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AC29-41943



D. L. R.

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

SOURCE TYPE: \_\_\_\_\_ [ ] New<sup>1</sup> [X] Existing<sup>1</sup>

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Tampa Electric Company 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) Stack emissions from combustion of coal, Gannon Station Unit 1

SOURCE LOCATION: Street Port Sutton Road City Tampa

UTM: East 360,000 North 3,087,500

Latitude 27 ° 54 ' 25 "N Longitude 82 ° 25 ' 21 "W

APPLICANT NAME AND TITLE: Tampa Electric Company

APPLICANT ADDRESS: P. O. Box 111, Tampa, FL 33601 Attn: Environmental Planning

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative\* of Tampa Electric Company  
construction

I certify that the statements made in this application for a \_\_\_\_\_ 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: Jerry L. Williams  
Jerry L. Williams, Manager, Environmental Planning  
Name and Title (Please Type)

Date: April 7, 1981 Telephone No. 813/879-4111

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

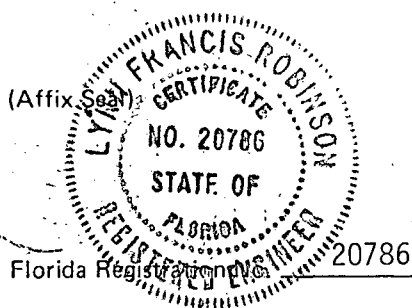
This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, 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: Lynn F. Robinson  
Lynn F. Robinson  
Name (Please Type)

Tampa Electric Company  
Company Name (Please Type)

P.O. Box 111, Tampa, FL 33601 Attn: Environmental Planning  
Mailing Address (Please Type)

Date: April 7, 1981 Telephone No. 813/879-4111



<sup>1</sup>See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

**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 source is presently an oil-fired boiler which generates steam to drive a turbine and produce electricity. The source will be converted to coal firing; an electrostatic precipitator will be added for particulate control.

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

Start of Construction September 1984 Completion of Construction December 1986

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.)

Electrostatic precipitator and controls - \$8,074,990

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

DER Permit A029-7136 dated September 27, 1978. Expiration date is July 1, 1983.

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  No

F. Normal equipment operating time: hrs/day 24; days/wk 7; wks/yr \_\_\_\_\_; if power plant, hrs/yr 5957; if seasonal, describe: \_\_\_\_\_

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?  | <u>Yes</u> |
| a. If yes, has "offset" been applied?   | <u>No</u>  |
| b. If yes, has "Lowest Achievable Emission Rate" been applied?  | <u>No</u>  |
| c. If yes, list non-attainment pollutants.  |            |
| <u>Particulate</u>  |            |
| 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI.  | <u>No</u>  |
| 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. | <u>No</u>  |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?  | <u>No</u>  |
| 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?                                       | <u>No</u>  |

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



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

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 COMPANY NAME: Tampa Electric Company COUNTY: Hillsborough  
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Signed: \_\_\_\_\_  
Jerry L. Williams, Manager, Environmental Plannin  
 Name and Title (Please Type)  
 Date: April 7, 1981 Telephone No. 813/879-4111

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Signed: Lynn F. Robinson  
Lynn F. Robinson  
 Name (Please Type)  
Tampa Electric Company  
 Company Name (Please Type)  
P.O. Box 111, Tampa, FL 33601 Attn: Environ-  
 Mailing Address (Please Type) mental Planning  
 Date: April 7, 1981 Telephone No. 813/879-4111

(Affix Seal)

Florida Registration No. 20786

<sup>1</sup>See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

**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		
Coal	(See Section III-E)			

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

1. Total Process Input Rate (lbs/hr): See Section III-E

2. Product Weight (lbs/hr): \_\_\_\_\_

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission <sup>1</sup>		Allowed Emission <sup>2</sup> Rate per Ch. 17-2, F.A.C.	Allowable <sup>3</sup> Emission lbs/hr	Potential Emission <sup>4</sup>		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	125.7	374.4	0.1 LB/10 <sup>6</sup> BTU	125.7	8380	36,704	Fig. 1
Sulfur Dioxide	3017	8,985	2.4 LB/10 <sup>6</sup> BTU	3017	3017	8,985	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It <sup>5</sup> )
Electrostatic Precipitator	Particulate	≥ 98.5%	NA	Att. 2

<sup>1</sup> See Section V, Item 2.

<sup>2</sup> 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)

<sup>3</sup> Calculated from operating rate and applicable standard

<sup>4</sup> Emission, if source operated without control (See Section V, Item 3)

<sup>5</sup> If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Coal			1257 x 10 <sup>6</sup>

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

Fuel Analysis:

Percent Sulfur: 1.0 Percent Ash: 9.5  
 Density: - lbs/gal Typical Percent Nitrogen: 1.3  
 Heat Capacity: 12,500 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.

Flyash - From flyash handling system to either flyash silo for sale or to boiler for reinjection. Bottom Slag - To slag sluicing system and ponds for storage/sale.

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

Stack Height: 306 ft. Stack Diameter: 10.0 ft.  
 Gas Flow Rate: 500,000 ACFM Gas Exit Temperature: 329 °F.  
 Water Vapor Content: 5.2 % Velocity: 106.3 FPS

SECTION IV: INCINERATOR INFORMATION

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) <sup>3</sup>	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: \_\_\_\_\_

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

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### SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

- Total process input rate and product weight – show derivation.  $1257 \times 10^6$  BTU/Hr.
- 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 1
- Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). See Attachment 1
- 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 2 and Figure 4
- 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 2
- 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 Figure 1
- 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 Figure 2
- 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 Figure 3

- 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

- 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

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

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

Table with 2 columns: Pollutant, Emission Rate. Rows for TSP and SO2 with blank lines for values and units (grams/sec).

E. Emission Data Used in Modeling

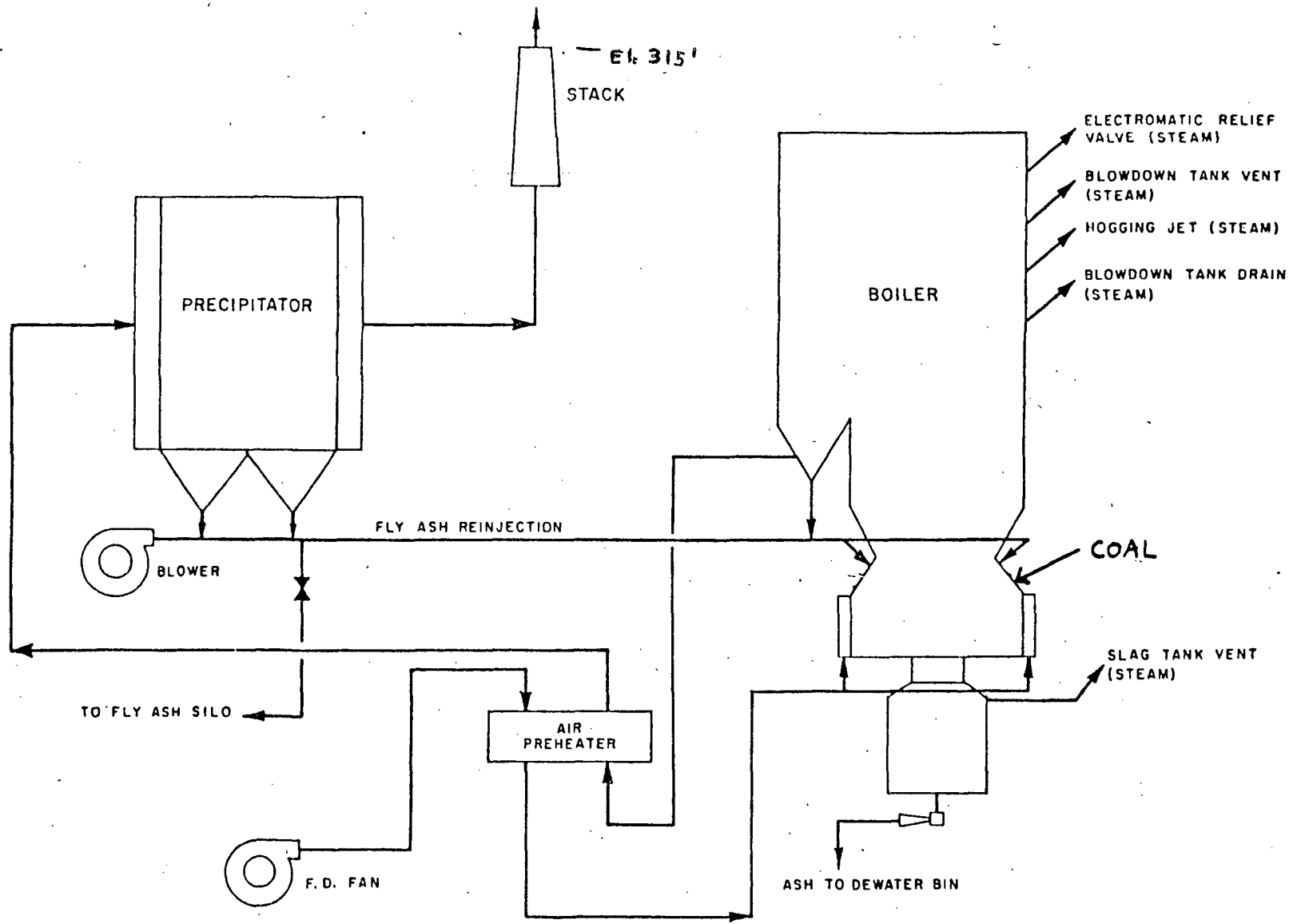
Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

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.



**FIGURE 1**  
**GANNON STATION-UNIT 1**  
**TAMPA ELECTRIC COMPANY**

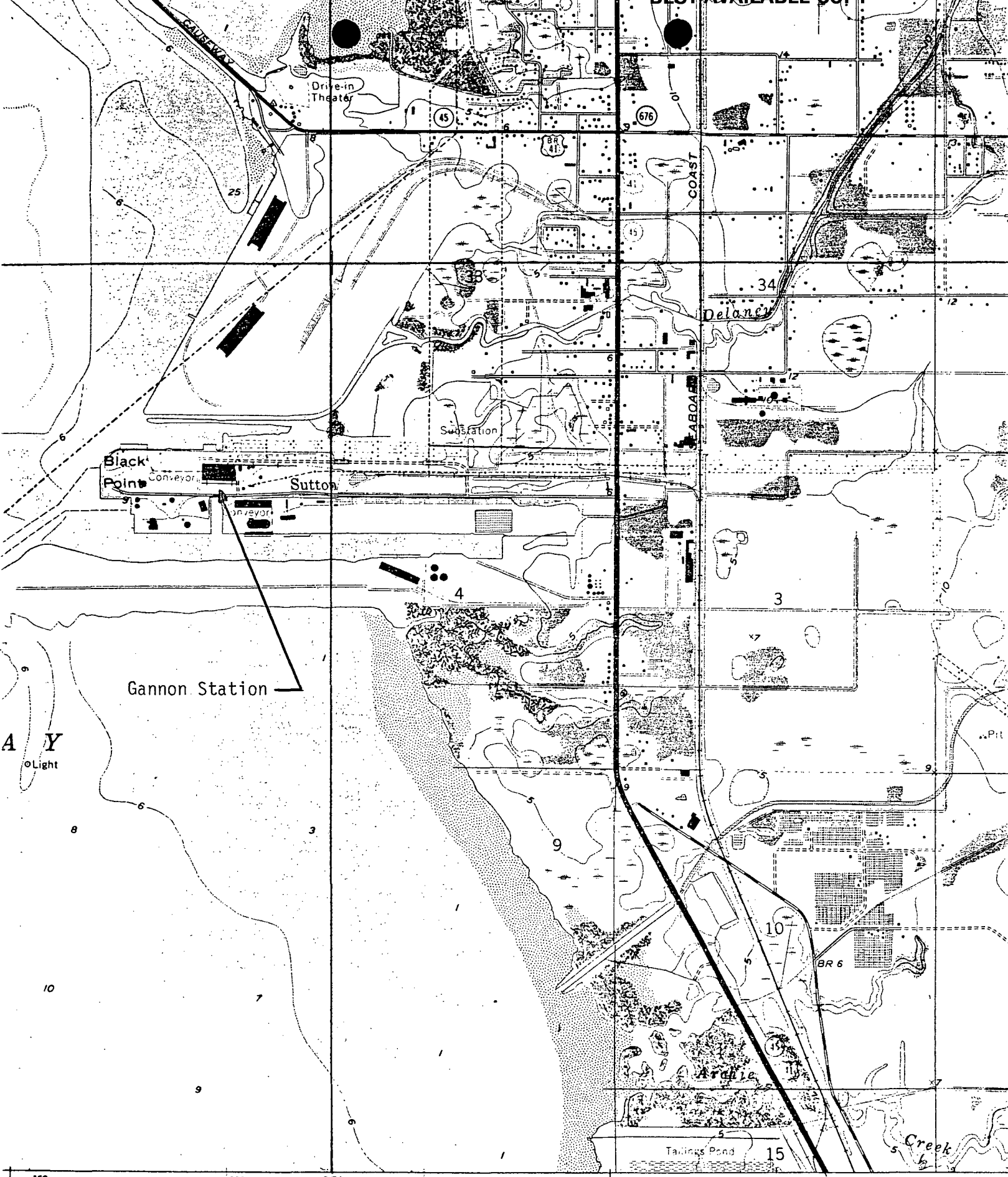
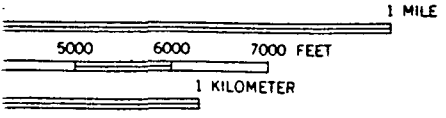


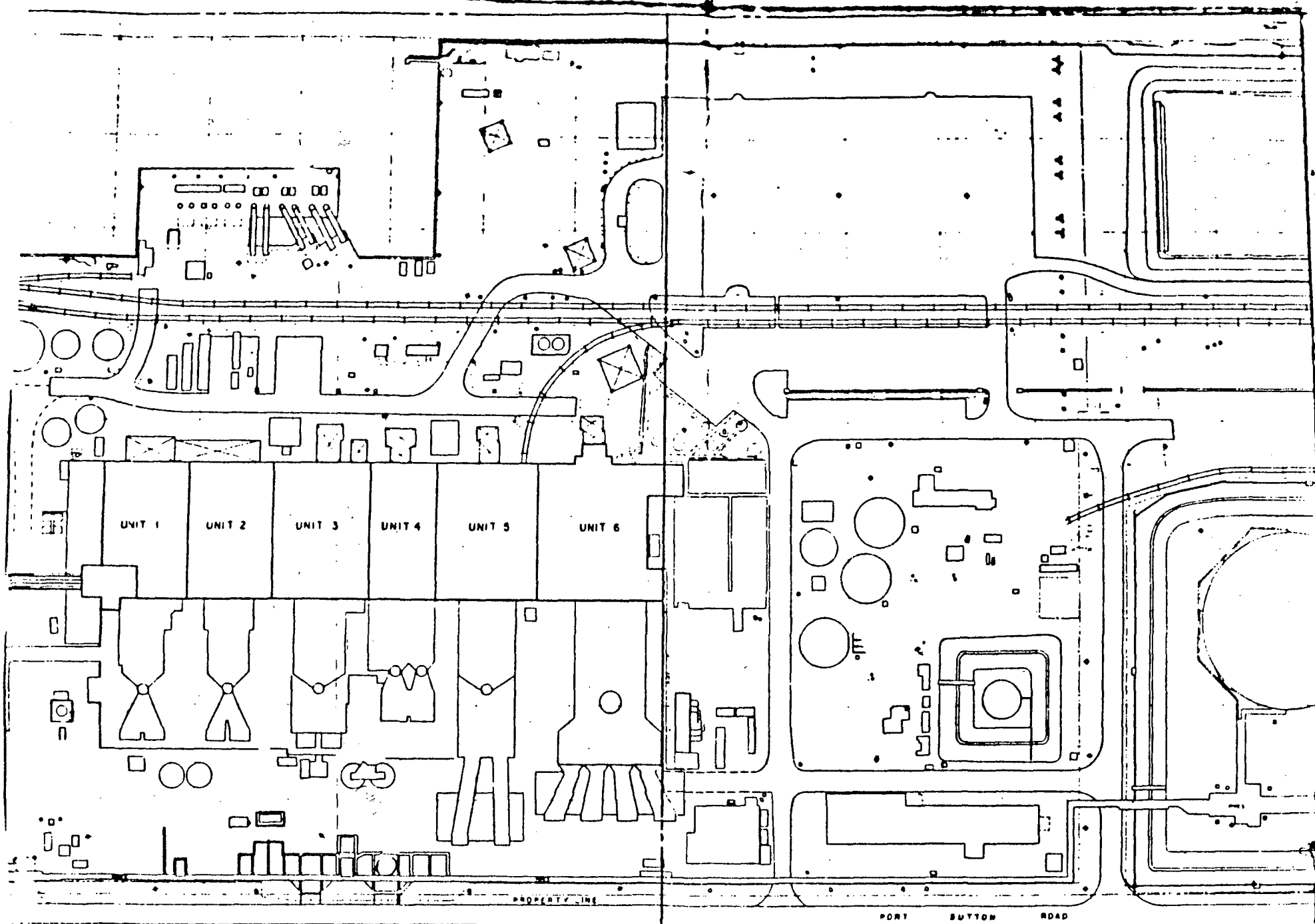
FIGURE 2

INTERIOR—GEOLOGICAL SURVEY, WASHING  
GIBSONTON 1.7 MI.  
BRADENTON 32 MI.



ROAD CLASSIFICATION

Heavy-duty	—————	Light-duty
Medium-duty	—————	Unimproved

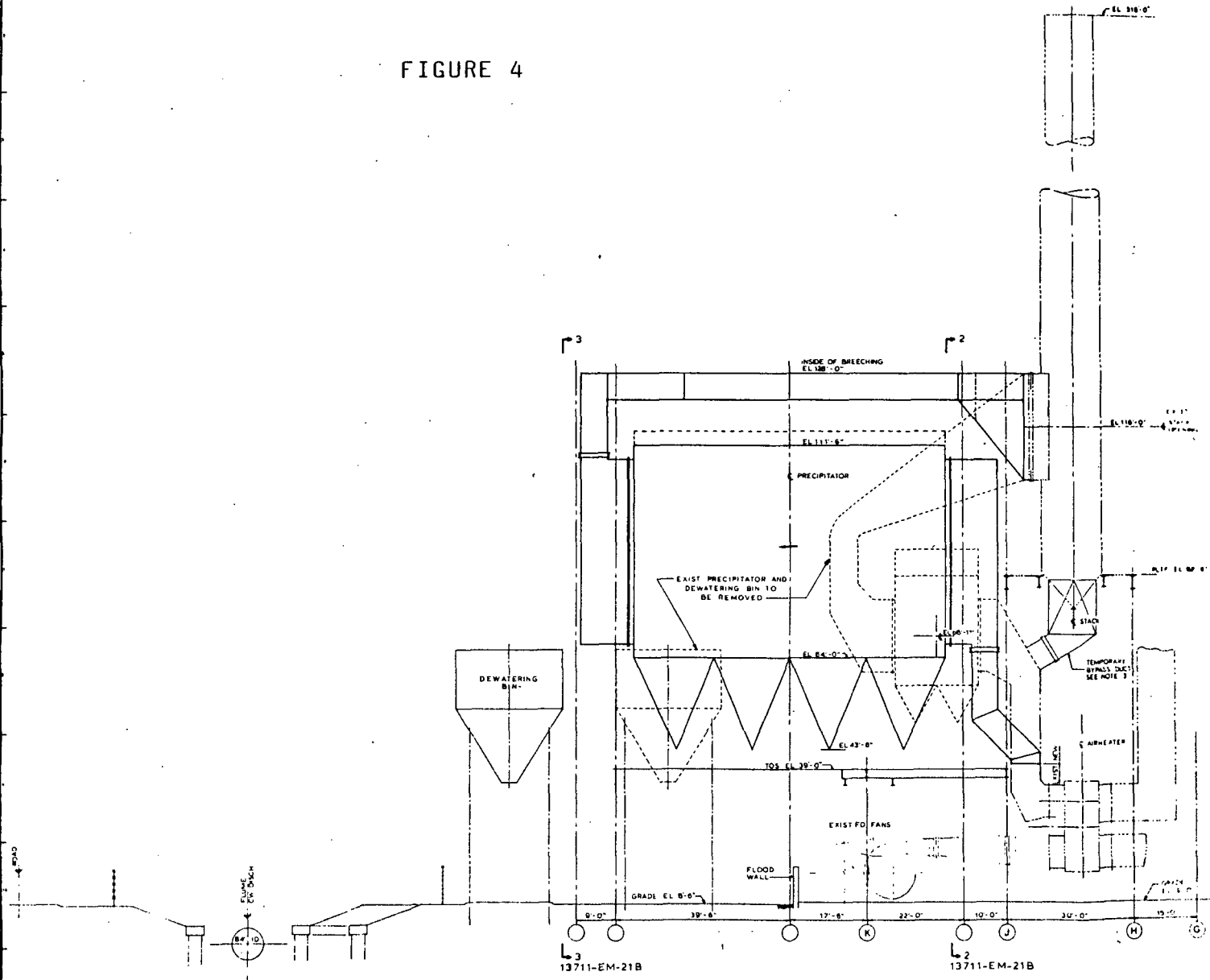


GANNON POWER PLANT

Source: Tampa Electric Company  
FIGURE 3

# BEST AVAILABLE COPY

## FIGURE 4



- NOTES
1. SEE NOTE 1 OF SET FOR A COMPLETE LIST OF NOTES & REVISIONS (REWORK)
  2. ALL DIMENSIONS SHOWN ARE FOR A COMPLETE SET OF NOTES & REVISIONS (REWORK)
  3. TEMPORARY BYPASS DUCT & AIR HEATER TO BE REMOVED UPON COMPLETION OF PROJECT. PROVIDE A DUCT TO ALLOW FOR FUTURE REVISIONS TO PRECIPITATOR AND DUCTWORK.
- REFERENCE DRAWINGS  
13711-EM-21B  
13711-EM-21C

PRELIMINARY FOR BIDS

TECO REFERENCE NO  
JO 9312 UNIT 1  
JO 9611 UNIT 2

ARRANGEMENT ELEVATION  
PRECIPITATOR & DUCTWORK  
UNITS NO 1 & 2 GANNON STATION  
TAMPA ELECTRIC COMPANY  
ISSUED FOR BIDS ONLY  
13711-EM-21A-1

NO.	DESCRIPTION	DATE	BY	CHECKED	APPROVED	SCALE	STATUS
1	ISSUED FOR BIDS ONLY						

## Gannon Station Units 1 &amp; 2

## Section III

## C. Airborne Contaminants Emitted

## 1. Particulates

## a. Emissions

$$1257 \times 10^6 \frac{\text{BTU}}{\text{Hr}} \times 0.1 \frac{\text{Lb}}{10^6 \text{BTU}} = 125.7 \frac{\text{Lb}}{\text{Hr}} \text{ maximum emissions}$$

$$125.7 \frac{\text{Lb}}{\text{Hr}} \times \frac{1 \text{ Ton}}{2000 \text{ Lb}} \times 8760 \frac{\text{Hr}}{\text{Yr}} \times 0.68 \text{ capacity factor} =$$

$$374.4 \frac{\text{Tons}}{\text{Yr}} \text{ Actual emissions}$$

$$\text{b. Allowed Emission Rate} = 0.1 \frac{\text{Lb}}{10^6 \text{BTU}}$$

$$\text{c. Allowable Emissions} = 125.7 \frac{\text{Lb}}{\text{Hr}} \text{ (same as maximum emissions)}$$

## d. Potential Emissions

$$= \text{Maximum emissions} + (1 - \text{Precipitator Efficiency})$$

$$= 125.7 + (1 - 0.985) = 8380 \frac{\text{Lb}}{\text{Hr}} = 36704 \frac{\text{Tons}}{\text{Yr}}$$

Test Method for compliance - EPA Reference Method 17

## 2. Sulfur Dioxide

## a. Emissions

$$1257 \times 10^6 \frac{\text{BTU}}{\text{Hr}} \times 2.4 \frac{\text{Lb}}{10^6 \text{BTU}} = 3017 \frac{\text{Lb}}{\text{Hr}} \text{ maximum emissions}$$

$$3017 \frac{\text{Lb}}{\text{Hr}} \times \frac{1 \text{ Ton}}{2000 \text{ Lb}} \times 8760 \frac{\text{Hr}}{\text{Yr}} \times 0.68 \text{ capacity factor} =$$

$$8,985 \frac{\text{Tons}}{\text{Yr}} \text{ actual emissions}$$

$$\text{b. Allowed Emission Rate} = 2.4 \frac{\text{Lb}}{10^6 \text{BTU}}$$

$$\text{c. Allowable Emission} = 3017 \frac{\text{Lb}}{\text{Hr}} \text{ (same as maximum emissions)}$$

## d. Potential Emissions

$$= \text{Maximum emissions} = 3017 \frac{\text{Lb}}{\text{Hr}}; 8985 \frac{\text{Tons}}{\text{Yr}}$$

Test Method for compliance - Fuel Analysis



Attachment 2

Proposals for precipitators are presently under evaluation by Tampa Electric Company. Basis of design is as follows:

Design Coal

12,500 BTU/Lb

9.5 % ash (7.6 #/MMBTU)

1.0 % sulfur (1.6 #/MMBTU)

6.0 % moisture

Precipitator specific collection area (SCA) =  $525 \text{ ft}^2/1000 \text{ acfm}$

Design efficiency  $\geq 98.5\%$

See Figure 4 for cross-section