

AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC

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

*August 9
KCEPC
Rec'd.*

July 31, 1984

Mr. Dan Williams
Air Permitting Section
Department of Environmental Regulation
Southwest District
7601 Highway 301 North
Tampa, Florida 33610

Dear Mr. Williams:

Please find attached four (4) copies of a construction permit application to install a wet scrubber at the Plant City facility.

*Potential to
50 Tpy emit*

Also attached is a check in the amount of \$500.00 to cover the application fee. A copy of the application and the appropriate fee have been transmitted to the Hillsborough County Environmental Protection Commission.

Should you have any question concerning this application, please let me know.

Sincerely,

George Townsend

George Townsend
Environmental Supervisor

GT:cr

Attachments

cc: J. J. Lewis
F. G. Mullins

AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

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

July 31, 1984

Mr. Jerry Campbell
Air Permitting Engineer
Hillsborough County
Environmental Protection Commission
1900 Ninth Avenue
Tampa, Florida 33605

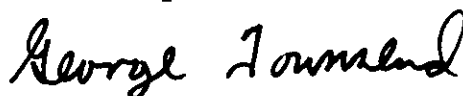
Dear Mr. Campbell:

Please find attached a construction permit application to install a wet scrubber at the Amax Plant City facility. Also attached is a check in the amount of \$170.00 to cover the application fee.

The four (4) copies of the application required by the Florida Department of Environmental Regulation have been transmitted to that agency, along with the appropriate application fee.

Should you have any question concerning this application, please let me know.

Sincerely,

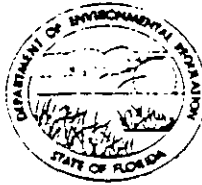


George Townsend
Environmental Supervisor

GT:cr

Attachment

cc: J. J. Lewis
F. G. Mullins



AC 29-091314

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

New source?
Is all new plants?
are modif. exist. pt.?

SOURCE TYPE: Point Source Air Pollution New¹ Existing¹
APPLICATION TYPE: Construction Operation Modification
COMPANY NAME: Amax Phosphate, Inc. COUNTY: Hillsborough

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Phosphoric Acid Defluorinating Plant with Upflow Counter Current Scrubber

SOURCE LOCATION: Street Coronet Road City Plant City
UTM: East 17-393.8 North 3096.3
Latitude _____ ° _____ ' _____ "N Longitude _____ ° _____ ' _____ "W

APPLICANT NAME AND TITLE: J. J. Lewis, Plant Manager
APPLICANT ADDRESS: P.O. Box 790, Plant City, Florida 33566

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Amax Phosphate, Inc.

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: [Signature]
J. J. Lewis, Plant Manager
Name and Title (Please Type)
Date: 6/4/84 Telephone No. (813) 752-1161

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: [Signature]
Anthony R. Lenkei
Name (Please Type)
Amax Phosphate, Inc.
Company Name (Please Type)
P.O. Box 790, Plant City, FL 33566
Mailing Address (Please Type)

(Affix Seal)

Florida Registration No. 8716 Date: _____ Telephone No. (813) 752-1161

¹See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)
DER FORM 17-1.122(18) Page 1 of 10

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This project will control emissions from the reaction tanks during the defluorination of phosphoric acid. The emission control system will consist of up-flow counter current wet scrubber, fan, and necessary duct work to vent the reaction tanks.

Describe process

B. Schedule of project covered in this application (Construction Permit Application Only)

1 1/2 yrs to const.

Start of Construction September 1, 1984 Completion of Construction February 28, 1985

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Equipment and Materials - \$43,700

inexpensive scrubber.

Labor - \$15,300

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Not Applicable

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? Yes XX No

F. Normal equipment operating time: hrs/day 8; days/wk 5; wks/yr 52; if power plant, hrs/yr N/A; if seasonal, describe: 2080 hr/yr operation

is this max hr plnt operate

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant?

Yes

a. If yes, has "offset" been applied?

N/A

b. If yes, has "Lowest Achievable Emission Rate" been applied?

N/A

c. If yes, list non-attainment pollutants.

Ozone, VOC

ppm-600 which rule apply? Need BACT recommendation

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI.

No

3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII.

No

other poll emission from other equip

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?

No

is not new plnt, describe when equip affected

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?

No

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Phosphoric Acid	Fluoride	0.85%	50,792 $\frac{431.75}{hr}$ = 1.1	See Attachment D-1&D-2
Diatomaceous Earth	Particulate	100	231	See Attachment D-1&D-2
Caustic	N/A	N/A	626	See Attachment D-1&D-2
Water			51,649 ✓	

Needs to balance

B. Process Rate, if applicable: (See Section V, Item 1)

- Total Process Input Rate (lbs/hr): 51,649
- Product Weight (lbs/hr): ~~51,872~~ prod wgt greater input, is so, why?
51,782 in attach A - which correct

P₂O₅ acid 4% in product?

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C.	Allowable ³ Emission lbs/hr	Potential Emission ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	0.50	0.52	17-2.610 (2) (a)	0.50	25.0	26.0	See Attach D-3
Fluoride	0.98	1.02	17-2.600 (3) (a)	0.18	49.23	51.20	See Attach D-3
			React Output				

What is potential basis

Basis of allowable emission (You may not have current copy of rules, contact public info) All max emission greater than allowable.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles ⁵ Size Collected (in microns)	Basis for Efficiency (Sec. V, It ⁵)
Upflow Counter Current	Particulate	98+%	N/A	N/A
Wet Scrubber	Fluoride	98+%	N/A	N/A
designed by A. R. Lenkei	EPA SIM. CROSS FLOW SCRUBBER WITH 94% EFF. IS DUCT			

check this

¹ See Section V, Item 2.

² Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 0.1 pounds per million BTU heat input)

³ Calculated from operating rate and applicable standard

*Base on theoretical wet scrubber performance.

⁴ Emission, if source operated without control (See Section V, Item 3)

⁵ If Applicable

E. Fuels

Not Applicable

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____
 Density: _____ lbs/gal Typical Percent Nitrogen: _____
 Heat Capacity: _____ BTU/lb _____ BTU/gal
 Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.
The liquid and solid waste generated by this process is either used in the manufacturing process at the feed preparation plant or returned to the closed circuit recycled process water system. *Emission from pond after*

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 32 ft Stack Diameter: 24 ft
 Gas Flow Rate: 1,900 ACFM Gas Exit Temperature: 80 °F
 Water Vapor Content: 3.0 % Velocity: 10.08 FPS

How measure velocity during test

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ days/week _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume (ft) ³	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: Cyclone Wet Scrubber Afterburner Other (specify) _____

Brief description of operating characteristics of control devices: Not Applicable

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation. See Attachment A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. See Attachment B-1 and B-2
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). See Attachment B-1 and B-2
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). See Attachment C - DP, PPM, GPM
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). See Attachment B-1 and B-2
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. See Attachment D-1, D-2 and D-3
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map). See Attachment E
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. See Attachment E

- 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

*Recommend
is no
specific
regulate*

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

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

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

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

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

- c. Efficiency*:
- d. Capital Cost:
- e. Useful 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:

2.

- a. Control Device: _____
- b. Operating Principles: _____

- c. Efficiency*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy**:
- h. Maintenance Costs:
- 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:

*Explain method of determining efficiency.

**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:
- 2. Efficiency*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:

a.

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

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration
_____	_____
_____	_____
_____	_____

(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

Contaminant	Rate or Concentration

(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.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data Not Applicable

1. _____ no sites _____ TSP _____ () SO₂* _____ Wind spd/dir

Period of monitoring _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? Yes No

b) Was instrumentation calibrated in accordance with Department procedures? Yes No Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

2. Surface data obtained from (location) _____

3. Upper air (mixing height) data obtained from (location) _____

4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. _____ Modified? If yes, attach description.
2. _____ Modified? If yes, attach description.
3. _____ Modified? If yes, attach description.
4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO ₂	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

Total Process Input Rate

50,792 Lbs./Hr. Phosphoric Acid @ 52% P_2O_5 + 231 Lbs./Hr. Diatomaceous Earth + 626 Lbs./Hr. Sodium Hydroxide @ 50% NaOH = 51,649 Lbs./Hr. ✓
Total Process Input Rate.

Product Rate

51,649 Lbs./Hr. Total Process Input Rate + 1490 Lbs./Hr. H_2O as steam
- (1357 Lbs./Hr. Sludge) composed of (1.0% Phosphoric Acid Input + 99.0% Diatomaceous Earth Input + 99.0% Sodium Hydroxide Input) = 51,782 Lbs./Hr. Product.

ATTACHMENT B-1

Particulate Emissions (Actual)

Estimated Scrubber System Loading: 25 Lbs./Hour ← Basis of est.

100% - 98% (Scrubber Efficiency) = 2%

25 Lbs./Hour Loading to Scrubber System X 2% Discharge = 0.50 Lbs./Hour Emissions

0.50 Lbs./Hour Emissions X 2080 Hours Annual Operating Time = 1040 Lbs./Year Emissions ÷ 2,000 Lbs./Ton = 0.52 Tons/Year Emissions

Potential Emissions

25 Lbs./Hour Scrubber System Loading

25 Lbs./Hour X 2080 Hours Annual Operating Time = 52,000 Lbs./Year ÷ 2,000 Lbs./Ton = 26 Tons/Year Potential Emissions

Particulate compliance will be demonstrated using Method 5. ← 10 FPS How measure velocity, How test procedure modified

ATTACHMENT B-2

Fluoride Emissions (Actual)

Estimated Scrubber Loading: 49.23 Lbs./Hour

100% - 98% (Scrubber System Efficiency) = 2.0%

49.23 Lbs./Hour Loading to Scrubber System X 2.0% Discharge =
0.98 Lbs./Hour Emissions

0.98 Lbs./Hour Emissions X 2080 Hours Annual Operating Time =
2038.4 Lbs./Year Emissions \div 2,000 Lbs./Ton = 1.02 Tons/Year Emissions

Basis of Flow Entry
low (Packed cross flow bed)

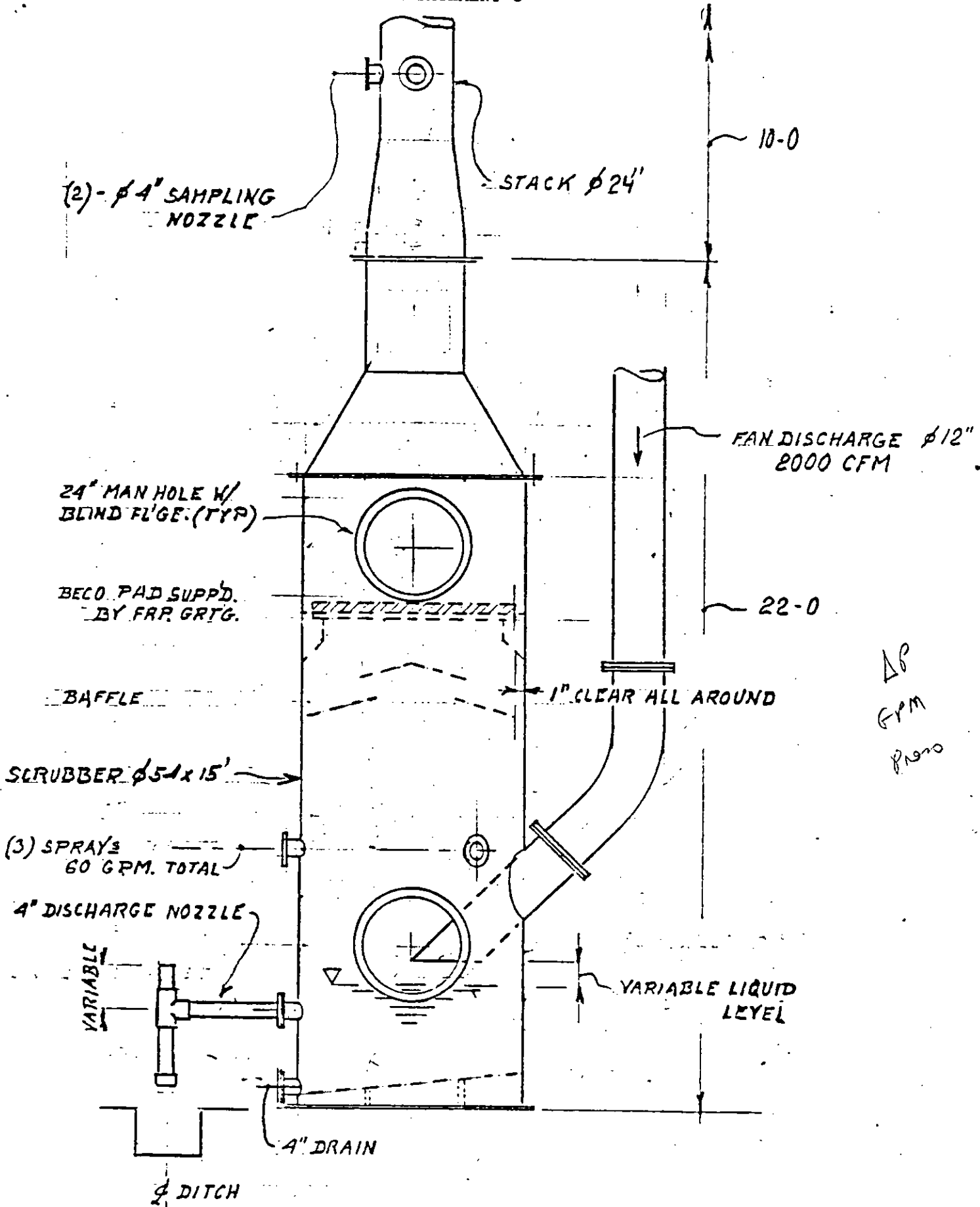
Potential Emissions

49.23 /Hour Scrubber System Loading

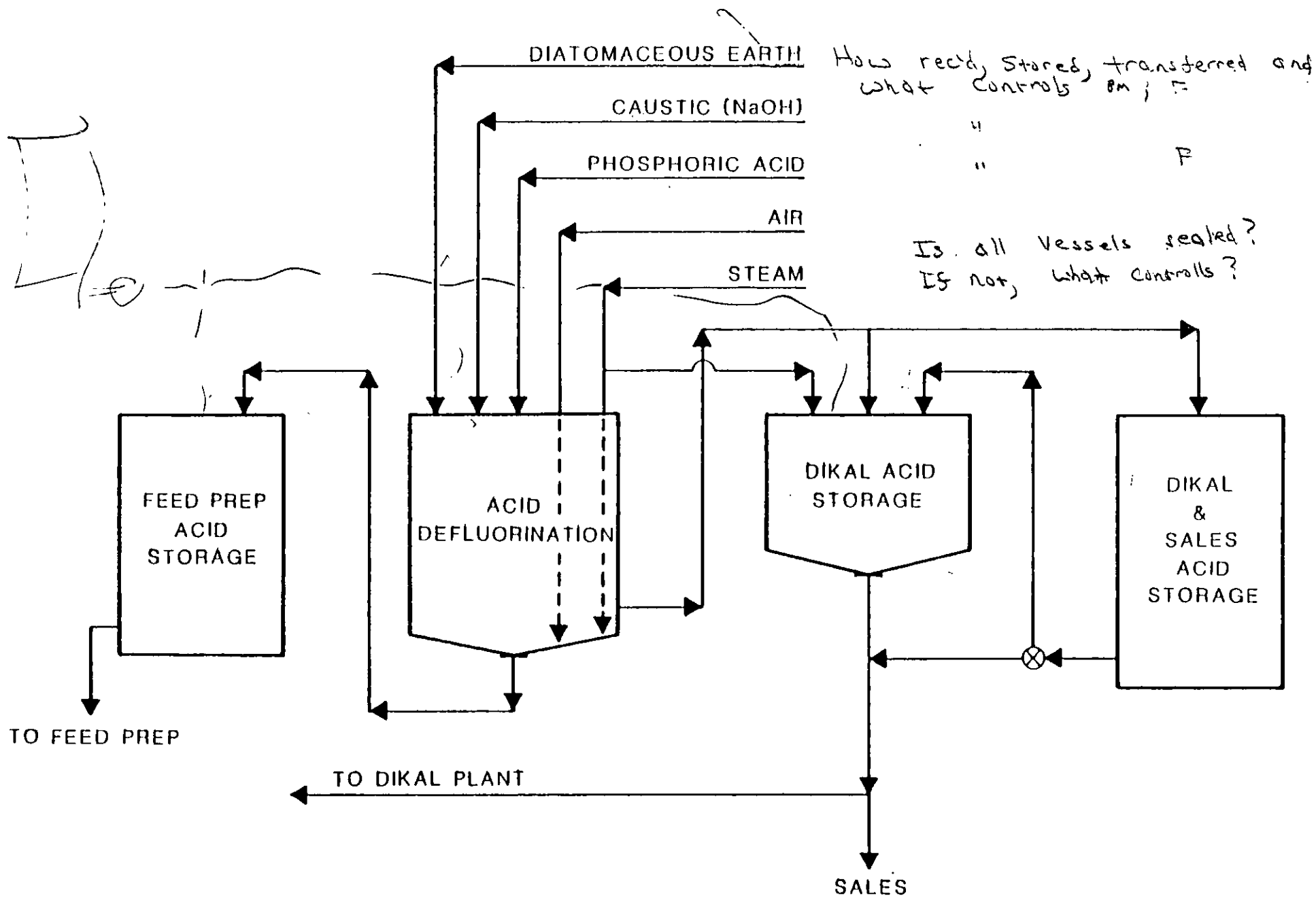
49.23 Lbs./Hour X 2080 Hours Annual Operating Time = 102,398 Lbs./Year
 \div 2,000 Lbs./Ton = 51.20 Tons/Year Emissions

MAX 1025
(will be limit)

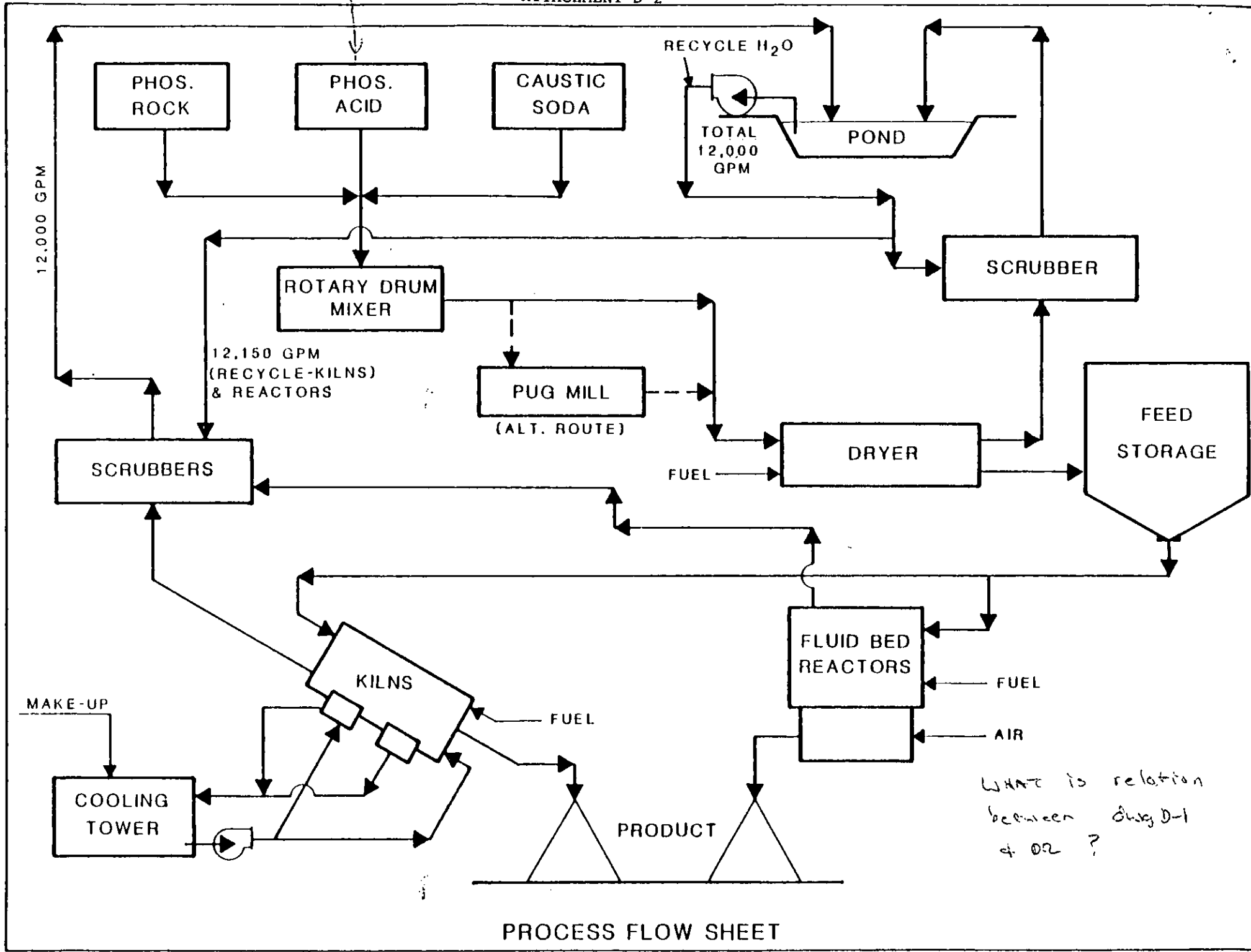
Fluoride compliance will be demonstrated using Method 13B.



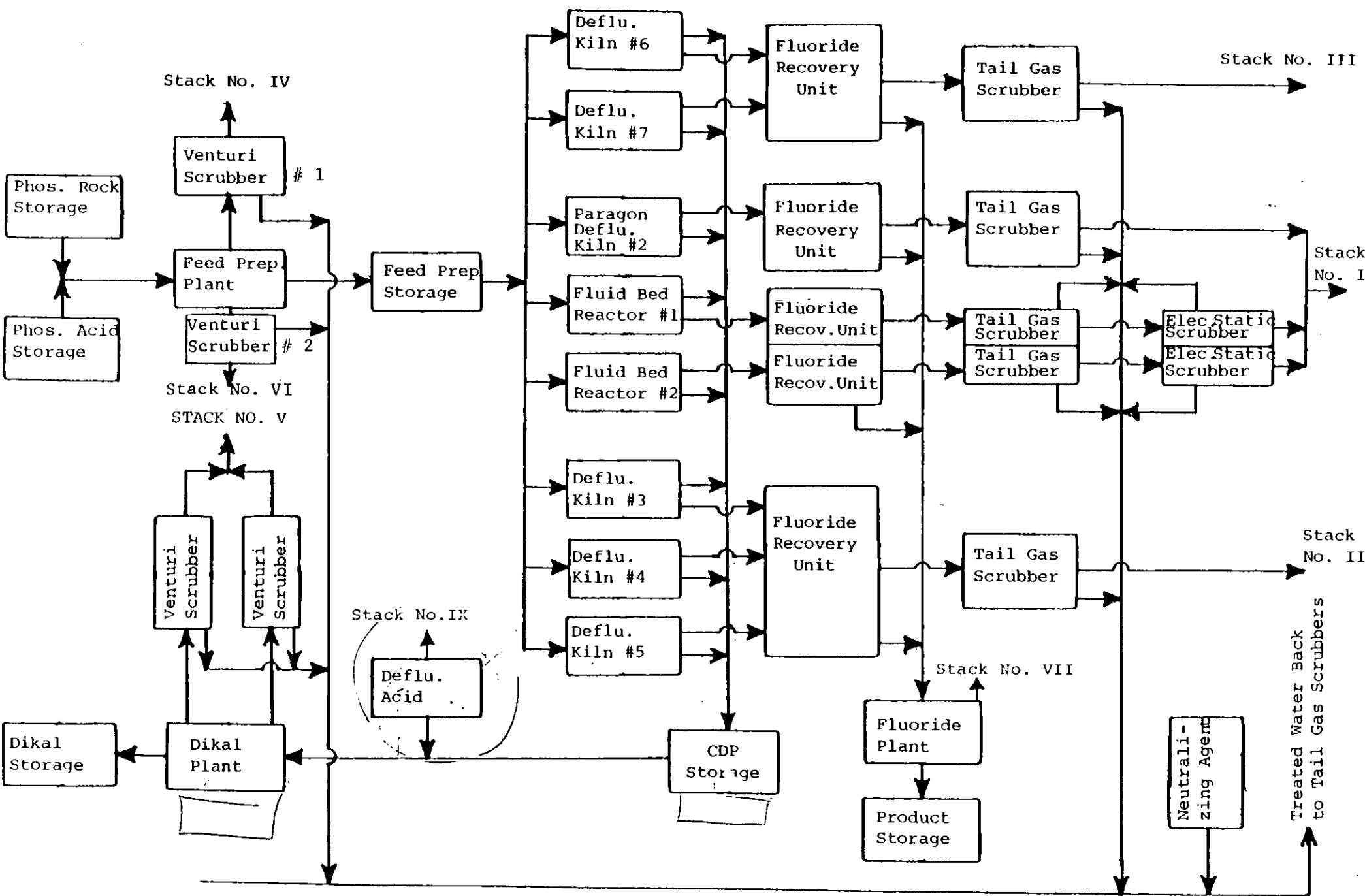
DEFLU ACID PLANT
FRP SCRUBBER



DEFLUORINATED PHOSPHORIC ACID FLOW SHEET



PROCESS FLOW SHEET

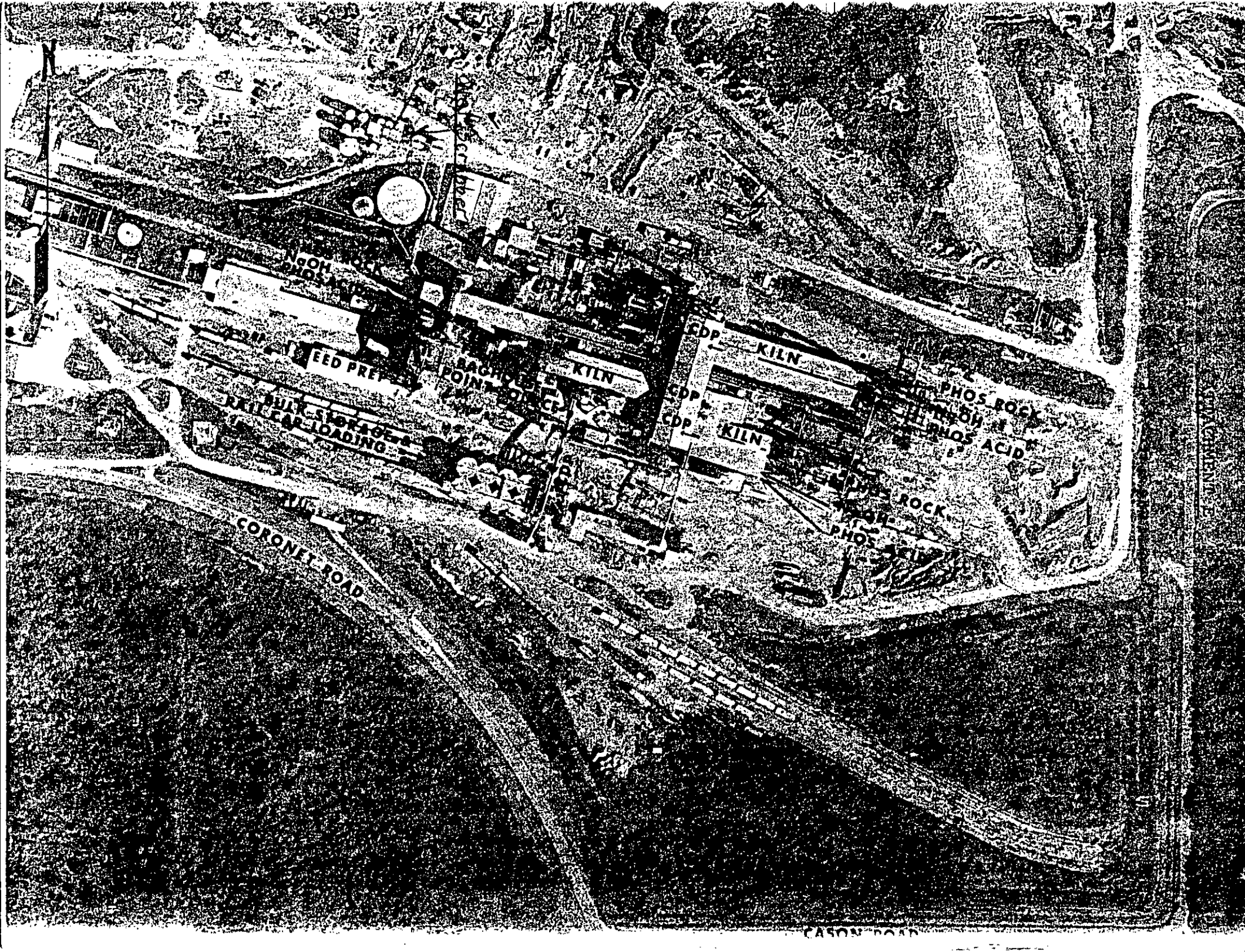


Pond

Pond

Copy for phos acid deflu. kiln / D-1 show other process eqm

INDICATE WHAT IS PROPOSED EQUIP



PHOS ROCK

EED PREP

RAIL CAR STORAGE

CORONET ROAD

BAGHOUSE
POINT OFFICE

KILN

KILN

KILN

PHOS ROCK
PHOS ACID

PHOS ROCK

CASON ROAD