

AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

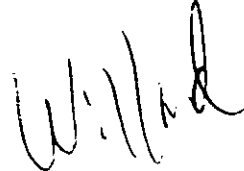
December 16, 1985

DER

DEC 19 1985

BAQM

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, FL 32301

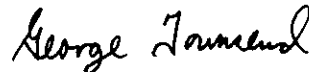


Dear Mr. Fancy:

We applied for and received a construction permit to install a Phosphoric Acid Defluorination Wet Scrubber; Permit No. AC 29-091316. However, due to the present depressed market and the recent loss of a potential contract with a significant user of defluorinated phosphoric acid, AMAX, at this time, is not willing to commit the necessary resources to complete this project. The proposed scrubber and the connecting duct work is on site and ready for installation when and if an affirmative decision is made to complete the project. We are not producing defluorinated phosphoric acid at this time and unless we are able to capture a share of the market for defluorinated phosphoric acid, there is no incentive for AMAX to produce defluorinated phosphoric acid. In light of the present circumstances, we are requesting a six (6) month extension on the Defluorinated Acid Scrubber construction permit. We feel this will give AMAX sufficient time to conduct market surveys and explore contractual agreements with the users of defluorinated phosphoric acid. With this information AMAX can make an informed decision on whether or not the potential for an adequate and timely return on the investment would warrant the completion of the project.

Should you have any questions or require additional information, please let me know. Your assistance in this matter would be greatly appreciated.

Sincerely,



George Townsend
Environmental Supervisor

GT:tc

cc: Bill Thomas, DER
Jerry Campbell, HCEPC
F. W. Cheesman
B. V. Galloway
G. P. Uebelhoer

AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 • PLANT CITY, FLORIDA 34289 • (813) 752-1161

April 5, 1985

Main File
Copy
DER
APR 12 1985
BAQM

Mr. C. H. Fancy, P.E.
Bureau of Air Quality Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301-8241

Dear Mr. Fancy:

In response to a request for additional information concerning file no. A029-091316, we are submitting the following:

1. The test data for fluoride removal from the phosphoric acid was gathered simply by determining, by analyses, the fluoride content of the acid at various stages of the defluorinating process. As referenced by Louis John Lamb to Joe Floyd; attachment F of the permit application, the maximum fluoride emissions occurred during a two hour period when the heated acid, diatomaceous earth, and caustic mixture was air sparged, worst case condition. Laboratory analysis of the acid before and after this two hour period indicated that 32.12 lbs. of fluorides had been removed. Each of the two reaction tanks will be swept with 1,025 ACFM during the defluorinating process. The 1.83 grains F_2/ft^3 calculates as follows:

$$\frac{32.12 \text{ Lbs } F_2}{2 \text{ Hours}} \times \frac{1 \text{ Hour}}{60 \text{ Min.}} \times \frac{1 \text{ Minute}}{1025 \text{ Ft}^3} \times \frac{7000 \text{ Grains}}{1 \text{ Lb}} = \frac{1.83 \text{ Grains}}{\text{Ft}^3}$$

2. Approximately 95% of the sludge produced during the phosphoric acid defluorinating process is recovered and used in another manufacturing process. The remaining 5% may be sluiced to the process water system
3. The 99+% fluoride removal capability of the Rigidome 4837 scrubber is based on the phosphoric acid fluoride removal test data and the engineering data presented by Louis John Lamb. AMAX will investigate the use of packing in this scrubber if it is needed to meet the BACT for fluoride set forth in the operating permit.

Sincerely,

George Townsend

George Townsend
Environmental Supervisor

GT:cr

cc: J. J. Lewis
G. P. Ubelhoer

Willard Harbs - 4/12/85 BQ

ROUTING AND TRANSMITTAL SLIP		ACTION NO
		ACTION DUE DATE
1. TO (NAME, OFFICE, LOCATION)	INITIAL	DATE
<i>Chase</i> 1/16		
2.	INITIAL	DATE
<i>Bill B</i>		
3.	INITIAL	DATE
<i>I assume Willard has copy</i>		
4.	INITIAL	DATE

REMARKS:
*Incompleteness response
 Return for file*

INFORMATION	
<input type="checkbox"/>	REVIEW & RETURN
<input type="checkbox"/>	REVIEW & FILE
<input type="checkbox"/>	INITIAL & FORWARD
DISPOSITION	
<input type="checkbox"/>	REVIEW & RESPOND
<input type="checkbox"/>	PREPARE RESPONSE
<input type="checkbox"/>	FOR MY SIGNATURE
<input type="checkbox"/>	FOR YOUR SIGNATURE
<input type="checkbox"/>	LET'S DISCUSS
<input type="checkbox"/>	SET UP MEETING
<input type="checkbox"/>	INVESTIGATE & REPT
<input type="checkbox"/>	INITIAL & FORWARD
<input type="checkbox"/>	DISTRIBUTE
<input type="checkbox"/>	CONCURRENCE
<input type="checkbox"/>	FOR PROCESSING
<input type="checkbox"/>	INITIAL & RETURN

DM
Patty

ROUTING AND TRANSMITTAL SLIP		ACTION NO
		ACTION DUE DATE
1. TO: (NAME, OFFICE, LOCATION)	INITIAL	DATE
<i>Chase</i> 3/12		
2.	INITIAL	DATE
<i>Bill</i> 3/13		
3.	INITIAL	DATE
4.	INITIAL	DATE

REMARKS:
*Incompleteness response
 Willard has copy -
 Please return for file*

INFORMATION	
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<input type="checkbox"/>	Review & File
<input type="checkbox"/>	Initial & Forward

DISPOSITION	
<input type="checkbox"/>	Review & Respond
<input type="checkbox"/>	Prepare Response
<input type="checkbox"/>	For My Signature
<input type="checkbox"/>	For Your Signature
<input type="checkbox"/>	Let's Discuss
<input type="checkbox"/>	Set Up Meeting
<input type="checkbox"/>	Investigate & Report
<input type="checkbox"/>	Initial & Forward
<input type="checkbox"/>	Distribute
<input type="checkbox"/>	Concurrence
<input type="checkbox"/>	For Processing
<input type="checkbox"/>	Initial & Return

FROM:
Patty

DATE
 3/11
 PHONE

AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

March 7, 1985

DER
MAR 11 1985
BAQM

Mr. C. H. Fancy, P.E.
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301-8241

Dear Mr. Fancy:

In response to the letter of incompleteness, dated January 28, 1985, concerning file no. A029-091316, we are submitting the following. The responses are in the order the questions were presented.

1. For a clarification of drawing D-1, please see Attachment A of this letter. The process vessels in the phosphoric acid defluorinating area are also shown in Attachment A.
2. There is only one diatomaceous earth (D.E.) slurry tank. c
3. We feel that a 180 day period from the date of issuance would be sufficient time to complete the project.
4. To clarify the statement referred to in section II: A, it should have read: Maximum particulate emissions occur during the slurring of the D.E. This slurring takes place only in the D.E. slurry tank, not in the acid tanks. The D.E. slurry is prepared using fresh water. The slurring of D.E. would take place for approximately ½ hour twice a day.
5. The D.E. slurry tank discharges into one of the first 12,000 gallon acid tanks, and while the first defluorination tank is being sparged the D.E. slurry tank is refilled and then dumps into the second 12,000 gallon acid tank.
6. See Attachment B (section VI of the permit application).

Mr. C. H. Fancy, P.E.

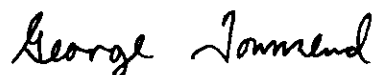
March 7, 1985

Page Two

7. The basis of Mr. Lamb's calculations of 1.825 gr/ft³ of fluoride was the amount of total fluoride removed during an actual defluorinating cycle. Although Mr. Lamb's final fluoride determination is labeled lbs. HF/hr., it is in fact total fluoride which includes HF and SiF₄. The reactions between the phosphoric acid, caustic solution, diatomaceous earth (86% SiO₂-0.6% CaO), and the fluoride contaminants are as follows:
1. $\text{H}_3\text{PO}_4 + \text{NaOH} \rightarrow 2\text{H}_2\text{O} + \text{SiF}_4$
 2. $4\text{HF} + \text{SiO}_2 \rightarrow 2\text{H}_2\text{O} + \text{SiF}_4$
 3. $3\text{SiF}_4 + 2\text{H}_2\text{O} \rightarrow 2\text{H}_2\text{SiF}_6 + \text{SiO}_2$
 4. $\text{H}_2\text{SiF}_6 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SiF}_6 + 2\text{H}_2\text{O}$
8. The feed prep acid storage, dikal acid storage, and dikal and sales acid storage tanks and all tanks shown in Attachment A are existing tanks.
9. Precipitated fluoride compounds are removed from the acid by gravity settling. Nearly all of the precipitated sludge is pumped to the feed prep plant and used in the manufacturing process. However, a small percentage may be sluiced to the holding ponds.
10. The proposed scrubber will not recirculate water. The holding pond system is more than adequate, some 350 acres, to contain the potential 20,000 tons of water. If during the rainy season pond volumes require it, we are permitted under EPA-NPDES and DER-Industrial Wastewater permits to discharge treated process water.
11. Fluoride emissions are based on actual test data of the total amount of fluoride removed during the defluorination of one tank of phosphoric acid. The total amount of fluoride removed was then equated to the airflow of 1,000 SCFM.
12. The correct stack diameter is 1.33' and the correct velocity is 35.81 FPS.

Should you have any questions concerning the information provided, please call me at (813) 752-1161.

Sincerely,

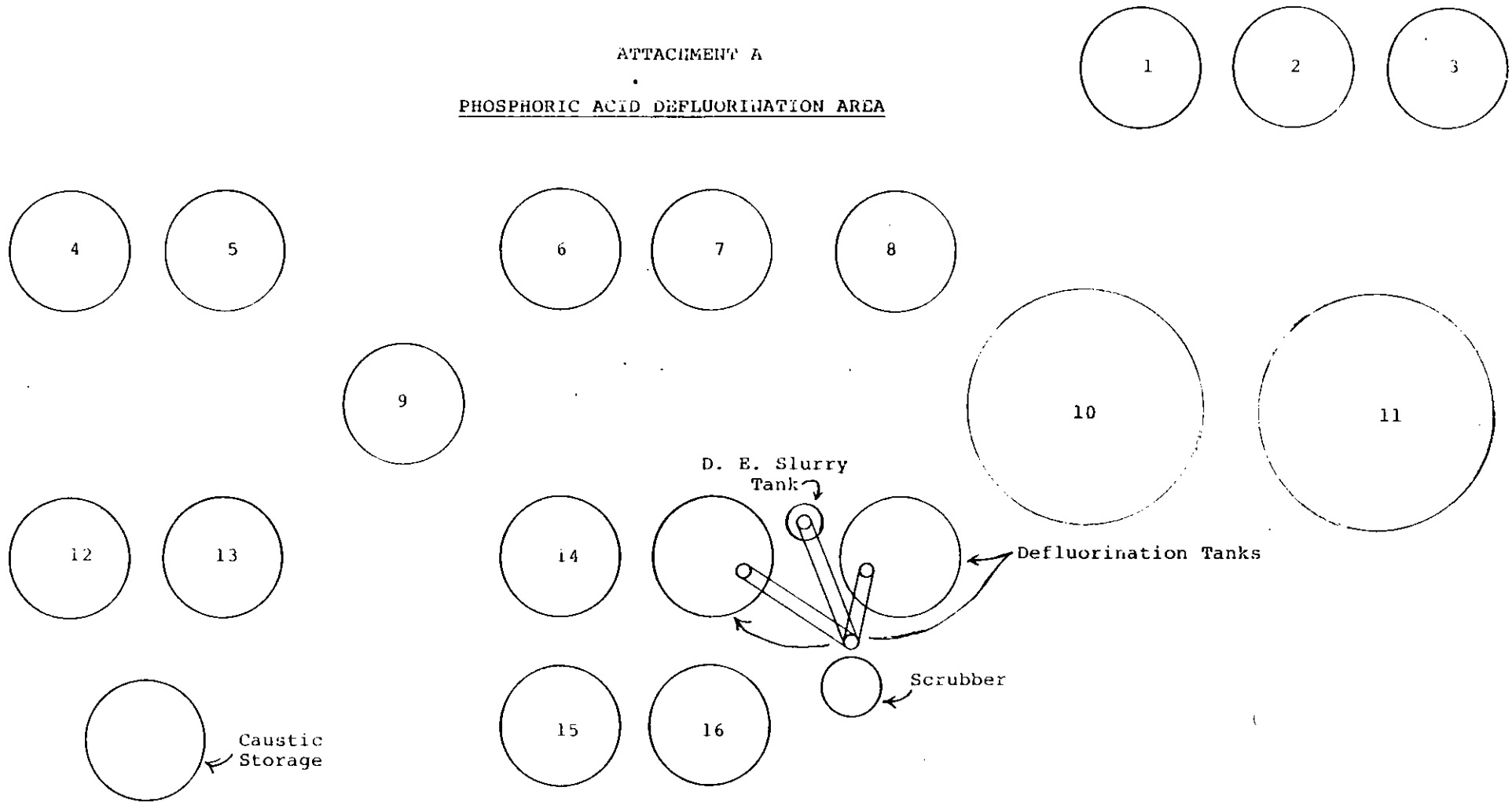


George Townsend
Environmental Supervisor

GT:cr

cc: Bill Thomas, DER
Steve Gyorog, HCEPC
J. J. Lewis
F. G. Mullins

ATTACHMENT A
PHOSPHORIC ACID DEFLUORINATION AREA



Tanks 1-16 are acid storage tanks

9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
 Yes No

Contaminant	Rate or Concentration
Fluoride	3.650 Grains/ft. ³
Particulate	0.42 Grains/ft. ³

B. Has EPA declared the best available control technology for this class of sources (if yes, attach copy) Yes No

Contaminant	Rate or Concentration
The state of Florida has declared BACT for a similar source.	

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Fluoride	0.86 lbs./hr.
Particulate	0.39 Lbs./Hr.

D. Describe the existing control and treatment technology (if any).

- | | |
|---------------------------|----------------------|
| 1. Control Device/System: | 4. Capital Costs: |
| 2. Operating Principles: | 5. Operating Costs: |
| 3. Efficiency: * | 6. Maintenance Cost: |
| 7. Useful Life: | |
| 8. Energy: | |
| 9. Emissions: | |

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

- | | | | |
|---------------|------|-----------------|-----|
| a. Height: | ft. | b. Diameter: | ft. |
| c. Flow Rate: | ACFM | d. Temperature: | °F |
| e. Velocity: | FPS | | |

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

- a. **Control Device:** Packed Bed Scrubber
- b. **Operating Principles:** Mass Transfer/Particle Collection
- c. **Efficiency*:** 98+
- d. **Capital Cost:** \$24,000
- e. **Useful Life:** 20 Years
- f. **Operating Cost:** \$8,186
- g. **Energy*:** 10 KWH
- h. **Maintenance Cost:** \$3,030/year
- i. **Availability of construction materials and process chemicals:**
Package scrubbers are available through various manufacturers.
- j. **Applicability to manufacturing processes:** Compatible with process
- k. **Ability to construct with control device, install in available space, and operate within proposed levels:**
The available space is limited; for horizontal configuration.

2.

- a. **Control Device:** Venturi
- b. **Operating Principles:** Mass Transfer/Particle Collection
- c. **Efficiency*:** 98+
- d. **Capital Cost:** \$46,000
- e. **Useful Life:** 20 Years
- f. **Operating Cost:** \$8,423/year
- g. **Energy**:** 12 KWH
- h. **Maintenance Costs:** \$1,600/year
- i. **Availability of construction materials and process chemicals:**
Package scrubbers are available through various manufacturers.
- j. **Applicability to manufacturing processes:** Compatible with process
- k. **Ability to construct with control device, install in available space, and operate within proposed levels:**
Moderate space available

*Explain method of determining efficiency. Manufacturer's design guarantee

**Energy to be reported in units of electrical power - KWH design rate.

3.

- a. **Control Device:**
- b. **Operating Principles:**
- c. **Efficiency*:**
- d. **Capital Cost:**
- e. **Life:**
- f. **Operating Cost:**
- g. **Energy:**
- h. **Maintenance Cost:**

*Explain method of determining efficiency above.

- i. Availability of construction materials and process chemicals:
 - j. Applicability to manufacturing processes:
 - k. Ability to construct with control device, install in available space and operate within proposed levels:
- 4.
- a. Control Device
 - b. Operating Principles:
 - c. Efficiency*:
 - d. Capital Cost:
 - e. Life:
 - f. Operating Cost:
 - g. Energy:
 - h. Maintenance Cost:
 - i. Availability of construction materials and process chemicals:
 - j. Applicability to manufacturing processes:
 - k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

- 1. Control Device: Spray Chamber (this scrubber is already owned)
- 2. Efficiency*: 99+
- 3. Capital Cost: \$5,000 (to recoat inside)
- 4. Life: 20 Years
- 5. Operating Cost: \$8,186
- 6. Energy: 10 KWH
- 7. Maintenance Cost: \$1,000
- 8. Manufacturer: Rigidome
- 9. Other locations where employed on similar processes: None known

a.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:
- (5) Environmental Manager:
- (6) Telephone No.:

*Explain method of determining efficiency above. Fluoride emissions calculated from test data

(7) Emissions*:

Contaminant	Rate or Concentration
Fluoride	0.86 Lbs./Hr.
Particulate	0.39 Lbs./Hr.

(8) Process Rate*:

b.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>

(8) Process Rate*:

10. Reason for selection and description of systems:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 28, 1985

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. George Townsend
Environmental Supervisor
AMAX Chemical Corporation
P. O. Box 790
Plant City, Florida 34289

Dear Mr. Townsend:

Re: File No. AC 29-091316
Phosphoric Acid Defluorination Plant

The Bureau has reviewed your reply to our request for additional information for the application for a permit to construct the above referenced plant. Several of the questions in our September 7, 1984, letter were not answered completely. Please provide the information requested below so that we can resume processing this application.

1. Please clarify drawing D-1 by providing a similar "plan" drawing showing the scrubber and all process vessels in the proposed defluorinating plant and note which vessels will be vented to the scrubber.
2. In the addendum, additional notes, there are two D.E. tanks listed but the letter to Mr. J. Floyd indicates in paragraph a) that there will be one slurry mixer. Please clarify how many slurry mixing tanks will be in the new plant.
3. Assuming a construction permit is issued in May, 1985, when will the construction of the proposed plant begin and when will it be completed?
4. Section II:A, indicates that maximum emissions occur during the slurring of the diatomaceous earth. What liquid is mixed with the D.E. in the slurry tank? Will the slurring take place in both 12,000 gallon acid tanks at the same time? How often will this occur?

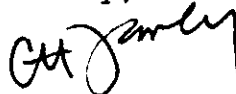
Mr. George Townsend
Page Two
January 28, 1985

5. Please clarify the operating sequence of the proposed facility-i.e., does the slurry tank discharge into one of the 12,000 gallon acid defluorination tanks and, while this defluorination tank is being sparged, the D.E. slurry tank refills and dumps into the other 12,000 gallon defluorination tank?
6. The Occidental Chemical Company BACT was for a different process than AMAX is proposing. Please complete Section VI of the application for AMAX's proposed process.
7. What are the chemical reactions between diatomaceous earth, caustic solution, phosphoric acid, and the fluoride contaminants? Are the fluoride emissions from the process in the form of HF or SiF_6 ? Are Mr. Louis Lamb's calculations of emissions from the plant for total fluorides or HF only?
8. Are the feed prep acid storage, dikal acid storage, and dikal and sales acid storage tanks part of the proposed phosphoric acid defluorinating plant or existing tanks?
9. How are the precipitated fluoride compounds removed from the treated acid and what is done with them?
10. Does the scrubber recirculate the well water? If not, over 20,000 tons per year of water could enter the pond. Can the pond process this additional volume of water, especially during the rainy season?
11. Fluoride emissions are based on the heated acid producing 1.825 gr F/ft³. What is the basis for this emission factor?
12. The revised application listed a stack diameter of 1.33 feet and a flow of 35.81 FPS. Item 11 of your December 18 letter listed a different diameter (1.0') and flow (63.66 FPS). What is the correct diameter and flow?

Mr. George Townsend
Page Three
January 28, 1985

If you have any questions about the information being requested,
please call Willard Hanks at (904)488-1344.

Sincerely,

A handwritten signature in black ink, appearing to read "C. H. Fancy". The signature is written in a cursive style with a large, looped initial "C".

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/WH/s

cc: Bill Thomas, SW District
Steve Gyrog, HCEPC

No. 0155809

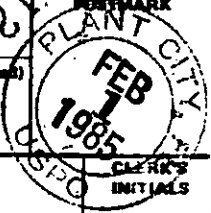
RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO		Mr. George Townsend		
STREET AND NO.				
P.O., STATE AND ZIP CODE				
POSTAGE		\$		
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE		¢	
	SPECIAL DELIVERY		¢	
	RESTRICTED DELIVERY		¢	
	OPTIONAL SERVICES	RETURN RECEIPT SERVICE		¢
		SHOW TO WHOM AND DATE DELIVERED		¢
		SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY		¢
	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY		¢	
	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY		¢	
TOTAL POSTAGE AND FEES		\$		
POSTMARK OR DATE				
1/29/85				

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979 RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL	SENDER: Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.		
	1. The following service is requested (check one.) <input checked="" type="checkbox"/> Show to whom and date delivered. _____ ¢ <input type="checkbox"/> Show to whom, date and address of delivery. _____ ¢ <input type="checkbox"/> RESTRICTED DELIVERY Show to whom and date delivered: _____ ¢ <input type="checkbox"/> RESTRICTED DELIVERY. Show to whom, date, and address of delivery. \$ _____		
	(CONSULT POSTMASTER FOR FEES)		
	2. ARTICLE ADDRESSED TO: Mr. George Townsend P. O. Box 790 Plant City, Florida 34289		
	3. ARTICLE DESCRIPTION: REGISTERED NO. _____ CERTIFIED NO. 0155809 INSURED NO. _____		
	(Always obtain signature of addressee or agent)		
	I have received the article described above. SIGNATURE _____ <input type="checkbox"/> Addressee <input type="checkbox"/> Authorized agent		
	4. DATE OF DELIVERY 2-1-85		POSTMARK 
	5. ADDRESS (Complete only if requested)		
	6. UNABLE TO DELIVER BECAUSE:		
CLERK'S INITIALS _____			