AES Fax

6-30-88

- SO_2 quality settlement, Max.
- Type of models to be used, Tom.

- Max's comments -

Ask Bill on Policy.

- TSP Nonattainment designation
- PM_{10} stds are in effect
- Irregular operations. 81/82

BACT; Barry + CAER (voc)

Call Terry Varkonda

- [redacted] Scrubbers on Boilers + RB + Smelt tank
- Include non regulated pollutants + toxics
- Dual 6 nonattainment for ozone. VOC → CAER.
- Dual O_3 increment available?
- Amount of VOC over 100 TPY without net out.

Called Terry on 7-7-88 with DER/EPA comments.

DER / AES 6/30/88

		DER
Buck Oven	488-1344	Siting Coord
Pradeep Raval	"	BAQM
Terry Cole	877 0099	AES
JEFF SWAIN	703-522-1315	AES
KERRY VARKONDA	"	"
Curt Barton	~~Stone Container~~ 404 621 6707	Stone Container/
JOHN MILLICAN	584-5137	Seminole Kraft ENVI. SERVICES
Larry Alfred	913-339-2325	Black & Veatch
Barry Andrews	488-1344	BAQM
Max Linn	488-1344	BAQM

RECEIVED

June 21, 1988

JUN 23 1988

DER - BAQM

Mr. Max A. Linn
Meteorologist
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Dear Max:

Attached for your review are three (3) copies of the Air Quality Analysis Work Plan (AQAWP) for our AES-Cedar Bay cogeneration plant to be built in Jacksonville. Please provide a copy to Buck Oven and Barry Andrews. I spoke to Buck concerning a time to meet with you to discuss this plan in more detail, and we have tentatively scheduled this meeting for Thursday, June 30th at 1:00 p.m. in Tallahassee.

As far as the agenda goes, I propose we step through the plan page by page, addressing areas needing further discussion as we come to them.

In addition to issues specifically addressed in the AQAWP, there are several other issues we would like to get clarification on during this meeting:

- What are the implications of the ozone non-attainment status of Duval County?
  - What growth allowance exists and what amount will be available for the project ?
- What analysis will be required for trace metals emissions?

AES/Cedar Bay Inc.

1925 North Lynn Street • Arlington, Virginia 22209 • (703) 522-1315 • Telecopier—(703) 528-4510

June 21, 1988

Mr. Max A. Linn
Meteorologist
Bureau of Air Quality Management
State of Florida
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- What analysis will be required for trace metals emissions?

AES/Cedar Bay Inc.

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- Although already addressed in the plan, we want to be sure we are clear on how to deal with the modeled SO_2 exceedence issue. I think our approach effectively addresses DER and BES concerns, but am very interested in hearing feedback from you and others.

I look forward to meeting with you on the 30th.

Sincerely,

Kerry

Kerry Varkonda
Project Development Specialist

cc: James Manning, Division Chief, BESD - Jacksonville

KV/clr
Attachment

bcc: Mr. Jeff Swain, AES
Mr. Tom Tribone, AES
Mr. Terry Cole, Oertel & Hoffman✓
Mr. John Millican, Envir. Services
Mr. Curt Barton, Stone Container
Mr. Michael Riddle, Seminole Kraft Corp.
Mr. Steve Day, B&V
Mr. Larry Alfred, B&V

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

	ACTION NO	
	ACTION DUE DATE	
1. TO: (NAME, OFFICE, LOCATION)	Initial	
~~Clair~~	Date	
2.	Initial	
~~Larry~~ YS	Date	
3.	Initial	
Bill	Date	
4.	Initial	
	Date	

REMARKS:

FYI - Copies of attachment given to Max, Barry + Buck

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 & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM: Patty

DATE 6-24

PHONE

AES CEDAR BAY, INC.
CEDAR BAY COGENERATION PROJECT
B&V PROJECT 14573
B&V FILE 32.0203

AIR QUALITY ANALYSIS WORK PLAN

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(Continued)

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LIST OF FIGURES

1.0 INTRODUCTION

AES Cedar Bay, Inc. (AES-CB) proposes to construct the AES Cedar Bay Cogeneration Project to be located in Jacksonville, Florida. The project will incorporate three fluidized bed boilers burning coal and bark (the cogeneration plant) and one chemical recovery boiler burning the black liquor by-product of the adjacent Seminole Kraft paper mill. The cogeneration plant will sell electric power to Florida Power and Light and provide process steam to the kraft paper mill. The chemical recovery boiler will provide steam and electricity for internal consumption at Seminole Kraft. Eight existing boilers fueled by oil, bark, and black liquor will be removed from service as a result of the installation of the proposed sources. The existing smelt dissolving tanks and multiple effect evaporators will also be replaced by new units. Commercial operation of the proposed facility is scheduled to begin in 1992.

The project will replace older, less environmentally efficient equipment with advanced chemical recovery boiler and clean coal technology, resulting in numerous environmental benefits. Major reductions are anticipated in ambient impacts of sulfur dioxide (SO_2), total suspended particular matter (TSP), and particulate matter with aerodynamic diameter less than 10 microns (PM_{10}). In addition, the maximum total reduced sulfur (TRS) emission rate from the new recovery boiler is expected to drop to less than one-third of that from the existing recovery boilers, significantly reducing ambient impacts and thereby odor.

This air quality analysis work plan describes the proposed methodology for obtaining the required air permits for the installation and operation of the proposed emission sources of the AES Cedar Bay Cogeneration Project.

2.0 PROJECT DESCRIPTION

The AES Cedar Bay Cogeneration Project is a cogeneration facility to be located in Jacksonville, Florida. The proposed project site is shown on Figure 2-1. The site is located at the existing industrial site of the Seminole Kraft paper mill on the east bank of the Broward River. The proposed facility will be built between the existing mill and the river.

The AES Cedar Bay Cogeneration Project will generate process steam which will be sold to the adjacent Seminole Kraft Corporation mill and will generate approximately 225 MW of electricity for sale to Florida Power and Light Company (FP&L). The facility will be located at the existing Seminole Kraft pulp and paper mill site where oil, bark, and kraft black liquor are currently burned to produce steam and electric power.

The proposed cogeneration plant will fire bark and coal in three circulating fluidized bed (CFB) boilers which will produce steam at 1,800 psig for a new double automatic extraction condensing turbine generator. This will produce the 225 MW for sale and also 175 psig and 75 psig process steam for the mill. These boilers will be operated by AES-CB and will replace the existing three oil fired boilers and the two bark boilers at the mill.

A new kraft black liquor recovery boiler, which will be operated by Seminole Kraft, will replace the three existing recovery boilers and will produce 1,250 psig steam. A new double automatic extraction condensing turbine generator will produce 42 MW of electric power for internal mill consumption as well as 600 psig and 175 psig process steam for the kraft mill processes. Due to improvements in technology, the new boiler will utilize a noncontact black liquor evaporation system versus the direct contact evaporation system currently in service. As discussed earlier, this will result in a significant reduction in TRS emissions from the recovery boiler. The existing multiple effect evaporators (MEEs) and smelt dissolving tanks (SDTs) will also be replaced as part of this project. A basic process flow diagram for the pulping and chemical recovery equipment is given on Figure 2-2. Noncondensable gases from the new MEE are directed

PROPOSED SITE LOCATION

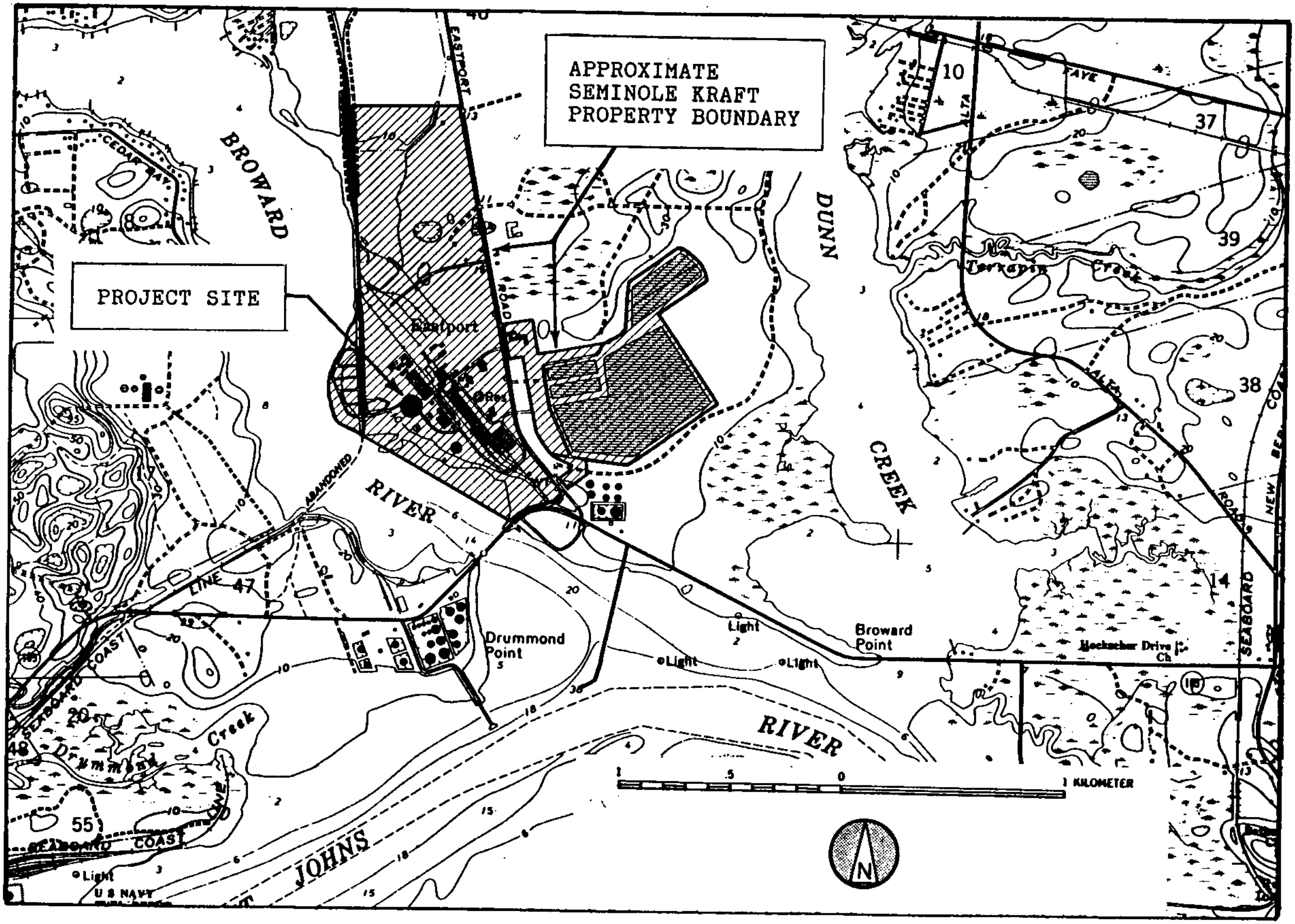

FIGURE 2-1

062288
AIRQUAL

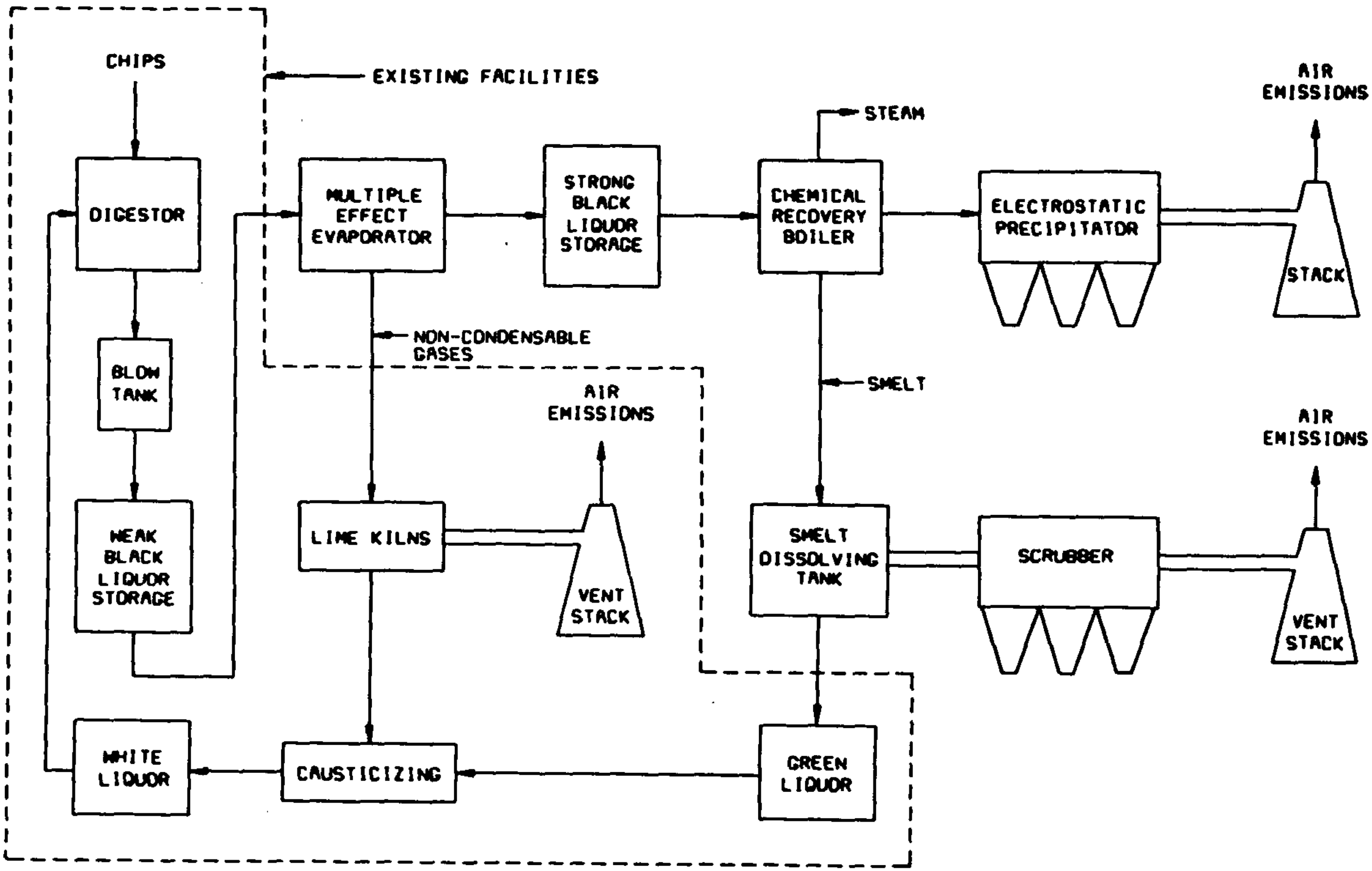

FIGURE 2.2
BASIC PROCESS FLOW
FOR PULPING AND
CHEMICAL RECOVERY

to the existing lime kilns for incineration. The net air emission changes due to the equipment replacement are discussed in Section 3 of this work plan.

The CFB boilers will burn approximately 3,200 MBtu/h. Of this, approximately 96 percent will be coal and the remainder bark. The recovery boiler will burn approximately 1,100 MBtu/h black liquor solids.

Emissions control for the CFB boilers is expected to include:

- o Limestone injection for SO_2 reduction.
- o Baghouses for particulate reduction.
- o Low combustion temperature control for NO_x reduction.

Emissions control features for the recovery boilers are expected to include:

- o Electrostatic precipitators for particulate control.
- o Non-contact black liquor evaporators for total reduced sulfur control.

Emission control for the smelt dissolving tank is expected to include a liquid contact scrubber for particulate and TRS control.

The proposed facility will receive coal by rail or barge according to economic attractiveness.

The coal combustion byproduct (ash) will be stored in silos or on impervious pads for removal from the site. This material may be sent to mines, landfilled, or potentially marketed in the engineering materials industry.

3.0 POLLUTANT APPLICABILITY

The proposed project site area is currently designated attainment for all "criteria" pollutants except ozone. A portion of Jacksonville was formerly designated nonattainment for total suspended particulate matter but was recently designated as unclassifiable with respect to new fine particulate (PM_{10}) standards.

The cogeneration project will be subject to the permitting requirements of the Prevention of Significant Deterioration (PSD) program because the net emissions increase of at least one regulated pollutant is expected to exceed 100 tons per year. Specific regulated pollutants which have net emissions increases at levels that exceed "significant" levels defined by EPA and FDER must be included in the permit application (including a Best Available Control Technology assessment).

Table 3-1 lists the estimated net increases in annual emissions for the cogeneration project. Each net emissions increase is the difference between estimated emissions from the four new boilers and SDT vent and the actual emissions from the eight boilers and SDT vents to be replaced.

Actual emissions are proposed to be based on the average of the last five mill operating years. During this period of time, mill operations were not typical, relative to the mill's capacity or historical operations. Mill ownership changed in 1983 and again in 1985 before being shut down in late 1985. Equipment reliability was poor during these years, as were mill product market conditions. The mill was purchased by Stone Container Corporation in 1986 and restarted in early 1987.

Due to the irregular nature of operations from 1982 through 1987, the proposed method of calculating representative emissions for each source in each year is as follows:

$$\text{Representative Emissions} = \text{Actual Emissions} \times \frac{\text{8400 Hours}}{\text{Actual Hours}}$$

The 8400 hour figure represents 350 operating days per year. The remaining 15 days are assumed as typical downtime needed for equipment maintenance. This is consistent with historical plant operations.

TABLE 3-1. SIGNIFICANT AND NET EMISSION RATES FOR PROPOSED FACILITY

Pollutant	Significant Emission Rates t/yr	Actual Emissions[a] t/yr	Estimated Maximum Emissions[b] t/yr	Net Increase t/yr	Applicable Pollutant Yes/No
Carbon monoxide	100	c	4,765	d	d
Nitrogen oxide	40	c	6,360	d	d
Sulfur dioxide	40	c	10,775	d	d
Particulate matter	25	c	648	d	d
Particulate matter (PM_{10})	15	c	648	d	d
Ozone (volatile organic compounds)	40	c	539	d	d
Lead	0.6	e	e	d	d
Asbestos	0.007	e	e	d	d
Beryllium	0.0004	e	e	d	d
Mercury	0.1	e	e	d	d
Vinyl chloride	1.0	e	e	d	d
Fluorides	3	e	e	d	d
Sulfuric acid mist	7	e	e	d	d
Total reduced sulfur	10	c	44	d	d

[a]Based upon average of sum of 1982, 1983, 1984, 1985, and 1987 actual emissions prorated to represent full years of operation (see Section 3.0).
[b]Based upon proposed design criteria of all proposed sources (detailed in Table 5-4).
[c]Currently in preparation.
[d]Will be included with permit application submittal.
[e]Will be estimated from fuel analysis data or applicable literature information.

The above equation would be used to estimate representative emissions from each source for years 1982 through 1985 and 1987. 1986 would be excluded since the mill did not operate during that year.

Emission figures which were not included as part of the annual mill emission reports will be estimated based on AP-42 factors.

The emission estimates for the proposed new sources assume that all new boilers will be operated at maximum load for the entire year (8,760 hours). These estimates also assume the three CFB boilers to be operated totally on coal, producing higher expected emissions than when burning bark. The "significant" levels for the regulated pollutants are included in the table for comparison.

4.0 BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

A BACT document will be prepared separately for the AES Cedar Bay Cogeneration Project. The BACT analysis will include those pollutants shown to be applicable because of expected significant emissions.

Under the federal Clean Air Act, BACT represents the maximum degree of pollutant reduction determined on a case-by-case basis after consideration of environmental, energy, and economic factors. However, BACT cannot be less stringent than the emission limits imposed through any applicable new source performance standard (NSPS).

The BACT analysis will follow the so-called "top down" approach as presented the December 1, 1987, memorandum from J. Craig Potter to the EPA Regional Administrators. For each pollutant or group of pollutants, the most stringent control available for a similar source or source category will be addressed first. If it can be shown that this level of control is technically or economically infeasible for the source, than the next most stringent level of control will be determined and similarly evaluated until the proposed BACT level is reached.

The proposed BACT control methods will not be finalized until after completion of the BACT analysis, but is expected to include fabric filter control for particulates, a circulating fluidized bed (CFB) boiler with limestone injection and fabric filter control for sulfur dioxide, and a CFB boiler without supplemental control for nitrogen dioxide and carbon monoxide. Because of the nonattainment status of the site and with regard to ozone, the CFB boilers will be analyzed for VOC emissions from the standpoint of Lowest Achievable Emission Rate (LAER). Expected BACT controls for the chemical recovery boiler include an electrostatic precipitator for particulate control and low-odor boiler technology for control of total reduced sulfur (TRS). The BACT control for the MEE system is expected to be incineration in the lime kilns. The BACT control for the smelt dissolving tank is expected to be a liquid contact scrubber for reducing particulate and TRS emissions.

5.0 AIR QUALITY ASSESSMENT METHODOLOGY

An analysis of flue gas emissions will be conducted to facilitate the assessment of the impacts of airborne pollutants on ground level ambient air quality levels, visibility, soils, and vegetation in the project vicinity. This section describes the overall air quality assessment methodology proposed for this study including the various modeling data requirements. The assessment methodology is based on EPA's Guideline on Air Quality Models (Revised) July 1986 (including Supplement A, July 1987) and the UNAMAP 6 dispersion models.

Copies of pertinent air quality modeling runs will be included as a separate appendix to the actual air permit application.

5.1 APPLICABLE AIR QUALITY DISPERSION MODELS

For most air quality modeling assessments it is desirable to use both screening level and refined dispersion modeling techniques. For this project, EPA's screening level model PTPLU-2 and the EPA document entitled Procedures for Evaluating Air Quality Impact of New Stationary Sources (Volume 10--Revised) will be used to determine the highest predicted ground level concentration for various plant operating conditions. The operating conditions of the circulating fluidized bed (CFB) boilers will be evaluated at 50 and 75 percent capacity plus the maximum design for the plant. The worst case operating conditions then will be further evaluated using refined dispersion modeling techniques.

The terrain is level in the vicinity of the proposed Cedar Bay Cogeneration Project. Following the recommended EPA modeling guidance for refined models, the ISCST (Industrial Source Complex Short-term) dispersion model will be used with five years of hourly meteorological data. Concentrations will be predicted for 1-, 3-, 8-, and 24-hour plus annual averaging periods.

The proposed modeling site will be considered rural for modeling purposes based on the land use within a 3-kilometer radius. Standard EPA default modeling options will be used for this analysis.

Building downwash will be used in the modeling assessment as appropriate to consider the effects of nearby buildings. The proposed new sources will utilize good engineering practice (GEP) stack heights. The PSD permit application will include a plot plan and building dimensions to support GEP determinations.

5.2 METEOROLOGICAL DATA

Preprocessed meteorological data obtained from the Florida DER for Jacksonville, Florida, for the five-year period 1981 to 1985 will be used for the dispersion modeling.

5.3 SOURCE DATA

The proposed emissions associated with this project can be classified as fugitive and combustion gas emissions. Combustion gas emissions will be evaluated for operation of the existing sources as well as proposed new sources.

5.3.1 Fugitive Dust Emissions

The generation of particulate emissions from the handling and storage of coal, wood waste, limestone, and combustion waste will be minimized. An estimated fugitive dust emissions inventory will be developed and submitted as part of the permit application. Modeling of ambient air quality impacts will be performed using the recommended ISCST dispersion model. The modeling will include both point and area sources within the plant, as appropriate. Receptors will be positioned at locations on the plant boundary and 100 meters beyond the boundary. The results of the modeling will demonstrate compliance with all particulate air quality standards.

Emission factors and typical dust control efficiencies will be obtained from EPA's Compilation of Air Pollutant Emission Factors (AP-42). The emission inventory will be based on annual material throughput for facility operation.

5.3.2 Combustion Gas Emissions

Combustion gas emissions will be evaluated for operation of the existing sources and for the new sources proposed for this project. The purpose of evaluating both existing and proposed sources is to determine the effects on the ambient air quality of replacing existing equipment with new, efficient, and well controlled boilers equipped with GEP stacks. It is anticipated that the replacement of the existing power and recovery boilers and their respective short stacks with three fluidized bed and one recovery boiler equipped with GEP height stacks will show a net ambient air quality improvement.

5.3.2.1 Existing Source Data. Table 5-1 summarizes the existing Seminole Kraft paper mill source information, including sulfur dioxide emissions in accordance with FDER's emissions inventory. A modeling study was previously performed by the FDER of major sources in the Jacksonville area to assess potential sulfur dioxide levels. For convenience, the FDER study combined similar Seminole Kraft sources into "composite" sources for modeling. The source parameters for the composite sources were developed from the combined worst-case source parameters for the sources included in each composite.

EPA's Guide for Compiling a Comprehensive Emission Inventory (March 1973) is a more refined method of "lumping" similar sources together. The procedure calculates a plume buoyancy term (K) for each individual stack using stack height (H), flow volume (V), exhaust gas temperature (T), and Emission Rates (a) in the following equation.

$$K = (H)(V)(T)/(a)$$

When combining sources, the stack with the lowest K value is selected and its stack parameters are used to represent the composite source. Emissions from all sources are added and used for the composite source. This method simplifies the dispersion modeling effort. Table 5-2 shows the simplified source configuration for the existing Seminole Kraft SO_2 sources. The stack heights for the five combined sources represent less than GEP heights and require modeling of downwash effects induced by buildings in the immediate area of the stacks.

TABLE 5-1. EXISTING SEMINOLE KRAFT SOURCE DATA

Source	SO_2 Emission Rate[a] g/sec	(x.132) lb/h	Stack Height m	Stack Exit Temperature K	Stack Exit Velocity m/sec	Stack Diameter m
P. Boiler #1	54.6	7.2	32.3	433	20.12	1.83
P. Boiler #2	72.7	9.6	32.3	450	21.34	2.13
P. Boiler #3	72.7	9.6	32.3	450	22.86	2.13
B. Boilers	114.0	15.1	41.5	329	13.72	2.44
R. Boiler #1	11.0	1.4	38.4	344	17.68	2.59
R. Boiler #2	14.1	1.9	38.4	344	17.98	2.74
R. Boiler #3	14.1	1.9	38.4	344	16.76	2.74
Lime Kiln #1	0.5	0.07	21.0	344	5.18	1.80
Lime Kiln #2	0.5	0.07	22.9	339	7.62	1.43
Lime Kiln #3	0.5	0.07	22.9	339	10.36	1.13
SDT #1	0.2	0.03	36.6	344	3.96	1.07
SDT #2	0.3	0.04	37.8	344	4.27	1.22
SDT #3	0.3	0.04	37.8	347	4.27	1.22

[a]Based on FDER data; confirmed by AES calculations.

TABLE 5-2. EXISTING COMPOSITE SOURCE DATA

Source	SO2 Emission Rate[a] g/sec	Stack Height m	Stack Exit Temperature K	Stack Exit Velocity m/sec	Stack Diameter m
P. Boilers	200.0	32.3	433	20.12	1.83
B. Boilers	114.0	41.5	329	13.72	2.44
R. Boilers	39.2	38.4	344	16.76	2.74
Lime Kilns	1.5	22.9	339	10.36	1.13
SDTs	0.8	37.8	344	4.27	1.22

[a]Based upon FDER data; confirmed by AES calculations.

5.3.2.2 Proposed Source Data. Table 5-3 summarizes the source data for the three fluidized bed boilers, recovery boiler, and smelt dissolving tank being proposed to replace the existing three oil-fired power boilers, two bark-fueled boilers, three recovery boilers, and three smelt dissolving tanks. The three fluidized bed boilers will exhaust pollutants through a common GEP stack. The recovery boiler will be equipped with a separate GEP stack. The smelt dissolving tank will exhaust through a vent stack. MEE emissions will be routed to the lime kilns for incineration, as they currently are at the Seminole Kraft Mill.

Estimated emission rates for the fluidized bed boilers, recovery boilers, and SDT are given in Table 5-4. The boiler stack heights represent GEP heights based on an enclosed CFB boiler structure of 170 feet in height and a projected width greater than that height. The CRB structure height is estimated at 210 feet; however, the horizontal dimensions are smaller so that the structure does not influence the GEP height of the stacks. A plot plan will be included in the permit application to identify building dimensions and support the GEP determinations.

5.4 RECEPTOR DATA

The ISCST dispersion model can predict ground-level concentrations for receptor locations expressed in either polar coordinates, Cartesian coordinates (x-y), or both. Polar receptor coordinates are proposed for this analysis with the proposed CFB boiler stack located at the center of the receptor array.

Receptor locations will be established at appropriate distances and with adequate density to predict maximum concentrations for the various averaging periods and to identify the significant impact areas for criteria pollutants with significant impacts in offsite locations. With a polar receptor grid, an initial receptor array will be established according to EPA modeling workshop guidance and the PTPLU-2 modeling results. Additional receptor rings (distances) will be selected after reviewing the initial ISCST modeling results. The purpose of the additional receptor rings can be to increase the resolution of receptor spacing in the vicinity of expected maximum predicted concentrations or to extend the grid to the

TABLE 5-3. PRELIMINARY SOURCE DATA FOR NEW SOURCES

Model Parameters	Fluidized Bed Boilers	Recovery Boiler	Smelt Dissolving Tanks
Nearby Building Height	170 feet	210 feet	210 feet
Stack Height	425 feet	425 feet	240 feet
Total Heat Input	3,200 MBtu/h	1,100 MBtu/h[a]	NA
Stack Exit Velocity	3,600 ft/min	3,600 ft/min	3,056 ft/min
Stack Exit Diameter	17 feet	11.5 feet	5 feet
Stack Exit Temperature	265 F	380 F	160 F

[a]Design feedrate of 4.1 million pounds black liquor solids per day.

TABLE 5-4. ESTIMATED POLLUTANT EMISSION RATES

	Circulating Fluidized Bed Boilers		Chemical Recovery Boiler	SDT	
	Emission Rate lb/MBtu	Emissions[a] lb/h	Emissions[b] lb/h	Emission Rate[c] lb/ton BLS	Emissions[d] lb/h
CO	0.19	608	480	--	--
NO_x	0.36	1,152	300	--	--
SO_2	0.60	1,920	540	--	--
PM	0.02	64	73	0.2	11
PM_{10}[e]	0.02	64	73	0.2	11
VOC	0.016	51	72	--	--
TRS	--	--	8	0.03	2

NA based on BACT.

[a]Based upon 3,200 MBtu/h heat input to boilers.

[b]Based upon preliminary estimates from manufacturers' information and a feedrate of 4.1 million pounds black liquor solids (BLS)/day.

[c]One ton of BLS assumed to be 3,000 pounds.

[d]Based on feedrate of 4.1 million pounds BLS/day.

[e]Conservative assumption that all particulate emissions are PM_{10}.

outer bounds of significant impact areas. Higher resolution will be accomplished by bracketing the maximum predicted concentration locations by receptor rings at approximately 100 meter intervals.

6.0 AAQS ANALYSIS

The air quality impact assessment will determine the impact of the proposed facility on the Ambient Air Quality Standards (AAQS). Florida has established some air quality standards that are more restrictive than the National AAQS. The applicable federal and state ambient air quality standards are given in Table 6-1.

Since the air quality assessment will use a five-year meteorological data set, the highest second-highest modeled concentrations will be used to show compliance with all but the annual standards. As part of this assessment, it will be necessary to establish values for pollutant background concentrations.

6.1 POLLUTANT BACKGROUND CONCENTRATIONS

The state of Florida has been conducting air quality monitoring for criteria pollutants at locations throughout the state for many years. The plant site is considered to be in attainment for all criteria pollutants except ozone. Downtown Jacksonville was designated nonattainment for total suspended particulate (TSP), but was recently designated as unclassified for PM_{10}. Monitoring of PM_{10} has been performed in downtown Jacksonville (Adams Street) since early 1986. With the availability of this data and other representative monitoring data, the FDER has indicated that additional ambient air quality monitoring will not be required for this permit application.

The FDER document Ambient Air Quality in Florida 1986 (November 1987) provides the most recent monitoring data for use in establishing background concentrations for the criteria pollutants. FDER and EPA guidance would generally allow use of the highest, second-highest monitored concentrations to establish background concentrations for the project area. For this analysis, 1986 data from all Duval County monitoring sites were reviewed for each pollutant. Generally, data with the highest concentrations were selected; however, location of the samplers and monitoring objectives were also considered.

TABLE 6-1. FEDERAL AND FLORIDA AMBIENT AIR QUALITY STANDARDS

Pollutant	Sampling Period	Federal Standards Primary ug/m^3	Federal Standards Secondary ug/m^3	Florida Standards ug/m^3
Sulfur Dioxide (SO_2)	Annual	80	--	60
	24-hour	365	--	260
	3-hour	--	1,300	1,300
Nitrogen Dioxide (NO_2)	Annual	100	100	100
Particulate Matter (PM_{10})	Annual	50	50	50
	24-hour	150	150	150
Carbon Monoxide[a] (CO)	8-hour	10	--	10
	1-hour	40	--	40
Ozone (O_3)	1-hour	235	235	235
Lead (Pb)	Calendar Quarter	1.5	1.5	1.5

[a]Units are mg/m^3.

Table 6-2 summarizes the existing monitoring data being proposed as conservative values of the background pollutant concentrations for the plant area. These monitoring sites are all located within the vicinity of the proposed plant site or in the Jacksonville metropolitan area. The background concentrations for applicable criteria pollutants except for SO_2 will be combined with the predicted modeled concentrations to demonstrate compliance with the applicable standards.

6.2 APPROACH TO ADDRESS SO_2 MODELED EXCEEDENCE ISSUE

Modeling of the Jacksonville area by the FDER has indicated that if existing permitted sources were to operate at their permitted emission rates, a nonattainment area for SO_2 would exist. In accordance with FDER guidance, AES-CB will approach the permit application process in two segments.

First, AES-CB will demonstrate that net ambient impacts resulting from the project (i.e., ambient impacts from the new circulating fluidized bed and recovery boilers and SDT minus impacts from the existing power, bark and recovery boilers and SDTs, assuming Seminole Kraft permitted emission rates) will be less than significant impact levels at modeled exceedence points. That is, less than 25 ug/m^3 for a 3-hour average, 5 ug/m^3 for a 24-hour average, and 1 ug/m^3 for an annual average.

This expected demonstration is based upon both the use of offsetting emissions and the installation of good engineering practice (GEP) stacks on the new sources at the facility. Present sources are equipped with short stacks which are heavily influenced in the modeling by building downwash effects. GEP stack heights will eliminate the downwash effects of the model.

This analysis is intended to address the FDER concern for the project's impact on the SO_2 modeled exceedence issue in Jacksonville, and is our understanding of the FDER's requirement of an applicant before a permit for new construction can be considered.

Once the above criteria are met, SO_2 ambient impacts will be evaluated in the typical fashion, as described in Section 6.3 for AAQS and Section 7 for PSD increment. There will be no further evaluation relative to the modeled SO_2 exceedence issue beyond that described above.

TABLE 6-2. EXISTING AMBIENT AIR QUALITY MONITORING DATA[a]

	Measured Concentration	Location	Year
Sulfur Dioxide (ug/m^3)			
Annual	10	1960-081-H	1986
24-Hour	63	1960-081-H	1986
3-Hour	321	1960-081-H	1986
Nitrogen Dioxide (ug/m^3)			
Annual	29	1960-032-H	1985[b]
PM_{10} (ug/m^3)			
Annual	31	1960-004-H	c
24-Hour	65	1960-004-H	c
Carbon Monoxide (PPM)			
8-Hour	6	1960-082-H	1986
1-Hour	13	1960-082-H	1986
Lead (ug/m^3)			
Calendar Quarter	0.3	1960-084-H	1986

TSP

Add TSP

[a]From Ambient Air Quality in Florida 1986, Florida Department of Environmental Regulation, November 1987.

[b]1986 not available.

[c]April 1986-March 1987.

6.3 MODELED POLLUTANT CONCENTRATIONS

The net modeled impacts of applicable criteria pollutants will be assessed with regard to compliance with applicable AAQS. First, actual emissions from the existing Seminole Kraft sources, as defined in Section 3.0, will be modeled to establish "base" ambient concentrations. Next, the new sources proposed to replace the existing sources will be modeled with the same receptors. If the net changes of all offsite ambient concentrations are below significant ambient impact levels, then no additional modeling will be performed for that pollutant.

For those criteria pollutants with offsite net impacts greater than significant levels, an emissions inventory of other appropriate existing sources will be established. The inventory will be developed based on the "Screening Threshold" Method for PSD Modeling used by the North Carolina Air Quality Section. This method was previously recommended by the FDER to develop a list of sources to be included in AAQS analyses.

A background concentration for each applicable pollutant and averaging period will then be added to the total modeled impact. The background concentration, as discussed in Section 6.1, very conservatively represents the contributions from all other sources not included in the modeling analysis.

7.0 PSD INCREMENT ANALYSIS

Prevention of Significant Deterioration (PSD) regulations were promulgated as a result of the 1977 Clean Air Act Amendments to ensure that air quality in a defined area does not significantly deteriorate or exceed AAQS while providing a margin for future growth.

PSD regulations apply to areas designated as "attainment" for criteria pollutants. New sources or major modifications to existing sources that emit regulated air pollutants in "significant" amounts must comply with these regulations. As previously discussed, emission rates for the AES-CB analysis will be the net difference between emissions from the new CFBs, recovery boiler, and SDT and emissions from the existing equipment to be replaced. PSD regulations classify all areas of the country. The proposed project site has been classified a Class II PSD area. As a result of this classification, Class II PSD increments will be applicable for this analysis in all areas surrounding the facility.

In addition, any Class I area within 100 kilometers of a proposed source must be assessed to ensure that modeled impacts will not exceed Class I increments. The closest Class I area is the Okefenokee National Wilderness Area in southeastern Georgia. This area is approximately 60 kilometers from the project site. PSD Class I increment consumption will be modeled for this area in addition to the analysis of maximum Class II increment consumption. The modeling of SO_2 for Class I increment consumption will be performed using the ISC model's plume chemical transformation feature. A half-life of 4 hours will be applied for the analysis.

The PSD Class I and II maximum allowable increments are listed in Table 7-1. A source inventory of appropriate PSD increment consumers will be developed in the same manner as for the AAQS analysis. A list of potential PSD consuming sources will be obtained from FDER to use in developing the final source inventory.

TABLE 7-1. PSD CLASS I AND CLASS II AIR QUALITY INCREMENTS

Pollutant	Class I Increment ug/m^3	Class II Increment ug/m^3
SO_2		
Annual	2	20
24-Hour	5	91
3-Hour	25	512
Particulates		
Annual	5	19
24-Hour	10	37
NO_x[a]		
Annual	2.5	25.0

[a]Proposed February 8, 1988.

8.0 ADDITIONAL IMPACT ANALYSIS

8.1 VISIBILITY

The nearest PSD Class I area is the Okefenokee National Wilderness Area in southeastern Georgia. This Class I area is approximately 60 kilometers from the site. An analysis of potential visibility degradation will be performed based on EPA guidance materials. A Level-1 assessment is expected to show no significant effect on the visibility in the Class I area. It is anticipated that the removal of the existing boilers and installation of the newer boilers will have a favorable affect on the overall visibility in the project site area as well.

8.2 SOILS AND VEGETATION

The analysis will examine the levels at which the soil and vegetation in the area are adversely impacted by various pollutants and compare these levels with the predicted net impacts due to the proposed facility.

8.3 GROWTH

The potential for secondary effects on air quality will also be assessed. The possible effects of the proposed facility on economic and population growth will be discussed.

Jeffrey V. Swain
Project ~~Development Manager~~ Director

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2-4-88

AES JACKSONVILLE PPS.

Owner/Operator of PP facility (Pvt) cogen trend.
Try to have facility get competitive with utilities

140MW @ TX 110 mill. (40%) was controls on PP built before. (Acid control inclu)
170MW @ PA. coal.

- 2 under construction in California (natural gas)
- Most recent project 300MW (Oklahoma) Coal fired (fluid bed)

Seminole Kraft
- Oil/Bark Power Boilers {3 coal/bark, 1 oil, 1 R. Boiler}
- Recovery Boiler odor problem

Generate 250

New 225 MW Cogeneration [1 low odor R. Boiler, 3 coal/bark boilers (fluidized bed)]
Replace the above Boilers.

Steam to S.K.
225 MW thru JEA & FPL

Recovery Boiler needs to comply with TRS rule.

March 10 will have SOC meeting - Jacksonville, MAX.

Bruce feels time frame: at least 10 MO after complete application
: or later if litigation.

Check water discharge with EPA for significant change from NPDES.
Steve Day feels the NPDES permit is needed regardless not sure its new

FPL expects need for 1600 MW by mid 90's.

This project may substitute for FPL plans for gas fired combined cycle unit next.

PM10 monitoring data source questions for Bay/Mear
Other requirements past EPA approval of SIP. (1 yr maybe).

AN OVERVIEW OF

AES JACKSONVILLE

COGENERATION FACILITY

FEBRUARY 1988

APPLIED ENERGY SERVICES, INC.

OVERVIEW

- AES has been developing a cogeneration facility on an existing industrial site in Jacksonville, Florida
  - Steam will be sold to the Seminole Kraft paper mill that was refurbished by Stone Container Corporation in the fall of 1986 and restarted in February 1987, and
  - 225 MW of electricity will be wheeled through Jacksonville Electric Authority (JEA) and sold to Florida Power and Light
- The new power facility, valued at approximately $400 million, will consist of the following:
  - one new low-odor recovery boiler and an associated turbine, and
  - three new circulating fluidized bed (CFB) boilers and associated turbine
- The project will replace older, less efficient equipment, improving Seminole Kraft's competitive position and reducing odor emissions.
- Bark and coal will be fired in the CFB boilers to generate steam
- This document provides information about the planned cogeneration facility and AES.

ATTRACTIVE FEATURES OF THE PROJECT

Economic

- Provides attractively priced electricity to Florida ratepayers under a stable rate structure
- Steam at below-market prices improves Seminole Kraft's competitive position, thus improving employment stability.
- $400 million cogeneration project provides up to 660 construction jobs and 95 new permanent jobs at the AES plant;
- Facility increases the tax base in the City of Jacksonville, resulting in expanded tax revenues.
- Supports diversification of industrial mix in Jacksonville

Energy

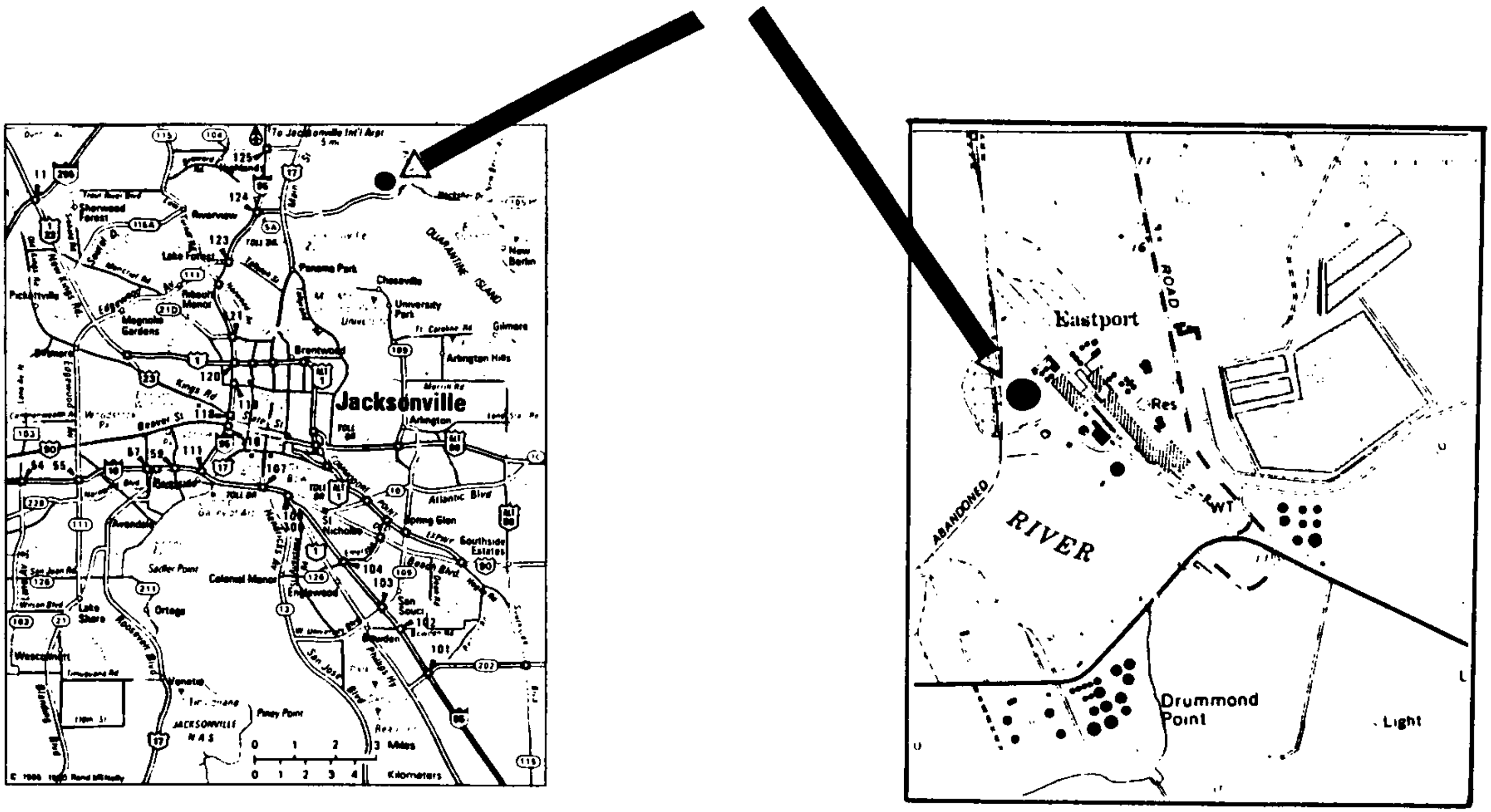
- Facility displaces oil use at the Seminole Kraft mill
- Coal abundantly available and not dependent on foreign suppliers
- Adds needed electric generating capacity in Florida for mid 1990's and beyond
- Consistent with State energy policy that favors coal in new generating facilities

Environmental

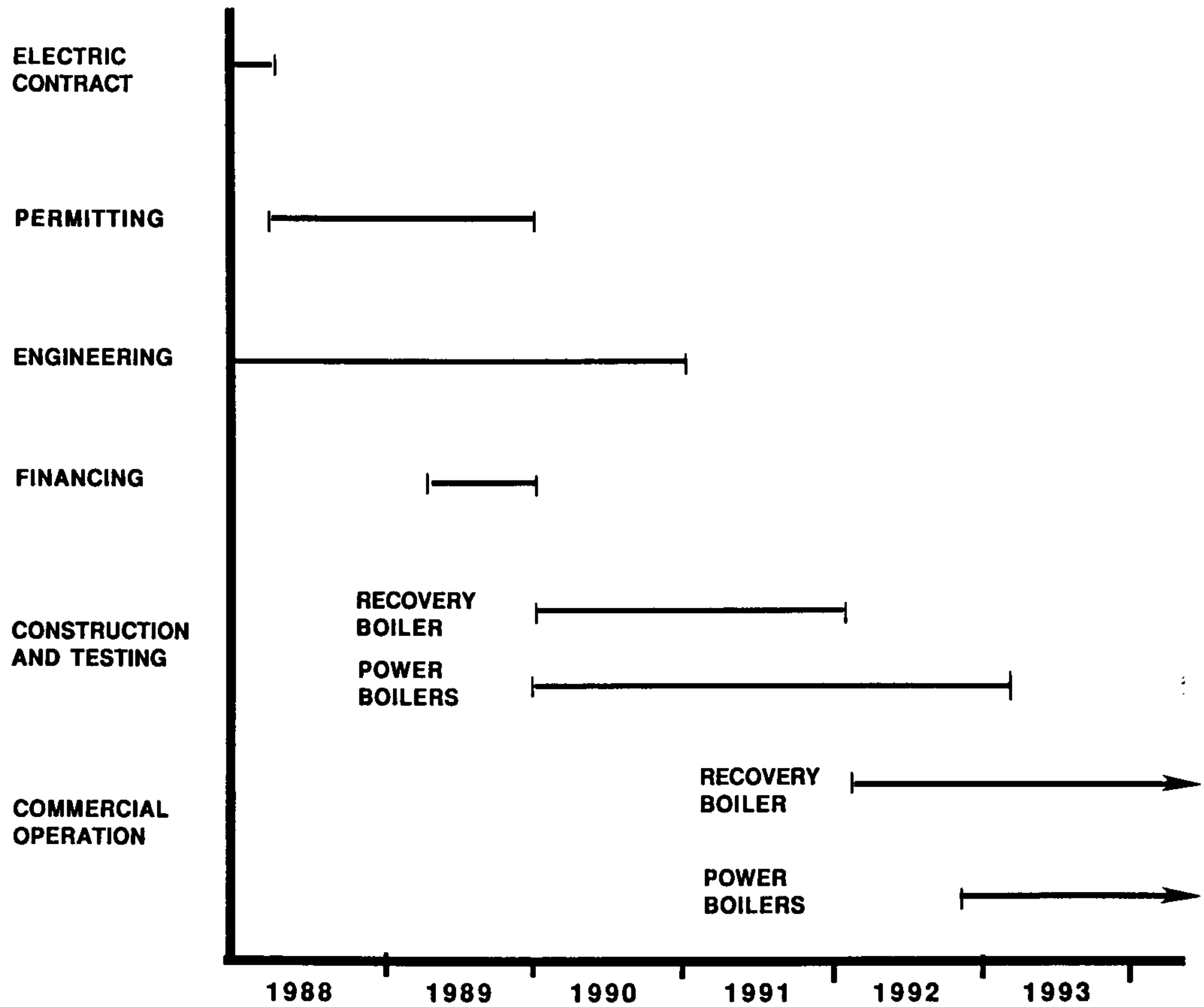
- Located on an existing industrial site adjacent to Seminole Kraft.
- New recovery boiler reduces odor and particulate emissions from the mill
- Offsets emissions from oil-fired boilers at Seminole Kraft mill
- Allows coal to be used with minimal air pollution through application of new technology (i.e., circulating fluidized bed boilers)

AES JACKSONVILLE LOCATION

- The plant will be located on the site of the Seminole Kraft paper mill on Eastport Road



PROJECT SCHEDULE



NEXT STEPS

- Signing of power supply contract with Florida Power and Light (FP&L) expected in the next several weeks
- Initiating site certification and permitting effort; looking forward to working closely with appropriate agencies to facilitate the permitting process
- Engineering, Fuel Procurement, Steam and Wheeling Contract development efforts are underway
- AES looks forward to developing a plant adjacent to Stone Container in Jacksonville as we did in Connecticut (see enclosed press release)
- Questions regarding AES Jacksonville can be directed to Jeffrey V. Swain, Project Director, AES Jacksonville at (703-522-1315)

AES OFFICERS AND DIRECTORS

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AES EXPERIENCE

AES FACILITY/ LOCATION	CUSTOMERS	COST Million	FUEL	STEAM (#/HR)	POWER (MW)	CONT. START	ON LINE
Deepwater Houston, Texas	Texas Utilities Lyondell Petrochemical	$280	Petcoke	30,000	139	December 1983	June 1986
Beaver Valley Monaca, Pennsylvania	West Penn Power Arco Chemical	116	Coal	145,000	118	September 1985	July 1987
Placerita Newhall, California	Southern California Edison, TOSCO	120	Gas	250,000	99	July 1986	July 1987
Thames Montville, Connecticut	Northeast Utilities Stone Container	250	Coal	65,000	180	December 1986	November 1989
Shady Point Poteau, Oklahoma	Oklahoma G&E AES CO_2 Plant	475	Coal	100,000	320	June 1987	January 1991
Riverside Woonsocket, Rhode Island	New England Electric Boston Edison Eastern Utilities Associates	260	Coal	50,000	180	1989	1991
Barbers Point Oahu, Hawaii	Hawaiian Electric Chevron*	250	Coal	30,000	146	1989	1992
Petrolia Petrolia, Pennsylvania	West Penn Power	280	Coal	30,000	180	1992	1995
Ballinger Creek Frederick, Maryland	Potomac Electric*	270	Coal	30,000	180	1990	1993
Jacksonville	Florida Power & Light Stone Container*	400	Coal	600,000	225	1990	1993
TOTAL		$2701 Million		1,330,000 lb/hr	1767 MW		

* Letter of Intent agreements signed

Applied
Energy
Services,
Inc.

Contact: Mr. Robert F. Hemphill, Jr.
703/522-1315
November 26, 1986

For Immediate Release

AES AWARDS $180 MILLION POWER PLANT CONSTRUCTION CONTRACT TO JAPANESE-AMERICAN JOINT VENTURE. $250 MILLION PROJECT FINANCING COMPLETE.

ARLINGTON, VA, November, 1986: Applied Energy Services, Inc. (AES) announced today that it has awarded a $180 million contract to a joint venture of Marubeni, Toshiba and Pritchard to construct its AES Thames Cogeneration plant in Montville, Connecticut. "We are pleased not only because the Thames plant is our largest project to date but because it incorporates many advanced features to minimize impact on the environment," stated Roger Sant, President and CEO of AES.

The project will cost $250 million and is being financed by a syndicate of banks led by Fuji Bank, Ltd. as Agent. Other participating banks include the Bank of New England, N.A., the Nippon Credit Bank, Ltd., the Bank of Nova Scotia, the Westpac Banking Corporation, the Chuo Trust & Banking Co., Ltd., the Daiwa Bank, Ltd., the Hokkaido Takushoku Bank, Ltd., and the Saitama Bank, Ltd. Salomon Brothers Inc. is serving as Financial Advisor for AES. AES Executive Vice President Dennis W. Bakke praised the leadership of Fuji and the cooperation of the bank group. "Additionally, the subordinated lenders including Marubeni America Corporation, Combustion Engineering Corporation, CSX Transportation and Toshiba International were also critical to a timely and successful financing."

The plant, which is being engineered by Black and Veatch of Kansas City, Missouri, consists of two Combustion Engineering circulating fluidized bed boilers and a Toshiba steam turbine-generator. The plant is scheduled to begin operation in mid-1989. It is expected to produce 180 megawatts of electricity (sufficient to supply 36,000 homes) for sale to Connecticut Light & Power on a 25-year contract, and 60,000 pounds an hour of steam to be sold to a

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subsidiary of Stone Container Corporation. "The plant will be supplied with approximately 600,000 tons of coal each year through an innovative contract with CSX Transportation," explained AES Senior Vice President Robert F. Hemphill, Jr. "This is the first coal plant to be built in New England in many years and our design incorporates the advanced fluidized bed combustion technology."

AES is a privately held company formed in 1981. The company is an independent supplier of steam and electricity and was recently designated the twelfth fastest growing private company in the United States by INC. Magazine. It operates a 140 megawatt petroleum coke fired cogeneration plant in Houston, Texas, is refurbishing a 120 megawatt coal fired cogeneration plant near Pittsburgh, Pennsylvania and is constructing a 100 megawatt natural gas-fired cogeneration plant near Los Angeles, California. In addition, AES is developing several other power plants around the country.

10-28-87

Seminole
[redacted] KRAFT

AES Inc

will build cogen, they will run & own the facility. Jax Kraft's property will be used & also they will buy the steam
250 MW

Problem with SO_2 short term & any ambient.

New Replaces old.

OLD - are oil fired boiler
New - coal fired line injection fluidized.
(better SO_2 control)

Dual G. unclassifiable for SO_2