State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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TO: Buck Oven, Power Plant Siting Section

THRU: Clair Fancy, Deputy Chief, BAQM

FROM: Bob King, BAQM

DATE: November 18, 1981

SUBJ: Response to the JEA's Comments on Draft Conditions of Certification

1. The Bureau feels that most comments from JEA on the draft conditions are acceptable except for these comments on Condition Nos. 5, 13, and 15.

2. We disagree on JEA's resolution on draft Condition No. 5. The draft condition is not inconsistent with the conditions in the revised federal PSD preliminary determination. Therefore, we believe that the condition should be retained without any change.

3. JEA's resolution on draft Condition 13 did not point out the reason why they object to the limits addressed for the auxiliary boilers. The condition should not be changed if there is not good reason for it.

4. The SO_2 emission limit is 0.76 lb/MMBTU for the proposed main units, which requires 90% SO_2 reduction based on the federal NSPS. The Bureau cannot agree with the JEA's resolution on draft Condition 15. Bypass reheat is continuous process. The quantity of flue gas bypassed is 25% or more. The Bureau does not believe that JEA can meet the NSPS limit on SO_2 emissions with the amount of bypassing flue gas. The attached document will give good reasons why bypass reheat should not be used in the proposed project.

BK:caa

It should be noted that the higher water vapor content in the gas offsets to some extent the adverse effects of gas cooling. Since the water vapor has a lower density than do other constituents of the gas, it makes the plume more buoyant. The effect is small, however, and has been omitted in developing the curves.

It is concluded that for the high efficiencies of SO_2 removal (85 - 95%), reheating is not likely to be economically justified except in marginal situations where the inlet SO_2 to the scrubber is so high that even with high SO_2 removal ambient concentration is still close to exceeding the standard.

There are some considerations, however, that may make the situation worse than it appears. If there is no reheat, then the gas leaving the stack can already have a load of mist, in which case evaporation of the droplets as the plume becomes mixed with air can cool the plume and further reduce its buoyancy. A high degree of mist elimination should be achieved if no reheat is used. Moreover, very little NO_x (probably less than 15 percent) is removed in SO_2 scrubbing. Thus NO_x ambient concentration will be greatly increased unless the gas is reheated.

4.11.7 Analysis of Bypass Reheat

Bypass reheat should be analyzed to determine its applicability from the standpoint of the emission limitations for sulfur dioxide. Bypass reheat offers the advantages of low capital investment and simple operation. The maximum quantity of reheat that can be obtained, however, is limited by the constraints of pollutant emission standards. As mentioned earlier, a regulation requiring 90 percent SO_2 removal efficiency would completely rule out the bypass reheat option. The limitation of sulfur emission to meet the emission standard for sulfur dioxide of 1.2 lb/mill Btu can be written as:

$$X - 1 - \frac{1}{E} + \frac{1.2}{2WSE} \qquad \text{(Eq. 4.11-11)}$$

where,

W = amount of fuel required to generate one million Btu/lb

S = weight fraction of sulfur in the fuel

X = fraction of bypass flue gas stream

E = Fractional sulfur removal efficiency of the wet scrubbing system

For details of the heat balance around the reheat system, refer to Reference (1).

4.11.8 No Reheat

As mentioned previously, stack gas reheat is not required by law. Some power plants have selected, at least temporarily, a "no-reheat" design and accepted the possible consequences--condensation in the ID fan and the stack.

Wash water can be sprayed periodically on the ID fan blades to prevent solid deposits, and a wet stack can be installed to protect the stack from acid attack.

Some advocate "no-reheat" by utilizing a "slow" stack (gas velocity of 30 ft/s [9 m/s]) rather than a conventional stack (gas velocity of 90 ft/s [30 m/s]). The slow stack allows mist droplets (acid rain) to settle out in the stack bottom. This requires special duct and stack material and handling equipment. It also requires larger stacks, which increase opacity problems.

Another alternative for prevention of ground concentration of pollutants is to build a taller stack. A tall stack may be more economial than reheating, even though it involves a high capital cost. There is, by comparison, no energy cost. Under certain circumstances, however, a stack of the required height might not achieve the objective of dispersion for a particular location. Meteorological modeling is a useful tool for determining the validity of such an alternative, but most dispersion models have not been developed for wet plumes.

To limit corrosion in no-reheat operation, one may either select materials that are inherently resistant to corrosion, or use coatings to cover corrodible materials. Discussion of this issue is included elsewhere in this Data Book. If the purpose of reheat is to protect a downstream fan, an obvious alternative is to place a fan upstream from the scrubber. This solution is only feasible with an upstream collector or ESP to remove abrasive particulate. Most installations with wet stack operation have stack lining problems. The lining usually blisters and eventually

STACK GAS REHEAT FOR WET FLUE GAS DESULFURIZATION SYSTEMS

EPRI FP-361
(Research Project 209-2)

Final Report

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Prepared by

BATTELLE
Columbus Laboratories
505 King Avenue
Columbus, Ohio 43201

Principal Investigators
P. S. K. Choi
S. G. Bloom
H. S. Rosenberg
S. T. DiNovo

Prepared for

Electric Power Research Institute
3412 Hillview Avenue
Palo Alto, California 94304

Project Manager
Thomas Morasky

ABSTRACT

A major problem in operating wet flue gas desulfurization systems is the need for stack gas reheat. Reheat is required to avoid downstream condensation and corrosion, to avoid a visible plume, and to enhance plume rise and dispersion of residual pollutants. Reheat methods currently in use include in-line reheat, indirect hot air reheat, and direct combustion reheat. Bypass reheat is not currently in use but has been considered and tested.

In-line reheaters using steam, in general, encounter a severe corrosion problem, due mainly to stress corrosion caused by chloride. Neither carbon nor stainless steel is adequate to resist this corrosion. In-line carbon steel reheaters using hot water have less severe corrosion problems compared to steam in-line reheaters. The use of hot water may not be the reason for less corrosion. More likely, one of the reasons may be that the boiler systems incorporate a limestone injection process which may eliminate chloride and sulfate ions from the flue gas. Because of extended fins on the tubes, however, a heater of this type has more severe pluggage and soot-blowing problems.

Indirect hot air reheaters are free of corrosion and plugging problems. This type of reheater, also providing reduced moisture content in the stack gas, reduces the probability of fog formation in the plume.

The major problems associated with direct combustion reheaters are corrosion and flame instability. An external combustion chamber is desirable. The initial capital investment is low but the utility cost is high due to high cost of fuel.

Bypass reheat has the advantages of low capital investment and simple operation, but the maximum degree of reheat attainable is limited by pollutant standards.

CONCLUSIONS

Based on the results of the unit study on stack gas reheat for wet scrubbing, the following conclusions can be drawn.

(1) Power plant stack gases from wet scrubbers need to be reheated in order to avoid downstream condensation in the I.D. fan and stack, and to avoid a visible plume. A secondary reason for stack gas reheat is to improve plume rise and dispersion. The types of reheat systems currently being employed at power plants include in-line reheat, indirect hot air reheat, and direct combustion reheat.

(2) To minimize the heat requirement for a fixed degree of reheat, the mist carryover from the scrubber should be minimized. The efficiency of the scrubber mist eliminator should, therefore, be high and the time of operation of the top wash sprayer, if used, should be minimized. A high-efficiency mist eliminator also is necessary to avoid severe pluggage problems in in-line reheaters.

(3) The lowest heat requirement to avoid downstream condensation can be obtained by an in-line reheater. The lowest heat requirement to avoid a visible plume can be obtained by an indirect hot air reheater. An indirect hot air reheater also results in a higher plume rise and generally a lower ground-level pollutant concentration for a fixed degree of reheat because of the effect of stack gas dilution with air. However, in general, the effect of reheat on the effective control of ground-level sulfur dioxide concentration is small in the temperature ranges beyond the dewpoint of the stack gas.

(4) Bypass reheat has the advantages of low capital investment and simple operation. However, the maximum degree of reheat which can be obtained is limited by the constraints of pollutant emission standards. The applicability of bypass reheat, for example, based on the limitation for sulfur dioxide emission depends on the sulfur content of the fuel, the removal efficiency of the scrubbing system, the temperature of the bypassed flue gas, and the degree of reheat required.

(5) The general consensus for reheat requirement is to increase the stack gas temperature from the wet scrubber and mist eliminator (about 125 F) by 25 F to 50 F. The energy need for reheat ranges between 1 to 5 percent of the total energy input to the boiler system. The energy need has a wide range because of variations in mode of operation, extent of duct insulation, arrangement of ductwork, and type of reheat.

(6) In-line reheaters using steam, in general, have a severe corrosion problem. The corrosion is mainly due to stress corrosion caused by chloride. Neither carbon steel nor stainless steel is deemed adequate to resist the corrosion. The solids deposited on the tubes should be blown off about once every 4 to 8 hours using either steam or compressed air. The soot blowing equipment is one of the high maintenance items.

(7) In-line, carbon steel reheaters using hot water have less corrosion problems compared with those for steam in-line reheaters during the first 6 to 7 years of operation. The tube temperature in general is low (about 230 to 350 F). Because of

extended fins, a reheater of this type has more severe pluggage and soot blowing problems. An efficient mist eliminator prior to the reheater is essential.

(8) In-line reheaters, either steam or hot water, have the advantages of being simple in design and low in capital investment. However, the reheaters require a large amount of maintenance for successful operation.

(9) Direct combustion reheaters with burners in-line have corrosion and flame stability problems. An external combustion chamber is desirable to cope with the problems. This type of reheat system is not deemed adequate for ducts with combustible linings since ineffective mixing of stack gas and combustion gas would cause downstream hot spots and damage the linings. In addition, the preheating time for the combustion chamber is high (about 8 to 15 hours) in order to prevent the refractory lining from cracking, and the temperature control is difficult. The initial investment is low, but the annual utility cost is very high compared with those for other reheat systems.

(10) Indirect hot air reheaters are free of corrosion and pluggage problems. This type of reheater also provides a decrease in moisture content per unit weight of dry gas, which will reduce the probability of fog formation in the plume. The initial capital investment is relatively high compared with that for other types of reheaters. However, the maintenance cost will probably be lower due to the absence of corrosion and pluggage problems.

(11) Startup and shutdown should be carried out with more attention to proper procedures. The procedures vary with the type of reheater, type of duct lining material, type of mist eliminator material, distance from the mist eliminator, and the type of materials used in

construction of the FGD system. Two important points to consider in the procedures are the prevention of corrosion in the reheater and the protection of structures from thermal damage.

(12) Stack gas that has not been reheated has a very dense, visible plume. The condensate in the stack has a pH of 2 to 4 according to the survey data and causes some deleterious effect on masonry linings. Operation without reheat requires washing I.D. fans to protect the fan blades from solid deposits, and an acid-resistant lining in the stack to protect the stack structure from deterioration.

RECOMMENDATIONS FOR FUTURE STUDY

(1) A detailed economic analysis of alternative reheat systems is recommended to analyze initial investment cost and cost for operation and maintenance. There has been a lack of systematically analyzed information on stack gas reheat, and thus, the selection of stack gas reheat in the scrubber installation has been mainly dependent upon the vendors supplying the scrubbing system. This occurs because the reheat system is usually included as a part of the scrubber package. However, this need not be the case and a utility should be free to select the optimal reheat system for its specific situation. In the proposed study, a representative case will be selected to use as a basis for the comparative analysis. Technical evaluations will be carried out for various reheat alternatives as well as the economic analysis. The results would provide the Electric Power Research Institute and its membership with a better basis for economic and technical analysis of various types of reheat systems.

(2) A study on plume rise and pollutant dispersion is also recommended for a wet plume to examine the effect of various parameters. In the present report, the effect of reheat was studied only for a specific case. The

State of Florida Department of Environmental Regulation
Jacksonville Electric Authority
SJRPP Units 1 & 2
PA 81-13
CONDITIONS OF CERTIFICATION

Table of Contents

State of Florida Department of Environmental Regulation
Jacksonville Electric Authority
SJRPP Units 1 & 2
PA 81-13

CONDITIONS OF CERTIFICATION

I. Air

The construction and operation of SJRPP Units 1 & 2 at the Jacksonville steam electric power plant site shall be in accordance with all applicable provisions of Chapters 17-2, 17-4, 17-5 and 17-7, Florida Administrative Code. In addition to the foregoing, the permittee shall comply with the following conditions of certification:

A. Emission Limitations

1. Based on a maximum heat input of 6,144 million BTU per hour, stack emissions from SJRPP Unit 1 & 2 shall not exceed the following when burning coal:

   a. SO_2 - 1.2 lb. per million BTU heat input, maximum two hour average, 0.76 lb/MMBtu on a 30-day rolling average.

   b. NO_x - 0.60 lb. per million BTU heat input.

   c. Particulates - 0.03 lb. per million BTU heat input.

   d. Visible emissions - 20% (6-minute average), except one 6-minute period per hour of not more than 27% opacity.

2. The height of the boiler exhaust stack for SJRPP Unit 1 & 2 shall not be less than 640 ft. above grade.

3. Particulate emissions from the coal handling facilities:

   a. The permittee shall not cause to be discharged into the atmosphere from any coal processing or conveying equipment, coal storage system or coal transfer and loading system processing coal, visible emissions which exceed 10 percent opacity. Particulate emissions shall be controlled by use of control devices.

   b. The permittee must submit to the Department within thirty (30) days after it becomes available, copies of technical data pertaining to the selected particulate emissions control for the coal handling

facility. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters such as air/-cloth ratio and flow rate. The Department may, upon review of these data, disapprove the use of any such device if the Department determines the selected control device to be inadequate to meet the emission limits specified in 3(a) above. Such disapproval shall be issued within 30 days of receipt of the technical data.

4. Particulate emissions from limestone and flyash handling shall not exceed the following:

   a. Limestone silos - 0.050 lb/hr.

   b. Limestone hopper/transfer conveyors - 0.65 lb/hr.

   c. Flyash handling system - 0.2 lb/hr.

5. Visible emissions from the following facilities shall be limited to 5% opacity: (a) limestone and flyash handling system, (b) limestone day silos and (c) flyash silos.

6. Compliance with opacity limits of the facilities listed in Condition 5 will be determined by EPA reference method 9 (Appendix A, 40 CFR 60).

7. Construction shall reasonably conform to the plans and schedule given in the application.

8. The permittee shall report any delays in construction and completion of the project which would delay commercial operation by more than 90 days to the Department's St. Johns River Subdistrict Office.

9. Reasonable precautions to prevent fugitive particulate emissions during construction, such as coating of roads and construction sites used by contractors regrassing or watering areas of disturbed soils, will be taken by the permittee.

10. Coal shall not be burned in the units unless both electrostatic precipitator and limestone scrubber are operating properly except as provided under 40 CRF Part 60 Subpart Da.

11. The two auxiliary boilers shall fire No. 2 fuel oil with a maximum sulfur content of 0.76 percent by weight, a maximum ash content of 0.01 percent by weight, a minimum

heating value of 19,170 Btu per pound and a maximum viscosity of 3.0 centistokes at 100° F. Samples of all fuel oil fired in the boilers shall be taken and analyzed for sulfur content, ash content, heating value and viscosity. Accordingly, samples shall be taken of each fuel oil shipment received. Records of the analyses shall be kept a minimum of the two years to be available for FDER's inspection.

12. The same quality No. 2 fuel oil, used for the auxiliary boilers, shall be used for the main boilers Units 1 and 2 during start-up and low load operation.

13. Maximum emissions from either of the auxiliary boilers shall be limited to 0.8 lb/MMBTU for SO_2, 0.3 lb/MMBTU for NO_x, 0.01 lb/MMBTU for PM, and 10 percent opacity for visible emissions.

14. Coal fired in Units 1 and 2 shall have an ash content not to exceed 18% and a sulfur content not to exceed 4% by weight. Coal sulfur content shall be determined and recorded in accordance with 40 CRF 60.47a.

15. No fraction of flue gas shall be allowed to bypass the FGD system to reheat the gases existing from the FGD system, if the bypass will cause overall SO_2 removal efficiency less than 90 percent. The percentage and amount of flue gas bypassing the FGD system shall be documented and records kept a minimum of two years available for FDER's inspection.

16. Neither of the auxiliary boilers shall be allowed to operate while the boiler Units 1 and 2 are operating collectively at greater than 6,144 million Btu per hour heat input.

8. Air Monitoring Program

1. The permittee shall install and operate continuously monitoring devices for each main boiler exhaust for sulfur dioxide, nitrogen oxide, carbon monoxide, carbon dioxide and opacity. The monitoring devices shall meet

the applicable requirements of Section 17-2.710, FAC, and 40 CFR 60.47a. The opacity monitor may be placed in the duct work between the electrostatic precipitator and the FGD scrubber.

2. The permittee or Jacksonville Bio-Environmental Services Division shall operate two ambient monitoring devices for sulfur dioxide in accordance with EPA reference methods in 40 CFR, Part 53, and two ambient monitoring devices for suspended particulates. The monitoring devices shall be specifically located at a location approved by the Department. The frequency of operation shall be every six days commencing as specified by the Department.

3. The permittee shall maintain a daily log of the amounts and types of fuel used and copies of fuel analyses containing information on sulfur content, ash content and heating values.

4. The permittee shall provide stack sampling facilities as required by Rule 17-2.700(4) FAC. The sampling probe liner shall be fabricated of material which can withstand flexing.

5. The ambient monitoring program may be reviewed by the Department and the permittee annually after start-up of Unit 1. The monitoring program may be expanded or modified as deemed necessary by the Department.

6. Prior to operation of the source, the permittee shall submit to the Department a standardized plan or procedure that will allow the permittee to monitor emission control equipment efficiency and enable the permittee to return malfunctioning equipment to proper operation as expeditiously as possible.

C. Stack Testing

1. Within 60 calendar days after achieving the maximum capacity at which each unit will be operated, but no later than 180 operating days after initial start-up, the permittee shall conduct performance tests for particulates SO_2, NO_x, and visible emissions during normal operations near (±10%) 6144 MMBtu/hr heat input and furnish the Department a written report of the results of such performance tests within 30 days of completion of the tests. The performance tests will be conducted in accordance with the provisions of 40 CFR 60.46a, 48a, and 49a.

E. Operating Restrictions

1. The permittee shall not operate its Southside, Northside, or Kennedy Generating Station in such a manner as to cause violation of ambient air quality standards for SO_2 when SJRPP is operating.

2. The permittee shall file with the Department, St. Johns River Subdistrict Office and the Jacksonville Bio-Environmental Services by June 1, 1984, the SJRPP proposed operating plan and supporting justification that will include the procedures JEA will follow to permanently eliminate emissions from steam generating units equivalent to the impact of the emissions of Southside Units 1 and 2. The Secretary of the Department shall indicate the Department's approval or disapproval within 90 days of receipt. The proposed operating plan shall also contain proposals for operating during air pollution episodes pursuant to 17-2.320(3), FAC, including use of such alternatives as washed coal.

3. The operating plan shall include retirement of Southside Units 1 and 2, or equivalent units, cold storage, construction of tall stacks or other equivalent programs.

4. The schedule for implementation of the plant shall by consistent with the start-up of SJRPP.

II. Water Discharges

Any discharges into any waters of the State during construction and operation of SJRPP Units 1 and 2 shall be in accordance with all applicable provisions of Chapter 17-3, Florida Administrative Code, and 40 CFR, Part 423, Effluent Guidelines and Standards for Steam Electric Power Generating Point Source Category, except as provided herein. Also, the permittee shall comply with the following conditions of certification:

A. Plant Effluents and Receiving Body of Water

For discharges made from the power plant the following conditions shall apply:

1. Receiving Body of Water (RBW)

The receiving body of water has been determined by the Department to be those waters of the St. John's River and any other waters affected which are considered to be waters of the State within the definition of Chapter 403, Florida Statutes.

2. Point of Discharge (P.O.D.)

The point of discharge has been determined by the Department to be where the effluent physically enters the waters of the State in the St. Johns River or Browns Creek.

3. Thermal Mixing Zone

The instantaneous zone of thermal mixing for the cooling system shall not exceed an area of 9.5 acres. The temperature at the point of discharge into the St. John's River shall not be greater than 105 degrees F. The temperature of the water at the edge of the mixing zone shall not exceed the limitations of Paragraph 17-3.05(1)(d). Cooling tower blowdown shall not exceed 93^{o} F as a 24 hour average.

4. Chemical Wastes

All discharges of low volume wastes (demineralizer regeneration, floor drainage, labs drains, FGD blowdown and similar wastes) and metal cleaning wastes shall comply with Chapter 17-3. If violations of Chapter 17-3 occur, corrective action shall be taken. These wastewaters shall be directed to an adequately sized and constructed treatment facility.

During periods when treated wastewater does not comply with pH discharge limitations, the treated wastewater may be recycled to the coal pile runoff sedimentation pond, except when the sedimentation pond has insufficient capacity to retain the recycled wastewater and the runoff from a rainfall event equal to or less than a ten year, 24 hour storm.

5. Coal Pile

Coal pile runoff shall be directed in the central wastewater treatment system and shall not be directly discharged to surface waters, except that discharge of stormwater runoff from the coal pile is allowed only during periods of high rainfall in excess of the ten year, 24 hour storm.

6. Chlorine

The concentration of total residual chlorine discharged from Units 1 & 2 and/or Northside Generating Station shall not exceed 0.1 mg/l at the POD nor 0.01 mg/l beyond an instantaneous mixing zone of 1.0 acre. Chlorine from either unit at SJRPP shall not be discharged more than two hours per day and no unit shall be chlorinated simultaneously with any other unit at SJRPP or at Northside Generating Station. Levels of free available chlorine shall not exceed 0.5 mg/l for an

instantaneous maximum nor 0.2 mg/l on a daily average from the blowdown of either cooling tower. In the event that 40 CFR, Part 423 is revised with respect to chlorine limitations, such discharge limitations shall apply to cooling tower blowdown.

7. pH

The pH of the combined discharges shall be such that the pH will fall within the range of 6.0 to 9.0.

8. Polychlorinated Biphenyl Compounds

There shall be no net discharge of polychlorinated biphenyl compounds.

9. Combined Low Volume Wastes and Coal Pile Runoff

The combined low volume wastes and coal pile runoff shall be treated to control pH, total suspended solids and toxic metals prior to being discharged. The following effluent limitations will apply:

Effluent	Daily Maximum	Maximum 30-Day Daily Average
TSS	50 mg/l	30 mg/l
Oil and Grease	15 mg/l	10 mg/l
pH	6-9	6-9

The design plans and specifications of the treatment system shall be submitted to the Department for review and approval prior to construction. The Department will indicate approval or disapproval within 45 days.

10. Metal Cleaning and Bottom Ash Sluice System Blowdown

Blowdown from the metal cleaning wastes and from the bottom ash sluice system shall be treated as appropriate prior to discharge to the cooling water system. The following effluent limitations shall apply:

Effluent	Daily Maximum	Maxmimum 30-Day Daily Average
TSS	100 mg/l	30 mg/l
Oil and Grease	20 mg/l	15 mg/l
pH	6-9	
Iron	1 mg/l	
Copper	1 mg/l	
PO_4	1 mg/l	
COD	100 mg/l	

11. Solid Waste and Limestone Storage Areas

There shall be no direct discharge of stormwater runoff to surface waters from the solid waste and limestone storage areas prior to treatment.

12. Storm Water Runoff

During plant operation, necessary measures shall be used to settle, filter, treat or absorb silt-containing or pollutant-laden stormwater runoff to limit the suspended solids to 50 mg/l or less at the POD during rainfall periods less than the 10-year, 24-hour rainfall, and to prevent an increase in turbidity of more than 50 Jackson Turbidity Units above background in waters of the State.

Control measures shall consist at the minimum of filters, sediment traps, barriers, berms or vegetative planting. Exposed or disturbed soil shall be protected as soon as possible to minimize silt - and sediment-laden runoff. The pH shall be kept within the range of 6.0 to 8.5 at the POD.

13. Coal Unloading Facility Percolation Pond Overflow

There shall be no direct discharge to surface waters from the coal unloading facility wastewater treatment system percolation pond. Any discharge from the facility shall be reported to the Department and the Environmental Protection Agency. The quantity of flow and duration of flow shall be estimated.

14. Mixing Zones

The discharge of the following pollutants shall not violate the Water Quality Standards of Chapter 17-3, FAC, beyond the edge of the designated instantaneous mixing zones as described herein.

Pollutants	Mixing Zone	
Aluminum	$125,600^2$	31 Acres
Copper	$125,600^2$	31 Acres
Cyanide	$125,600^2$	31 Acres
Iron	$125,600^2$	31 Acres
Mercury	$125,600^2$	31 Acres
Silver	$125,600^2$	31 Acres

Oil and Grease	125,600[2]	31 Acres
Selenium	80[2]	0.02 Acres
Chlorides	80[2]	0.02 Acres

15. Variances to Water Quality Standards

In accordance with the provisions of Sections 403.201 and 403.511(2), F.S., Jacksonville Electric Authority is hereby granted variances to the water Quality Standards of Chapter 17-3, F.A.C., for Aluminum, Copper, Iron and Mercury and 17-4.244(4) for Copper but only at such times as the natural background levels of the St. Johns River approach or exceed those standards. In any event, the discharge from the SJRPP shall comply with the effluent limitations set forth in paragraph II.A.16. The variances for mercury and copper shall only be for two years, but may be extended by the Secretary pending results of monitoring data on wastewater treatment plant efficiency and ambient water quality data and bioassays performed for copper and mercury.

16. Effluent Limitations

The following effluent limitations shall apply for Aluminum, Copper, Iron, Mercury, Silver, and Oil and Grease at the locations specified:

a. Cooling Tower Blowdown - Daily average concentrations shall not exceed 1.5 times the concentrations present in the intake of the applicant's Northside Generating Station.

b. Wastewater Treatment Facility Discharge - Instantaneous maximum concentrations shall not exceed:

Aluminum	0.15 mg/l
Copper	1.0 mg/l
Iron	1.0 mg/l
Mercury	41.1 ug/l
Silver	6.4 ug/l
Oil and Grease	20 mg/l

B. Water Monitoring Programs

The permittee shall monitor and report to the Department the listed parameters on the basis specified herein. The methods and procedures utilized shall receive written approval by the Department. The monitoring program may be reviewed annually by the Department, and a determination may be made as to the necessity and extent of continuation, and may be modified in accordance with Condition No. XXV.

1. Chemical Monitoring

The following parameters shall be monitored during discharge as shown, commencing with the start of commercial operation of SJRPP and reported quarterly to the Department's St. Johns River Subdistrict Office:

Parameter	Location	Sample Type	Frequency
Flow, Groundwater	Wellfield Pipeline	Recorder	Continuous
Flow, Cooling Water Make-up	Intake	Pump Logs	Daily
Flow, Cooling Tower Blowdown	Cooling Towers	Pump Logs	Daily
Flow, CWTF*	Prior to Pump Sump	Recorder	Continuous
Flow, Oily Waste-Water collection Basin	Prior to Pump Sump	Pump Logs	Daily
pH	Pump Sump Outfall to NGS	Recorder Grab	Continuous One/per week
Temperature	Outfall to NGS	Recorder	Continuous
TSS	Oily Waste Basin, Metal Cleaning Waste Retention Basin CWTF and Sewage Treatment Facility	Grab 24 Hour Composite " " "	Two/per week Two/per week " " " Monthly
Chlorine,Total Residual	Cooling Tower Blowdown Discharge to Browns Creek (During construction only)	Multiple Grab	Weekly

*CWTF = Central Wastewater Treatment Facility

Oil and Grease	Oily Wastewater Collection	3 Grab Composite	Two/week
	Metal Cleaning Waste Retention Basin CWTF	24 Hour Composite	One/day
		3 Grab Composite	Two/week
Metals	Intake and Sump Pump	24 Hour Composite	Once/week for first six months, two/month for the next six months, then monthly thereafter
Aluminum	"		"
Copper	"		"
Cyanide	"		"
Iron	"		"
Mercury	"		"
Nickel	"		"
Selenium	"		"
Silver	"		"
Zinc	"		"
BOD	STP Influent and effluent	8 Hour Composite	Monthly
	Metal Cleaning Waste Facility	24 Hour Composite	Daily
PO_4	Metal Cleaning Facility	24 Hour Composite	Daily
Copper	" " "	" " "	"
Iron	" " "	" " "	"
Cycles-of-concentration	Cooling tower	Calculation	"

2. Groundwater Monitoring

The groundwater levels shall be monitored continuously at selected wells as approved by the St. Johns River Water Management District. Chemical analyses shall be made on samples from all monitored wells identified in Condition III. F. below. The location, frequency and selected chemical analyses shall be as given in Condition III.F.

The groundwater monitoring program shall be implemented at least one year prior to operation of SJRPP Unit 1. The chemical analyses shall be in accord with the latest edition of Standard Methods for the Analysis of Water and Wastewater. The data

shall be submitted within 30 days of collection/-analysis to the St. Johns River Water Management District and to the DER St. Johns River Subdistrict Office.

Conductivity shall be monitored in wells around all lined solid waste disposal sites, coal piles, and wastewater treatment and sedimentation ponds.

III. Groundwater

A. General

The use of groundwater from the wellfield for plant service water for SJRPP shall be minimized to the greatest extent practicable, but in no case shall exceed 7.6 mgd on a maximum daily basis from any new wells or 5.1 mgd on an average annual basis.

B. Well Criteria

The submission of well logs and test results and location, design and construction of wells to provide plant service water shall be in accordance with applicable rules of the Department of Evironmental Regulation and the St. Johns River Water Management District(SJRWMD). Total water use per month shall be reported quarterly to SJRWMD commencing with the start of construction.

C. Well Withdrawal Limits

JEA is authorized to make a combined average annual withdrawal of 5.1 million gallons of water per day with a maximum combined withdrawal rate not to exceed 7.6 million gallons during a single day. Withdrawals may be made from a wellfield consisting of up to four (4) wells whose approximate locations are described in Figure 1.

After wells have been constructed, St. Johns River Water Management District may evaluate the individual wells and may recommend to the Department authorization of different withdrawals based upon hydrologic characteristics for the individual wells. The Department pursuant to Section 403.516, F.S. may modify the above withdrawal limitations with the concurrence of SJRWMD and the permittee.

D. Water Use Restriction

Said water is restricted to uses other than main stream condensing. Any change in the use of said water will require a modification of this condition.

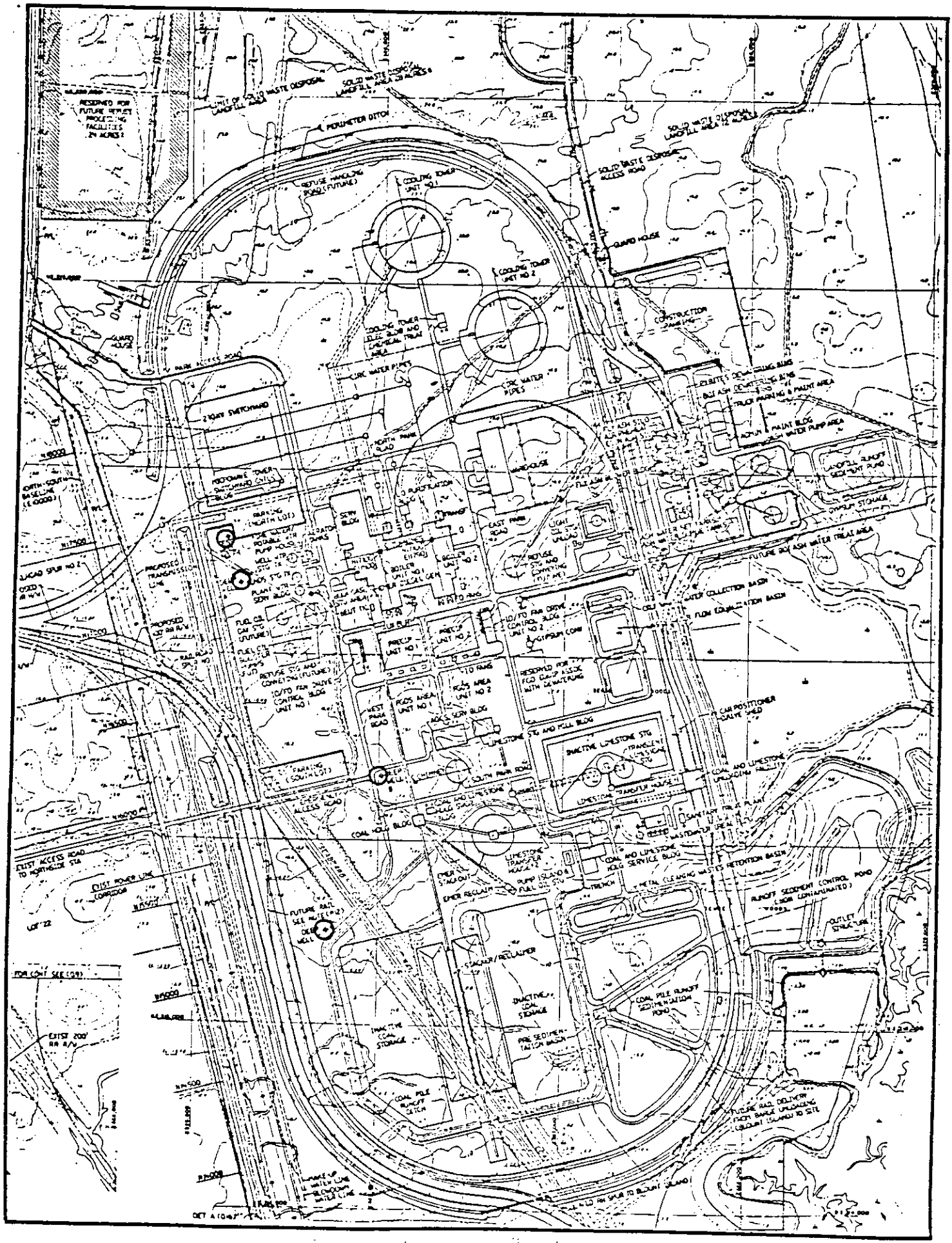

RESERVED FOR FUTURE SERVICE PROJECTING FACILITIES 24 ACRES
SOLID WASTE DISPOSAL LANDFILL AREA 28 ACRES
PERIMETER DITCH
REFUSE HANDLING POND (FUTURE)
COOLING TOWER UNIT NO 1
COOLING TOWER UNIT NO 2
SOLID WASTE DISPOSAL LANDFILL AREA 12 ACRES
SOLID WASTE DISPOSAL ACCESS ROAD
GUARD HOUSE
CONSTRUCTION PARKING
CIRC WATER PIPES
2 KV SWITCHYARD
NORTH PARK ROAD
WAREHOUSE
EAST PARK ROAD
WEST PARK ROAD
SOUTH PARK ROAD
EXIST ACCESS ROAD TO NORTHSIDE STA
EXIST POWER LINE CORRIDOR
EXIST 200' RR R/W
FUTURE RAIL SIDE TRACK
DEER CREEK
SCRUBBER BLDG
PRECIP UNIT NO 1
PRECIP UNIT NO 2
BOILER UNIT NO 1
BOILER UNIT NO 2
ID/FD FAN DRIVE CONTROL BLDG UNIT NO 1
ID/FD FAN DRIVE CONTROL BLDG UNIT NO 2
FGD SLUDGE ASSOC WITH DEWATERING
FGD AREA UNIT NO 1
FGD AREA UNIT NO 2
LIMESTONE STG AND FILL BLDG
INACTIVE LIMESTONE STG
TRANSIENT LIMESTONE STG
LIMESTONE TRANSFER HOUSE #2
COAL AND LIMESTONE CRUSHING BLDG
COAL AND LIMESTONE HDLG SERVICE BLDG
COAL AND LIMESTONE UNLOADING FACILITY
SAMPLING PLANT
WASTEWATER TREATMENT PLANT
WASTEWATER RETENTION BASIN
RUNOFF SEDIMENT CONTROL POND (NON-CONTAMINATED)
OUTLET STRUCTURE
STACKER/RECLAIMER
INACTIVE COAL STORAGE
COAL PILE RUNOFF SEDIMENTATION POND
PRE SEDIMENTATION BASIN
COAL PILE RUNOFF DITCH
FUTURE RAIL DELIVERY FROM BARGE UNLOADING FACILITY ON SEMINOLE TO SITE
WATER COLLECTION BASIN
FLOW EQUALIZATION BASIN
FUTURE ASH WATER TREAT AREA
ASH WATER SETTLING BASIN
ASH WATER PUMP AREA
LANDFILL RUNOFF SEDIMENT POND
OVERFLOW STORAGE
CONSTRUCTION PARKING & PAINT AREA
EXISTING DEMOLITION BLDG
ASH DEWATERING BLDG
TRUCK PARKING
PAINT BLDG
FOR CONT SEE (99)

FIGURE 1

E. Emergency Shortages

In the event an emergency water shortage should be declared pursuant to Section 373.175 or 373.246, F.S., by St. Johns River Water Management District for an area including the location of these withdrawal points, the Department pursuant to Section 403.516, F.S., may alter, modify, or declare to be inactive, all or parts of Condition III. A.-G. An authorized Water Management District Representative, at any reasonable time, may enter the property to inspect the facilities.

F. Monitoring and Reporting

JEA shall, within the time limits hereinafter set forth, complete the following items.

1. JEA shall install flow meters in compliance with SJRWMD specifications on all production wells.

2. JEA shall submit to SJRWMD, on forms available from the District, a record of pumpage for each meter installed in F.1. above. Said pumpage shall be provided on a monthly basis, and shall be submitted by April 15, July 15, October 15, and January 15 for each preceding calendar quarter.

3. JEA shall maintain and operate a continuous water level recorder on the standby production well located at the test site in Duval County, Florida. Detailed hydrographs of water level fluctuations shall be constructed with the data collected from the water level recorder and shall be submitted to SJRWMD by April 15, July 15, October 15, and January 15 for each preceding calendar quarter.

4. Water quality analysis shall be performed on water withdrawn from each production well. The water samples collected from each of the wells shall be collected immediately after removal by pumping of a quantity of water equal to two casing volumes. The JEA and staff of SJRWMD may determine and adjust the intervals to be monitored in accordance with hydrologic conditions determined from drilling logs. The water quality analyses shall be performed monthly during the first year of operation, quarterly during the second year and twice each year (May and September) thereafter. Results shall be submitted to SJRWMD within 45 days after following such analyses were performed. Testing for the following parameters is required:

Calcium	Magnesium	Sodium
Potassium	Bicarbonate	Sulfate
Chloride	Nitrate	Total Dissolved Solids
Specific conductance	Gross Alpha	Total Phosphate
Radium 226 (only if gross Alpha is greater than 15 pci/l)	Radiation	

5. In the event that SJRWMD determines there is a significant change in the water quality (substantially caused by SJRPP and causing a potentially significant effect on water use), the Department may propose pursuant to Section 403.516, F.S., that the permittee be required to reduce or cease withdrawal from these groundwater sources.

6. Minimum Water Level Restrictions

If the Department and SJRWMD at a future date establish a minimum water level of general applicability to all users in the aquifer or aquifers hydrologically associated with these withdrawals, they may propose pursuant to Section 403.516, F.S. that JEA reduce or cease withdrawal from these groundwater sources at times when water levels fall below these minimums.

G. Shallow Aquifer Monitoring Wells

After consulation with the DER and SJRWMD, JEA shall install a monitoring well network to monitor groundwater quality horizontally and vertically through to the top of the Hawthorne Formation's first clayey lithologic Unit. Groundwater quantity and flow directions will be determined seasonally at the site through the preparation of seasonal watertable contour maps. From these maps the water quality monitoring well network will be located. Monitoring well locations and designs shall be submitted to the Department and SJRWMD for review. Approval or disapproval of the locations and design shall be granted within 60 days. Monitoring wells shall be installed upgradient and downgradient from each solid waste disposal area, each liquid waste pond and each coal pile storage area. An additional monitoring well will be placed immediately downgradient of the first section of each solid waste landfill to be utilized. The water samples collected from each of

the monitor wells shall be collected immediately after removal by pumping of a quantity of water equal to two casing volumes. The water quality analyses shall be performed monthly during the year prior to commercial operation and quarterly thereafter. Results shall be submitted to the Department and the SJRWMD by the fifteenth (15th) day of the month following the month during which such analyses were performed. Testing for the following constituents is required:

TDS	Cadmium
Conductance	Zinc
pH	Copper
Redox	Nickel
Sulfate	Selenium
Sulfite	Chromium
Color	Arsenic
	Beryllium
Chloride	Mercury
Iron	Lead
Aluminum	Gross Alpha

H. Leachate

1. Zone of Discharge

Leachate from the solid waste landfills, sludge disposal test cells, coal storage piles, wastewater treatment ponds, or sedimentation ponds shall not contaminate waters of the State (including both surface and groundwaters) in excess of the limitations of Chapter 17-3, FAC., beyond the boundary of a zone of discharge extending 50 feet below the waste and 200 feet from the edge of the landfill or ponds.

2. Corrective Action

When the groundwater monitoring system shows a violation of the groundwater water quality standards of Chapter 17-3, FAC., the appropriate ponds, FGD landfill, or coal pile shall be bottom sealed, relocated, or the operation of the affected facility shall be altered in

such a manner as to assure the Department that no violation of the groundwater standards will occur beyond the boundary of the zone of discharge.

IV. Control Measures During Construction

A. Stormwater Runoff

During construction, appropriate measures shall be used to settle, filter, treat or absorb silt-containing or pollutant-laden stormwater runoff to limit the suspended solids to 50 mg/l or less at the POD during rainfall periods less than the 10-year, 24 hour rainfall, and to prevent an increase in turbidity of more than 50 Jackson Turbidity Units above background in waters of the State beyond 50 meters from the POD to Browns Creek. Oil and grease shall not exceed 5 mg/l at the discharge from the runoff sediment control pond.

Control measures shall consist at the minimum of sediment traps, barriers, berms or vegetative planting. Exposed or disturbed soil shall be protected as soon as possible to minimize silt- and sediment-laden runoff. The pH shall be kept within the range of 6.0 to 8.5 at the POD.

Final drainage plans illustrating all stormwater treatment facilities and conveyances for construction phases and ultimate operations for both the entire St. Johns River Power Park site and the Blount Island coal site shall be submitted to the St. Johns River Subdistrict Manager and the St. Johns River Water Management District for review and approval prior to construction of any such conveyance or facility. The Department shall indicate its approval or disapproval within 60 days of the submittal.

Stormwater drainage to Brown's Creek and Brown's Creek proper shall be monitored as indicated below beginning twelve (12) months prior to the commencement of construction and continuing throughout construction:

Monitoring Point	Parameters	Frequency	Sample Type
*Stormwater drainage to Brown's Creek from existing borrow pit in southeast portion of site	BOD5, TOC, suspended solids, turbidity, dissolved oxygen, pH, TKN, Total phosphorus, Fecal Coliform, Total Coliform	Twice Monthly	Grab
	Oil and Grease	Once/Week	Grab
*West Fork of Brown's Creek at Point Downstream from entry of	BOD5, TOC, suspended solids, turbidity, dis-	Twice Monthly	Grab

of stormwater from Power Park site by way of a borrow pit	solved oxygen, pH, TKN, Total phosphorus, fecal coliform, Total coliform

*Monitoring shall be conducted at suitable points for allowing a comparision of the characteristics of pre-construction and construction phase drainage and receiving waters.

B. Sanitary Wastes

Disposal of sanitary wastes from construction toilet facilities shall be in accordance with applicable regulations of the Department and appropriate local health agency. The sewage treatment plant shall be operated in accordance with Chapters 17-3, 17-6, 17-16, and 17-19, FAC. The discharge of total residual chlorine to Brown's creek shall not exceed 0.01 mg/l.

C. Environmental Control Program

An environmental control program shall be established under the supervision of a qualified person to assure that all construction activities conform to good environmental practices and the applicable conditions of certification.

The permittee shall notify the Department by telephone if unexpected harmful effects or evidence of irreversible environmental damage are detected during construction, shall immediately report in writing to the Department and shall within two weeks provide an analysis of the problem and a plan to eliminate or significantly reduce the harmful effects or damage and a plan to prevent reoccurrence.

D. Construction Dewatering Effluent

Construction dewatering effluent shall be treated when appropriate to limit surface water discharges of suspended solids to no more than 50 mg/l. The discharge of construction dewatering liquids shall not cause turbidity in excess of 50 Jackson Turbidity Units above ambient beyond a 20 meter radius from the point of discharge. Weekly grab samples will be collected and analyzed for suspended solids.

A program for controlling the groundwater impacts of construction dewatering shall be submitted to the Department and the St. Johns River Water Management District for review prior to implementation.

V. Solid Wastes

Solid wastes resulting from construction or operation shall be disposed of in accordance with the applicable regulations of Chapter 17-7, FAC. The permittee shall submit a program for approval outlining the methods to be used in handling and disposal of solid wastes. Such program shall indicate at the least methods for erosion control, covering, vegetation and quality control.

Open burning in connection with land clearing shall be in accordance with Chapter 17-5, FAC. No additional permits shall be required, but the Division of Forestry shall be notified prior to burning. Open burning shall not occur if the Division of Forestry has issued a ban on burning due to fire hazard conditions.

VI. Operation Safeguards

The overall design, layout, and operation of the facilities shall be such as to minimize hazards to humans and the environment. Security control measures shall be utilized to prevent exposure of the public to hazardous conditions. The Federal Occupational Safety and Health Standards will be complied with during construction and operation. The Safety Standards specified under Section 440.56, F.S., by the Industrial Safety Section of the Florida Department of Commerce will also be complied with.

VII. Screening

The permittee shall provide screening of the site through the use of aesthetically acceptable structures, vegetated earthen walls and/or existing or planted vegetation.

VIII. Potable Water Supply System

The potable water supply system shall be designed and operated in conformance with Chapter 17-22, FAC. Information as required in 17-22.108 shall be submitted to the Department prior to construction and operation. The operator of the potable water supply system shall be certified in accordance with Chapter 17-16, FAC.

IX. Transformer and Electric Switching Gear

The foundations for transformers, capacitors, and switching gear necessary to connect SJRPP Units 1 & 2 to the existing distribution system shall be constructed in such a manner as to allow complete collection and recovery of any spills or leakage of oily, toxic, or hazardous substances.

X. Toxic, Deleterious, or Hazardous Materials

The spill of any toxic, deleterious, or hazardous materials shall be reported in the manner specified by Condition XV.

XI. Construction in Waters of the State

A. No construction on sovereign submerged lands shall commence without obtaining lease easement or title from the Department of Natural Resources and/or Trustees of the Internal Improvement Trust Fund.

B. Construction of intake and discharge structures, coal unloading wharf, and transmission towers shall be done in a manner to minimize turbidity. Turbidity screens should be used to prevent turbidity in excess of 50 JTUs above background beyond 150 meters from the dredging, pile driving, or construction site.

All spoil from connecting the SJRPP intake/discharge system to the NGS, and the coal unloading wharf shall be piped hydraulically or tucked to an upland disposal site of sufficient capacity to retain all material. Spoil from construction access canals shall be side cast and used for restoring natural bottom contours upon completion of construction.

C. Variances

1. A variances to the provisions of Section 17-3.061(h) for lead and Section 17-3.121(27) for silver for a period n to exceed a cumulative total of twelve months commenci on the start of dredging activities are granted in accordance with Sections 403.201(1)(c) and 403.511(2 F.S. at the coal unloading facility wharf site on B Island. Concentrations of at the boundary of a 15 radius mixing zone shall not exceed the following:

Lead 62 µg/l
Silver 6.1 µg/l

2. Variances to the provisions of Sections 17-3 cadmium, 17-3.061(h) for lead, 17-3.121(18) and Section 17-3.121(27) and Section 17-4. silver are granted pursuant to the provis 403.201(1)(c) and 403.511(2), F.S. at th overflow for a period not to exceed a c of twelve months starting with commenc activities concentrations at the boun dius mixing zone shall not exceed

Cadmium	8.2 µg/l
Mercury	0.2 µg/l
Lead	62 µg/l
Silver	6.1 µg/l

D. Mixing Zones

During dredging activities mixing zone radii are designated for the following parameters:

Parameter	Distance to Edge of Mixing Zone[3] (m)
Aluminum	150
Antimony	18
Cadmium	150
Copper	150
Cyanide	19
Iron	150
Lead	150
Mercury	150
Oil and Grease	25
Silver	150

XII. Solid Waste Landfill

A. The proposed solid waste landfill area shall be monitored and studied pursuant to a detailed groundwater testing and monitoring Program as defined in Condition III, F.G. The results of the program will be used by the Department in determining whether JEA has affirmatively demonstrated that Florida Water Criteria (Chapter 17-3, F.A.C.) will not be violated.

B. JEA shall either provide an impermeable liner under the solid waste disposal areas or shall utilize a chemical fixation process, stablization or other approved methods to control leachate from the solid waste. JEA may implement a test program to demonstrate the quality and quantity of leachate from an unlined or uncontrolled waste facility. Upon an affirmative showing that an uncontrolled solid waste facility will not cause violation of groundwater quality criteria, the Department may approve use of non-lined or uncontrolled landfill cells.

C. JEA shall utilize solid waste disposal area "B", north of Island Drive or the area previously designated for the bottom ash pond, prior to using disposal area "A".

D. Construction of perimeter berms shall be in conformance with the provisions of Chapter 17-9, F.A.C., regarding earthen dams.

E. Prior to the commencement of operation of solid waste disposal areas the following shall be submitted to the St. Johns River Subdistrict Manager for review and approval:

(1) Plot plan - should be drawn on a scale not greater than 200 ft. to the inch showing the following:

a. Dimensions and legal description of the site.

b. Location and depth corrected to MSL of soil borings.

c. Proposed trenching plan.

d. Cover stock piles.

e. Fencing or other measures to restrict access.

f. Cross sections showing both original and proposed fill elevation.

g. Location, depth corrected to MSL and construction details of monitoring wells.

(2) Design Drawings and Maps - may be combined with plot plan and should be drawn on a scale not greater than 200 ft. to the inch showing the following:

a. Topographic map with five foot contour intervals.

b. Proposed fill area.

c. Borrow area.

d. Access roads.

e. Grades required for proper drainage.

f. Typical cross sections of disposal site including lifts, borrow areas and drainage controls.

g. Special drainage devices.

(3) Soil map, Interpretive Guide Sheets, and a report giving the suitability of the site for such an operation.

(4) Contingency plan, including waste handling and disposal

methods, in case of an emergency such as equipment failure, natural disaster or fire.

(5) Operation plans to direct and control the use of the site.

(6) An indication by discussion or drawings or both of how the site is designed to meet water quality standards of Chapter 17-3 and 17-4 FAC at the waste site boundary or the boundary of the zone of discharge.

Based on the Department's reviews of the above, additions to or modifications of the overall monitoring program may be required for monitoring of runoff, groundwaters, and surface waters which may be affected by the various landfilling operations.

The Department shall indicate its approval or disapproval of the submitted plans, drawings, maps, analyses and contingency plans within 60 days.

XIII. Transmission Lines

A. General

1. Filling and construction in water of the State shall be minimized to the extent practicable. No such activities shall take place without obtaining lease, title or title from the Department of Natural Resources and/or TIITF where required. Construction and access roads should avoid wetlands and be located in surrounding uplands.

2. Placement of fill in wetland areas shall be minimized by spanning such areas with the maximum span practicable.

3. The Department may determine that any fill required in wetlands for construction but not required for maintenance purposes shall be removed and the ground restored to its original contours after transmission line placement.

4. Where fill in wetlands is necessary for access, keyhole fills from upland areas should be oriented as nearly parallel to surface water flow lines as possible.

5. Sufficient size and number of culverts or other structures shall be placed through fill causeways to maintain substantially unimpaired sheet flow.

6. Turbidity control measures, including but not limited to hay bales, turbidity curtains, sodding, mulching and seeding, shall be employed to prevent violation of water quality standards.

7. The Right-of-Way shall be located so as to minimize impacts in or on stream beds such as the removal of vegetation, to the extent practicable. Within 25 feet of the banks of any streams, rivers, or lakes, vegetation shall be left undisturbed, except for selective topping of trees or removal of trees which topping would kill. If it is necessary to remove such trees within 25 feet of the banks of streams, rivers, or lakes, the root mat shall be left undisturbed.

8. Any necessary water quality certifications which must be made to the Corps of Engineers shall be made at the time of a finding of compliance for specific work at specific locations.

9. Construction activities should proceed as much as practicable during the dry season.

B. Other Construction Activities

1. Maintenance roads under control of the permittee shall be planted with native species to prevent erosion and subsequent water quality degradation where drainage from such roads would impact waters of the State significantly.

2. Good environmental practices such as described in Environmental Criteria for Electric Transmission Systems as published by the U.S. Department of Interior and the U.S. Department of Agriculture shall be followed to the extent practicable.

3. Compliance with the most recent version of the National Electric Safety Code adopted by the Public Service Commission is required.

4. Fences running parallel to the transmission line which may become conductive shall be grounded at appropriate intervals; fences running perpendicular to the line shall be grounded at the edge of the right-of-way.

5. Field reconnaissance of rare and endangered species shall be performed in order to minimize impacts on these species.

6. Open burning in connection with land clearing shall be in accordance with the applicable rules of the Department of

Agriculture and Consumer Services. No additional permits shall be required, but the Division of Forestry shall be notified prior to burning. Open burning shall not occur if the Division of Forestry has issued a ban on burning due to fire hazard conditions.

C. Maintenance

1. Vegetative clearing operations for maintenance purposes to be carried out within the corridor shall follow the general standards for clearing right-of-way for overhead transmission lines as referenced in Sections XIII. A.7. and XIII.B.2. Selective clearing of vegetation is preferred over clearing and grubbing or clear cutting.

2. If chemicals or herbicides are to be used for vegetation control, the name, type, proposed use, locations, and manner of application shall be provided to the Department prior to their application for assessment of compliance with applicable regulations.

D. Archaeological Sites

Any archaeological sites discovered during construction of the transmission lines shall be disturbed as little as possible and such discovery shall be communicated to the Department of State, Division of Archives, History and Record Management (DAHRM). Potentially affected areas will be surveyed, and if a significant site is located, the site shall be avoided, protected, or excavated as directed by DAHRM.

E. Road Crossing

For all locations where the transmission line will cross State highways, the applicant will submit materials pursuant to the Department of Transportion's (DOT) "Utility Accomodation Guide" to DOT's district office for review and approval. All applicable regulations pertaining to roadway crossings by transmission lines shall be complied with.

F. Emergency Reporting

Emergency replacement of previously existing right-of-way or transmission lines shall not be considered a modification pursuant to Section 403.516, F.S. A verbal report of the emergency shall be made to the Department as soon as possible. Within fourteen (14) calendar days after correction of the emergency, a report to the Department shall be made outlining the details of the emergency and the steps taken for its

temporary relief. The report shall be a written description of all of the work performed and shall set forth any pollution control measures or mitigative measures which were utilized or are being utilized to prevent pollution of waters, harm to sensitive areas or alteration of archaeological or historical resources.

G. Final Right-of-Way Location

A map of 1:24000 scale showing final location of the right-of-way shall be submitted to the Department upon completion of acquisition.

H. Compliance

Construction and maintenance shall comply with the applicable rules and regulations of the Department and those agencies specified in 17-17.54(2)(a) and (b), FAC.

XIV. Change in Discharge

All discharges or emissions authorized herein shall be consistent with the terms and conditions of this certification. The discharge of any pollutant not identified in the application or any discharge more frequent than, or at a level in excess of, that authorized herein shall constitute a violation of the certification. Any anticipated facility expansions, production increases, or process modification which will result in new, different or increased discharges or expansion in steam generating capacity will require a submission of new or supplemental application pursuant to Chapter 403, F.S.

XV. Non-Compliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any limitation specified in this certification, the permittee shall notify the manager of DER's St. Johns River subdistrict office by telephone during the working day in which permittee becomes aware of said non-compliance and shall confirm this situation in writing within seventy-two (72) hours supplying the following information:

a. A description and cause of non-compliance; and

b. The period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the non-complying event.

XVI. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this certification. Such systems are not to be bypassed without prior Department approval. The one exception is that during periods when light oil is used for ignition, the FGD system may be bypassed.

XVII. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact resulting from non-compliance with any limitation specified in this certification, including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying event.

XVIII. Right of Entry

The permittee shall allow the Secretary of the Florida Department of Environmental Regulation and/or authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which records are required to be kept under the terms and conditions of this permit; and

b. to have access to and copy all records required to be kept under the conditions of this certification; and

c. to inspect and test any monitoring equipment or monitoring method required in this certification and to sample any discharge or pollutants; and

d. to assess any damage to the environment or violation of ambient standards.

XIX. Revocation or Suspension

This certification may be suspended or revoked pursuant to Section 403.512, Florida Statutes, or for violations of any Condition of Certification.

XX. Civil and Criminal Liability

This certification does not relieve the permittee from civil or criminal responsibility or liability for non-compliance with any conditions of this certifiation, applicable rules or regulations of

the Department, or Chapter 403, Florida Statutes, or regulations thereunder.

Subject to Section 403.511, Florida Statutes, this certification shall not preclude the institution of any legal action or relieve the permittee from any responsibilities or penalties established pursuant to any other applicable State Statutes or regulations.

XXI. Property Rights

The issuance of this certification does not convey any property rights in either real or personal property, tangible or intangible, nor any exclusive privileges, nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. The applicant will obtain title, lease or right of use to any sovereign submerged lands occupied by the plant, transmission line structures, or appurtenant facilities from the State of Florida.

XXII. Severability

The provisions of this certification are severable, and, if any provision of this certification or the application of any provision of this certification to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of the certification shall not be affected thereby.

XXIII. Definitions

The meaning of terms used herein shall be governed by the definitions contained in Chapter 403, Florida Statutes, and any regulation adopted pursuant thereto. In the event of any dispute over the meaning of a term used in these general or special conditions which is not defined in such statutes or regulations, such dispute shall be resolved by reference to the most relevant definitions contained in any other state or federal statute or regulation or, in the alternative, by the use of the commonly accepted meaning as determined by the Department.

XXIV. Review of Site Certification

The certification shall be final unless revised, revoked or suspended pursuant to law. At least every five years from the date of issuance of this certification or any National Pollutant Discharge Elimination System Permit issued pursuant to the Federal Water Pollution Control Act Amendments of 1972 for the plant units, the Department shall review all monitoring data that has been

submitted to it during the proceeding five-year period for the purpose of determining the extent of the permittee's compliance with the conditions of this certification of the environmental impact of this facility. The Department shall submit the results of its review and recommendations to the permittee. Such review will be repeated at least every five years thereafter.

XXV. Modification of Conditions

The conditions of this certification may be modified in the following manner:

A. The Board hereby delegates to the Secretary the authority to modify, after notice and opportunity for hearing, any conditions pertaining to consumptive use of water, monitoring, sampling, groundwater, mixing zones, zones of discharge, leachate control programs, effluent limitations or variances to water quality standards.

B. All other modifications shall be made in accordance with Sections 403.516, Florida Statutes.

XXVI. Flood Control Protection

The plant and associated facilities shall be constructed in such a manner as to comply with the Duval County flood protection requirements.

XXVII. Effect of Certification

Certification and conditions of certification are predicated upon design and performance criteria indicated in the application. Thus, conformance to those criteria, unless specifically amended, modified, or as the Department and parties are otherwise notified, is binding upon the applicant in the preparation, construction and maintenance of the certified project. In those instances where a conflict occurs between the application's design criteria and the conditions of certification, the conditions shall prevail.

XXVIII. Noise

To mitigate the effects of noise produced by the steam blowout of steam boiler tubes, JEA shall conduct public awareness campaigns prior to such activities to forewarn the public of the estimated time and duration of the noise.

XXIX. Archaeological Sites

The following archaeological sites shown in Figure 2 shall be preserved whenever practical. If they must be altered by con-

struction, then archaeological salvage excavation shall be performed prior to construction under the supervision of the Florida Department of State, Division of Archives, History and Records Management.

Site -	8Du669	8Du670
	8Du671	8Du673
	8Du674	8Du675
	8Du677	8Du678

XXX. Blount Island Coal Unloading Facility

Area drainage and rainfall runoff from the lined coal pile on Blount Island shall be directed to a lined treatment system designed to process the runoff from the 24-hour, ten-year storm. Wastewater treatment shall consist of as a minimum: removal of solids and metals by precipitation and sedimentation followed by pH adjustment to no less than 8.0 and final disposal by percolation. Sufficient capacity shall be provided to allow for accumulation of settled solids of up to 20 percent of the total pond volume. Solids removed from the sedimentation pond shall be disposed in a properly designed landfill.

The sedimentation pond liner shall be impervious and designed for the life of the facility. The liner shall be installed in such a manner as to prevent rupture during cleaning or removal of solids.

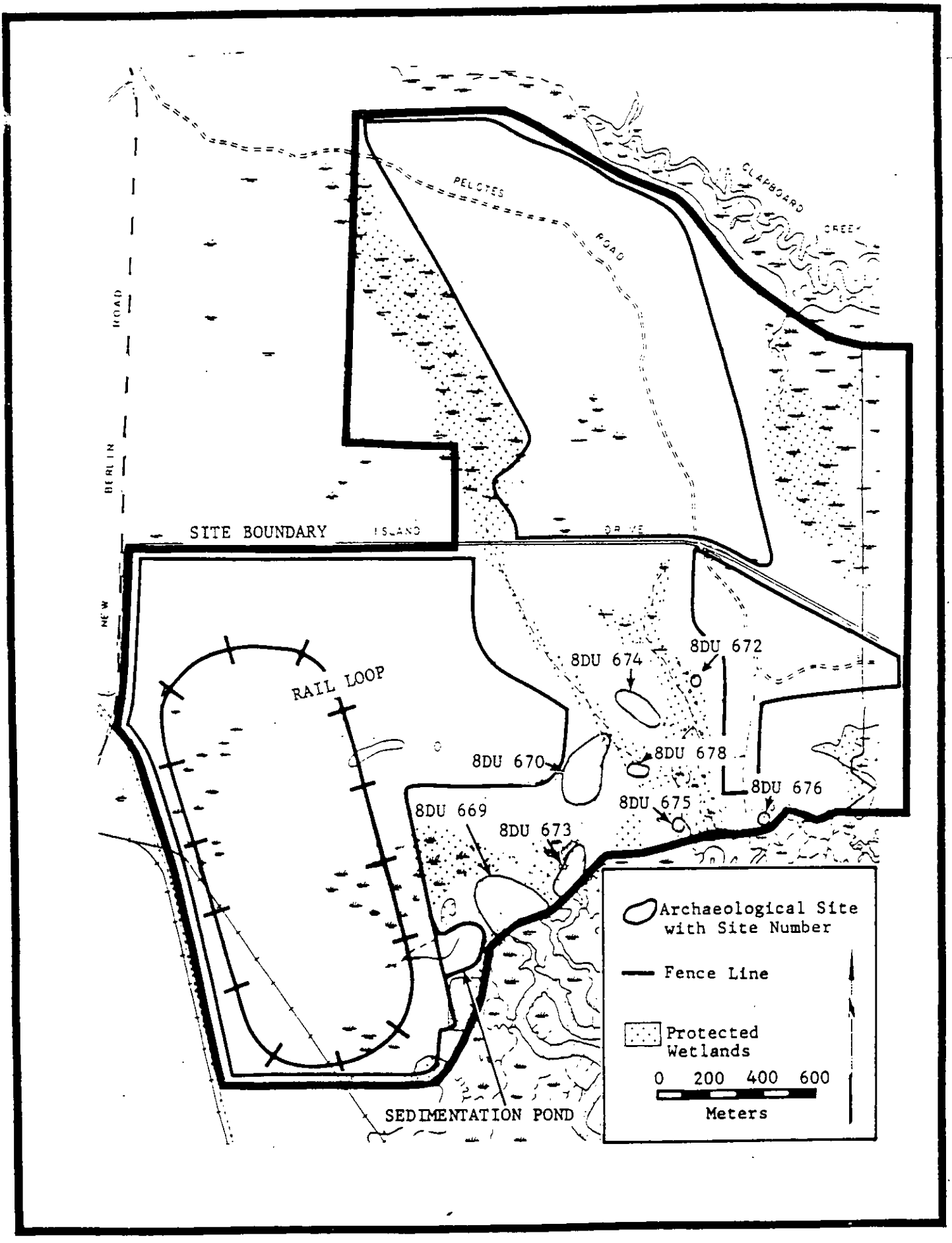

PELOTES ROAD
CLAPBOARD CREEK
BERLIN ROAD
NEW
SITE BOUNDARY
ISLAND DRIVE
RAIL LOOP
8DU 674
8DU 672
8DU 670
8DU 678
8DU 676
8DU 675
8DU 669
8DU 673
SEDIMENTATION POND
Archaeological Site with Site Number
Fence Line
Protected Wetlands
0 200 400 600
Meters

FIGURE 2

activities in the area. When current and future JEA spoil disposal activities are completed, Least terns could resume nesting in the spoil areas provided that dredge spoils are not deleterious to this species.

Nesting Least terns and their eggs were observed at three remote sites on Blount Island in areas characterized by sparse vegetation. A decline in suitable tern nesting sites has prompted the Florida Game and Fresh Water Fish Commission to list the Least tern as threatened. Man-made spoil banks are now important nesting areas for this bird and help offset the loss of much of the tern's natural nesting habitat. Several studies have indicated that birds nesting in areas containing toxic constituents suffer from lower reproductive rates than avifauna inhabiting "cleaner" areas. It has also been reported that biomagnification of potentially toxic trace elements occurs in avian food webs. However, it is not known how the toxic compounds (which are present in St. John's River dredge spoil) will affect reproductive and feeding activities of tern and other avian species and future studies could be required.

Of the species found on Blount Island only the Endangered wood stork is seen as possessing unique ecological value. None of the island's fauna are considered to be commercially or recreationally important.

VI. FACILITY SPECIFIC CONCERNS

A. Air Quality

1. Selected Fuel

The units are planned for coal-fired operation; however, provisions are being made in the design to allow for possible conversion to oil,

gas or refuse firing. Based on a study of availability of coal, east of the Mississippi River, there are practical sources of coal adequate to meet the plant's needs over the anticipated life of the project (approximately 3,500,000 tons per year). The JEA coal availability study has identified coal supplies in Tennessee, Kentucky, and Ohio as the most likely sources. In addition, partial supplies could be obtained from several foreign sources.

The plant is designed to retain the flexibility to change its coal supply (to insure against disruptions in supply, local market upsets and to maintain competitive prices) with minimum reduction in efficiency and without violating air quality standards. Analyses of potential coal supplies were therefore necessary so that the plant could be designed to accomodate coals with a variety of characteristics. Coals from the above sources were analyzed to determine the ranges of characteristics and chemical constituents.

The air quality control system is designed on a "worst case" basis assuming the maximum sulfur (4 percent) and ash (18 percent) in the coal and a minimum heating value (10,500 Btu/lb). This approach assumes the sulfur and ash contents of the coal are 3.8 lb/MMBtu (Million Btu) and 17.1 lb/MMBtu, respectively. The ash remaining after the coal is burned is assumed to be 80 percent fly ash and 20 percent bottom ash. The above values were used to develop collection equipment efficiencies, investment estimates and long and short-term ground level ambient air quality concentrations. This approach requires a more sophisticated, complex, efficient and costly air quality control system than would be required on the basis of average coal characteristics.

It is proposed that the steam generator will burn No. 2 fuel oil for light-off and flame stabilization during start-up and low load operation. This light oil will be stored on site and pumped to the steam generator as required. Approximately 1,000,000 gal/yr will be utilized on an intermittent basis, which represents less than 2 percent (by heat input) of the steam generator annual fuel consumption. The fuel oil is expected to have a maximum sulfur content of 0.76 percent by weight, a maximum ash content of 0.01 percent by weight, and a heating value of 19,000 Btu/lb. Since the pollutant contents are so low and the utilization of oil so limited, the emissions of particulates and SO_2 from oil burning are considered by JEA to be insignificant when compared to those from coal burning.

The coal handling system will provide for delivery of coal by ocean vessel to a marine terminal on Blount Island with shuttle train delivery to the plant, as well as rail delivery directly to the plant by unit train or in trainload lots. A rotary car dumper will be used to unload coal from the trains on the power plant site proper. The system will also include the yard area coal storage, transfer system, coal silos, and the tripper floor distribution system.

2. Air Quality Impacts

The air quality in the area of the JEA site is currently affected by emissions from the St. Regis and Alton Box Board paper mills, the Celotex wall board plant and JEA's existing power plants. The air quality in the area will also be impacted by the construction and operation of the JEA SJRPP.

The emission of air pollutants from the JEA site are limited by Chapter 17-2, FAC, and by the New Source Performance Standards as imposed by the U.S. Environmental Protection Agency. In order to comply with these regulations, JEA plans to utilize washed coal with electrostatic precipitators to control emission of fly ash and a wet limestone scrubber to control emission of sulfur oxides. Nitrogen oxides emissions will be controlled by boiler design.

When both of the units are operating at 100% of rated capacity, the plant will consume 1129 tons per hour of coal and will emit 9034 pounds per hour of SO_2, 356 pounds per hour of particulates, and 7114 pounds per hour of nitrogen oxides.

The stack height of 640 feet will assist the control equipment in reducing ambient air quality impacts. Only during rate meteorological conditions will stack emissions reach the ground close to the plant. The stack height insures dispersion and dilution of air pollutants before the pollutants reach ground level at some distance from the site.

Air quality impacts are shown on Table 1. The computerized dispersion models used by JEA to predict ambient air quality impacts indicate no violations of ambient air quality standards.

The department has reviewed the models JEA used to predict air quality impacts and the inputs to those models. In verifying the JEA results the department has found a predicted violation of the Florida Ambient Air Quality Standard (FAAQS) for SO_2 on a 24-hour average. We have also found certain discrepancies in the modeling assumptions input data (e.g., emission rates and mixing heights) used in the analysis but are satisfied that all other FAAQS's and PDS increments will be complied with.

The violation of the State SO_2 standard is associated with the three other JEA power plants, Northside, Kennedy, and Southside. These three plants, along with the proposed new plant, are geographically aligned along a roughly northeast to southwest orientation. This causes a maximum interaction of emissions from these facilities to occur when winds blow parallel to this direction. The predicted violation occurs downwind (i.e., southwest) of the Southside facility.

JEA has addressed this case of alignment of the four power plants and has concluded that no violation will occur. This conclusion is based on modeling in which the stack heights at the Kennedy and Southside facilities are raised to 84 m. Pursuant to Executive Order No. 79-67, signed by Governor Bob Graham on August 31, 1979, JEA is required to raise the stacks of the Kennedy and Southside facilities. However, JEA is now asking the Department to reexamine (and rescind) the stack height requirements of the Governor's Executive Order due to significant changes in the utility's future operating plans.

Because the actual stack heights at the Southside and Kennedy plants are considerably lower than those used by JEA in their air quality analysis, we remodeled this case. The results show a predicted 24-hour ground level SO_2 concentration of 263.3 ug/m^3 occurring approximately 2.5 kilometers to the southwest of the Southside facility. (The FAAQS is 260 ug/m^3). The proposed SJRPP facility contributes 8.7 ug/m^3 to the predicted violation. It should be noted that only the four JEA power plants were modeled, and the addition of a background value for SO_2 would further increase the magnitude of the violation.

Unless an alternative proposal for the use of the Kennedy and/or Southside facilities is submitted, taller stacks at those facilities may have to be made a condition of certification of the SJRPP facility. Until these issues are resolved, we are unable to approve the air quality analysis portion of the SJRPP application.

TABLE 1

Maximum Predicted Ambient Air Quality Impacts

($\mu g/m^3$)

Prevention of Significant Deterioration

Pollutant and Source	Annual Avg.	24 Hour Avg.	3 Hour Avg.
SO_2: Plant Only	13	207	1298
Plant & Existing Sources	2	52	410
(Ambient Standards)	60	260	1300
(PSD Increment)	20	91	512
Particulates: Plant Only	3	33	N/A
Plant & Existing Sources	2	28	N/A
(Ambient Standards)	60	150	N/A
(PSD Increment)	19	37	N/A
NO_x: Plant Only	10		N/A
Plant & Existing Sources			
(Ambient Standards)	100		N/A

3. Prevention of Significant Deterioration

Pursuant to Chapter 17-2, FAC, and 40 CFR 52.21, the SJRPP Units 1 and 2 are subject to a review for the Prevention of Significant Deterioration (PSD) of air quality. The Clean Air Act Amendments of 1977 prescribe incremental limitations on the air quality impacts of a new

source. Table 1 summarized maximum air quality impacts from the proposed construction of Unit 1 and 2 and all other increment consuming sources in the vicinity of the SSJRPP Site. The Department of Environmental Regulation has reviewed the PSD analysis submitted by JEA and has found that the construction of Units 1 and 2 should not violate state PSD regulations as contained in Section 17-204, FAC.

Additionally, the U. S. Environmental Protection Agency Preliminary Determination for JEA SJRPP Units 1 & 2 was completed in December 1980. Federal regulations on PSD (40 CFR 52.21) require the following air quality impacts to be addressed:

1. National Ambient Air Quality Standards
2. PSD increment impact
3. Visibility, soils and vegetation impacts
4. Impacts due to growth caused by the proposed source
5. Best Available Control Technology (BACT)
6. Class I area impacts

After their review, EPA has made a preliminary determination that the construction can be approved provided certain conditions are met.

The predicted impact of the SJRPP on the Okefenokee Wilderness Area Class I Area increments is presented in the following table:

TABLE 2

Increment	Pollutant	
	Particulate	SO_2
Annual	20%	50%
24 Hour	10%	80%
3 Hour		72%

It appears that the SJRPP would not violate the Class I PSD increments in the Okefenokee.

The percent consumption of the applicable Class II PSD increments caused by the JEA Plant and other new sources are present in the following table:

TABLE 3

Increment	Pollutant	
	Particulate	SO_2
Annual	12%	12%
24 hour	46%	46%
3 hour	N/A	65%

The plant should not violate the increments or cause significant deterioration in the Jacksonville area.

Nonattainment Areas

The extent of the contribution of the proposed plant to the formation of ozone and, therefore, its impact on the Jacksonville ozone nonattainment areas cannot be estimated through modelling. However, because of the plant's low emission levels of oxidants and hydrocarbons (the primary precursors of ozone), it was assumed by JEA that the impacts of the proposed plant on ozone concentrations in the Jacksonville area will not be significant.

The impact of the plant on the Jacksonville particulate nonattainment area was estimated through modelling and compared with the USEPA

"significance levels" which are 1 $\mu g/m^3$ for an annual average and 5 $\mu g/m^3$ for a 24-hour average. The TSP nonattainment area basically covers the central downtown area and is at its closest point 9.4 km from the proposed plant.

The annual average impact was calculated using the total TSP emissions from the operation of the proposed plant including fugitive dust emissions from the coal handling facilities, coal unloading facility, limestone handling, waste disposal and cooling towers. The results of the analysis indicate that the annual average TSP impact on the nonattainment area would be less than one $\mu g/m^3$ the EPA significance level. The maximum 24 hour TSP impact would be 4 $\mu g/m^3$, which is less than the 5 $\mu g/m^3$ EPA significance level.

It, therefore, appears that the proposed SJRPP will not have a significant adverse effect on the downtown Jacksonville area.

Impacts on Visibility

The proposed power plant may have an impact on visibility in the area.

Visibility is defined as the greatest distance at which it is just possible to see and identify with the unaided eye a prominent dark object against the sky at the horizon in the daytime or a known unfocused moderately intense light source at night. Visibility is diminished by four major processes: light scattering by gas molecules, light scattering by particles, light absorption by gases not naturally occurring in the atmosphere, and light absorption by particles.

Coal-fired power plants affect visibility through the three major

combustion related pollutants: particulates, sulfur dioxide, and nitrogen dioxide. Visibility is decreased by particulates primarily through light scattering; by nitrogen dioxide through absorption and later by scattering due to conversion of gaseous nitrogen dioxide to particulate nitrates and nitrites; and by sulfur dioxide when it converts to particulate sulfates.

The frequency distribution of the visibility observed at Jacksonville Imeson Airport over a five-year period is summarized in the application. The average quarterly background visibility at Jacksonville Airport is seldom greater than 12 miles or less than two miles. Visibility conditions greater than or equal to those measured at Jacksonville can be expected at St. Augustine (70 km southeast) and the Okefenokee Class I area (60-70 km northwest). Using equations, the background conditions may be calculated and the SO_4 (sulfate) and TSP impacts at the Okefenokee Class I and St. Augustine historical areas may be estimated so that the visibility impacts at these areas may also be estimated. For purposes of this simplified analysis, it was necessary to assume that SO_4 and TSP are the only pollutants contributing to visibility reduction. It was also assumed that the background visibility is 12 miles. The calculated new visibility due to the SJRPP was 10.8 miles.

This corresponds to a reduction of approximately 10 percent in the visual range at the Okefenokee Class I area during worst-case conditions. A similar calculation shows that the visual range at St. Augustine

is estimated to be 11.1 miles, or a worst-case reduction of approximately 8 percent. It should be noted that these visibility reductions resulting from the TSP, and SO_4 transformation from SO_2 are estimated based on Gaussian Plume modelling at large distances and empirical extinction coefficients and transformation rates. Therefore, the estimates from such calculations cannot be considered precise.

An analysis was made of 5 years (1964-1968) of Jacksonville surface wind data that is resolved to 22.5 degree sectors to determine the percent of time during which the winds would carry the proposed plant plume in the directions of the Okefenokee Class I area and the St. Augustine area. The 5-year average percent occurrence of winds toward St. Augustine is only 5.6 percent. The 5-year average percent occurrence of winds toward the Okefenokee Class I area is 11.2 percent. The visibility reductions previously discussed do not represent full-time visibility impairment, only the estimated maximum visibility impairment during these periods when the winds blow in the critical directions.

4. Best Available Control Technology

Section 17-2.03 Florida Administrative Code (FAC) and Section 169, 424SC 7401 require evaluation of proposed air pollutant emission control equipment and a determination as to whether or not an applicant will utilize the Best Available Control Technology (BACT) for each pollutant.

The installation of high efficiency electrostatic precipitators to control particulate emission from the boilers, bag filters to control

particulate emissions from fly ash handling, and liquid spray and bag filter systems to control particulate emissions from coal handling and lime and limestone handling all represent BACT.

The use of washed coal and the installation of limestone scrubbers will achieve a 90% reduction of the potential sulfur oxide emissions and would comply with EPA's requirements under 40 CFR Part 60, Federal New Source Performance Standards.

The use of boiler design controls which limit flame temperature and oxygen availability in order to control the formation of nitrogen oxides in the boiler to 0.6 pounds per million BTU is considered by EPA to be BACT. Likewise, the use of boiler controls to limit the emission of carbon monoxide is also considered BACT.

The Department of Environmental Regulation, having considered (a) all available scientific, engineering and technical material, (b) existing emission control standards of other states, and (c) the social and economic impact of the application of such technology, also finds the emission control technology to be used by JEA to be the Best Available Control Technology, as shown in the following:

The proposed facility will consist of two 600 megawatt coal-fired electric utility steam generating units to be located in Jacksonville, Florida. The units will be designed for possible conversion to oil, gas or refuse firing. There will be an oil fired auxiliary boiler rated at 200 million Btu/hr estimated to have an annual capacity factor of 5 percent compared to 74 percent for the two units.

The plant will be located in Duval County which is classified nonattainment for the pollutant Ozone (17-2.16(1)(c) F.A.C.). It will be located in the area of influence of the Jacksonville particulate nonattainment area (17-2.13(1)(b) F.A.C.), however, the plant will not significantly impact the nonattainment area and is, therefore, exempt from the requirements of Section 17-2, 17 & 18 & 19 with respect to particulate emissions. The facility must comply with the provisions of 17-2.04 F.A.C. (Prevention of Significant Deterioration).

BACT Determination Requested by the Applicant:

Pollutant	Emission Limit
Particulates	0.03 lb/million Btu input
SO_2	0.76 lb/million Btu input
NO_x	0.60 lb/million Btu input
CO	0.05 lb/million Btu input

Particulate emissions are to be controlled using an electrostatic precipitator (ESP). SO_2 emissions are to be controlled with a limestone wet scrubbing system. There is no specific control technology for control of NO_x and CO emissions. BACT is to be manufacturer's guarantee for state-of-the-art burner design parameters to minimize emissions.

Flyash emissions are to be controlled using a pneumatic transfer system and bottom ash using a wet transfer system. Emissions from coal and limestone handling are to be controlled by use of enclosed conveying systems with baghouses rated at 99.9 percent efficiency. Water suppression to control dust is to be used as required.

Bio-Environmental Services recommended a 65% reduction in NO_x emissions or 0.5 lb/million Btu heat input. This was the only exception to unanimous acceptance of the NSPS emission limits as BACT.

BACT Determination by DER:

Pollutant	Emission Limit
Particulates	0.03 lb/million Btu input
SO_2	0.76 lb/million Btu input
NO_x	0.60 lb/million Btu input
CO	0.05 lb/million Btu input

NSPS, Subpart Da, standards of performance for electric utility steam generating units for which construction is commenced after September 18, 1978, is determined as BACT for the proposed project. The proposed control equipment is state-of-the-art and determined as BACT.

Emissions from the auxiliary boiler are minor compared to the main units. The auxiliary boiler will operate only when one of the main units is not in operation. Limited operation of the auxiliary boiler is determined as BACT.

The emission rates proposed by JEA are equal to or better than the New Source Performance Standards. The emission rates adopted by the U.S. EPA are based on extensive recent evaluations of technology employed by the electric power industry in the United States. The emission rates requested by JEA are more restrictive than Florida's emission limiting standards for new coal fired fossil fuel steam generators with a heat input greater than 250 MMBTU/hour.

A determination of Best Available Control Technology for visible emissions from the unit was not requested by the applicant. Specific emission rates were not requested for the limestone and coal handling systems.

The applicant's requested emission rate of 0.76 lbs/MMBTU with 90% removal of SO_2 constitutes Best Available Control Technology for this pollutant. Provision of SO_2 removal efficiency of greater than 90% would not markedly improve the ambient air quality in the area, therefore the increased cost of additional removal efficiency would neither be cost effective nor warranted. The additional waste of large quantities of fuel energy and the use of greater land areas required to meet SO_2 removal rates more efficient than 90% are not justified by the degree of air quality improvement projected.

To achieve the 90% SO_2 reduction, JEA analyzed two control processes, the lime/limestone system selected and a lime spray dryer system. The preferred lime/limestone system utilizes an aqueous lime/-limestone solution to absorb SO_2 and convert the gas to calcium sulfate or gypsum. The alternative system utilizes a spray of an aqueous lime solution to absorb SO_2. The solution is evaporated leaving a calcium sulfite/ sulfate particulate which is collected as a powder. The waste powder is not marketable and cannot be landfilled without treatment. Consequently, the comparative costs over the limestone system will be greater.

The applicant's requested emission rate of 0.03 lbs/MMBTU for particulate is 70% lower than the emission rate currently allowed by Florida's emission limiting standards for new coal fired fossil fuel steam generators. The applicant reviewed assessments of the particulate control alternatives which concluded that fabric filter system and precipitators would be roughly equivalent in terms of the degree of control achieved and that wet scrubbers would not be suitable. Wet scrubbers are not considered suitable for the following reasons:

* The wet scrubber would be intergral with the FGD system, thus preventing emergency bypassing of the FGD system while maintaining particulate matter emission limits.
* The wet scrubber approach requires the use of wet and semi-wet induced draft fans. Wet and semi-wet fans have traditionally experienced corrosion and imbalance problems.
* The flue gas pressure loss across the scrubber is very high, on the order of 25 inches of water. This requires the application of extra energy to maintain the required gas flow through the system.
* Fly ash would have to be handled in a wet mode, thus limiting its marketability as a valuable resource.
* Since the fly ash would enter into the FGD liquid circuitry, contamination of the FGD system by-product would occur thus making it unsuitable for the manufacture of wallboard.

In comparing the practicality of the other two modes, the electrostatic precipitator constitutes proven technology on units of the size proposed by JEA. However, while the U.S. EPA has published studies on two facilities of 39MW and 175MW capacity which are utilizing fabric filters, the application of this technology to a 600 MW unit with flue gas desulfurization could produce scale up difficulties. Further, an analysis conducted by the Seminole Electric Cooperative on 640 MW units indicated the cost of fabric filters to be an additional $5 million in capital and $2 million/year in maintenance. JEA found that a fabric filter could cost as much as $38.7 million more on a capitalized annual basis. Therefore, although the U.S. EPA finds that the New Source Performance Standard of 0.03 lbs/MMBTU is achievable with either baghouse or electrostatic precipitator as Best Available Control Technology for particulates, JEA chose to use electrostatic precipitators.

The applicant requested that an emission rate of 0.60 lbs/MMBTU be declared Best Available Control Technology for nitrogen oxides (NO_x). This is consistent with the proposed federal New Source Performance Standards. Reductions in nitrogen oxide emissions would be accomplished through boiler design.

Equipment designers have guaranteed that NO_x emissions from units will not exceed 0.6 lbs/MMBTU at loads ranging from 20% to 100%. Since loads of less than 20% are only due to startup or operation as spinning reserve, guarantees for that range are recognized as acceptable practice, particularly on base load units. Based on presently available

information, an emission rate of 0.6 lbs/MMBTU constitutes Best Available Control Technology for nitrogen oxides from JEA's proposed boilers.

The use of boiler controls and oxygen monitors to limit carbon monoxide to 0.05 lbs/MMBTU (296 lbs/hr) is considered to be BACT.

The applicant did not request a visible emission limit for the proposed facility. The U.S. EPA's new Source Performance Standards specify a visible emission limit of 20% opacity with an allowable opacity of not more than 27% for six minutes in any hour. The Florida Standards for new coal fired fossil fuel steam generators limits the visible emissions to 20% opacity except that 40% opacity may not be exceeded more than two minutes in any hour. Because the proposed federal standards have been based on a review of the best control technology available, the Best Control Technology Available constitutes 20% opacity except that an opacity of 27% may not be exceeded more than six minutes in any hour.

Fugitive Dust

Fugitive dust is produced by a number of sources associated with the project. These include the coal handling system, lime and limestone handling system, fly ash handling system, and FGD waste handling and disposal systems. Also since brackish water cooling towers will be used, EPA has indicated that dissolved and suspended solids in the small droplets fraction (less than 50 microns diameter) of cooling tower drift would be considered fugitive dust in the impact assessment. The fol-

lowing paragraphs describe the control systems and/or methods proposed as BACT for these fugitive dust sources.

Coal Handling Fugitive Dust Collection

Control and collection of fugitive particulates in the coal handling system will be accomplished by several different methods, including totally enclosed conveying systems, water spray dust suppression systems, and dust collection systems utilizing fabric filters.

The ship unloading facility will have dry dust collection systems capable of 99.9 percent control efficiency on the unloader receiving hoppers. All conveyors will be totally enclosed and each transfer point fitted with dry dust collection systems, with the exception of the stacker-reclaimer which will be fitted with a water spray dust suppression system capable of 97 percent efficiency. The rail car loading facility will be enclosed in a building and fitted with a dry dust collection system. The coal surge pile in the ship unloading area will be treated by wetting agents to achieve a 90 percent control efficiency.

Coal will be unloaded at the plant site by a rotary car dumper which will be housed in an unloading building with a wet dust suppression system. This is expected to have a dust control efficiency of 97 percent. From the delivery point, totally enclosed belt conveyors will be used to transport the coal to the coal handling building. Surge bins in the coal handling building will be vented with fabric filter dust collectors (efficiency of 99.9 percent), and similar collectors

will be located at all conveyor discharge points. Conveyors between the coal handling building and the stacker-reclaimer will not be enclosed, but coal dust associated with these conveyors will be controlled by a water spray dust suppression system. Dust releases in the stacker-reclaimer area (active coal pile) will be controlled by wetting agents for an efficiency of 90 percent. Dust releases from the inactive coal pile will also be controlled by wetting agents.

All conveyors from the coal handling building to the power house will be enclosed, and fabric filter dust collectors will be utilized to vent the storage silos in the power house and all conveyor transfer points. Tripper conveyors will be enclosed in a gallery.

Lime and Limestone Fugitive Dust Collection

Control and collection of fugitive dust particulates from the limestone and/or lime addition system for the FGD equipment will be accomplished by appropriate types of fabric filter dust collectors.

Lime will be the "pebble" type and will be transported at the site by pneumatic conveyors and stored in silos. The pneumatic conveyors and silos will be vented to fabric filters in order to assure that the fugitive lime dust particles are collected in an efficient manner.

Limestone will be transported at the site by totally enclosed belt conveyors. All silos and hoppers utilized by the limestone system will be vented to fabric filter dust collectors. Similar collectors will be located at all conveyor discharge points.

All fabric filter dust collectors in the lime or limestone additive system will have an efficiency of 99.9 percent.

Control and Collection of Fugitive Fly Ash Particulates

In the fly ash handling system, fugitive fly ash particulate will be controlled at all transfer and discharge locations by fabric filters. The fly ash handling system consists essentially of ash hoppers located beneath the flue gas particulate collection equipment. Pneumatic conveyors are utilized to transfer fly ash to and from ash storage silos, and to mixers which prepare the ash and FGD wastes for disposal. Pneumatic conveyors are by their nature enclosed. Discharge for the conveyor's blower(s) will be equipped with fabric filters with greater than 99 percent collection efficiency.

Cooling Tower Drift

The dissolved and suspended solids in the small droplet size fraction of brackish water cooling tower drift is considered by EPA to contribute to total suspended particulates. This contribution is minimized by using high efficiency drift eliminators in the two natural draft towers (which limit drift to approximately .005 percent of circulating water flow) and by maintaining the cycles of concentration of the circulating water to a low level such as a maximum of 1.5. Additionally, a circumferential drift eliminator wall will be provided at the base of the hyperbolic shell to mitigate the potential effects of blow-through.

Upon reviewing the preceeding information, the Department also finds that the SJRPP Units 1 and 2 will not contribute to significant deterioration of air quality, although it appears that salt drift could have a significant negative impact on some of the dairy-pasture-lands in the area. Pasture grasses such as Pensacola bahia are highly intolerant of excessive concentrations of NaCl.

5. Acid Rain

In recent years the increase of rainfall acidity levels across Florida and other parts of the country has been ascribed in part to the air emissions from coal-fired power plants. Hence the requirement for emission controls on these plants, designed to reduce the potential acid causing factors. Generally, sulfur dioxide and oxides of nitrogen are believed to be the primary anthropogenic agents contributing to rainfall acidification. However, a great deal remains unknown about the amount that these two gases contribute to the problem, as well as how and where the acidification takes place.

It should be noted that rainfall under unpolluted conditions tends to be somewhat acidic, on the order of pH 5.6-5.7. This is due to the absorption of carbon dioxide in water in the atmosphere. Also, neither sulfur dioxide nor nitrogen dioxide in and of themselves are acidic. It appears that after a certain amount of time, estimated to be on the order of 3-4 days, these gases interact with sunlight, water vapor, ammonia, and many other chemical compounds in the atmosphere, which converts them to sulfuric acid and nitric acid. Scientists around the world are studying the rate of these reactions, which catalytic aids (sunlight, water, etc.) have the most effect driving the conversion,

ways to prevent the end acidic product from affecting the environment, where the end product eventually makes its impacts, and numerous other questions relating to the conversion reactions. It is universally agreed that the entire cause-effect-control relationship is very complex.

There are three issues relevant to the licensing of SJRPP Units 1 & 2 as an emission source in relation to acidic rainfall. These are: (1) why is the problem of concern, (2) what will be the Unit's contribution to the regional, state and country wide problem, and (3) what controls are required to mitigate the problem?

First, the following effects have been ascribed to above-normal acidic rainfall. Acid rain is listed as a cause for destabilization of clay minerals, reduction of soil cation exchange capacity, promotion of chemical denudation of soils, and promotion of runoff. Vegetational effects tend to be quite varied, ranging from a few cases of reported beneficial effects, to the more prevalent harmful effects. The harmful effects include foliage damage, alteration of reponses to pathogens, symbionts and saprophytes, leaching of essential materials from plant surfaces, and destruction of the protective waxy leaf coatings. Impacts to wildlife are generally indirect, but nonetheless potentially significant via habitat alteration. Effects on aquatic ecosystems begin with changes in water quality. The water quality changes are brought about by acidification via direct input of rainfall (or snow melting in the northern states), indirect changes from erosion and previously impacted soil contributions, as well as a cascading effect wherein the addition of acid components and soil-based catalytic materials frees up

often-times toxic metals or other wastes which were previously chemically bound. These problems then effect population balances of aquatic organisms by interfering with breeding and reproduction, poisoning, or elimination of food supplies, which frequently result in termination of particular species within those aquatic ecosystems. These population shifts also occur in the aquatic vegetation, further compounding the problem.

Second, the pH levels in Florida lakes, primarily those in the northern part of the state, have been dropping, e.g., becoming more acidic, over the past two decades. Many of Florida's perched sand lakes have little or no buffering capacity and are therefore very susceptible to acid rain.

Trends in data seem to indicate that most of the acidity is derived from sulfur dioxide sources in the northeastern United States. Conversion from sulfur dioxide into sulfuric acid appears to start affecting the environment more than 50 km from the source, and the acid is susceptible to long range transport. Florida is subject to frequent cold fronts moving into the state in the winter months, which are suspected of bringing in northern-based pollutants.

Florida itself has relatively few coal-fired industries at this time, but combustion of oil and gas as well as emissions from heavy industries such as pulp mills and the phosphate industry make significant contributions to SO_x and NO_x loadings. Normal sources of atmospheric sulfur in this state are derived from sea-salt, a non-pol-

luting source, which tends to obscure the acidic sulfur components. Hence, in terms of Florida's impact on other parts of the country, this state tends to be the recipient rather than the donor. As more coal-fired industry is utilized, this balance may begin to shift. The impact from a source such as the SJRPP would be to contribute slightly to the problem, but would not be registered until some distance from the plant, perhaps 100 km or so. The degree of impact, as implied earlier, is extremely hard to quantify. Some studies indicate that the majority of acidic fallout impacts may occur 200-300 kilometers from the source.

One feature that will mitigate some of the impact of SJRPP Units 1 & 2 is that stringent sulfur emission controls will be required prior to Unit operation. These units will thus have less impact than that of other units which do not employ those emission controls. The SJRPP Units 1 & 2 will utilize flue gas desulfurization scrubbers to limit sulfur emissions. Oxides of nitrogen will be controlled by boiler design. Such control will also help mitigate the rainfall acidification problem. The primary source of nitrogen oxides appears to be automobile emissions.

In balancing the need for power with the environmental impacts from the operation of the plant, at this time, the required use of scrubbers and boiler controls seems to be the most relevant and effective way of addressing the unit's contribution to rainfall acidification. In regards to the whole issue of rainfall acidification in the State of Florida, the state, utilities, universities and other industries as well

as similar entities throughout the world have been researching the problem.

Construction of new coal fired units may have a slightly positive effect on the acid rain problem in Florida. Data collected during the Florida Sulfur Oxides Study indicated that the conversion of sulfur dioxide to sulfuric acid forms two to three times faster in the exhaust plume from an oil fired power plant than from a coal fired power plant. Oil fired power plants in Florida do not have emission controls for sulfur oxides or nitrogen oxides in most instances. As new coal fired power plants are built with pollution control devices, and as these new coal plants replace the oil plants that emit greater quantities of SO_x and NO_x, then air pollution levels and acidic rainfall may decrease.

6. Radioactivity

The fact that there are radioactive emissions from the combustion of coal has been recognized for some time. Recent articles have disclosed the fact that the amount of such emissions can be greater from a coal-fired power plant than from a normally operating nuclear reactor. The question then becomes how much greater are these emissions and do these pose significant health impacts.

The Department of Veteran and Community Affairs appended to their report on TECO Big Bend Unit 4 a report made by the Radiological Health Services Section of the Department of Health and Rehabilitative Services (HRS) focusing on this issue. Also, TECO briefly addressed radioactivity in their application.

The following discussion has been compiled from exerpts from the HRS report which is oriented to country-wide coal sources and potential impacts thereof, from a section of the TECO Big Bend 4 application which contains data more specific to the type of coals expected to be used, and an article in the 8 December 1978 issue of "Science", titled "Radiological Impact of Airborne Effluents of Coal and Nuclear Plants", by McBride, Moore, Witherspoon, and Blanco.

Coal contains at least 50 percent carbon by weight, as well as sulfur, iron, moisture, and trace quantities of naturally occurring radioactive materials such as Uranium, (U-235, U-238), Thorium (TH-232), their decay products, and potassium-40. When coal is burned, the mineral content of the coal is converted to ash and slag. These waste materials contain most of the radionuclides originally present in the coal. A fraction of the ash is released to the atmosphere, and the remainder is collected and either re-utilized or landfilled.

Various factors affect particulate emission of radionuclides from coal-fired power plants. These include the type of coal and its source, the type of furnace used for combustion, and the equipment type and efficiency of the air emission control equipment.

Radionuclide concentrations in the released particulates may be enriched relative to those in the mineral content of the fuel as a result of the combustion and emission control processes. Enrichment factors for uranium as great as 2.0 are reported while enrichment factors as great as 5.0 are reported for lead and polonium. The actual

exposure of humans and the environment to coal emitted radioactivity depends on the emission rate, the stack height and local meteorological conditions.

The Oak Ridge National Laboratory at the request of the U. S. Environmental Protection Agency has made preliminary projections of the health impact of radionuclide emissions from coal-fired power plants. They used a model for new plants based on 550 MW unit burning a western coal with a higher radionuclide content than coals under consideration for the SJRPP.

The Oak Ridge/EPA assessment was initially based on a 1% ash emission rate. It considered dispersion based on stack height and the general atmospheric or meteorological conditions in the region. Also considered was the average distance from the source to potentially exposed population centers. Certain assumptions were also made about the primary mode of exposure to radioactivity i.e. that this could be by ingestion of food grown in the region impacted by the plant. Some exposure could also come by inhalation of fine particles and by contamination of water supplies.

The following table summarizes the doses which could be received from the 550 MW plant in a suburban area, based on the Oak Ridge assumptions.

TABLE 4

Annual Radiation Doses from Radioactive Particulate Emissions From the Model "New" Coal Fired Station (550 MW Plant Burning Western Coal).

Organ	Maximum Individual Dose (mrem/yr)
Lung	1.1
Bone	2.1
Kidney	1.0
Liver	0.9
Thyroid	1.1
G. I. Tract	0.8
Other Soft Tissue	1.1

As a point of reference the following table indicates human dose rate comparisions between emissions from a 1000 MW coal fired plant and natural background radiation, as well as the allowed amounts from a nuclear reactor:

TABLE 5

Dose Commitments from Airborne Radioactivity Released At 1000 MW Power Plants.

Types, Units	Coal Fired Plants	Pressurized Water Reactor	Background	Federal Allowances
Maximum Individual (mrem/yr)				
Whole Body	1.9	1.8	80	5
Bone	18.2	2.7	120	15) iodine
Thyroid	1.9	3.8	—	15)

The maximum individual dose commitments from the 1000 MW plant were estimated at the plant boundary at 500 meters from the release points. Dose commitments would be less at greater distances. The ingestion component of the dose commitment was based on the assumption that all food is grown and consumed at the site boundary. The initial calculations were based on a release height of 20 meters with no plume rise. As a result the doses listed above are extremely conservative.

If SJRPP Units 1 & 2 are built, total plant electric output will use around 1200 MW, or possibly 1.2 times the amount listed in Table 4. For whole body doses from airborne emissions, if the SJRPP site output is comparative to the emissions from the 1000 MW plant used above, then roughly 2.9 mrems/yr exposure might be received, or about 3/5 of what is allowed for light water reactors. Comparision with the Pressurized Water Reactor (PWR) statistics for bone dosages indicates a potential problem for persons whose lifestyle matches the assumptions listed above.

The following table summarizes the risks associated with dose projected for the 550 MW model plant previously described:

TABLE 6

Individual Lifetime Risks and Number of Fatal Cancers Due to Radioactive Particulate Emissions From the Model "New" Coal Fired Station (550 mw Plant Burning Western Coal) for Suburban Site.

	Risk
Individual Lifetime Risks	
Maximum Individual	1.4×10^{-5}
Average Individual	4.8×10^{-7}
Expected Fatal Cancers per Year of Operation	1.7×10^{-2}

The JEA SJRPP Units 1 & 2 impact could be approximately twice as much.

Impacts from the radioactivity retained in the ash and slag are expected to be minimal for several reasons. Ash stored on JEA's site will be landfilled, which should provide a natural earthen buffer to radioactivity. These landfill areas are not the sort of areas frequented by the public, although some slight unquantified level of radioactive component of the ash should be low.

Contamination of drinking water supplies via leaching of radioactive materials could be of some concern. However, JEA will be required to construct the ash landfills to deter infiltration by rainwater, reducing the potential for leaching. Also, the depth to the Floridan aquifer and the buffer provided by the clays of the Hawthorn Formation will help minimize this potential problem.

In Section VI.D.2., the Department has expressed concern over the potential for groundwater contamination from leaching of various chemicals and metals into the surficial aquifer and thence to the marsh or river. This may also be of concern regarding radioactive leachates, if the radiation levels are somewhat high. However, since the radioactivity of the ash is unknown and the leaching rate is unknown, it is impossible to determine whether or not the radiation levels in the

groundwater leachate will be significant. Contamination of water supplies can be directly quantified by monitoring of groundwater quality. Comparison of monitoring well data from the site with state groundwater quality criteria for radioactivity will be made. Should problems be directly indicated, rectification will be required.

7. Coal Dust from Trains

The movement of coal supply trains to the proposed plant from coal mines outside the state will result in increased fugitive dust levels in areas near the railroad tracks. These increases in fugitive dust levels will be primarily the result of road bed dust emissions and coal dust blowing from the exposed coal contained within each hopper car. The only other quantifiable emissions associated with the coal trains result from the diesel locomotive emissions, which are relatively minor.

For an impact analysis of the coal trains as they move through Jacksonville, it was assumed that trains will travel 500 miles from the mines and that there will be a maximum of three trains per day with 72 cars per train, and a maximum of 106 tons of coal per car. An estimated one percent of coal by weight will be lost as fugitive dust over a journey of about 500 miles with an estimated 90 percent of the total losses escaping during the first few hours of train transit. This implies that only 0.1 percent of the original coal weight will be dispersed as fugitive dust during the rest of the trip, and only a small

fraction of the 0.1 percent will be dispersed in the Jacksonville area.

The fugitive dust emissions from agitated road bed dust in the Jacksonville area were estimated using USEPA Publication AP-42 (1979), assuming that the road bed dust emissions are conservatively approximated by emissions from motor vehicles traveling on unpaved roads and that each train will travel at an average speed of 10 miles per hour.

The 24-hour average TSP level in the Jacksonville area resulting from the operation of three coal trains per day (a conservative estimate) was calculated to be 22 $\mu g/m^3$ at a distance of 100 meters downwind of the railroad tracks under light wind conditions. When added to the Jacksonville area background level of 50 $\mu g/m^3$, this total is relatively small compared to the National Ambient Air Quality secondary standard and Florida standard of 150 $\mu g/m^3$. It is noteworthy that the amount of the fugitive coal dust which was estimated to blow off the coal cars is about half of the expected emissions resulting from agitation of roadbed dust. This is primarily because of the very conservative method that was employed to estimate roadbed dust emissions.

8. Trace Elements

Eighteen trace elements were selected for review on the basis of reported high concentrations in coal, capability for volatilization during combustion, potential for toxicity, and existence of regulatory guidelines. Since a coal source has not been selected, trace element concentrations in coal were obtained from a report on trace elements in coal samples from the eastern United States.

The predicted deposition rates were determined on the basis of coal consumption, trace element concentration, and SO_2 emission rates. Elements considered to be volatile were assumed to exit the stack in an uncontrolled manner. Those trace elements typically occurring as particulates or absorbed on particulates were also assumed to exit in an uncontrolled state. These assumptions were utilized due to the lack of information on the behavior of trace elements passing through an FGD system. In addition, the use of these assumptions introduced a degree of conservatism to the assessment.

Studies of model power plants in most cases predicted increases in soil trace element levels of less than 10 percent of the total endogenous concentrations over the life of the model plant. It was concluded that uptake by vegetation could not increase dramatically unless the forms of deposited trace elements were considerably more available than the endogenous forms.

The estimated increases ranged from 1.5×10^{-5} to 1.2×1 percent, using average soil background concentrations. The estimated increases over the 40 year life of the plant, assuming that the elements remained concentrated in the top 25 cm of soil over this period ranged from 5.9×10^{-4} to 4.7×10^{-1}. The assessment of these estimated increases was based on a number of worst case conditions. Under these conditions there should not be a perceptible increase on an annual basis. Over the 40 year plant life, those elements exhibiting a higher percent increase relative to the others studied included: arsenic, boron, cadmium, lead, mercury, and molybdenum.

The estimated soil concentration increase for arsenic would be 1.48 x 10^{-2} mg per kg of soil over the 40 year plant life. Naturally occurring arsenic levels in soils average about 6 ppm. Soil arsenic concentrations greater than 2 ppm, soluble form, have been shown to produce injury symptoms on alfalfa and barley and as such no effect could be expected under worst case conditions.

The estimated soil concentration increase for boron would be 2.5 x 10^{-2} mg per kg of soil over the 40 year plant life under worst case conditions. Naturally occurring boron concentrations range from 2-100 ppm with the highest levels found in saline and alkaline soils. The average value is considered to be about 10 ppm. Using a toxicity level of 0.5-10 ppm for plants sensitive to boron as a means for comparision, no adverse effects to sensitive species such as citrus would be expected under worst case operating conditions.

The estimated soil concentration increase for cadmium would be 1.43 x 10^{-4} mg per kg of soil over the 40 year plant life. This represents a 2.4 x 10^{-1} percent increase in soil concentration over the average background level of 0.06 ppm, which is high in comparison with the other elements addressed. Toxicity to plants is reported to occur when cadmium concentration in plant tissues reaches about 3 ppm and it is unlikely that the estimated soil concentration will be high enough for the accumulation of 2 ppm in leaf tissue within the vicinity of the proposed plant.

The estimated soil increase for lead would be 3.49×10^{-2} mg per kg of soil over the 40 year plant life. Naturally occurring lead concentrations in soil averages about 10 ppm. Based on reported threshold concentrations of 10 ppm lead in solution culture, the addition of 3.49×10^{-2} mg lead per kg of soil to soils containing as much as 5 ppm lead should not result in any adverse effects. It is thought that lead enters the plant primarily through the leaf surface. However, the effect of such accumulations cannot be predicted due to the lack of information concerning the concentration of lead in plants due to leaf deposition.

The estimated soil increase for mercury would be 1.19×10^{-4} mg per kg of soil. Naturally occurring mercury concentrations in soil average 0.1 ppm. Most higher vascular plants are resistant to toxicity from high mercury concentrations even though high concentrations are present in plant tissue. Concentrations of 0.5-50 ppm are found to inhibit the growth of cauliflower, lettuce, potato, and carrots. The addition of 1.19×10^{-4} mg per kg of soil is not considered to result in any adverse effect.

The estimated soil increase for molybdenum would be 2.73×10^{-3} mg per kg of soil over the 40 year life. Naturally occurring background concentrations average about 2 ppm. Molybdenum toxicity is rarely observed in the field since most plants seem to be able to tolerate high tissue concentration. A Mo concentration of 5 ppm in nutrient solution was found to be toxic to clover and lettuce. It would appear to be unlikely that the contribution of Mo from the proposed plant would result in adverse effects.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

November 3, 1981

Mr. Tommie A. Gibbs, Chief
Air Facilities Branch
U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Gibbs:

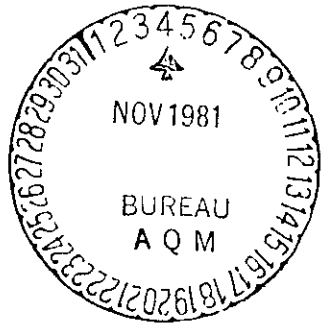
Attached is a letter from the Jacksonville Bio-Environmental Services Division that you should be able to answer more easily than this department.

Sincerely,

Hamilton S. Oven, Jr.

Hamilton S. Oven, Jr., P.E.
Administrator
Power Plant Siting

cc: Robert S. Pace
Steve Smallwood



DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Air and Water Pollution Control

October 30, 1981

Mr. Hamilton S. Oven, Jr., P.E.
Administrator - Power Plant Siting Section
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: St. Johns River Power Park (SJRPP)

Dear Mr. Oven:

In reviewing the recent drafts of the FDER site certification for the SJRPP, several questions have arisen which we wish to convey for your consideration.

1) In January 1981, EPA issued a preliminary determination of approval, with specific conditions, under authority of PSD. Has EPA yet made any final determination under PSD? BES files have no record of such.

2) With reference to PSD approval above, a public notice was published in the Florida Times Union. The information concerning emissions from SJRPP contained in the copy of the public notice sent to this office (copy attached) was grossly in error. Emissions increases resulting from construction of SJRPP will be approximately four times greater than reported in the notice. What legal problems may arise because of the inaccurate notice?

3) The above mentioned notice also indicates maximum PSD increment consumption from the SJRPP. Was the low emissions data referenced above used in the increment consumption modelling, or was correct data used?

4) Recent conversations with JEA personnel revealed that the chimney for the two main power boilers will be a single outer wall, with twin interior stacks, one for each boiler, as opposed to a single common stack. What stack geometry was used in PSD and NAAQS modelling?

AREA CODE 904 / AIR POLLUTION - 633-3033 OR 633-3303 / WATER POLLUTION - 633-3415
515 WEST 6TH STREET / JACKSONVILLE, FLORIDA 32206

Your consideration and response to these matters will be appreciated.

Very truly yours,

Robert S. Pace, P.E.
Pollution Control Engineer

RSP/vj
Enclosure

cc: D. Dutton with enclosure
R. Breitmoser - JEA with enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JAN 14 1981

REF: 4AH-AF

Ms. Marion Degroves
Duval County Bio-Environmental
Services Department
515 West 6th Street
Jacksonville, Florida 32206

RE: Jacksonville Electric Authority
New Power Generating Station
PSD-FL-010

Dear Ms. Degroves:

I wish to bring to your attention that the Jacksonville Electric Authority proposes to construct a new power generating complex near the city of Jacksonville, Florida, and that emissions of air pollutants will thereby be increased. The U.S. Environmental Protection Agency (EPA) has reviewed the proposed modification under the authority of Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval with conditions for this construction. This approval applies only to federal regulatory requirements and has no bearing on State or local functions.

Please also be aware that the attached public notice announcing the Agency's preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in a local newspaper, Florida Times Journal, in the near future. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction.

If you have questions, please feel free to call Mr. Kent Williams, Chief, New Source Review, at 404/881-4552 or Mr. Jeffrey Shumaker of TRW Inc. at 919/541-9100. TRW is under contract to EPA, and its personnel are acting as authorized representatives of the Agency in providing aid to the Region IV PSD review program.

Sincerely yours,

Tommie A. Gibbs

Tommie A. Gibbs, Chief
Air Facilities Branch

Attachment

TAG:JLS:cg

PUBLIC NOTICE

A new air pollution source is proposed for construction by the Jacksonville Electric Authority near the town of Jacksonville in Duval County, Florida. The source is a new power generating complex that will increase emissions of air pollutants by the following amounts in tons per year:

Sulfur Dioxide	Particulate Matter	Nitrogen Oxides	Carbon Monoxide	Volatile Organic Compounds
9015	377	7117	593	29

The maximum increment consumed by the proposed new source is as follows:

	Annual	24-Hour	3-Hour
Sulfur Dioxide			
Class I	50%	80%	72%
Class II	10%	46%	65%
Particulate Matter			
Class I	10%	20%	--
Class II	12%	46%	--

Note that no allowable 3-hour increments have been established for particulate matter.

The proposed construction has been reviewed by the U.S. Environmental Protection Agency (EPA) under Federal Prevention of Significant Deterioration (PSD) Regulations (40 CFR 52.21), and EPA has made a preliminary determination that the construction can be approved provided certain conditions are met. A summary of the basis for this determination and the application for a permit submitted by the Jacksonville Electric Authority are available for public review in the Information Services Division, City Hall, 200 E. Bay Street, Jacksonville, Florida.

Any person may submit written comments to EPA regarding the proposed modification. All comments, postmarked not later than 30 days from the date of this notice, will be considered by EPA in making a final determination regarding approval for construction of this source. These comments will be made available for public review at the above location. Furthermore, a public hearing can be requested by any person. Such requests should be submitted within 15 days of the date of this notice. Letters should be addressed to:

Mr. Tommie A. Gibbs, Chief
Air Facilities Branch
U.S. Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due: _____	Date Due: _____	

TO: Buck Oven, Power Plant Siting Section

THRU: Steve Smallwood, Bureau of Air Quality Management

THRU: Clair Fancy, Central Air Permitting, BAQM

FROM: Bob King, Central Air Permitting, BAQM

DATE: October 9, 1981

SUBJ: Jacksonville Electric Authority, SJRPP Units 1 and 2
Comments on Conditions of Draft Certification

1. The Bureau believes that the following conditions should be added to the Section 1.A. Emission Limitations:

   (a) The two auxiliary boilers shall fire No. 2 fuel oil with a maximum sulfur content of 0.76 percent by weight, a maximum ash content of 0.01 percent by weight, a minimum heating value of 19,170 Btu per pound and a maximum viscosity of 3.0 centistokes at 100 ^{o}F. Samples of all fuel oil fired in the boilers shall be taken and analyzed for sulfur content, ash content, heating value and viscosity. Accordingly, samples shall be taken of each fuel oil shipment received. Records of the analyses shall be kept a minimum of the two years to be available for FDER's inspection.

   (b) The same quality No. 2 fuel oil, used for the auxiliary boilers, shall be used for the main boilers Units 1 and 2 during start-up and low load operation.

   (c) Maximum emissions from either of the auxiliary boilers shall be limited to 0.8 lb/MMBTU for SO_2, 0.3 lb/MMBTU for NO_x, 0.01 lb/MMBTU for PM, and 10 percent opacity for visible emissions.

   (d) Coal fired in Units 1 and 2 shall have an ash content not to exceed 18% and a sulfur content not to exceed 4% by weight. Coal sulfur content shall be determined and recorded in accordance with 40 CFR 60.47a.

(e) No fraction of flue gas shall be allowed to bypass the FGD system to reheat the gases existing from the FGD system, if the bypass will cause overall SO_2 removal efficiency less than 90 percent. The percentage and amount of flue gas bypassing the FGD system shall be documented and records kept a minimum of two years available for FDER's inspection.

(f) Neither of the auxiliary boilers shall be allowed to operate while the boiler Units 1 and 2 are operating collectively at greater than 6,144 million Btu per hour heat input.

2. The Bureau objects to using 20% opacity in Subsection I.A.3.a. for coal handling facilities. The 20% opacity limit for visible emissions from coal handling facilities is too lenient in comparison with the visible emission limits addressed in EPA's PSD permit. The Bureau proposes using 10% opacity limit for controlling visible emissions from the coal handling facilities.

3. The heat input values of 4,330 and 4,458 MMBTU/hr addressed in Subsections I.A.1 and I.C.1, respectively, are questionable. Based on our understanding, each main unit has 6,144 MMBTU/hr maximum heat input rate. Please check latest information from the applicant on this matter.

BK:caa

given in Fig. 7 for converting known volumes at other temperatures to the 60F standard base. This correction is also dependent on the API (American Petroleum Institute) gravity range as illustrated by the three parametric curves of Fig. 7.

Since handling and especially burning equipment is usually designed for a maximum oil viscosity, it is necessary to know the viscosity characteristics of the fuel oil to be used. If the viscosities of heavy oils are known at two temperatures, viscosities at other temperatures can be closely predicted with negligible error by a linear interpolation between these two values located on the standard ASTM chart of Fig. 8. Viscosity variations with temperature for certain light oils can also be found with the aid of the ASTM chart but in this case knowledge of the viscosity at only one temperature is required. Viscosities of light oils at various temperatures within the region designated as No. 2 fuel oil can be found by drawing a line parallel to the No. 2 boundary lines through the point of known viscosity and temperature. Copies of the chart may be obtained from the ASTM.

Compared with coal, fuel oils are relatively easy to handle and burn. Heating is not required for the lighter oils, and even the heavier oils are relatively simple to handle. There is not as much ash-in-bulk disposal problem as there is with coal, and the amount of ash discharged from the stack is correspondingly small. In most oil burners the oil is atomized to a mist of small particles that mix with combustion air. In the atomized state, the characteristics of oil approaches those of a gas, with consequent similar explosion hazards (*see Safety Precautions, Chapter 7*).

Because of its relatively low cost compared with that of lighter oils, No. 6 fuel oil is the most widely used for steam generation. It can be considered a by-product of the refining process. Its ash content ranges from about 0.01 to 0.5%, which is very low compared with coal. However, despite this low percentage content, ash containing compounds of vanadium, sodium and sulfur can be responsible for a number of serious operating problems (Chapter 15).

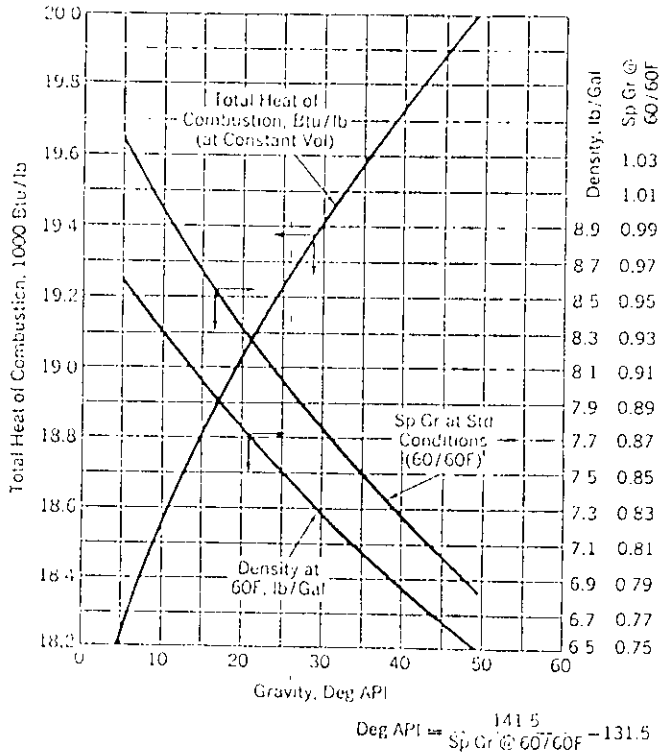


Fig. 6 Heating value, weight (lb per gal), and specific gravity of fuel oil for a range of API gravities.

Table 26
Range of analyses of fuel oils

Grade of Fuel Oil	No. 1	No. 2	No. 4	No. 5	No. 6
Weight, percent					
Sulfur	0.01-0.5	0.05-1.0	0.2-2.0	0.5-3.0	0.7-3.5
Hydrogen	13.3-14.1	11.8-13.9	(10.6-13.0)*	(10.5-12.0)*	(9.5-12.0)*
Carbon	85.9-86.7	86.1-88.2	(86.5-89.2)*	(86.5-89.2)*	(86.5-90.2)*
Nitrogen	Nil-0.1	Nil-0.1	—	—	—
Oxygen	—	—	—	—	—
Ash	—	—	0-0.1	0-0.1	0.01-0.5
Gravity					
Deg API	40-44	28-40	15-30	14-22	7-22
Specific	0.825-0.806	0.887-0.825	0.966-0.876	0.972-0.922	1.022-0.922
Lb per gal	6.87-6.71	7.39-6.87	8.04-7.30	8.10-7.68	8.51-7.68
Pour point, F	0 to −50	0 to −40	−10 to +50	−10 to +80	+15 to +85
Viscosity					
Centistokes @ 100F	1.4-2.2	1.9-3.0	10.5-65	65-200	260-750
SUS @ 100F	—	32-38	60-300	—	—
SSF @ 122F	—	—	—	20-40	45-300
Water & sediment, vol %	—	0-0.1	tr to 1.0	0.05-1.0	0.05-2.0
Heating value					
Btu per lb, gross (calculated)	19,670-19,860	19,170-19,750	18,280-19,400	18,100-19,020	17,410-18,990

* Estimated.

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO: 1

ACTION DUE DATE: ASAP

KAHEL		FANCY		STARNES	
BLOMMEL		THOMAS		MARY CLARK	
BARKER		GEORGE		HODGES	
J. ROGERS		PALAGYI		MARSHALL MOTT-SMITH	

REMARKS:

Do you - ~~but~~ OK ! BI
Larry concur on this?

P.P. Certification
I have been over this with Bob in some detail & feel satisfied. No modeling is involved so if ~~Larry is not available it should not be held up~~ If you agree - lets get it to Buck
BI

Larry has seen this -

INFORMATION
- REVIEW & RETURN
- REVIEW & FILE
- INITIAL & FORWARD

DISPOSITION
- REVIEW & RESPOND
- PREPARE RESPONSE
- FOR MY SIGNATURE
- FOR YOUR SIGNATURE
- LET'S DISCUSS
- SET UP MEETING
- INVESTIGATE & REPT
- INITIAL & FORWARD
- DISTRIBUTE
- CONCURRENCE
- FOR PROCESSING
- INITIAL & RETURN

STEVE SMALLWOOD

DATE: 10-9

PHONE:

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO.

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) ~~Clair Toney~~
2. Steve Smallwood
3.
4.

INITIAL / DATE

REMARKS:

1. Please review and comment.
2. Comments should be sent to Buck Owen ASAP.

INFORMATION
- REVIEW & RETURN
- REVIEW & FILE
- INITIAL & FORWARD

DISPOSITION
- REVIEW & RESPOND
- PREPARE RESPONSE
- FOR MY SIGNATURE
- FOR YOUR SIGNATURE
- LET'S DISCUSS
- SET UP MEETING
- INVESTIGATE & REPT
- INITIAL & FORWARD
- DISTRIBUTE
- CONCURRENCE
- FOR PROCESSING
- INITIAL & RETURN

FROM: Bob King

DATE: 10/9/81

PHONE:

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO: 10/9/81

ACTION DUE DATE: ASAP ✓ ? Thursday 8/8

KAHEL		CARR		STARNES	
BLOMMEL		THOMAS		MARY CLARK	
BARKER		GEORGE		HODGES	
J. ROGERS		PALAGYI		MARSHALL MOTT-SMITH	

REMARKS:

- Call Buck
- When does he need comments
- Let me see draft response before it is sent to PPS.

draft response from me

INFORMATION
- REVIEW & RETURN
- REVIEW & FILE
- INITIAL & FORWARD

DISPOSITION
- ✓ REVIEW & RESPOND
- PREPARE RESPONSE
- FOR MY SIGNATURE
- ✓ FOR YOUR SIGNATURE
- ✓ LET'S DISCUSS
- SET UP MEETING
- INVESTIGATE & REPT
- INITIAL & FORWARD
- DISTRIBUTE
- CONCURRENCE
- FOR PROCESSING
- INITIAL & RETURN

FROM: STEVE SMALLWOOD S.S.

DATE: 9-30

PHONE:

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO:

ACTION DUE DATE:

1. TO: (NAME, OFFICE, LOCATION) Steve Smallwood	INITIAL	DATE
2.	INITIAL	DATE
3.	INITIAL	DATE
4.	INITIAL	DATE

REMARKS:

Please have your staff review + comment. I know we are missing a section on control of Southside + Kennedy with respect to SJRPP

INFORMATION
- REVIEW & RETURN
- REVIEW & FILE
- INITIAL & FORWARD

DISPOSITION
- REVIEW & RESPOND
- PREPARE RESPONSE
- FOR MY SIGNATURE
- FOR YOUR SIGNATURE
- LET'S DISCUSS
- SET UP MEETING
- INVESTIGATE & REPT
- INITIAL & FORWARD
- DISTRIBUTE
- CONCURRENCE
- FOR PROCESSING
- INITIAL & RETURN

FROM: Buck Owen

DATE:

PHONE:

1:00 meeting
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cant finalize until modeling
has to file response
with Irving office on 10/16
9th October

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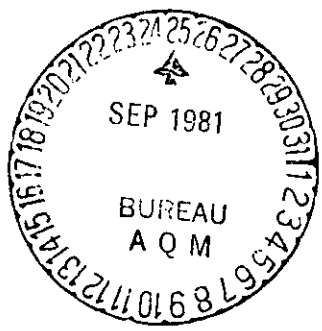

State of Florida Department of Environmental Regulation
Jacksonville Electric Authority
SJRPP Units 1 & 2
PA 81-13

CONDITIONS OF CERTIFICATION

I. Air

The construction and operation of SJRPP Units 1 & 2 at the Jacksonville steam electric power plant site shall be in accordance with all applicable provisions of Chapters 17-2, 17-4, 17-5 and 17-7, Florida Administrative Code. In addition to the foregoing, the permittee shall comply with the following conditions of certification:

A. Emission Limitations

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1. Based on a maximum heat input of 4,330 million BTU per hour, stack emissions from SJRPP Unit 1 & 2 shall not exceed the following when burning coal:

   a. SO_2 - 1.2 lb. per million BTU heat input, maximum two hour average, 0.76 lb/MMBtu on a 30-day rolling average.

   b. NO_x - 0.60 lb. per million BTU heat input.

   Particulate matter

   c. Particulates - 0.03 lb. per million BTU heat input.

   d. Visible emissions - 20% (6-minute average), except one 6-minute period per hour of not more than 27% opacity.

2. The height of the boiler exhaust stack for SJRPP Unit 1 & 2 shall not be less than 640 ft. above grade.

3. Particulate emissions from the coal handling facilities:

   a. The permittee shall not cause to be discharged into the atmosphere from any coal processing or conveying equipment, coal storage system or coal transfer and loading system processing coal, visible emissions which exceed 20 percent opacity. Particulate emissions shall be controlled by use of control devices.

   too high - 10% ok.

   b. The permittee must submit to the Department within ten (10) working days after it becomes available, copies of technical data pertaining to the selected particulate emissions control for the coal handling

facility. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters such as air/-cloth ratio and flow rate. The Department may, upon review of these data, disapprove the use of such device if the Department determines the selected control device to be inadequate to meet the emission limits specified in 3(a) above. Such disapproval shall be issued within 30 days of receipt of the technical data.

4. Particulate emissions from limestone and flyash handling shall not exceed the following:

   a. Limestone silos - 0.050 lb/hr.

   b. Limestone hopper/transfer conveyors - 0.65 lb/hr.

   c. Flyash handling system - 0.2 lb/hr.

5. Visible emissions from the following facilities shall be limited to 5% opacity: (a) limestone and flyash handling system, (b) limestone day silos and (c) flyash silos.

6. Compliance with opacity limits of the facilities listed in Condition 5 will be determined by EPA reference method 9 (Appendix A, 40 CFR 60).

7. Construction shall reasonably conform to the plans and schedule given in the application.

8. The permittee shall report any delays in construction and completion of the project to the Department's Southwest District Office.

9. Reasonable precautions to prevent fugitive particulate emissions during construction, such as coating of roads and construction sites used by contractors, will be taken by the permittee.

10. Coal should not be burned in the unit unless both electrostatic precipitator and limestone scrubber are operating properly.

11. Coal burned in the unit should be washed before it is transported to the plant site.

B. Air Monitoring Program

1. The permittee shall install and operate continuously monitoring devices for each boiler exhaust for sulfur dioxide, nitrogen dioxide, oxygen and opacity. The

monitoring devices shall meet the applicable requirements of Section 17-2.08, FAC, and 40 CFR 60.47a. The opacity monitor may be placed in the duct work between the electrostatic precipitator and the FGD scrubber.

2. The permittee or Jacksonville Bio-Environmental Services Division shall operate the two ambient monitoring devices for sulfur dioxide in accordance with EPA reference methods in 40 CFR, Part 53, and two ambient monitoring devices for suspended particulates. The monitoring devices shall be specifically located at a location approved by the Department. The frequency of operation shall be every six days commencing as specified by the Department.

3. The permittee shall maintain a daily log of the amounts and types of fuel used and copies of fuel analyses containing information on sulfur content, ash content and heating values.

4. The permittee shall provide stack sampling facilities as required by Rule 17-2.23(4) FAC and shall explicitly provide a safe and reliable elevator to the platform. The sampling probe liner shall be fabricated of material which can withstand flexing.

5. The ambient monitoring program may be reviewed by the Department and the permittee annually beginning two years after start-up of Unit 2.

6. Prior to operation of the source, the permittee shall submit to the Department a standardized plan or procedure that will allow the permittee to monitor emission control equipment efficiency and enable the permittee to return malfunctioning equipment to proper operation as expeditiously as possible.

C. Stack Testing

1. Within 60 calendar days after achieving the maximum capacity at which each unit will be operated, but no later than 180 operating days after initial start-up, the permittee shall conduct performance tests for particulates SO_2, NO_x, and visible emissions during normal operations near 4458 MMBtu/hr heat input and furnish the Department a written report of the results of such performance tests within 30 days. The performance tests will be conducted in accordance with the provisions of 40 CFR 60.46a, 48a, and 49a.

6160 MMBtu/hr

2. Performance tests shall be conducted and data reduced in accordance with methods and procedures in accordance with DER's Standard Sampling Techniques and Methods of Analysis for Determination of Air Pollutants From Point Sources, July 1975.

3. Performance tests shall be conducted under such conditions as the Department shall specify based on representative performance of the facility. The permittee shall make available to the Department such records as may be necessary to determine the conditions of the performance tests.

4. The permittee shall provide 30 days prior notice of the performance tests to afford the Department the opportunity to have an observer present.

5. Stack tests for particulates and SO_2 shall be performed annually in accordance with conditions C. 2, 3, and 4 above.

D. Reporting

1. For SJRPP, stack monitoring, fuel usage and fuel analysis data shall be reported to the Department's St. John's River Subdistrict Office on a quarterly basis commencing with the start of commercial operation in accordance with 40 CFR, Part 60, Section 60.7., and in accordance with Section 17-2.08, FAC.

2. Utilizing the SAROAD or other format approved in writing by the Department, ambient air monitoring data shall be reported to the Bureau of Air Quality Management of the Department quarterly. Commencing on the date of certification, such reports shall be due by the last day of the month following the quarterly reporting period.

3. Beginning one month after certification, the permittee shall submit to the Department a quarterly status report briefly outlining porgress made on engineering design and purchase of major pieces of equipment (including control equipment). All reports and information required to be submitted under this condition shall be submitted to the Administrator of Power Plant Siting, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida, 32301.

II. Water Discharges

Any discharges into any waters of the State during construction and operation of SJRPP Units 1 & 2 shall be in accordance with all applicable provisions of Chapter 17-3, Florida Administrative Code, and 40 CFR, 423, Effluent Guidelines and Standards for Steam Electric Power Generating Point Source Category, except as provided herein. Also, the permittee shall comply with the following conditions of certification:

A. Plant Effluents and Receiving Body of Water

For discharges made from the power plant the following conditions shall apply:

1. Receiving Boby of Water (RBW)

The receiving body of water has been determined by the Department to be those waters of the St. John's River and any other waters affected which are considered to be waters of the State within the definition of Chapter 403, Florida Statutes.

2. Point of Dishcarge (P.O.D.)

The point of discharge will be determined by the Department to be where the effluent physically enters the waters of the State.

3. Thermal Mixing Zone

The instantaneous zone of thermal mixing for the cooling system shall not exceed an area of 9.5 acres. The temperature at the point of discharge into the St. John's River shall not be greater than 105 degrees F. The temperature of the water at the edge of the mixing zone shall not exceed the limitations of Paragraph 17-3.05(1)(d).

4. Chemical Wastes

All discharges of FGD blowdown and low volume wastes (demineralizer regeneration, floor drainage, lab drains and similar wastes) shall comply with Chapter 17-3. If violations of Chapter 17-3 occur, corrective action shall be taken. These wasteswaters shall be discharged to an adequately sized and constructed treatment facility. Low volume wastes, boiler preoperational and operational metal cleaning wastes, preheater wash, and stack wash

shall be disposed of in an adequately sized treatment facility.

During periods when treated wastewater does not comply with pH discharge limitations, the treated wastewater may be recycled to the coal pile runoff sedimentation basin, except when the sedimentation basin has insufficient capacity to retain the recycled wastewater and the runoff from a rainfall event equal to or less than a ten year, 24 hour storm.

5. Coal Pile

Coal pile runoff shall be disposed of in the wastewater treatment system and shall not be directly discharged to surface waters. Discharge of stormwater runoff from the coal pile is allowed only during periods of high rainfall in excess of the ten year, 24 hour storm.

6. Chlorine

The concentration of total residual chlorine discharged from Units 1 & 2 shall not exceed 0.1 mg/l at the POD nor 0.01 mg/l beyond an instantaneous mixing zone of 1.0 acre. Chlorine from either unit at SJRPP shall not be discharged more than two hours per day and no unit shall be chlorinated simultaneously with any other unit at SJRPP or at Northside Generating Station. Levels of free available chlorine shall not exceed 0.5 mg/l for an instantaneous maximum nor 0.2 mg/l on a daily average in either cooling tower blowdown.

7. pH

The pH of the combined discharges shall be such that the pH be within the range of 6.0 to 9.0.

8. Polychlorinated Biphenyl Compounds

There shall be no net discharge of polychlorinated biphenyl compounds.

9. Combined Low Volume Wastes and Coal Pile Runoff

The low volume wastes and coal pile runoff shall be treated to control pH, turbidity, solids and toxic metals prior to discharge into the cooling water system. The following effluent limitations will apply:

Effluent	Daily Maximum	Maximum 30-Day Daily Average
TSS	50 mg/l	30 mg/l
Oil and Grease	15 mg/l	10 mg/l
pH	6-9	6-9

The design plans and specifications of the treatment system shall be submitted to the Department for review and approval prior to construction.

10. Metal Cleaning and Bottom Ash Sluice System Blowdown

Blowdown from the metal cleaning wastes and from the bottom ash sluice system shall be treated as appropriate prior to discharge to the cooling water system. The following effluent limitations shall apply:

Effluent	Daily Maximum	Maxmimum 30-Day Daily Average
TSS	100 mg/l	30 mg/l
Oil and Grease	20 mg/l	15 mg/l
pH	6-9	
Iron	1 mg/l	
Copper	1 mg/l	
PO_4	1 mg/l	
COD	100 mg/l	

11. Solid Waste and Limestone Storage Areas

There shall be no direct discharge of stormwater runoff to surface waters from the solid waste and limestone storage areas prior to treatment.

12. Storm Water Runoff

During plant operation, necessary measures shall be used to settle, filter, treat or absorb silt-containing or pollutant-laden stormwater runoff to limit the suspended solids to 50 mg/l or less at the POD during rainfall periods less than the 10-year, 24-hour rainfall, and to prevent an increase in turbidity of more than 50 Jackson Turbidity Units above background in waters of the State beyond 50 meters from the POD at Station E 4500 and N 3712.

Control measures shall consist at the minimum of filters, sediment traps, barriers, berms or vegetative planting.

Exposed or disturbed soil shall be protected as soon as possible to minimize silt - and sediment-laden runoff. The pH shall be kept within the range of 6.0 to 8.5 at the POD.

13. Coal Unloading Facility Percolation Pond Overflow

There shall be no direct discharge to surface waters from the coal unloading facility wastewater treatment system percolation pond. Any discharge from the facility shall be reported to the Department and the Environmental Protection Agency. The quantity of flow and duration of flow shall be estimated.

14. Mixing Zones

The discharge of the following pollutants shall not violate the Water Quality Standards of Chapter 17-3, FAC, beyond the edge of the designated instantaneous mixing zones as described herein.

Pollutants	Mixing Zone	
Aluminum	$125,600^2$	31 Acres
Copper	$125,600^2$	31 Acres
Cyanide	$125,600^2$	31 Acres
Iron	$125,600^2$	31 Acres
Mercury	$125,600^2$	31 Acres
Silver	$125,600^2$	31 Acres
Oil and Grease	$125,600^2$	31 Acres
Selenium	$12,000^2$	3 Acres

15. Variances to Water Quality Standards

In accordance with the provisions of Sections 403.201 and 403.511(2), F.S., Jacksonville Electric Authority is hereby granted variances to the water Quality Standards of Chapter 17-3, F.A.C., for Aluminum, Copper, Cyanide, Mercury, ~~Silver, and Oil and Grease~~ Iron and, but only at such times as the natural background levels of the St. Johns River approach or exceed those standards. In any event, the discharge from the SJRPP shall comply with the effluent limitations set forth in paragraph II.A.16. The variance for mercury shall only be for two years, but may be extended by the Secretary pending results of monitoring data on wastewater treatment plant efficiency and ambient data

16. Effluent Limitations

The following instantaneous maximum effluent limitations shall apply for Aluminum, Copper, Cyanide, Mercury, Silver, and Oil and Grease at the locations specified:

a. Cooling Tower Blowdown - Concentrations shall not exceed 1.5 times the concentrations present in the intake of the applicant's Northside Generating Station.

b. Wastewater Treatment Facility Discharge - Concentrations shall not exceed:

Aluminum	0.15 mg/l
Copper	1.0 mg/l
Cyanide	5. ug/l
Iron	1.0 mg/l
Mercury	41.1 ug/l
Silver	6.4 ug/l
Oil and Grease	20 mg/l

B. Water Monitoring Programs

The permittee shall monitor and report to the Department the listed parameters on the basis specified herein. The methods and procedures utilized shall receive written approval by the Department. The monitoring program may be reviewed annually by the Department, and a determination may be made as to the necessity and extent of continuation, and may be modified in accordance with Condition No. XXV.

1. Chemical Monitoring

The following parameters shall be monitored during discharge as shown, discharge commencing with the start of commercial operation of SJRPP and reported quarterly to the Department's St. Johns River Subdistrict Office:

Parameter	Location	Sample Type	Frequency
Flow, Groundwater	Wellfield Pipeline	Recorder	Continuous
Flow, Cooling	Intake	Pump Logs	Continuous
Flow, Cooling Tower Blowdown	Cooling Towers	Recorders	Continuous
Wastewater Flow	Prior to Pump Sump	Recorder	Continuous
Oily Wastewater Flow	Prior to Pump Sump	Recorder	Continuous
pH	Pump Sump Outfall to NGS	Recorder Grab	Continuous Two/per week
Temperature	Outfall to NGS	Recorder	Continuous
TSS	Oily Waste Basin, Metal Cleaning Waste Facility, and Sewage Treatment Facility	Grab 24 Hour Composite " " "	Two/per week Two/per week " " " Monthly
Chlorine,Total Residual	Cooling Tower Blowdown Discharge to Browns Creek (During construction only)	Multiple Grab	Weekly
Oil and Grease	Oily Waste Basin Metal Cleaning Waste Facility Wastewater Treatment Facility	3 Grab Composite 24 Hour Composite 3 Grab Composite	Two/week One/day Two/week
Metals	Intake and Sump Pump	24 Hour Composite	Once/week for first six months, two/month for the next six months, then monthly thereafter
Aluminum	"		"
Copper	"		"
Cyanide	"		"
Iron	"		"
Mercury	"		"

Nickel	"		"
Selenium	"		"
Silver	"		"
Zinc	"		"
BOD	STP Influent and effluent	8 Hour Composite	Monthly
	Metal Cleaning Waste Facility	24 Hour Composite	Daily
PO_4	Metal Cleaning Facility	24 Hour Composite	Daily
Copper	" " "	" " "	"
Iron	" " "	" " "	"
Cycles-of-concentration	Cooling tower	Calcuation	"

2. Groundwater Monitoring

The groundwater levels shall be monitored continuously at wells as approved by the St. Johns River Water Management District. Chemical analyses shall be made on samples from all monitored wells identified in Condition III. F. below. The location, frequency and selected chemical analyses shall be as given in Condition III.F.

The groundwater monitoring program shall be implemented at least one year prior to operation of SJRPP Unit 1. The chemical analyses shall be in accord with the latest edition of Standard Methods for the Analysis of Water and Wastewater. The data shall be submitted within 30 days of collection/-analysis to the St. Johns River Water Management District and to the DER St. Johns River Subdistrict Office.

Conductivity and heavy metals shall be monitored in wells around all solid waste disposal sites, coal piles, and wastewater treatment and sedimentation ponds.

III. Groundwater

A. General

The use of groundwater from the wellfield for plant service water for SJRPP shall be minimized to the greatest extent practicable, but in no case shall exceed 7.6 mgd on a maximum daily basis from any new wells or 5.1 mgd on an average annual basis.

B. Well Criteria

The submission of well logs and test results and location, design and construction of wells to provide plant service water shall be in accordance with applicable rules of the Department of Evironmental Regulation and the St. Johns River Water Management District(SJRWMD). Total water use per month shall be reported quarterly to SJRWMD commencing with the start of construction.

C. Well Withdrawal Limits

JEA is authorized to make a combined average annual withdrawal of 5.1 million gallons of water per day with a maximum combined withdrawal rate not to exceed 7.6 million gallons during a single day. Withdrawals may be made from a wellfield consisting of up to four (4) wells whose locations are described in Figure __.

After wells have been constructed, St. Johns River Water Management District may evaluate the individual wells and may recommend to the Department authorization of different withdrawals based upon hydrologic characteristics for the individual wells. The Department pursuant to Section 403.516, F.S. may modify the above withdrawal limitations with the concurrence of SJRWMD.

D. Water Use Restriction

Said water is restricted to uses other than main stream condensing. Any change in the use of said water will require a modification of this condition.

E. Emergency Shortages

In the event an emergency water shortage should be declared pursuant to Section 373.175 or 373.246, F.S., by St. Johns River Water Management District for an area including the location of these withdrawal points, the Department pursuant to Section 403.516, F.S., may alter, modify, or declare to be inactive, all or parts of Condition III. A.-G. An authorized Water Management District Representative, at any reasonable time, may enter the property to inspect the facilities.

F. Monitoring and Reporting

JEA shall, within the time limits hereinafter set forth, complete the following items, and if it fails to complete them by the specified time, the Condition III. A.-G. shall automatically become null and void.

1. FPC shall install flow meters in compliance with SJRWMD specifications on all production wells.

2. JEA shall submit to SJRWMD, on forms available from the District, a record of pumpage for each meter installed in F.1. above. Said pumpage shall be provided on a monthly basis, and shall be submitted by April 15, July 15, October 15, and January 15 for each preceding calendar quarter.

3. JEA shall maintain and operate a continuous water level recorder on the standby production well located at the test site in Duval County, Florida. Detailed hydrographs of water level fluctuations shall be constructed with the data collected from the water level recorder and shall be submitted to SJRWMD by April 15, July 15, October 15, and January 15 for each preceding calendar quarter.

4. Water quality analysis shall be performed on water withdrawn from each production well. The water samples collected from each of the wells shall be collected immediately after removal by pumping of a quantity of water equal to two casing volumes. The JEA and staff of SJRWMD may determine and adjust the intervals to be monitored in accordance with hydrologic conditions determined from drilling logs. The water quality analyses shall be performed monthly during the first year of operation, four times (January, May, September, and December) during the second year and twice each year (May and September) thereafter. Results shall be submitted to SJRWMD by the fifteenth (15th) day of the month following the month during which such analyses were performed. Testing for the following constituents is required:

Calcium	Magnesium	Sodium
Potassium	Bicarbonate	Sulfate
Chloride	Nitrate	Total Dissolved Solids
Specific conductance	Gross Alpha	Total Phosphate
Radium 226 (only if gross Alpha is greater than 15 pci/l)	Radiation	

The design and location of monitoring wells shall be as indicated by the attached Figure or as modified by the staff of SJRWMD.

5. In the event that SJRWMD determines there is a significant change in the water quality, the Department pursuant to Section 403.516, F.S., may require the permittee to reduce or cease withdrawal from these groundwater sources.

6. After consulation with the DER and SJRWMD, JEA shall install a monitoring well system as generally shown on Figure 3 to monitor groundwater quality in the top 55 feet of surficial aquifer. One well shall be installed to a depth greater than 55 feet, but less than 150 feet, to monitor vertical dispersion or groundwater contaminants. Monitoring well locations and designs shall be submitted to the Department and SJRWMD for review. Monitoring wells shall be installed upgradient and downgradient from each solid waste disposal area, each liquid waste pond and each coal pile storage area. An additional monitoring well will be placed immediately downgradient of the first section of each solid waste landfill to be utilized. Approval or disapproval of the locations and design shall be granted within 60 days. The water samples collected from each of the monitor wells shall be collected immediately after removal by pumping of a quantity of water equal to two casing volumes. The water quality analyses shall be performed monthly during the year prior to commercial operation and two years after operation and quarterly thereafter. Results shall be submitted to the Department and the SJRWMD by the fifteenth (15th) day of the month following the month during which such analyses were performed. Testing for the following constituents is required:

TDS	Cadmium
Conductance	Zinc
pH	Copper
Redox	Nickel
Dissolved Oxygen	Selenium
Temperature	Chromium
Color	Arsenic

Turbidity	Beryllium
Chloride	Mercury
Iron	Lead
Aluminum	Gross Alpha

G. Minimum Water Level Restrictions

The Department and SJRWMD may, at a future date pursuant to Section 403.516, F.S., establish a minimum water level in the aquifer or aquifers hydrologically associated with these withdrawals, which may require JEA to reduce or cease withdrawal from these groundwater sources at times when water levels fall below these minimums.

H. Leachate

1. Zone of Discharge

Leachate from the solid waste landfills, sludge disposal test cells, coal storage piles, bottom ash pond, wastewater treatment ponds, and sedimentation shall not contaminate waters of the State (including both surface and groundwaters) in excess of the limitations of Chapter 17-3, FAC., beyond the boundary of the site.

2. Corrective Action

When the groundwater monitoring system shows a violation of the groundwater water quality standards of Chapter 17-3, FAC., the appropriate ponds, FGD landfill, or coal pile shall be sealed, relocated or closed, or the operation of the affected facility shall be altered in such a manner as to assure the Department that no violation of the groundwater standards will occur beyond the boundary of the site.

IV. Control Measures During Construction

A. Stormwater Runoff

During construction, necessary measures shall be used to settle, filter, treat or absorb silt-containing or pollutant-laden stormwater runoff to limit the suspended solids to 50 mg/l or less at the POD during rainfall periods less than the 10-year, 24 hour rainfall, and to prevent an increase in turbidity of more than 50 Jackson Turbidity Units above background in waters of the State beyond 50 meters from the POD to Browns Creek.

Control measures shall consist at the minimum of filters, sediment traps, barriers, berms or vegetative planting. Exposed or disturbed soil shall be protected as soon as possible to minimize silt- and sediment-laden runoff. The pH shall be kept within the range of 6.0 to 8.5 at the POD.

Final drainage plans illustrating all stormwater treatment facilities and conveyances for construction phases and ultimate operations for both the entire St. Johns River Power Park site and the Blount Island coal site shall be submitted to the St. Johns River Subdistrict Manager and the St. Johns River Water Management District for review and approval prior to construction.

Stormwater drainage to Brown's Creek and Brown's Creek shall be monitored as indicated below beginning twelve (12) months prior to the commencement of construction and continuing throughout construction:

Monitoring Point	Parameters	Frequency	Sample Type
*Stormwater drainage to Brown's Creek from existing borrow pit in southeast portion of site	BOD5, COD, suspended solids, turbidity, dissolved oxygen, pH, TKN, Total phosphorus, Fecal Coliform, Total Coliform	Twice Monthly	Grab
*West Fork of Brown's Creek at Point Downstream from entry of of stormwater from Power Park site by way of a borrow pit	BOD5, COD, suspended solids, turbidity, dissolved oxygen, pH, TKN, Total phosphorus, fecal coliform, total coliform	Twice Monthly	Grab

*Monitoring shall be conducted at suitable points for allowing a comparision of the characteristics of pre-construction and construction phase drainage and receiving waters.

B. Sanitary Wastes

Disposal of sanitary wastes from construction toilet facilities shall be in accordance with applicable regulations of the Department and appropriate local health agency. The

sewage treatment plant shall be operated in accordance with Chapters 17-3, 17-6, 17-16, and 17-19, FAC. The discharge of total residual chlorine to Brown's creek shall not exceed 0.1 mg/l.

C. Environmental Control Program

An environmental control program shall be established under the supervision of a qualified person to assure that all construction activities conform to good environmental practices and the applicable conditions of certification.

The permittee shall notify the Department by telephone if unexpected harmful effects or evidence of irreversible environmental damage are detected during construction, shall immediately report in writing to the Department and shall within two weeks provide an analyses of the problem and a plan to eliminate or significantly reduce the harmful effects or damage and a plan to prevent reoccurrence.

D. Construction Dewatering Effluent

Construction dewatering effluent shall be treated as appropriate to limit suspended solids to no more than 50 mg/l. The discharge of construction dewatering liquids shall not cause turbidity in excess of 50 Jackson Turbidity Units above ambient beyond a 20 meter radius from the point of discharge. Weekly grab samples will be collected and analyzed for suspended solids.

A program for controlling the groundwater impacts of construction dewatering shall be submitted to the Department and the St. Johns River Water Management District for review prior to implementation.

V. Solid Wastes

Solid wastes resulting from construction or operation shall be disposed of in accordance with the applicable regulations of Chapter 17-7, FAC. The permittee shall submit a program for approval outlining the methods to be used in handling and disposal of solid wastes. Such program shall indicate at the least methods for erosion control, covering, vegetation and quality control.

Open burning in connection with land clearing shall be in accordance with Chapter 17-5, FAC. No additional permits shall be required, but the Division of Forestry shall be notified prior to burning. Open burning shall not occur if the Division of Forestry has issued a ban on burning due to fire hazard conditions.

VI. Operation Safeguards

The overall design, layout, and operation of the facilities shall be such as to minimize hazards to humans and the environment. Security control measures shall be utilized to prevent exposure of the public to hazardous conditions. The Federal Occupational Safety and Health Standards will be complied with during construction and operation. The Safety Standards specified under Section 440.56, F.S., by the Industrial Safety Section of the Florida Department of Commerce will also be complied with.

VII. Screening

The permittee shall provide screening of the site through the use of aesthetically acceptable structures, vegetated earthen walls and/or existing or planted vegetation.

VIII. Potable Water Supply System

The potable water supply system shall be designed and operated in conformance with Chapter 17-22, FAC. Information as required in 17-22.108 shall be submitted to the Department prior to construction and operation. The operator of the potable water supply system shall be certified in accordance with Chapter 17-16, FAC.

IX. Transformer and Electric Switching Gear

The foundations for transformers, capacitors, and switching gear necessary to connect SJRPP Units 1 & 2 to the existing distribution system shall be constructed of an impervious material and shall be constructed in such a manner as to allow complete collection and recovery of any spills or leakage of oily, toxic, or hazardous substances.

X. Toxic, Deleterious, or Hazardous Materials

The spill of any toxic, deleterious, or hazardous materials shall be reported in the manner specified by Condition XV.

XI. Construction in Waters of the State

A. No construction on sovereign submerged lands shall commence without obtaining lease or title from the Department of Natural Resources.

B. Construction of intake and discharge structures, coal unloading wharf, and transmission towers should be done in a manner to minimize turbidity. Turbidity screens should be

used to prevent turbidity in excess of 50 JTUs above background beyond 150 meters from the dredging, pile driving, or construction site.

All spoil from connecting the SJRPP intake/discharge system to the NGS, and the coal unloading wharf shall be piped hydraulically or tucked to an upland disposal site of sufficient capacity to retain all material. Spoil from construction access canals shall be side cast and used for restoring natural bottom contours upon completion of construction.

C. Variances

XII. Solid Waste Landfill

A. The proposed solid waste landfill area shall be monitored and studied pursuant to a detailed groundwater testing and monitoring Program as defined in Condition III, F.G. The results of the program will be used by the Department in determining whether JEA has affirmatively demonstrated that Florida Water Criteria (Chapter 17-3, F.A.C.) will not be violated.

B. JEA shall either provide an impermeable liner under the solid waste disposal areas or shall utilize a chemical fixation process to control leachate from the solid waste. JEA may implement a test program to demonstrate the quality and quantity of leachate from an unlined or untreated waste. Upon an affirmative showing that an uncontrolled solid waste facility will not cause violation of groundwater quality criteria, the Department may approve use of non-lined or non-chemically fixed landfill cells.

C. JEA shall utilize solid waste disposal area "B", north of Island Drive, prior to using disposal area "A".

D. Construction of perimeter berms shall be in conformance with the provisions of Chapter 17-9, F.A.C., regarding earthen dams.

E. Prior to the commencement of operation of solid waste disposal areas the following shall be submitted to the St. Johns River Subdistrict Manager for review and approval:

(1) Plot plan - should be drawn on a scale not greater than 200 ft. to the inch showing the following:

a. Dimensions and legal description of the site.

b. Location and depth corrected to MSL of soil borings.

c. Proposed trenching plan.

d. Cover stock piles.

e. Fencing or other measures to restrict access.

f. Cross sections showing both original and proposed fill elevation.

g. Location, depth corrected to MSL and construction details of monitoring wells.

(2) Design Drawings and Maps - may be combined with plot plan and should be drawn on a scale not greater than 200 ft. to the inch showing the following:

a. Topographic map with five foot contour intervals.

b. Proposed fill area.

c. Borrow area.

d. Access roads.

e. Grades required for proper drainage.

f. Typical cross sections of disposal site including lifts, borrow areas and drainage controls.

g. Special drainage devices.

(3) Soil map, Interpretive Guide Sheets, and a report giving the suitability of the site for such an operation.

(4) Contingency plan, including waste handling and disposal methods, in case of an emergency such as equipment failure, natural disaster or fire.

(5) Operation plans to direct and control the use of the site.

(6) An indication by discussion or drawings or both of how the site is designed to meet water quality standards of Chapter 17-3 and 17-4 FAC at the waste site boundary.

Based on the Department's reviews of the above, additions to or modifications of the overall monitoring program may be required for monitoring of runoff, groundwaters, and surface waters which may be affected by the various landfilling operations.

XIII. Transmission Lines

A. General

1. Filling and construction in water of the State shall be minimized to the extent practicable. No such activities shall take place without obtaining lease or title from the Department of Natural Resources where required. Construction and access roads should avoid wetlands and be located in surrounding uplands.

2. Placement of fill in wetland areas shall be minimized by spanning such areas with the maximum span practicable.

3. Any fill required in wetlands for construction but not required for maintenance purposes shall be removed and the ground restored to its original contours after transmission line placement.

4. Where fill in wetlands is necessary for access, keyhole fills from upland areas should be oriented as nearly parallel to surface water flow lines as possible.

5. Sufficient size and number of culverts or other structures shall be placed through fill causeways to maintain sheet flow substantially unimpaired.

6. Turbidity control measures, including but not limited to hay bales, turbidity curtains, sodding, mulching and seeding, shall be employed to prevent violation of water quality standards.

7. The Right-of-Way shall be located so as to minimize impacts in or on stream beds such as the removal of vegetation, to the extent practicable. Within 25 feet of the banks of any streams, rivers, or lakes, vegetation shall be left undisturbed, except for selective topping of trees or removal of trees such as pines. If it is necessary to remove such trees within 25 feet of the banks of streams, rivers, or lakes, the root mat shall be left undisturbed.

8. For all construction activities in waters of the state to their landward extent as defined in 17-4.28 which are also within the jurisdiction of the Corps of Engineers, the permittee shall file a copy of its Dredge/Fill application with the Corps of Engineers and with the DER, Bureau of Permitting, Power Plant Siting Section. For construction activities in waters of the State which are not also subject to the Corps, the permittee shall file substantially similar information. In either case, within 45 days of filing DER shall determine whether or not a probable violation of the conditions of certification would occur if the plans were executed as filed. If DER determines that a probable violation would occur, it shall so notify the permittee. Construction shall not commence without a written statement of compliance. Since certification is the only form of permit required by the State, it is understood that the permittee and DER shall strive to resolve such matters by

mutual agreement. If mutual agreement cannot be reached, as determined by the permittee, then the matter shall be referred to a Hearing Officer for disposition in accordance with the provisions of Chapter 120, Florida Statutes, within 60 days. Referral of an issue to a Hearing Officer pursuant to this condition shall not affect other conditions, nor shall it operate as a stay on any other portion of the line.

9. Any necessary water quality certifications which must be made to the Corps of Engineers shall be made at the time of a finding of compliance for specific work at specific locations.

10. Construction activities should proceed as much as practicable during the dry season.

B. Other Construction Activities

1. Maintenance roads under control of the permittee shall be planted with native species to prevent erosion and subsequent water quality degradation where drainage from such roads would impact waters of the State significantly.

2. Good environmental practices such as described in Environmental Criteria for Electric Transmission Systems as published by the U.S. Department of Interior and the U.S. Department of Agriculture shall be followied to the extent practicable.

3. Compliance with the most recent version of the National Electric Safety Code adopted by the Public Service Commission is required.

4. Fences running parallel to the transmission line which may become conductive shall be grounded at appropriate intervals; fences running perpendicular to the line shall be grounded at the edge of the right-of-way.

5. Field reconnaissance of rare and endangered species should be performed in order to maximize avoidance of impact on these species.

6. Open burning in connection with land clearing shall be in accordance with the applicable rules of the Department of Agriculture and Consumer Services. No additional permits shall be required, but the Division of Forestry shall be notified prior to burning. Open burning shall not occur if the Division of Forestry has issued a ban on burning due to fire hazard conditions.

C. Maintenance

1. Vegetative clearing operations for maintenance purposes to be carried out within the corridor shall follow the general standards for clearing right-of-way for overhead transmission lines as referenced in Sections XIII. A.7. and XIII.B.2. Selective clearing of vegetation is preferred over clearing and grubbing or clear cutting.

2. If chemicals or herbicides are to be used for vegetation control, the name, type, proposed use, locations, and manner of application shall be provided to the Department for assessment of compliance with applicable regulations.

D. Archaeological Sites

Any archaeological sites discovered during construction of the transmission lines shall be disturbed as little as possible and such discovery shall be communicated to the Department of State, Division of Archives, History and Record Management (DAHRM). Potentitally affected areas will be surveyed, and if a significant site is located, the site shall be avoided, protected, or excavated as directed by DAHRM.

E. Road Crossing

For all locations where the transmission line will cross State highways, the applicant will submit materials pursuant to the Department of Transportion's (DOT) "Utility Accomodation Guide" to DOT's district office for review and approval. All applicable regulations pertaining to roadway crossings by transmission lines shall be complied with.

F. Emergency Reporting

Emergency replacement of previously existing right-of-way or transmission lines shall not be considered a modification prusuant to Section 403.5315, F.S. A verbal report of the emergency shall be made to the Department as soon as possible. Within fourteen (14) calendar days after correction of the emergency, a report to the Department shall be made outlining the details of the emergency and the steps taken for its temporary relief. The report shall be a written description of all of the work performed and shall set forth any pollution control measures or mitigative measures which were utilized or are being utilized to prevent pollution of waters, harm to sensitive areas or alteration of archaeological or historical resources.

G. Final Right-of-Way Location

A map of 1:24000 scale showing final location of the right-of-way shall be submitted to the Department upon completion of acquisition.

H. Compliance

Construction and maintenance shall comply with the applicable rules and regulations of the Department and those agencies specified in 17-17.54(2)(a) and (b), FAC.

XIV. Change in Discharge

All discharges or emissions authorized herein shall be consistent with the terms and conditions of this certification. The discharge of any pollutant not identified in the application or any discharge more frequent than, or at a level in excess of, that authorized herein shall constitute a violation of the certification. Any anticipated facility expansions, production increases, or process modification which will result in new, different or increased discharges or expansion in steam generating capacity will require a submission of new or supplemental application pursuant to Chapter 403, F.S.

XV. Non-Compliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with any limitation specified in this certification, the permittee shall notify the manager of DER's St. Johns River subdistrict office by telephone during the working day in which permittee becomes aware of said non-compliance and shall confirm this situation in writing within seventy-two (72) hours supplying the following information:

a. A description and cause of non-compliance; and

b. The period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the non-complying event.

XVI. Facilities Operation

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this certi-

fication. Such systems are not to be bypassed without prior Department approval. The one exception is that during periods when light oil is used for ignition, the FGD system may be bypassed.

XVII. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact resulting from non-compliance with any limitation specified in this certification, including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying event.

XVIII. Right of Entry

The permittee shall allow the Secretary of the Florida Department of Environmental Regulation and/or authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which records are required to be kept under the terms and conditions of this permit; and

b. to have access to and copy all records required to be kept under the conditions of this certification; and

c. to inspect and test any monitoring equipment or monitoring method required in this certification and to sample any discharge or pollutants; and

d. to assess any damage to the environment or violation of ambient standards.

XIX. Revocation or Suspension

This certification may be suspended or revoked pursuant to Section 403.512, Florida Statutes, or for violations of any Condition of Certification.

XX. Civil and Criminal Liability

This certification does not relieve the permittee from civil or criminal responsibility or liability for non-compliance with any conditions of this certifiation, applicable rules or regulations of the Department, or Chapter 403, Florida Statutes, or regulations thereunder.

Subject to Section 403.511, Florida Statutes, this certification shall not preclude the institution of any legal action or

relieve the permittee from any responsibilities or penalties established pursuant to any other applicable State Statutes or regulations.

XXI. Property Rights

The issuance of this certification does not convey any property rights in either real or personal property, tangible or intangible, nor any exclusive privileges, nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. The applicant will obtain title, lease or right of use to any sovereign submerged lands occupied by the plant, transmission line structures, or appurtenant facilities from the State of Florida.

XXII. Severability

The provisions of this certification are severable, and, if any provision of this certification or the application of any provision of this certification to any circumstances is held invalid, the application of such provision to other circumstances and the remainder of the certification shall not be affected thereby.

XXIII. Definitions

The meaning of terms used herein shall be governed by the definitions contained in Chapter 403, Florida Statutes, and any regulation adopted pursuant thereto. In the event of any dispute over the meaning of a term used in these general or special conditions which is not defined in such statutes or regulations, such dispute shall be resolved by reference to the most relevant definitions contained in any other state or federal statute or regulation or, in the alternative, by the use of the commonly accepted meaning as determined by the Department.

XXIV. Review of Site Certification

The certification shall be final unless revised, revoked or suspended pursuant to law. At least every five years from the date of issuance of this certification or any National Pollutant Discharge Elimination System Permit issued pursuant to the Federal Water Pollution Control Act Amendments of 1972 for the plant units, the Department shall review all monitoring data that has been submitted to it during the proceeding five-year period for the purpose of determining the extent of the permittee's compliance with the conditions of this certification of the environmental impact of this facility. The Department shall submit the results of its review and recommendations to the permittee. Such review will be repeated at least every five years thereafter.

XXV. Modification of Conditions

The conditions of this certification may be modified in the following manner:

A. The Board hereby delegates to the Secretary the authority to modify, after notice and opportunity for hearing, any conditions pertaining to consumptive use of water, monitoring, sampling, groundwater, mixing zones, zones of discharge, leachate control programs or variances to water quality standards.

B. All other modifications shall be made in accordance with Sections 403.516, Florida Statutes.

XXVI. Flood Control Protection

The plant and associated facilities shall be constructed in such a manner as to comply with the Duval County flood protection requirements.

XXVII. Effect of Certification

Certification and conditions of certification are predicated upon design and performance criteria indicated in the application. Thus, conformance to those criteria, unless specifically amended, modified, or as the Department and parties are otherwise notified, is binding upon the applicant in the preparation, construction and maintenance of the certified project. In those instances where a conflict occurs between the application's design criteria and the conditions of certification, the conditions shall prevail.

XXVIII. Noise

To mitigate the effects of noise produced by the steam blowout of steam boiler tubes, JEA shall conduct public awareness campaigns prior to such activities to forewarn the public of the estimated time and duration of the noise.

XIX. Archaeological Sites

The following archaeological sites shall be preserved whenever possible. If they must be altered by construction, then archaeological salvage excavation shall be performed prior to construction under the supervision of the Florida Department of State, Division of Archives, History and Records Management.

Site - 8Du669 8Du670

8Du671 8Du673

8Du674 8Du675

8Du677 8Du678

XXXI. Blount Island Coal Unloading Facility

Area drainage and rainfall runoff from the lined coal pile on Blount Island shall be directed to a lined treatment system designed to process the runoff from the 24-hour, ten-year storm. Wastewater treatment shall consist of as a minimum: removal of solids and metals by precipitation and sedimentation followed by pH adjustment to no less than 8.0 and final disposal by percolation. Sufficient capacity shall be provided to allow for accumulation of settled solids of up to 20 percent of the total pond volume. Solids removed from the sedimentation pond shall be disposed in a properly designed landfill.

The sedimentation pond liner shall be impervious and designed for the life of the facility. The liner shall be installed in such a manner as to prevent rupture during cleaning or removal of solids.