	3164.900	7.62	347.0	6.29	1.83
OVERSTREET PAV. (ASPHALT)	3.67	355.900	3143.700	9.14	408.0	16.00	1.30
PANDA KATHLEEN	0.73	398.700	3101.400	45.72	372.0	14.57	5.33
PASCO CO. COGEN. FACILITY PROPOSED	5.04	385.600	3139.000	30.48	384.3	17.13	3.35
PASCO COUNTY RRF	14.10	347.100	3139.200	83.82	394.3	15.70	3.05
PINELLAS RRF	62.24	335.300	3084.400	49.10	522.0	27.72	2.74
REEDY CREEK GENERATORS 1 & 2 EPCOT	3.66	442.000	3139.000	5.20	616.5	44.12	0.55
REEDY CREEK SERVICES	0.15	443.000	3144.300	19.80	414.0	15.56	3.41
RIDGE COGENERATION	13.80	416.700	3100.400	99.10	350.0	14.54	3.05
SECI HARDEE (50% I)	13.00	404.900	3057.400	27.40	414.0	14.09	5.79
STAUFFER BOILER	-4.86	325.600	3116.700	7.32	464.0	3.23	0.91

Table 2-5
Class I AND CLASS II Area Sulfur Dioxide Emitting PSD Facilities

SOURCE DESCRIPTION	Emissions (g/s)	UTM COORDINATES (km)		Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
		EAST	NORTH				
Class 1 SO2 SOURCE INVENTORY		P S D - C L A S S I					
US-AGRI CHEMICALS CORP.							
STAUFFER DRYER	-1.50	325.600	3116.700	18.29	322.0	22.87	0.70
STAUFFER FURNACE	-50.93	325.600	3116.700	49.00	335.0	3.60	1.20
STAUFFER KILN	-7.36	325.600	3116.700	25.61	306.0	6.97	2.13
STAUFFER ROASTER	-0.45	325.600	3116.700	25.61	322.0	6.97	0.91
TAMPA MCKAY BAY RRF 1-4 (U01-04)	21.40	360.000	3091.000	48.80	555.0	29.60	1.80
TECO BIG BEND UNIT 3 (24-HR)	-1218.00	361.900	3075.000	149.40	418.0	14.33	7.32
TECO BIG BEND UNIT 4 (U04)	654.70	361.900	3075.000	149.40	342.2	19.81	7.32
TECO BIG BEND UNITS 1&2 (24-HR)	-2436.00	361.900	3075.000	149.40	422.0	28.65	7.32
TECO POLK POWER	0.016	402.016	3067.640	22.90	1000.0	20.00	1.20
TECO POLK POWER	0.30	402.420	3067.320	6.10	533.0	13.10	0.91
TECO POLK POWER	1.27	402.298	3067.297	60.70	1033.0	9.10	1.10
TECO POLK POWER	5.42	402.488	3066.954	22.86	812.0	27.43	5.49
TECO POLK POWER	8.20	402.328	3067.472	60.70	1033.0	10.70	1.40
TECO POLK POWER	49.68	402.450	3067.350	45.72	400.0	16.76	5.79
TECO POLK POWER 4 CC	17.60	402.450	3067.216	45.72	389.0	16.15	4.42
TECO POLK POWER 5 CT	33.40	402.488	3066.914	22.86	785.0	31.39	5.49
USS AGRI-CHEM BARTOW DRYER	-3.41	413.200	3086.300	15.80	332.0	10.01	1.83
USS AGRI-CHEM BARTOW SAP (800 TPD & 10 LB/TON)	-42.00	413.200	3086.300	28.96	305.0	7.50	2.12
USSAC FT MEADE GTSP	-18.27	416.000	3069.000	28.35	330.0	17.60	1.52
USSAC FT MEADE H2SO4 (1500 TPD @ 10 LB/TON)	-78.80	416.210	3068.740	29.00	314.0	6.77	3.02
USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	92.48	415.940	3068.930	53.40	355.0	10.00	2.59

Table 2-5
Class I AND CLASS II Area Sulfur Dioxide Emitting PSD Facilities

SOURCE DESCRIPTION	PSD - CLASS 2						
	Emissions (g/s)	UTM COORDINATES (km)		Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
		EAST	NORTH				
Class 2 SO2 SOURCE INVENTORY US-AGRI CHEMICALS CORP.							
BREWSTER/IMPERIAL DRYER	✓ -19.26	404.800	3069.500	27.44	339.0	15.25	2.29
CARGILL/GARDINIER DRYER	✓ -28.89	363.400	3082.400	20.73	310.0	13.12	1.07
CARGILL/GARDINIER SAP #4,5,6	-187.70	363.400	3082.400	22.60	363.0	7.00	1.52
CARGILL/GARDINIER SAP #7	-26.25	363.400	3082.400	45.60	340.0	12.64	2.29
CARGILL/GARDINIER SAP #8	-41.16	363.400	3082.400	45.60	339.0	13.93	2.44
CARGILL/GARDINIER SAP #9	-54.60	363.400	3082.400	45.60	350.0	10.30	2.74
CARGILL/GARDINIER SAP #9 (INCR IN9 OF8/9 U06)	67.20	363.400	3082.400	45.60	350.0	12.66	2.74
CARGILL/SEMINOLE/W.R. GRACE DRYER	-39.66	409.770	3086.990	15.24	327.0	17.32	2.04
CARGILL/SEMINOLE/W.R. GRACE SAP #1 & #2	-216.00	409.770	3086.990	45.72	352.0	16.50	1.37
CARGILL/SEMINOLE/W.R. GRACE SAP #3	-52.50	409.770	3086.990	45.72	311.0	16.70	1.52
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	143.64	409.770	3086.990	60.96	347.0	34.00	1.52
CARGILL/SEMINOLE/W.R. GRACE SAP 4, 5 & 6	-121.07	409.770	3086.990	60.96	347.0	25.10	1.52
CF BARTOW DAP 1-3	3.97	408.500	3082.500	36.40	339.0	16.11	2.13
CF BARTOW H2SO4 1 (400 TPD)	-60.90	408.500	3082.500	30.49	350.0	12.20	1.37
CF BARTOW H2SO4 2 (500 TPD)	-110.25	408.500	3082.500	30.49	350.0	10.37	1.68
CF BARTOW H2SO4 3 (600 TPD)	-107.10	408.500	3082.500	30.49	364.0	4.27	2.74
CF BARTOW H2SO4 4 (900 TPD)	-174.83	408.500	3082.500	30.49	358.0	7.93	2.13
CF BARTOW H2SO4 5 (2400 TPD)	50.40	408.500	3082.500	63.41	361.0	10.88	2.13
CF BARTOW H2SO4 5 (900 TPD)	-226.80	408.500	3082.500	63.41	358.0	10.67	2.13
CF BARTOW H2SO4 6 (2400 TPD)	50.40	408.500	3082.500	63.41	370.0	7.28	2.13
CF BARTOW H2SO4 6 (900 TPD)	-170.10	408.500	3082.500	63.41	359.0	10.37	2.13
CF BARTOW H2SO4 7 (2000 TPD)	42.00	408.500	3082.500	67.10	351.0	9.80	2.40
CF PLANT CITY BASELINE A & B	-105.00	388.000	3116.000	23.80	316.0	18.80	1.52
CF PLANT CITY BASELINE C & D	-100.80	388.000	3116.000	60.35	353.0	16.40	2.44
CF PLANT CITY H2SO4 A&B (U02&03)	88.20	388.000	3116.000	33.50	316.0	19.50	1.52
CF PLANT CITY PROPOSED C & D (U07-08)	109.20	388.000	3116.000	60.35	353.0	17.77	2.44
DOLIME BOILER	-4.52	404.813	3069.548	27.43	494.1	7.25	0.61
DOLIME DRYER	-5.68	404.813	3069.548	27.43	333.0	20.67	1.52
ESTECH/SWIFT DRYER	-22.80	411.500	3074.200	18.75	340.0	5.06	2.95
ESTECH/SWIFT DRYER	-23.94	411.500	3074.200	18.29	339.0	8.47	2.95
ESTECH/SWIFT SAP (610 TPD & 29 LB/TON)	-92.87	411.500	3074.200	30.79	358.0	3.90	2.13
FARMLAND 1,2 H2SO4	-83.98	410.330	3079.655	30.48	311.0	20.18	1.37
FARMLAND 3 & 4 H2SO4 (1620 TPD)	-67.16	410.330	3079.655	30.48	355.0	9.27	2.29
FARMLAND 3 & 4 H2SO4 (2100 TPD)	88.20	410.330	3079.655	30.48	355.0	12.02	2.29
FARMLAND 5 H2SO4 (2400 TPD)	-50.40	410.330	3079.655	45.72	355.0	11.55	2.44
FARMLAND 5 H2SO4 (2800 TPD)	58.80	410.330	3079.655	45.72	355.0	13.42	2.44
FARMLAND 3 H2SO4	-44.1	410.268	3079.660	30.48	355.0	12.02	2.29
FARMLAND 6 H2SO4 (2800 TPD)	57.75	410.516	3079.624	45.72	355.0	10.60	2.74
FPC INT. CITY PROP TURBINES/7EA AT 20 DEG F	124.40	446.300	3126.000	15.24	819.8	56.21	4.21
FPC INT. CITY PROP TURBINES/7FA AT 20 DEG F	110.40	446.300	3126.000	15.24	880.8	32.07	7.04
FPC OSCEOLA PEAKING 7-10	111.88	446.300	3126.000	15.20	834.8	0.05	4.21
FPC OSCEOLA PEAKING 11-12	102.56	446.300	3126.000	15.2	895.9	0.03	7.04
FPC POLK	24.7	414.400	3073.910	34.40	400.0	40.50	4.10
GEN. PORT. CEMENT KILN 4	-62.99	358.000	3090.600	35.97	505.2	17.61	2.74
GEN. PORT. CEMENT KILN 5	-69.30	358.000	3090.600	45.42	494.1	5.80	3.81
HARDEE	277.60	404.800	3057.400	22.90	389.0	23.90	4.88
IMC - AGRICO /NICHOLS/CONSERVE (2 @ 1300 TPD & 4 LB/TO	-54.60	398.400	3084.200	30.50	308.0	18.90	1.80
IMC - AGRICO /NICHOLS/CONSERVE (2000 TPD @ 4 LB/TON)	-42.00	398.400	3084.200	45.70	352.0	10.30	2.30
IMC - AGRICO /NICHOLS/CONSERVE (2500 TPD @ 4 LB/TON)	52.50	398.400	3084.200	45.70	352.0	12.00	2.30
IMC - AGRICO /NICHOLS/CONSERVE ROCK DRYER	-3.88	398.400	3084.200	24.40	339.0	12.90	1.52
IMC-AGRICCO/NEW WALES AFI PLANT	0.20	396.600	3078.900	52.40	322.0	13.10	2.40
IMC-AGRICCO/NEW WALES DAP	5.54	396.600	3078.900	36.60	319.1	20.15	1.83
IMC-AGRICCO/NEW WALES MULTIPHOS	4.80	396.600	3078.900	52.40	314.0	15.80	1.40
IMC-AGRICCO/NEW WALES ROCK DRYER	-34.27	396.600	3078.900	21.00	347.0	18.60	2.13
IMC-AGRICCO/NEW WALES SAP #1,2,3 (3 AT 2900 TPD)	182.85	396.600	3078.900	61.00	350.0	15.31	2.60
IMC-AGRICCO/NEW WALES SAP #1,2,3 BASELINE	-146.00	396.600	3078.900	61.00	350.0	14.28	2.60
IMC-AGRICCO/NEW WALES SAP #4,5 (2 AT 2900 TPD)	121.90	396.600	3078.900	60.70	350.0	15.31	2.60
IMC-AGRICCO/PIERCE DRYERS 1,2	✓ -24.32	404.100	3078.950	24.38	339.0	12.94	1.52
IMC-AGRICCO/PIERCE DRYERS 3,4	✓ -23.00	404.100	3078.950	24.38	339.0	18.82	2.43

Table 2-5
Class I AND CLASS II Area Sulfur Dioxide Emitting PSD Facilities

Class 2 SO2 SOURCE INVENTORY US-AGRI CHEMICALS CORP.	PSD - CLASS 2						
	Emissions (g/s)	UTM COORDINATES (km)		Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
SOURCE DESCRIPTION		EAST	NORTH				
IMC-AGRICO/SO. PIERCE DAP PLANT	4.41	407.500	3071.330	38.10	328.0	14.60	3.10
IMC-AGRICO/SO. PIERCE H2SO4 (2 @ 2700 TPD)	125.99	407.500	3071.300	44.18	350.0	13.29	2.74
IMC-AGRICO/SO. PIERCE H2SO4 (2 @1800 TPD)	-75.60	407.500	3071.300	45.73	350.0	26.40	1.60
LAKELAND LARSEN CT	29.11	409.300	3102.800	30.48	783.2	28.22	5.79
LAKELAND MCINTOSH 3	500.10	409.200	3106.200	76.20	350.0	19.70	4.88
MOBIL BIG-4 BOILER (UAA)	0.60	394.800	3069.770	8.20	505.0	7.57	0.41
MOBIL BIG-4 DRYER (U01)	16.38	394.850	3069.770	30.50	334.0	7.26	1.82
MOBIL NICHOLS 75 HP BOILER	-0.87	398.300	3084.300	4.00	522.0	1.80	0.80
MOBIL NICHOLS CALCINER	-13.89	398.300	3084.300	28.40	340.0	19.24	1.09
MOBIL NICHOLS DRYER 4	2.44	398.300	3084.300	25.90	339.0	16.05	2.29
MOBILE ELECTROPHOS 400HP BOILER	-6.53	405.600	3079.400	7.32	464.0	3.23	0.91
MOBILE ELECTROPHOS 600HP BOILER	-10.05	405.600	3079.400	6.10	464.0	7.71	0.91
MOBILE ELECTROPHOS CALCINER	-7.11	405.600	3079.400	25.61	306.0	6.97	2.13
MOBILE ELECTROPHOS COKE DRYER	-3.17	405.600	3079.400	18.29	322.0	22.87	0.70
MOBILE ELECTROPHOS FURNACE (31.25 TPH ROCK @ 0.3% S)	-47.25	405.600	3079.400	29.27	314.0	8.52	2.13
MOBILE ELECTROPHOS ROCK DRYER	-21.81	405.600	3079.400	18.29	350.0	6.79	1.83
MULBERRY COGENERATION CT	13.40	413.600	3080.600	38.10	377.0	9.31	1.98
MULBERRY PROSPHATES/ROYSER (1003 TPD @ 29 LB/TON)	-152.71	406.700	3085.200	51.00	356.0	9.90	2.13
MULBERRY PROSPHATES/ROYSER (1700 TPD @ 4 LB/TON)	35.70	406.700	3085.200	61.00	360.0	12.20	2.13
MULBERRY PROSPHATES/ROYSER SAP	25.70	406.753	3085.151	60.96	343.2	10.01	1.81
SEBRING UTIL 1 & 2	111.20	464.300	3035.400	45.70	446.0	24.10	1.80
SECI HARDEE (50% I)	13.00	404.900	3057.400	27.40	414.0	14.09	5.79
TECO BIG BEND UNIT 3 (24-HR)	-1218.00	361.900	3075.000	149.40	418.0	14.33	7.32
TECO BIG BEND UNIT 4 (U04)	654.70	361.900	3075.000	149.40	342.2	19.81	7.32
TECO BIG BEND UNITS 1&2 (24-HR)	-2436.00	361.900	3075.000	149.40	422.0	28.65	7.32
TECO POLK POWER	49.68	402.450	3067.350	45.72	400.0	16.76	5.79
TECO POLK POWER	8.20	402.328	3067.472	60.70	1033.0	10.70	1.40
TECO POLK POWER	5.42	402.488	3066.954	22.86	812.0	27.43	5.49
TECO POLK POWER	1.27	402.298	3067.297	60.70	1033.0	9.10	1.10
TECO POLK POWER	0.30	402.420	3067.320	6.10	533.0	13.10	0.91
TECO POLK POWER	0.016	402.016	3067.640	22.90	1000.0	20.00	1.20
TECO POLK POWER 4 CC	17.60	402.450	3067.216	45.72	389.0	16.15	4.42
TECO POLK POWER 5 CT	33.40	402.488	3066.914	22.86	785.0	31.39	5.49
USS AGRICHEM BARTOW DRYER	-3.41	413.200	3086.300	15.80	332.0	10.01	1.83
USS AGRICHEM BARTOW SAP (800 TPD & 10 LB/TON)	42.00	413.200	3086.300	28.96	305.0	7.50	2.12
USSAC FT MEADE GTSP	-18.27	416.000	3069.000	28.35	330.0	17.60	1.52
USSAC FT MEADE H2SO4 (1500 TPD @ 10 LB/TON)	78.80	416.210	3068.740	29.00	314.0	6.77	3.02
USSAC FT MEADE H2SO4 1 & 2 (2200 TPD)	92.48	415.940	3068.930	53.40	355.0	10.00	2.59

TABLE 2-6
SUMMARY OF CLASS II AREA SULFUR DIOXIDE IMPACTS ANALYSIS

U.S. AGRI-CHEMICALS CORP.
POLK COUNTY, FLORIDA

AQS 88, INV. OUT

MET DATA	SULFUR DIOXIDE IMPACT (ug/m ³)(1)					
	CLASS II PSD INCREMENT			AAQS		
	ANNUAL	3-HOUR	24-HOUR	ANNUAL	3-HOUR	24-HOUR
1987	0	160.1	29.5	35.6	537.1	182.4
1988	16 km 0	227.1	49.6	31.2	528.9	183.9
1989	24 km 0	256.3	62.7	30.1	597.6	237.9
1990	0	140.3	30.2	31.5	484.6	199.5
1991	0	205.3	32.6	34.7	583.8	191.8
MAXIMUM + Background. (2)	0 (3)	259.3	62.7	48.6	610.6	250.9
INCREMENT & STD.	20	512	91	60	1300	260
STD. EXCEEDED	NO	NO	NO	NO	NO	NO

NOTE:

- (1) All impacts represents the highest-high impact.
- (2) A background concentration of 13 ug/m³, based on a measured annual average from an ambient air monitor near Mulberry, was included in the AAQS. Short-term measurements were not included in order to avoid double counting of impacts of the major sources in the immediate vicinity of the monitor.
- (3) The source inventory for the annual period is increment expanding.

also Mulberry Co. ga

further south east of monitor

← USSAC
Farmland to east
Mulberry due north
CF to west

Monitor is within 2 km of other fertilizer sources

Location of monitor

TABLE 2-7
SUMMARY OF CLASS I AREA SULFUR DIOXIDE IMPACTS ANALYSIS

U.S. AGRI-CHEMICALS CORP.
POLK COUNTY, FLORIDA

PSD Inventory Impacts (using 1990 meteorological data)

*Is this all inclusive
of significant*

3-Hour Results				
Rank	Day/ Hour	Receptor Number	Inventory Contribution (ug/m ³)	USAC Contribution (ug/m ³)
1	D123H7	1	-58.389	1.4684
2	D123H7	12	-63.296	1.2832
3	D123H7	2	-53.207	1.1591
4	D89H4	11	-37.741	1.0926
5	D123H7	4	-44.354	1.0827
6	D89H4	12	-37.438	1.0737
7	D89H4	3	-37.554	1.0451
8	D89H4	2	-37.978	1.0249
9	D123H7	11	-51.427	0.9776
10	D89H4	14	-33.85	0.9668
11	D89H4	5	-36.745	0.9628
12	D89H4	10	-30.939	0.9585
13	D89H4	4	-37.828	0.9546
14	D123H7	3	-43.034	0.9509
15	D89H4	13	-31.005	0.9492
16	D89H4	6	-33.802	0.9176

24 - Hour Results				
Rank	Day	Receptor Number	Inventory Contribution (ug/m ³)	USAC Contribution (ug/m ³)
1	21	11	-13.8970	0.3141
2	21	12	-13.6180	0.3101
3	21	3	-13.7940	0.2923
4	21	10	-12.1780	0.2861
5	21	2	-13.6720	0.2852
6	21	14	-12.9460	0.2835
7	21	13	-12.1340	0.2811
8	21	6	-12.6630	0.2754
9	21	5	-13.5100	0.2749
10	21	7	-11.3150	0.2647
11	21	4	-13.5210	0.2630
12	21	1	-12.1580	0.2517
13	21	9	-9.0740	0.2400
14	124	1	-8.6520	0.2360
15	21	8	-8.5490	0.2311
16	333	1	-8.0290	0.1921

3 DAYS

3.0 GOOD ENGINEERING PRACTICE STACK HEIGHT

The criteria for good engineering practice stack height in Rule 62-210, FAC, states that the height of a stack should not exceed the greater of 65 meters (213) feet or the height of nearby structures plus the lesser of 1.5 times the height or cross-wind width of the nearby structure. This stack height policy is designed to prevent achieving ambient air quality goals solely through the use of excessive stack heights and air dispersion.

Based on this policy, the limiting height for sources addressed in this application is 213 feet. The stack associated with the proposed project are less than 213 feet in height above-grade. This satisfies the good engineering practice (GEP) stack height criteria.

4.0 IMPACTS ON SOILS, VEGETATION AND VISIBILITY

4.1 IMPACT ON SOILS AND VEGETATION

The U. S. Environmental Protection Agency was directed by Congress to develop primary and secondary ambient air quality standards. The primary standards were to protect human health and the secondary standards were to protect the public welfare from any known or anticipated adverse effects of a pollutant. The public welfare was to include soils, vegetation and visibility.

As a basis for promulgating the air quality standards, EPA undertook studies related to the effects of all major air pollutants and published criteria documents summarizing the results of the studies. The studies included in the criteria documents were related to both acute and chronic effects of air pollutants. Based on the results of these studies, the criteria documents recommended air pollutant concentration limits for various periods of time that would protect against both chronic and acute effects of air pollutants with a reasonable margin of safety.

The air quality modeling that has been conducted as a requirement for the PSD application demonstrates that the levels of SO₂ expected in the vicinity of the proposed project are below the ambient air quality standards. As a result, it is reasonable to conclude that there will be no adverse effect to the soils, vegetation or visibility of the area.

The plant property and the surrounding areas are comprised of mining lands (phosphate), flatwoods, marshes, and sloughs. The soils of the area are primarily sandy and are typically low in both clay and silt content. These characteristics and the semi-tropic climatic factors of high temperature and rainfall are the natural factors that determine the terrestrial communities of the region.

The land in the vicinity of the plant supports various plant communities. Much of the natural vegetation on the site and the surrounding areas has been altered due to mining and industrial use; primarily the phosphate fertilizer industry. As a result of mining and industrial activity, there is very little undisturbed land in existence in the vicinity of the

plant. As a result, no adverse impacts from the proposed project are expected on the soils and vegetation in the vicinity of the facility.

4.2 GROWTH RELATED IMPACTS

The proposed modification will require no changes in personnel and minimal other changes to operate the facility. Therefore, no significant growth impacts are expected as a result of the proposed project.

4.3 VISIBILITY IMPACTS

The proposed project will result in an increase in air emissions and therefore has the potential for adverse impacts on visibility.

Visibility impairment analysis was conducted in accordance with guidance from the NPS, using the results of the CALPUFF model. The results, presented in Table 4-1, indicate that there will be no adverse visibility impacts from the proposed project. Details of the visibility analysis are presented in Appendix A.

4.4 IMPACTS ON AIR QUALITY RELATED VALUES FOR CLASS I AREA

The analysis presented in this section addresses the review of the impact of increased emissions on air quality related values associated with the Chassahowitzka Wildlife Refuge, a Class I area located in excess of 100 kilometers northwest of the plant.

4.4.1 Impact on Vegetation

The response of vegetation to air pollutants is influenced by the concentration of the pollutant, the duration of the exposure and the frequency of the exposure. The pattern of exposure expected from a single facility is that of a few episodes of relatively high concentrations inter-dispersed with long periods of no exposure or extremely low concentrations. This is the pattern of exposure that would be expected from SO₂, NO_X and SAM emissions from the proposed project impacting the Class I area.

Vegetation responds to a dose of an air pollutant with a dose being defined as the product of the concentration of the pollutant and the duration of the exposure. The impact of the SO₂ emissions on Chassahowitzka regional vegetation was assessed by comparing pollutant doses that have been projected with air quality modeling to threshold doses reported in the literature.

SO₂ damage to vegetation can be grouped into two general categories: acute and chronic. Acute damage is caused by short-term exposure to relatively high concentrations of SO₂. This damage is usually characterized by a yellowing of leaf tips with a sharp, well-defined separation between the damaged and healthy areas of a leaf. In pine trees, injury usually first occurs at the base of the youngest needles (the newest tissue on the plant).

Damaged plants typically show decreased growth and yield. These effects vary widely between species but studies have shown a rough correlation between the loss and yield and the exposure dose. These studies showed approximately a 10 percent yield loss for each 10-fold increase in SO₂ dose beyond 260 micrograms per cubic meter-hour.

Susceptibility to acute damage varies widely with plant species and also with the time of exposure. For example, alfalfa can tolerate 3250 micrograms per cubic meter for one hour (3250 micrograms per cubic meter-hour dose), but only 1850 micrograms per cubic meter for two hours (3700 micrograms per cubic meter-hour dose). Table 4-2 shows the sulfur dioxide concentration/time thresholds for several plant species common to Florida.

The vegetation in the Chassahowitzka area is characterized by flatwoods, brackish-water, marine and halothyctic terrestrial species. Predominant tree species are slash pine, laurel oak, sweet gum and palm. Other plants in the area include needlegrass rush, seashore saltgrass, marsh hay and red mangrove.

A study of the tolerance of native Florida species to SO₂ (Woltz and Howe, 1981) demonstrated that cypress, slash pine, live oak and mangrove exposed to 1300 micrograms per cubic meter of SO₂ for 8-hours were not visibly damaged. This is consistent with the results reported in Table 4-2. Another study (McLaughlin and Lee, 1974) demonstrated that approximately 20 percent of a broad range of plants ranging from sensitive to tolerant were visibly injured when exposed to a SO₂ concentration of 920 micrograms per cubic meter for a 3-hour period.

Acute injury results from a plants inability to quickly convert absorbed SO₂ into the sulfate ion; an essential nutrient to plants. Chronic injury, on the other hand, results from a build-up of sulfate in tissue to the point where it becomes toxic. This sulfate build-up occurs over a relatively long period of time. Symptoms include a reduction in chlorophyll production resulting in decreased photosynthesis and yellow or reddish areas on leaves in a mottled pattern. In pines, sulfate injury is typically shown first at tips of older needles (the oldest tissue in the needle).

Chronic injury can result from SO₂ exposures that are much lower than is required for acute injury. Unfortunately, there is a lack of quantitative experimental data for long term effects of SO₂ exposure. The lowest average concentration for which chronic injury has been shown is 80 micrograms per cubic meter. The Environmental Protection Agency has therefore established an ambient air quality standard of 80 micrograms per cubic meter, annual average. The Florida Department of Environmental Protection adopted a more conservative standard of 60 micrograms per cubic meter, annual average. The SO₂ impacts from the proposed project are expected to be well below the ambient air quality standards.

The maximum expected concentrations of acid mist in the Chassahowitzka area resulting from the increased emissions from the proposed project are less than four percent of the expected sulfur dioxide impacts. Furthermore, it would be expected that by the time acid mist droplets have traveled over 100 kilometers from the plant to the Chassahowitzka area, the droplets may react with particles in the atmosphere to produce a sulfate salt.

Salt deposition concentrations in coastal areas are in the range of 25-300 pounds per acre per year and may be as high as 4000 pounds per acre per year on exposed shorelines. Sulfates can account for 5 - 6 percent of the total salt; resulting in a deposition rate in the range of 1-200 pounds per acre per year.

One study (Mulchi Armbruster, 1975) demonstrated leaf damage in reduced yields in corn and soybeans with a salt deposition of 169 - 339 pounds per acre per year. Another study (Curtis, 1975) reported that broad leaf plants absorbed greater amounts of salt than do pines, probably due to leaf shape. It has been found that deciduous trees begin to exhibit adverse effects to salt exposure concentrations in the range of 100 micrograms per cubic meter (DeVine, 1975). The same study reported no observed injury to plants with long-term exposures to salt spray of 40 micrograms per cubic meter.

The sulfate concentrations resulting from acid mist emissions from the proposed project are well below concentrations that have been reported to produce vegetation damage.

4.4.2 Impact on Soils

The major soil classification in the Chassahowitzka area is Weeki Wachee-Durbin muck. This is an euic, hyderthermic typic sulfhemist that is characterized by high levels of sulfur and organic matter. This soil is flooded daily with the advent of high tide and the pH ranges between 6.1 and 7.8. The upper level of this soil may contain as much as four percent sulfur (USDA, 1991).

Based upon the expected SO₂ and sulfate concentrations in the Chassahowitzka area resulting from the increased emissions from the plant, it is not expected that there will be any adverse impact on the native soils. A study, coordinated by the National Park Service in 1994, supported this position.

4.4.3 Impacts on Wildlife

As the predicted SO₂ levels are below those known to affect vegetation, the proposed project is not expected to have any adverse impact on the wildlife in the Chassahowitzka area.

4.4.4 Visibility Impairment Analysis

Visibility impairment analysis was performed to determine potential impact of the proposed project in the Chassahowitzka area. Results of the CALPUFF model are used in the analysis. A sample calculation is presented in Table 4-1 to show the procedure used for the analysis. The complete analysis is presented in Appendix A. The results of this analysis indicates that the visibility impacts from the proposed project are below the significant levels determined by the NPS.

TABLE 4-1

VISIBILITY IMPACT ANALYSIS RESULTS

Example Calculation

Background	from the 20% Cleanest Days	
SO2 =	0.00329 ppm =	8.62 ug/m ³
SO4 = SO2 * 1.5 =	12.92	ug/m ³
(NH4)SO4 = 1.1875 * SO4 =	15.35	ug/m ³
NO2 =	0.0085 ppm =	16 ug/m ³
NO3 = 1.348 * NO2 =	21.55	
(NH4)2NO3 = 1.29 * NO3 =	27.80	ug/m ³
(NH4)SO4 + (NH4)2NO3 =	43.15	ug/m ³
PM10 =	22.5	22.5 ug/m ³
Assume 90% RH fRH =	5	
Background extinction =	b back =	238.26 Mm ⁻¹

Source	Impact
	ug/m ³
NO2	0.0007
SO2	0.3140
H2SO4 =	0.01153
SO4 = SO2 * 1.5 =	0.4883
(NH4)2SO4 = 1.375 * SO4 =	0.6714 ug/m ³
(SO2+H2SO4)*1.5*1.375 =	2.14 ug/m ³
NO3 = 1.348 * NO2 =	0.0009 ug/m ³
(NH4)NO3 = 1.29 * NO3 =	0.0012 ug/m ³
PM10 =	0 ug/m ³
Source extinction =	b source 3.363 Mm ⁻¹

Change in Deciview

$Ddv = 10 * \ln (b \text{ back} + b \text{ source} / b \text{ back}) =$	0.140 dv
---	----------

Estimated Maximum = 0.27 dv
 Estimated Minimum = 0 dv
 Estimated Average = 0.01 dv

NOTE: Calculations are based on NPS guidance and are presented in Appendix A.

TABLE 4-2

SENSITIVITY OF VEGETATION TO SULFUR DIOXIDE

CONCENTRATION - TIME EXPOSURES TO
SULFUR DIOXIDE RESULTING IN DAMAGE TO
SEVERAL SPECIES COMMON TO FLORIDA

Sensitive Plants

Poplar	Radish	Cabbage
Lombardy Poplar	Cucumber	Broccoli
Black Willow	Squash	Spinach
Elm	Bean	Wheat
American Elm	Pea	Begonia
Southern pines	Soybean	Zinnia
Red Oak	Cotton	Rubber plant
Black Oak	Eggplant	Bluegrass
Sumac	Celery	Ryegrass

Intermediate Plants

Basswood	Yellow Poplar	Virginia creeper
Red Oxier Dogwood	Sweetgum	Rose
Maples	Locust	Hibiscus
Red Maple	Eastern Cottonwood	Gladiolus
Elm	Saltgrass	Honeysuckle
Pine	Cucumber	Wisteria
White Oak	Tobacco	Chrysanthemum
Pin Oak	Potato	

Tolerant Plants

Juniper	Pine	Gardenia
Ginkgo	Sumac	Citrus
Dogwood	Cantaloupe	Celery
Oak	Corn	
Live Oak	Lily	

(Continued)

TABLE 4-2 (CONTINUED)

Exposure Time, Hours	Concentration Needed to Produce Injury ($\mu\text{g}/\text{m}^3$)		
	Sensitive	Intermediate	Tolerant
0.5	2,620 - 10,480	9,170 - 31,440	>26,200
1.0	1,310 - 7,860	6,550 - 26,200	>20,960
2.0	655 - 5,240	3,930 - 19,650	>15,720
4.0	262 - 2,620	1,310 - 13,100	>10,480
8.0	131 - 1,310	524 - 6,550	> 5,240

5.0 CONCLUSION

It can be concluded from the information in this report that the proposed project described in this report, will not cause or significantly contribute to an exceedance of any air quality standard, PSD increment, or any other provision of Chapter 62, FAC.

REFERENCES

- Curtis, C.R., L.R. Krusbert, T.L. Lauver, and B.A. Francis. 1975. Chalk Point Cooling Tower Project: Field Research on Native Vegetation. Maryland Water Resources Research Center. Maryland Department of Natural Resources - Power Plant Siting Program. p.107.
- McLaughlin, S.B. and N.T. Lee. 1974 Botanical Studies in the Vicinity of the Widows Creek Steam Plant. Review of Air Pollution Effects Studies, 1952-1972, and Results of 1973 Surveys. Internal Report I-EB-74-1. TVA.
- United States Environmental Protection Agency, 1988. Workbook for Plume Visual Impact Screen and Analysis. EPA-450/4-88-015, September 1988.
- United States Department of Agriculture, 1991. Surveys of Hernando and Citrus Counties, Florida. USDA Soil Conservation Service in cooperation with University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations and Soil Science Department.
- Woltz, S.S. and T.K. Howe, 1981. Effects of Coal Burning Emissions on Florida Agriculture. In: The Impact of Increased Coal Use in Florida. Interdisciplinary Center for Aeronomy and (other) Atmospheric Sciences. University of Florida, Gainesville, Florida.

APPENDIX A - CALCULATIONS

USAC Chemicals Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact		Source (NH4)2SO4 ug/m ^3	Source NO2 ug/m ^3	Source (NH4)NO3 ug/m ^3	Source Extinction Mm-1	Change in Deciview ddv dv
				From SO2 Source ug/m ^3	RH Factor					
01/07/1990			7	0						
01/08/1990			8	0						
01/09/1990			9	0						
01/10/1990			10	0						
01/11/1990			11	0						
01/12/1990			12	0						
01/13/1990			13	0						
01/14/1990			14	0						
01/15/1990			15	0						
01/16/1990			16	0						
01/17/1990			17	0						
01/18/1990			18	0						
01/19/1990			19	0						
01/20/1990		118.30	20	0.038575	2.62	0.0825	0.00132	0.0022993	0.2221311	0.019
01/21/1990		118.30	21	0.31405	4.7	0.6715	0.01077	0.0187192	3.2441348	0.271
01/22/1990			22	0						
01/23/1990			23	0						
01/24/1990		118.30	24	0.016382	2.46	0.0350	0.00056	0.0009765	0.0885736	0.007
01/25/1990		118.30	25	0.05133	3.3	0.1098	0.00176	0.0030596	0.3722952	0.031
01/26/1990			26	0						
01/27/1990			27	0						
01/28/1990			28	0						
01/29/1990		118.30	29	0.00133	5.5	0.0028	4.6E-05	7.928E-05	0.0160774	0.001
01/30/1990		118.30	30	0.0609	3.5	0.1302	0.00209	0.00363	0.4684762	0.040
01/31/1990	2.22		31	0						
02/01/1990		118.30	32	0.08259	3.06	0.1766	0.00283	0.0049228	0.5554579	0.047
02/02/1990		118.30	33	0.09025	3.06	0.1930	0.00309	0.0053794	0.6069751	0.051
02/03/1990		118.30	34	0.0685	2.62	0.1465	0.00235	0.004083	0.3944519	0.033
02/04/1990		118.30	35	0.07446	3.3	0.1592	0.00255	0.0044383	0.5400565	0.046
02/05/1990			36	0						
02/06/1990			37	0						
02/07/1990		118.30	38	0.008531	1.82	0.0182	0.00029	0.0005085	0.0341251	0.003
02/08/1990		118.30	39	0.016323	2.22	0.0349	0.00056	0.0009729	0.0796444	0.007
02/09/1990		118.30	40	0.042424	2.22	0.0907	0.00145	0.0025287	0.2069983	0.017
02/10/1990		118.30	41	0.036153	4.34	0.0773	0.00124	0.0021549	0.3448548	0.029
02/11/1990			42	0						
02/12/1990			43	0						
02/13/1990			44	0						
02/14/1990		118.30	45	0.004937	1.66	0.0106	0.00017	0.0002943	0.0180125	0.002
02/15/1990		118.30	46	0.14566	1.86	0.3115	0.00499	0.0086822	0.595464	0.050
02/16/1990		118.30	47	0.14482	2.7	0.3097	0.00496	0.0086321	0.8593984	0.072
02/17/1990			48	0						
02/18/1990			49	0						
02/19/1990		118.30	50	0.11309	2.94	0.2418	0.00388	0.0067408	0.7307583	0.062
02/20/1990			51	0						
02/21/1990			52	0						
02/22/1990		118.30	53	0.09719	2.82	0.2078	0.00333	0.0057931	0.6023833	0.051
02/23/1990		118.30	54	0.13841	5.5	0.2960	0.00475	0.00825	1.6731404	0.140
02/24/1990		118.30	55	0.029208	1.54	0.0625	0.001	0.001741	0.0988609	0.008
02/25/1990			56	0						
02/26/1990			57	0						
02/27/1990			58	0						

USAC Chemicals Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m ^ 3	RH Factor	Source (NH4)2SO4 ug/m ^ 3	Source NO2 ug/m ^ 3	Source (NH4)NO3 ug/m ^ 3	Source Extinction Mm-1	Change in Deciview ddv
02/28/1990	2.22		59	0						
03/01/1990		102.76	60	0						
03/02/1990			61	0						
03/03/1990		102.76	62	0.033206	2.62	0.0710	0.00114	0.0019793	0.1912142	0.019
03/04/1990			63	0						
03/05/1990			64	0						
03/06/1990		102.76	65	0.020726	2.06	0.0443	0.00071	0.0012354	0.0938393	0.009
03/07/1990		102.76	66	0.000938	2.06	0.0020	3.2E-05	5.591E-05	0.0042469	0.000
03/08/1990			67	0						
03/09/1990			68	0						
03/10/1990			69	0						
03/11/1990			70	0						
03/12/1990			71	0						
03/13/1990			72	0						
03/14/1990			73	0						
03/15/1990		102.76	74	0.035775	2.06	0.0765	0.00123	0.0021324	0.1619754	0.016
03/16/1990		102.76	75	0.17975	2.14	0.3844	0.00616	0.0107142	0.8454441	0.082
03/17/1990		102.76	76	0.031814	3.3	0.0680	0.00109	0.0018963	0.2307461	0.022
03/18/1990			77	0						
03/19/1990		102.76	78	1.83E-05	1.74	0.0000	6.3E-07	1.091E-06	6.998E-05	0.000
03/20/1990		102.76	79	0.003639	1.66	0.0078	0.00012	0.0002169	0.0132768	0.001
03/21/1990			80	0						
03/22/1990			81	0						
03/23/1990			82	0						
03/24/1990			83	0						
03/25/1990		102.76	84	0						
03/26/1990		102.76	85	0.015762	2.38	0.0337	0.00054	0.0009395	0.08245	0.008
03/27/1990		102.76	86	0.010511	2.06	0.0225	0.00036	0.0006265	0.0475898	0.005
03/28/1990		102.76	87	0.002115	1.86	0.0045	7.3E-05	0.0001261	0.0086462	0.001
03/29/1990		102.76	88	0.013334	2.22	0.0285	0.00046	0.0007948	0.0650602	0.006
03/30/1990		102.76	89	0.19112	2.3	0.4087	0.00655	0.0113919	0.9661314	0.094
03/31/1990	1.86	102.76	90	0.16731	2.94	0.3578	0.00574	0.0099727	1.0811139	0.105
04/01/1990		101.04	91	0.002113	2.7	0.0045	7.2E-05	0.0001259	0.0125391	0.001
04/02/1990			92	0						
04/03/1990			93	0						
04/04/1990			94	0						
04/05/1990			95	0						
04/06/1990			96	0						
04/07/1990		101.04	97	0						
04/08/1990			98	0						
04/09/1990			99	0						
04/10/1990			100	0						
04/11/1990		101.04	101	0.031206	2.82	0.0667	0.00107	0.0018601	0.1934147	0.019
04/12/1990			102	0						
04/13/1990			103	0						
04/14/1990			104	0						
04/15/1990		101.04	105	0.000521	2.3	0.0011	1.8E-05	3.105E-05	0.0026337	0.000
04/16/1990		101.04	106	0.000802	1.86	0.0017	2.7E-05	4.78E-05	0.0032786	0.000
04/17/1990		101.04	107	0.00542	1.9	0.0116	0.00019	0.0003231	0.0226337	0.002
04/18/1990		101.04	108	0.09368	1.74	0.2003	0.00321	0.0055839	0.35826	0.035
04/19/1990		101.04	109	0.013382	2.3	0.0286	0.00046	0.0007976	0.0676474	0.007
04/20/1990			110	0						

USAC Chemicals Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background		Class 1 Impact		Source (NH4)2SO4 ug/m ^3	Source NO2 ug/m ^3	Source (NH4)NO3 ug/m ^3	Source Extinction Mm-1	Change in Deciview ddv dv
		Extinction	Jday	From SO2 Source ug/m ^3	RH Factor					
04/21/1990			111	0						
04/22/1990			112	0						
04/23/1990			113	0						
04/24/1990			114	0						
04/25/1990			115	0						
04/26/1990			116	0						
04/27/1990		101.04	117	0						
04/28/1990		101.04	118	0.10435	2.82	0.2231	0.00358	0.0062199	0.646761	0.064
04/29/1990		101.04	119	0.002538	2.54	0.0054	8.7E-05	0.0001513	0.0141686	0.001
04/30/1990		101.04	120	0.000723	2.54	0.0015	2.5E-05	4.31E-05	0.0040362	0.000
05/01/1990	1.82	101.04	121	0.009019	2.14	0.0193	0.00031	0.0005376	0.0424204	0.004
05/02/1990		104.49	122	0.000853	1.7	0.0018	2.9E-05	5.084E-05	0.0031871	0.000
05/03/1990		104.49	123	0.003765	1.78	0.0081	0.00013	0.0002244	0.0147295	0.001
05/04/1990		104.49	124	0.236	1.98	0.5046	0.00809	0.014067	1.0270212	0.098
05/05/1990		104.49	125	0.11633	2.3	0.2487	0.00399	0.0069339	0.5880602	0.056
05/06/1990		104.49	126	0.007414	2.3	0.0159	0.00025	0.0004419	0.0374785	0.004
05/07/1990			127	0						
05/08/1990			128	0						
05/09/1990		104.49	129	0.008162	2.06	0.0175	0.00028	0.0004865	0.0369544	0.004
05/10/1990		104.49	130	0.1054	2.62	0.2254	0.00361	0.0062825	0.6069377	0.058
05/11/1990			131	0						
05/12/1990			132	0						
05/13/1990		104.49	133	0.015808	2.06	0.0338	0.00054	0.0009422	0.0715725	0.007
05/14/1990		104.49	134	0.022569	1.66	0.0483	0.00077	0.0013452	0.0823422	0.008
05/15/1990		104.49	135	0.012653	1.78	0.0271	0.00043	0.0007542	0.0495012	0.005
05/16/1990		104.49	136	0.002009	1.82	0.0043	6.9E-05	0.0001197	0.0080363	0.001
05/17/1990		104.49	137	0.18117	1.86	0.3874	0.00621	0.0107988	0.7406303	0.071
05/18/1990		104.49	138	0.010639	1.82	0.0227	0.00036	0.0006341	0.0425573	0.004
05/19/1990		104.49	139	0.000818	1.9	0.0017	2.8E-05	4.876E-05	0.0034159	0.000
05/20/1990		104.49	140	0.004384	1.86	0.0094	0.00015	0.0002613	0.017922	0.002
05/21/1990			141	0						
05/22/1990			142	0						
05/23/1990			143	0						
05/24/1990			144	0						
05/25/1990		104.49	145	0.09938	2.14	0.2125	0.00341	0.0059236	0.4674283	0.045
05/26/1990		104.49	146	0						
05/27/1990		104.49	147	6.14E-05	2.94	0.0001	2.1E-06	3.66E-06	0.0003968	0.000
05/28/1990		104.49	148	0.058117	2.82	0.1243	0.00199	0.0034641	0.360209	0.034
05/29/1990		104.49	149	0.007768	2.3	0.0166	0.00027	0.000463	0.039268	0.004
05/30/1990			150	0						
05/31/1990	1.9		151	0						
06/01/1990		114.85	152	0						
06/02/1990		114.85	153	0.035165	3.06	0.0752	0.00121	0.002096	0.2365017	0.021
06/03/1990		114.85	154	0.045792	2.46	0.0979	0.00157	0.0027295	0.2475865	0.022
06/04/1990		114.85	155	0.011674	2.06	0.0250	0.0004	0.0006958	0.0528554	0.005
06/05/1990		114.85	156	0.000616	1.98	0.0013	2.1E-05	3.672E-05	0.0026807	0.000
06/06/1990			157	0						
06/07/1990		114.85	158	0.001717	2.38	0.0037	5.9E-05	0.0001023	0.0089815	0.001
06/08/1990		114.85	159	0.013252	2.38	0.0283	0.00045	0.0007899	0.0693203	0.006
06/09/1990		114.85	160	0.15345	2.38	0.3281	0.00526	0.0091465	0.8026867	0.070
06/10/1990		114.85	161	0.012499	2.38	0.0267	0.00043	0.000745	0.0653814	0.006
06/11/1990		114.85	162	0.12693	2.46	0.2714	0.00435	0.0075658	0.6862804	0.060

USAC Chemicals Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction Jday	Class 1 Impact From SO2 Source ug/m ^3	RH Factor	Source (NH4)2SO4 ug/m ^3	Source NO2 ug/m ^3	Source (NH4)NO3 ug/m ^3	Source Extinction Mm-1	Change in Deciview ddv dv	
06/12/1990		163	0							
06/13/1990		164	0							
06/14/1990		165	0							
06/15/1990		114.85	166	0				0	0.000	
06/16/1990		114.85	167	0.001994	1.62	0.0043	6.8E-05	0.0001189	0.0070997	0.001
06/17/1990		114.85	168	9.72E-05	1.7	0.0002	3.3E-06	5.794E-06	0.0003632	0.000
06/18/1990			169	0						
06/19/1990			170	0						
06/20/1990			171	0						
06/21/1990			172	0						
06/22/1990			173	0						
06/23/1990			174	0						
06/24/1990			175	0						
06/25/1990			176	0						
06/26/1990			177	0						
06/27/1990		114.85	178	0				0		0.000
06/28/1990		114.85	179	0.000806	1.78	0.0017	2.8E-05	4.804E-05	0.0031532	0.000
06/29/1990		114.85	180	0.05779	2.3	0.1236	0.00198	0.0034446	0.2921344	0.025
06/30/1990		114.85	181	0.08589	2.7	0.1837	0.00294	0.0051195	0.5096929	0.044
07/01/1990	2.14	114.85	182	0.10674	2.38	0.2282	0.00366	0.0063623	0.5583498	0.048
07/02/1990		139.01	183	0.007667	2.94	0.0164	0.00026	0.000457	0.0495422	0.004
07/03/1990			184	0						
07/04/1990		139.01	185	2.52E-05	2.7	0.0001	8.6E-07	1.502E-06	0.0001495	0.000
07/05/1990		139.01	186	-0.00019	2.22	-0.0004	-6.5E-06	-1.13E-05	-0.000927	-0.000
07/06/1990			187	0						
07/07/1990			188	0						
07/08/1990		139.01	189	4.75E-05	2.94	0.0001	1.6E-06	2.831E-06	0.0003069	0.000
07/09/1990		139.01	190	0.025947	2.62	0.0555	0.00089	0.0015466	0.1494138	0.011
07/10/1990		139.01	191	0						
07/11/1990		139.01	192	0.11791	3.06	0.2521	0.00404	0.0070281	0.793002	0.057
07/12/1990		139.01	193	0.11484	2.62	0.2456	0.00394	0.0068451	0.6612972	0.047
07/13/1990		139.01	194	0.0403	2.94	0.0862	0.00138	0.0024021	0.2604082	0.019
07/14/1990			195	0						
07/15/1990			196	0						
07/16/1990		139.01	197	0.10777	2.54	0.2304	0.00369	0.0064237	0.601636	0.043
07/17/1990		139.01	198	0.034022	2.94	0.0727	0.00117	0.0020279	0.2198414	0.016
07/18/1990			199	0						
07/19/1990			200	0						
07/20/1990			201	0						
07/21/1990		139.01	202	0.048511	2.46	0.1037	0.00166	0.0028915	0.2622875	0.019
07/22/1990		139.01	203	0.009795	2.94	0.0209	0.00034	0.0005838	0.0632928	0.005
07/23/1990			204	0						
07/24/1990			205	0						
07/25/1990			206	0						
07/26/1990			207	0						
07/27/1990			208	0						
07/28/1990			209	0						
07/29/1990			210	0						
07/30/1990		139.01	211	8.81E-05	2.38	0.0002	3E-06	5.251E-06	0.0004608	0.000
07/31/1990	2.7	139.01	212	8.18E-05	2.3	0.0002	2.8E-06	4.876E-06	0.0004135	0.000
08/01/1990		128.65	213	0						
08/02/1990			214	0						

USAC Chemicals Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m ^3	RH Factor	Source (NH4)2SO4 ug/m ^3	Source NO2 ug/m ^3	Source (NH4)NO3 ug/m ^3	Source Extinction Mm-1	Change in Deciview ddv dv
08/03/1990			215	0						
08/04/1990			216	0						
08/05/1990			217	0						
08/06/1990		128.65	218	0						
08/07/1990		128.65	219	0						
08/08/1990			220	0						
08/09/1990			221	0						
08/10/1990			222	0						
08/11/1990			223	0						
08/12/1990		128.65	224	0.000294	2.46	0.0006	1E-05	1.752E-05	0.0015896	0.000
08/13/1990		128.65	225	0.10553	2.7	0.2257	0.00362	0.0062902	0.6262416	0.049
08/14/1990		128.65	226	0					0	0.000
08/15/1990		128.65	227	0.17182	2.94	0.3674	0.00589	0.0102415	1.1102564	0.086
08/16/1990		128.65	228	0.05433	2.14	0.1162	0.00186	0.0032384	0.2555381	0.020
08/17/1990		128.65	229	0.040281	2.06	0.0861	0.00138	0.002401	0.1823768	0.014
08/18/1990		128.65	230	0.010607	2.7	0.0227	0.00036	0.0006322	0.0629446	0.005
08/19/1990			231	0						
08/20/1990			232	0						
08/21/1990		128.65	233	0.07818	2.7	0.1672	0.00268	0.00466	0.4639398	0.036
08/22/1990		128.65	234	0.04924	2.38	0.1053	0.00169	0.002935	0.2575712	0.020
08/23/1990			235	0						
08/24/1990			236	0						
08/25/1990			237	0						
08/26/1990		128.65	238	0.08478	2.54	0.1813	0.00291	0.0050534	0.4732922	0.037
08/27/1990		128.65	239	0.14399	2.14	0.3079	0.00494	0.0085826	0.6772489	0.053
08/28/1990		128.65	240	0.007456	2.46	0.0159	0.00026	0.0004444	0.0403128	0.003
08/29/1990			241	0						
08/30/1990			242	0						
08/31/1990	2.46		243	0						
09/01/1990		114.85	244	0.001095	2.46	0.0023	3.8E-05	6.527E-05	0.0059204	0.001
09/02/1990		114.85	245	0.07079	3.06	0.1514	0.00243	0.0042195	0.4760971	0.041
09/03/1990		114.85	246	0.001238	2.22	0.0026	4.2E-05	7.379E-05	0.0060405	0.001
09/04/1990			247	0						
09/05/1990			248	0						
09/06/1990			249	0						
09/07/1990			250	0						
09/08/1990		114.85	251	0.003999	2.14	0.0086	0.00014	0.0002384	0.0188091	0.002
09/09/1990		114.85	252	0.003174	1.86	0.0068	0.00011	0.0001892	0.0129754	0.001
09/10/1990		114.85	253	0.000958	1.98	0.0020	3.3E-05	5.71E-05	0.004169	0.000
09/11/1990		114.85	254	0.11057	2.38	0.2364	0.00379	0.0065906	0.5783843	0.050
09/12/1990			255	0						
09/13/1990			256	0						
09/14/1990			257	0						
09/15/1990		114.85	258	0.006331	2.38	0.0135	0.00022	0.0003774	0.033117	0.003
09/16/1990		114.85	259	0.001691	2.7	0.0036	5.8E-05	0.0001008	0.0100348	0.001
09/17/1990			260	0						
09/18/1990			261	0						
09/19/1990			262	0						
09/20/1990			263	0						
09/21/1990			264	0						
09/22/1990			265	0						
09/23/1990		114.85	266	0						

USAC Chemicals Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m ^3	RH Factor	Source (NH4)2SO4 ug/m ^3	Source NO2 ug/m ^3	Source (NH4)NO3 ug/m ^3	Source Extinction Mm-1	Change in Deciview ddv dv
09/24/1990			267	0						
09/25/1990			268	0						
09/26/1990			269	0						
09/27/1990		114.85	270	0.000789	1.7	0.0017	2.7E-05	4.703E-05	0.002948	0.000
09/28/1990			271	0						
09/29/1990			272	0						
09/30/1990	2.14	114.85	273	0.01368	6.3	0.0293	0.00047	0.0008154	0.1894213	0.016
10/01/1990		121.75	274	0.004083	2.82	0.0087	0.00014	0.0002434	0.0253064	0.002
10/02/1990		121.75	275	0.002813	2.22	0.0060	9.6E-05	0.0001677	0.0137254	0.001
10/03/1990		121.75	276	0						
10/04/1990			277	0						
10/05/1990			278	0						
10/06/1990			279	0						
10/07/1990			280	0						
10/08/1990			281	0						
10/09/1990			282	0						
10/10/1990			283	0						
10/11/1990		121.75	284	0.002339	3.98	0.0050	8E-05	0.0001394	0.0204605	0.002
10/12/1990		121.75	285	0.02168	3.06	0.0464	0.00074	0.0012923	0.1458085	0.012
10/13/1990			286	0						
10/14/1990			287	0						
10/15/1990			288	0						
10/16/1990			289	0						
10/17/1990			290	0						
10/18/1990			291	0						
10/19/1990		121.75	292	0.11852	2.7	0.2534	0.00406	0.0070645	0.7033276	0.058
10/20/1990			293	0						
10/21/1990			294	0						
10/22/1990			295	0						
10/23/1990		121.75	296	0.047774	3.06	0.1022	0.00164	0.0028476	0.3213034	0.026
10/24/1990			297	0						
10/25/1990			298	0						
10/26/1990			299	0						
10/27/1990			300	0						
10/28/1990			301	0						
10/29/1990			302	0						
10/30/1990			303	0						
10/31/1990	2.3		304	0						
11/01/1990		118.30	305	0						
11/02/1990			306	0						
11/03/1990			307	0						
11/04/1990			308	0						
11/05/1990			309	0						
11/06/1990			310	0						
11/07/1990			311	0						
11/08/1990		118.30	312	0						
11/09/1990		118.30	313	0.008069	3.3	0.0173	0.00028	0.000481	0.0585243	0.005
11/10/1990		118.30	314	0.019592	2.14	0.0419	0.00067	0.0011678	0.0921499	0.008
11/11/1990			315	0						
11/12/1990			316	0						
11/13/1990			317	0						
11/14/1990			318	0						

USAC Chemicals Visibility Calculations
For 1 Year of Data

DATE	Monthly RH Fator	Background Extinction	Jday	Class 1 Impact From SO2 Source ug/m ³	RH Factor	Source (NH4)2SO4 ug/m ³	Source NO2 ug/m ³	Source (NH4)NO3 ug/m ³	Source Extinction Mm-1	Change in Deciview ddv dv
11/15/1990			319	0						
11/16/1990			320	0						
11/17/1990			321	0						
11/18/1990			322	0						
11/19/1990			323	0						
11/20/1990			324	0						
11/21/1990			325	0						
11/22/1990			326	0						
11/23/1990			327	0						
11/24/1990		118.30	328	0.002065	6.3	0.0044	7.1E-05	0.0001231	0.0285932	0.002
11/25/1990			329	0						
11/26/1990			330	0						
11/27/1990		118.30	331	0.022261	3.5	0.0476	0.00076	0.0013269	0.1712438	0.014
11/28/1990		118.30	332	0.17657	3.7	0.3776	0.00605	0.0105246	1.435889	0.121
11/29/1990		118.30	333	0.19212	2.94	0.4108	0.00659	0.0114515	1.2414297	0.104
11/30/1990	2.22	118.30	334	0.029236	1.36	0.0625	0.001	0.0017426	0.0873895	0.007
12/01/1990		128.65	335	0						
12/02/1990			336	0						
12/03/1990			337	0						
12/04/1990		128.65	338	0.039182	2.7	0.0838	0.00134	0.0023355	0.2325159	0.018
12/05/1990		128.65	339	0						
12/06/1990			340	0						
12/07/1990		128.65	341	0.000162	3.18	0.0003	5.6E-06	9.656E-06	0.0011323	0.000
12/08/1990		128.65	342	0.055434	3.3	0.1185	0.0019	0.0033042	0.4020614	0.031
12/09/1990			343	0						
12/10/1990			344	0						
12/11/1990			345	0						
12/12/1990			346	0						
12/13/1990		128.65	347	0.07616	1.82	0.1629	0.00261	0.0045396	0.3046496	0.024
12/14/1990		128.65	348	0.034671	1.9	0.0741	0.00119	0.0020666	0.1447845	0.011
12/15/1990			349	0						
12/16/1990		128.65	350	0.028521	2.38	0.0610	0.00098	0.0017	0.1491915	0.012
12/17/1990		128.65	351	0.08461	2.62	0.1809	0.0029	0.0050433	0.4872201	0.038
12/18/1990		128.65	352	0.06631	3.7	0.1418	0.00227	0.0039525	0.5392411	0.042
12/19/1990			353	0						
12/20/1990			354	0						
12/21/1990		128.65	355	0.12282	2.54	0.2626	0.00421	0.0073208	0.685654	0.053
12/22/1990		128.65	356	0.003943	2.46	0.0084	0.00014	0.000235	0.0213189	0.002
12/23/1990		128.65	357	0.18267	2.54	0.3906	0.00626	0.0108882	1.0197722	0.079
12/24/1990		128.65	358	0.10002	3.18	0.2139	0.00343	0.0059618	0.6990628	0.054
12/25/1990			359	0						
12/26/1990			360	0						
12/27/1990			361	0						
12/28/1990			362	0						
12/29/1990			363	0						
12/30/1990			364	0						
12/31/1990	2.46			0.31405						

Days with Class 1 Impact =

141

Max 0.27
Min -0.00
Avg 0.01

APPENDIX B – AIR MODELING

THESE FIVE DISKS CONTAIN SULFUR DIOXIDE (SO2) AND NITROGEN OXIDES (NOX) MODELING FILES FOR THE U. S. AGRICHEMICALS FACILITY IN FT. MEADE, FLORIDA. THESE FILES CONTAIN ISCST3 AND CALPUFF MODELING OF:

SIGNIFICANT IMPACT ANALYSIS (SIA) FOR CLASS 1 AND 2 AREAS
INCREMENT ANALYSIS FOR CLASS II AND CLASS I AREA, (CHASSAHOWITZKA NWR)
BUILDING DOWNWASH PROFILE INPUT PROGRAM (BPIP) FILES.

THE FOLLOWING FILES ARE IN SELF EXTRACTING ARCHIVE FORMAT.

DISK 1 - ISCST3 FILES

C2ASISO2	EXE	55,243	02-01-00	SO2 CLASS 2 AREA SIA ANALYSIS
C2ASINX	EXE	98,243	02-01-00	NOX CLASS 2 AREA SIA ANALYSIS
C2-INV	EXE	400,893	02-01-00	SO2 CLASS 2 INCREMENT ANALYSIS
AQS-INV	EXE	489,557	02-01-00	SO2 FAAQS STANDARD ANALYSIS
BPIP	EXE	19,951	02-01-00	BUILDING DOWNWASH CALCULATIONS

DISK 2 - CALPUFF SIA FOR CHASSAHOWITZKA NWR CLASS I AREA FILES

SIA-PUFF	EXE	96,285	02-01-00	CALPUFF SO2 INPUT & OUTPUT
SIA-24	EXE	206,460	02-01-00	CALPOST SO2 24-HOUR INPUT & OUTPUT
SIA-3H	EXE	206,460	02-01-00	CALPOST SO2 3-HOUR INPUT & OUTPUT
SIA-ADD	EXE	717,733	02-01-00	CALPOST SO2 RESULTS ANALYSIS WORKSHEETS
SIA-NX	EXE	98,873	02-01-00	CALPUFF INPUT & OUTPUT FOR NOX

DISK 3 - CALMET, CALPUFF, AND CALPOST INCREMENT ANALYSIS FILES

CMT-INP	EXE	794,720	02-01-00	CALMET INPUT FILES
INV-24	EXE	99,379	02-01-00	CALPOST ADDITION ANALYSIS FOR 24-HOUR
INV-PUF	EXE	132,681	02-01-00	CALPUFF INVENTORY FILES

DISK 4 - CALPOST CULPABILITY INCREMENT ANALYSIS FOR 3-HOUR AVERAGING FILES

INV-3H	EXE	439,443	02-01-00	CALPOST ADDITION ANALYSIS FOR 3-HOUR
INV-CUL	EXE	921,066	02-01-00	SO2 CULPABILITY

DISK 5 - CALPOST ADDITION INCREMENT ANALYSIS FOR 3-HOUR AVERAGING FILE

INV-ADD	EXE	1,116,178	02-01-00	CALPOST ADDITION ANALYSIS FOR 3-HOUR
---------	-----	-----------	----------	--------------------------------------

TO UNARCHIVE THESE FILES COPY THEM TO A HARD DISK DRIVE AND TYPE THE FILE NAME.
FOR EXAMPLE TO UNARCHIVE THE SO2 ASI CLASS 2 ISCST3 OUTPUT FILES, TYPE:

C2SIASO2

AND PRESS ENTER.

THE FILES WILL AUTOMATICALLY UNARCHIVE TO THE HARD DISK DRIVE.

THESE ARCHIVED FILES CONTAIN THE MODELING AND ANALYSIS FILES IN ASCII FORMAT DESCRIBED AS FOLLOWS:

CLASS 1 MODELING OF SIGNIFICANT IMPACT ANALYSIS (SIA) FOR CHASSAHOWITZKA NWR CLASS 1 AREAS ARE PROVIDED IN THE FOLLOWING FILES;

IF THERE ARE ANY QUESTIONS OR IF I MAY PROVIDE ADDITIONAL FILES, OR CLARIFICATION PLEASE CALL ME.

FEBRUARY 1, 2000

MARK KOLETZKE, P.E.

KOGLER AND ASSOCIATES

(352) 377-5822 KOGLER@WORLDNET.ATT.NET



KOUGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX/377-7158

PROJECT 173-00-02

FAX TRANSMITTAL FORM

TO: Syed Amir & Cleve Holladay
FDER

FAX NO. _____
FROM: Pradeep Laval
DATE: 1/26/01 SENT BY: R

The text being transmitted consists of 5 page(s) PLUS this one. If you do not receive all of the pages or if there are difficulties with this transmission, please call (352) 377-5822.

REMARKS: I will email the map for clarity.
I will also be faxing this response to
Stan @ EPA, just to get it to him
sooner. Regards,
R

This message is intended for use only by the individual to whom it has been addressed and may contain confidential or privileged information. If you are not the intended recipient, please note that the use, copying or distribution of this information is not permitted. If you have received this FAX in error, please destroy the original and notify the sender immediately at (352) 377-5822 so that we may prevent any recurrence. Thank you.



KA 173-00-02

January 26, 2001

Mr. Syed Arif, P.E.
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Rd
Tallahassee, FL 32399-2400

Subject: Additional Information on Fluorides Monitoring
U.S. Agri-Chemicals Corp.
File No. 1050051-009-AC, PSD-FL-278

Dear Mr. Arif:

The following additional comments are submitted to satisfy FDEP/EPA review of the fluorides monitoring data submitted to you last week. As previously indicated, air dispersion modeling for fluorides was not necessary for the proposed project as actual ambient air concentration data for the plant is available.

The fluorides monitoring data submitted to FDEP is from an ambient monitor located inside USAC's northern property boundary (see attached map). The Regional Planning Council has required the ambient fluoride monitoring as a condition of the Gyp Stack expansion approval. The ongoing monitoring program will continue for several more years, in accordance with the conditions imposed by the Regional Planning Council. In this instance, the available ambient fluoride data facilitate an ambient air assessment for the proposed project.

The monitor is a model G2DT, dual filter tape unit from Research Appliance Company. Eight 3-hour samples (24-hour period) are collected once a month by a qualified lab technician. Pembroke Labs, which is certified by HRS and FDEP, analyzes the tape in accordance with NIOSH Method 212, using a pre-approved Quality Control Protocol.

The sampling results (see attached table) indicate the date of the sample, the sample weight and the corresponding ambient air fluoride concentration as a 24-hour average. For purposes of the current review, the tabulated ambient concentration level was compared with the 24-hour Ambient Reference Concentration (ARC) level of 6 micrograms per cubic meter, previously used as a guideline by the Department to determine adverse impacts of fluorides. It should be noted that all of the tabulated concentration levels are well below the ARC. It is our understanding that the FDEP no longer uses ARCs as part of a permit application review. However, this comparison is made herein specifically to satisfy EPA's concerns.

Mr. Syed Arif, P.E.
Florida Department of
Environmental Protection

January 26, 2001

Regarding Class I area SO2 modeling, the rationale used in the modeling was accepted for the proposed project by Ellen Porter and John Notar of the National Park Service.

If you have any questions, please do not hesitate to call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

*Con SA
send conditions
to USA.C*

JBK:par
Enc.

RON c: J. Girardin, USAC
R. Brunk, USAC 863-285-8121
S. Knipe, EPA

x279

SA

①

*Monitoring should be reported to us so we can look at it
If cessation of monitoring*

②

Year after production increase

*Initial Performance Test
Durq Annual Compliance Test
plus other monthly*

*One year - 12 data pts
In + Ann Compliance + 2 data points*

Bill Proses
Sam Zamani

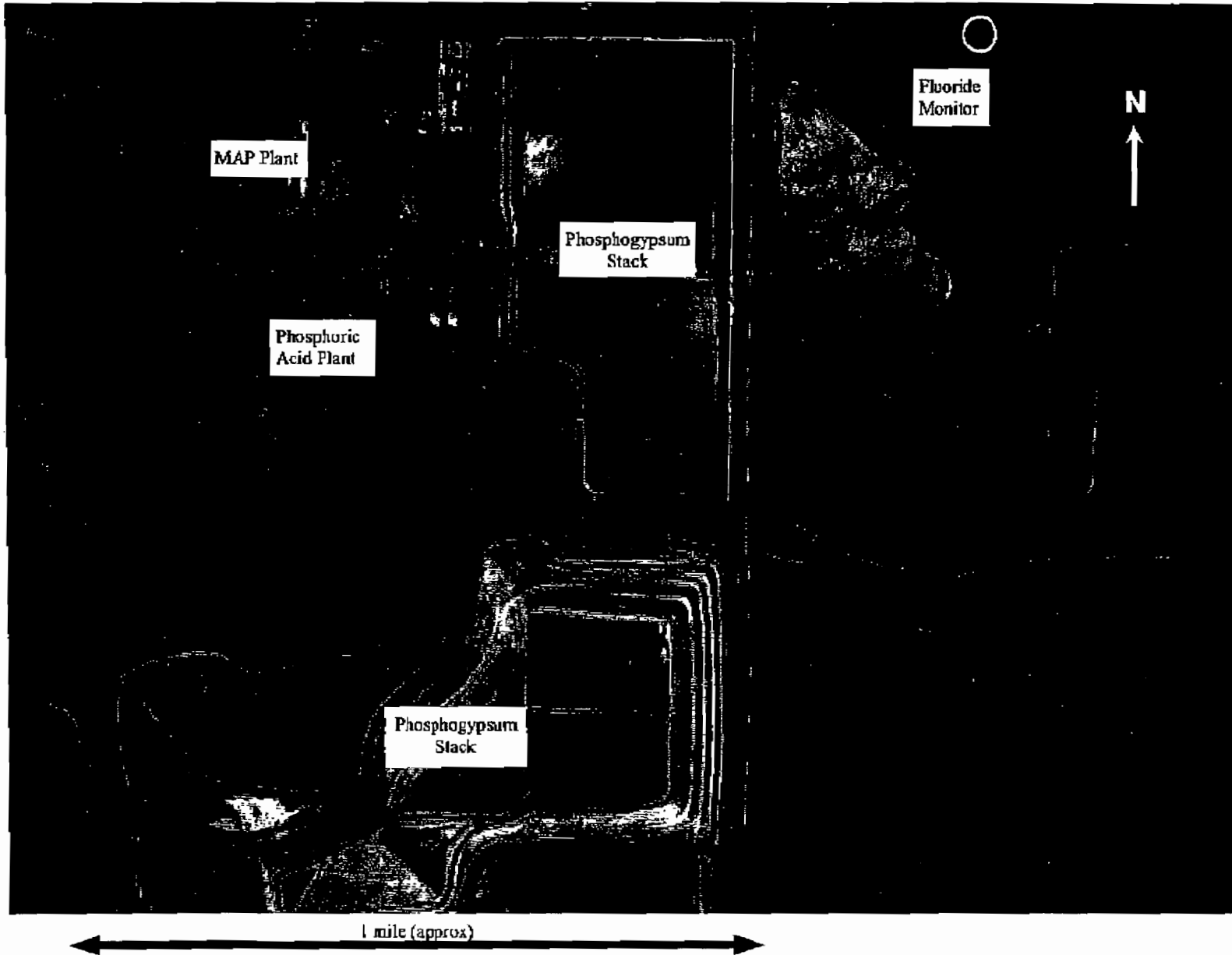
*Notify FDEP if it exceeds
Langton³*

*14 data points reading
Substitute modeling info
instead of monitoring
If go over .25*

*Central Florida Regional Planning Council → Polk
Tom Beck DCA - nothing much with them*

BEST AVAILABLE COPY

U.S. Agri-Chemicals
Fluoride Monitoring Station



01/26/01 12:02 3352 377 7158

KOOGLER ASSOC + + + + EDER TALL

004/008

USAC Gyp Stack Expansion Ambient Gaseous Fluorides Monitoring

NOTES:

1. BDL = Below Detection Level (5 ug or 2.1 ppb)
2. Florida DEP 24-hr No Threat Level is 6 ug/m³
3. Lab results and ambient concentrations are presented as a daily average.

sample date	lab result ug	concentration
		ug/m ³
7/11/96	10.5	3.4
7/12/96	BDL	
7/13/96	BDL	
7/14/96	BDL	
7/15/96	5.5	1.8
7/16/96	BDL	
7/17/96	BDL	
7/18/96	BDL	
8/6/96	BDL	
8/7/96	BDL	
8/8/96	BDL	
8/9/96	BDL	
8/10/96	BDL	
8/11/96	BDL	
8/12/96	BDL	
8/13/96	BDL	
9/5/96	BDL	
9/6/96	BDL	
9/7/96	BDL	
9/8/96	BDL	
9/9/96	BDL	
9/10/96	BDL	
9/11/96	BDL	
9/12/96	BDL	
10/16/96	5.5	1.8
11/21/96	BDL	
12/17/96	BDL	
1/27/97	5.1	1.6
2/5/97	5.5	1.7
3/4/97	BDL	
4/20/97	BDL	
5/27/97	BDL	
6/3/97	5.4	1.7
7/18/97	5.7	1.7
8/6/97	BDL	
9/17/97	BDL	
10/9/97	BDL	
11/4/97	BDL	
12/1/97	BDL	
1/28/98	BDL	
2/12/98	BDL	

USAC Gyp Stack Expansion Ambient Gaseous Fluorides Monitoring

NOTES:

1. BDL = Below Detection Level (5 ug or 2.1 ppb)
2. Florida DEP 24-hr No Threat Level is 6 ug/m³
3. Lab results and ambient concentrations are presented as a daily average.

sample date	lab result ug	concentration ug/m ³
3/13/98	5.4	1.7
4/2/98	BDL	
5/4/98	BDL	
6/22/98	BDL	
7/16/98	6.4	2.0
8/12/98	7.6	2.3
9/15/98	5.6	1.7
10/8/98	BDL	
11/17/98	BDL	
12/30/98	BDL	
1/27/99	BDL	
2/25/99	BDL	
3/10/99	BDL	
4/22/99	5.5	1.7
5/24/99	5.1	1.6
6/1/99	BDL	
7/14/99	5.4	1.7
8/26/99	BDL	
9/23/99	5.1	1.6
1/20/00	5	1.5
2/18/00	BDL	
3/14/00	BDL	
4/5/00	BDL	
4/6/00	BDL	
5/3/00	5.6	1.7
5/4/00	BDL	
6/14/00	BDL	
6/15/00	BDL	
7/13/00	BDL	
7/14/00	BDL	
8/21/00	BDL	
8/22/00	BDL	
9/18/00	5.1	1.6
9/19/00	BDL	
10/17/00	BDL	
10/18/00	BDL	
11/15/00	5.1	1.6
11/16/00	BDL	