CITY OF TALLAHASSEE

FINAL
PLAN OF STUDY AND
AIR QUALITY MODELLING PROTOCOL

PURDOM UNIT 8

NOVEMBER 4, 1996

Foster Wheeler Environmental Corporation
in association with
Raytheon Engineers & Constructors and Moore/Bowers

CITY OF TALLAHASSEE

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1.0 THE PURDOM UNIT 8 PROJECT

1.1 INTRODUCTION

The City of Tallahassee has initiated engineering and environmental studies for the purpose of preparing the necessary permit applications for a proposed new unit (Unit 8) at its existing Purdom Generating Station in St. Marks, Wakulla County, Florida. The location of the Purdom Generating Station is depicted in Figure 1-1.

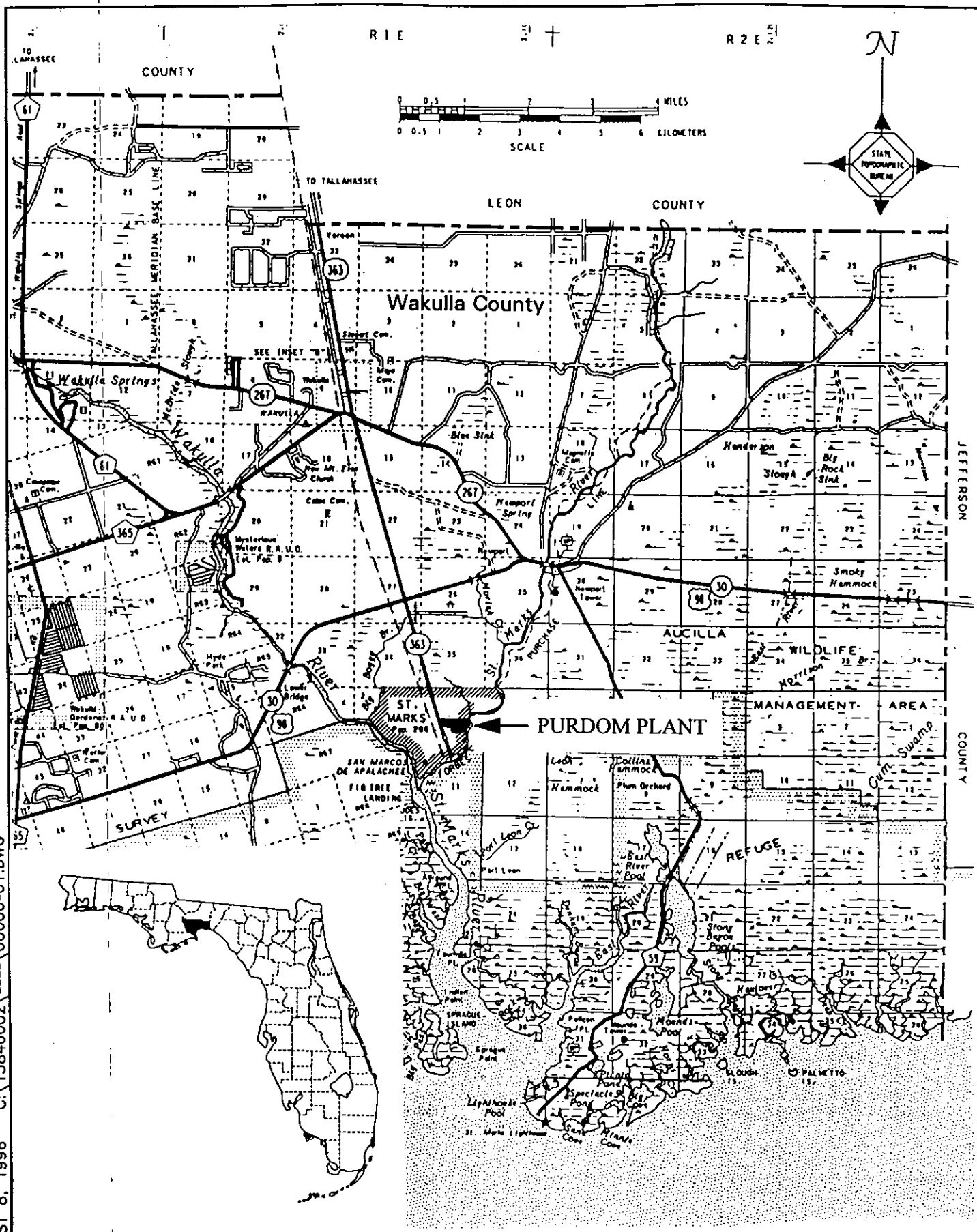
The primary purposes of this Plan of Study are to provide preliminary information about the project (which includes the early retirement of Purdom Units 5 and 6) and to initiate discussions between the City of Tallahassee as the applicant, the regulatory agencies, and other interested parties. The format deliberately highlights the study objectives that are expected to be of greatest interest for this particular project in order to focus attention on those key aspects of the project at an early stage of the permit application process. The intent is to encourage a productive, collaborative "scoping" process with regulatory agencies, the local community, and environmental and other interest groups. In addition to circulating the Plan of Study, the City of Tallahassee will sponsor several public meetings to inform citizens about the project and seek public input.

The Plan of Study is also intended to clarify the proposed approach to preparation of the Department of Environmental Protection's (DEP's) permit application for power plants under the Florida Electrical Power Plant Siting Act, known as a Site Certification Application (SCA). In general, the SCA for the Purdom Unit 8 project will follow the prescribed format and include the data and analysis called for in the Instruction Guide for Certification Application [DEP Form 62-1.211(1)]. However, as with every project, there are unique aspects of the setting and proposed project design that suggest a slightly modified approach on certain topics required to be addressed in the application. This Plan of Study identifies those unique aspects of the project and describes the proposed approach to application preparation. Appendix A to this Plan of Study provides a proposed outline for the application and cross-references to the sections of this plan in which the various SCA sections are discussed. The City of Tallahassee intends to apply for certification of the entire Purdom site, based on its existing permits, pursuant to the optional procedure available under Section 403.5175, Florida Statutes.

1.2 REASON FOR THE PROJECT

The City of Tallahassee Electric Department's mission is "to provide high quality, reliable, competitively priced electric services within [its] retail and wholesale market areas." The Purdom Unit 8 Project is being proposed for three reasons:

- To meet the electric generating capacity needs of the City of Tallahassee's customers in the year 2000 and beyond;
- To improve the efficiency of the City of Tallahassee's electric generating system through the introduction of new, highly efficient electric generating technology; and



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FOSTER WHEELER ENVIRONMENTAL CORPORATION

GENERAL SITE LOCATION MAP

CITY OF TALLAHASSEE - PURDOM UNIT 8 PROJECT
ST MARKS, FLORIDA

Figure
1-1

- To lower the cost of electric production within the City of Tallahassee's system in an effort to maintain competitive electric rates while preparing to meet the challenge of deregulation within the electric utility industry.

1.2.1 Capacity Need

Demand for electricity within the City of Tallahassee's electric service area is growing at a rate of slightly less than two percent per year. In addition, the City of Tallahassee's contract with Southern Company, which presently provides about 20 percent of the City's capacity, expires in the year 2000. So there is need to both keep up with growing demand and to replace capacity presently being supplied under a purchased power agreement that will expire in the next several years.

Energy conservation programs are helpful to reduce the need for additional electricity supplies, but the savings are not enough to allow existing facilities to keep up with demand. The use of electricity for advanced communications and other technology in the workplace and home is growing. Load management and conservation programs merely slow the rate of growth rather than eliminate it. Thus, new generating capacity is needed.

Another benefit of building Unit 8, while retiring Units 5 and 6 at Purdom, is to maintain and enhance the City of Tallahassee electric system's stability. By locating a substantial generating capability at Purdom, the City of Tallahassee is also able to support the Florida Power Corporation and Talquin Electric Cooperative systems with which the City of Tallahassee is interconnected. The result is a more reliable supply of electricity throughout the region.

1.2.2 Improved Efficiency

Some of the City of Tallahassee's generating equipment is approaching 40 years of operating life. In recent years, electric generating technology has made great strides in terms of efficiency (i.e., in the number of megawatts (MW) of electricity produced per unit of fuel consumed) and reduced environmental impact. For example, combined cycle technology, which is the technology proposed for the Purdom Unit 8 Project, captures waste heat from the initial fuel combustion to make steam and produce additional electricity. Also, currently available technology generates fewer air emissions per MW of electricity produced than older units. Thus, the newer technology is beneficial in terms of economics, conservation of energy resources, and reduced environmental impact.

Since the City of Tallahassee is growing and there is a need to add capacity to meet demand, there is an opportunity to upgrade equipment in the system and to improve the system's overall efficiency. The City of Tallahassee will also be retiring some outdated equipment during the next few years and will use this new efficient unit to replace that capacity.

1.2.3 Lowering Costs and Enhancing Competitive Position

The City of Tallahassee currently depends on its electric utility for revenues to support a broad range of municipal services. Thus, the City of Tallahassee's electric utility contributes in a significant way to residents' quality of life. To remain competitive (i.e., to retain its largest

electric customers, and maintain this important revenue stream) the City of Tallahassee must address trends in the industry that are forcing electric rates down.

In the last decade, electric utilities in Florida have begun to experience competition in their industry. The Florida Public Service Commission, the U.S. Congress, and the Federal Energy Regulatory Commission have taken steps to encourage this competition. Other industries, such as the telephone industry and the airlines, have been deregulated, resulting in fierce competition in industries that were previously operated as regulated monopolies.

The City of Tallahassee is preparing to meet this challenge by taking steps to make its electric rates more competitive. Because of the efficiency of the proposed Purdom Unit 8 Project, system production costs will be reduced, allowing the possibility of a rate decrease or, at least, reducing the likelihood of future rate increases. Competitive electric rates will mean that the City of Tallahassee's largest electrical customers will not be tempted to turn to other electric suppliers to keep their own operating costs low.

1.3 PROJECT SELECTION PROCESS

1.3.1 Integrated Resource Planning

In 1994, the Tallahassee Electric Department began a review of customer electricity requirements, fuel price forecasts, and resulting resource needs. The City of Tallahassee's system planning process utilized Integrated Resource Planning (IRP) modelling and procedures to ensure that the best choices in resources, considering both new generation and energy conservation, were blended to provide the least cost plan for meeting the customers' future needs. During the initial stages of this planning work, a citizens committee was utilized to identify the types of conservation programs and generation alternatives that should be considered and the criteria that should be utilized in framing the final recommendations for selection by the City Commission. The results of the planning process showed that:

- There was a need for additional power supplies beginning in 2000;
- Recent advances in available electric generating technology provided an opportunity for the City of Tallahassee's customers to benefit by installing a new combined cycle unit and retiring older, less efficient units earlier than scheduled; and
- The appropriate size of the new unit for the City of Tallahassee's utility system would be 250 MW.

1.3.2 Competitive Bidding Process

Following the identification of the Year 2000 need, the City of Tallahassee voluntarily embarked on a competitive solicitation process by issuing a Request for Proposals (RFP) to secure the additional power supply resources. This process allowed independent developers and other electric utilities to provide proposals for meeting the City of Tallahassee's need. In addition, the City of Tallahassee developed two "self-build" alternatives utilizing a team of City of Tallahassee electric employees and outside consulting engineers with expertise in power plant design, permitting, construction, and operation. The self-build alternatives included fixed price

"turn-key" construction proposals and fixed price natural gas pricing for the 2000 - 2020 operating period.

Evaluation of the external and "self-build" alternatives was completed utilizing the same IRP modelling techniques that identified the need. In addition to the proposals received by the City of Tallahassee in the RFP process, other generation options (purchased power, alternative generation options) were included in the IRP evaluation. The evaluation process also included sensitivity and risk analysis to determine how changes in assumptions about load growth, fuel prices, economic growth, retail wheeling, inflation, interest rates and so on might change the outcome of the evaluation.

The review and evaluation of the proposals and alternatives included participation by three different groups:

- A Technical Evaluation Committee consisting of three senior staff members from the Electric Department, one from the Treasurer-Clerk's office, and one from the Water & Sewer Department. This team was supported by Stone & Webster Management Consultants, Inc., who performed the modelling, and other outside legal and technical experts.
- A City Management Team consisting of the Assistant City Manager for Utilities, the Electric Department General Manager, and the Electric Planning Administrator; and
- An Oversight Committee formed to give feedback and advice to the Technical Evaluation Committee. This committee consisted of representatives of the City of Tallahassee's two largest customers, outside industry experts, an Assistant City Manager, the Treasurer-Clerk, and members that represented business, environmental and neighborhood interests.

In addition, the evaluation process was reviewed by R. W. Beck, Inc., an outside consulting engineering firm, and the City Auditor.

The review and evaluation concluded that the power supply plan which included one of the City of Tallahassee's "self-build" alternatives, the Purdom Unit 8 Project, was the least cost plan to meet the City of Tallahassee's energy needs for the year 2000 and beyond. The review conducted by R. W. Beck and the City Auditor found the process and evaluation to be fair. On July 10, 1996, the City Commission concurred with the recommendation of the evaluation committee and authorized staff to move forward with the Purdom Unit 8 Project.

Based on a comparison with the outside proposals offered in response to the RFP, the key competitive advantages of the Purdom Unit 8 Project were:

- Utilization of an existing site already owned by the City of Tallahassee and properly designated on the City of St. Marks' comprehensive plan and zoning map;
- The degree of detail in the City of Tallahassee's alternative, which enabled a more definitive assessment of potential environmental impact and risk to the immediate environment around the proposed site;
- The availability of tax exempt financing;

- A 20-year net present value (NPV) cost that was approximately 16 percent lower than the next lowest cost proposal;
- The opportunity to optimize staffing and share common facilities as a result of utilizing an existing power plant site;
- Utilization of a site already connected to the City of Tallahassee's power grid so that no new transmission facilities needed to be constructed; and
- Cost advantages associated with not having to pay profit normally included in any proposal made by a taxable entity.

1.4 PROJECT LICENSING PROCESS

1.4.1 "One-Stop" Permitting under the Power Plant Siting Act

The Purdom Unit 8 Project will be permitted under the Florida Electrical Power Plant Siting Act (PPSA) process. Considered a "one-stop" permitting process, the PPSA actually provides for a coordinated review of a single permit application (the SCA), which results in one consolidated permit, known as the Site Certification. The Site Certification will address the proposed Unit 8, the remaining existing units, and the entire existing site. All local, regional and state reviews and permits are covered by the Site Certification. Federal permits and reviews are handled separately but are coordinated with the PPSA process, and rely on the same information.

1.4.2 Certification Hearing

After reviewing the City of Tallahassee's application, each of the local, regional and state agencies will file a report with the DEP. As the coordinator of the review process, the DEP will incorporate the comments and recommendations of all the other agencies and make a recommendation for approval or denial of site certification. After receiving the other agencies' reports, the DEP will prepare one consolidated report, incorporating all the agencies' findings and recommendations plus the findings and recommendations of its own staff.

Following the issuance of the DEP report, a certification hearing will be held before an administrative law judge appointed by the Florida Division of Administrative Hearings. Public comment will be taken during the certification hearing at a time specifically set aside for the public to speak. After the judge hears the testimony and evidence, he or she will prepare a recommended order, outlining "findings of fact" and "conclusions of law" and recommending approval or denial of the project. Typically, in recommending approval, the judge will also recommend an extensive list of conditions that have been proposed by the various parties to the proceeding. This recommendation will be forwarded to the Governor and Cabinet for final action.

A separate hearing on the air quality Prevention of Significant Deterioration (PSD)/Title V Application may be held, if requested. However, it is likely that such a hearing would be scheduled to coincide with the certification hearing.

1.4.3 Governor and Cabinet Approval

The final decision on the site certification will be made by the Governor and Cabinet at one of their regular, twice monthly meetings. The applicant and the public will have the opportunity to speak briefly before the Governor and Cabinet take action on the site certification.

The PPSA is ***procedurally*** preemptive. That is, it preempts the permitting procedures of the individual agencies and local government but requires compliance with their substantive requirements. For example, the project will not have to follow the procedures of the local site plan review process, but a demonstration of compliance with the adopted Land Development Code of the City of St. Marks will have to be made through the PPSA process. If any variances from the substantive requirements of the agencies are sought by the applicant, they must be approved by the Governor and Cabinet.

DEP will likely take final action on the PSD/Title V permit about 30 days after the decision by the Governor and Cabinet.

1.4.4 Licensing Schedule

As of late July 1996, the Purdom Unit 8 Project team had begun the studies necessary for preparation of the SCA. The following are a few key milestones of the licensing process with their expected dates.

Preparation of the SCA	July 1996 through February 1997
Application Filing	February 1997
Application Sufficiency Review	February 1997 through June 1997
Agency Review of Application	June 1997 through October 1997
Filing of Agency Reports	September 1997
Filing of DEP's Report	October 1997
Certification Hearing	January 1998
Filing of Hearing Officer's Recommended Order	March 1998
Decision by Governor and Cabinet	May 1998
DEP Approval of PSD/Title V Permits	June 1998

1.4.5 Public Participation

The PPSA provides for public notices in the form of large newspaper ads of the application filing and the certification hearing. As mentioned above, public comment is taken during the certification hearing, and the public is allowed to speak briefly before the Governor and Cabinet take action on the final site certification.

In addition to the formal mechanisms for public notice and public participation provided in the PPSA, the City of Tallahassee welcomes public input and has developed a special program to meet with citizens, share information about the project, and listen to citizens' views. Public meetings on the project ~~will be~~were held in Tallahassee and St. Marks during September 1996 to

present information on the progress and provide citizens the opportunity to ask questions and express their views.

A question and answer column will be included with customers' bills and a project newsletter will be sent periodically to persons on the project mailing list. The City of Tallahassee would welcome the opportunity to make a brief presentation to civic, neighborhood, and business groups on the project and is continuing to meet with local government and agency representatives as requested or as needed to keep them informed.

A voice mailbox, e-mail address, and an Internet World Wide Web page have been established for citizen inquiries about the project. For questions or comments contact:

- Voice Mail: (904) 891-5585
- E-mail: purdom8@sc.ci.tlh.fl.us
- Web Page: http://www.state.fl.us/citytlh/purdom8/
- Mailing Address: Mr. Rob McGarrah
  2602 Jackson Bluff Road
  Tallahassee, FL 32304

1.5 PROJECT DESCRIPTION

1.5.1 Existing Purdom Plant and Site

The Purdom Generating Station is located at 667 Leon Drive (State Road 363), St. Marks, Florida.

1.5.1.1 Plant History and Operation

The station has nine generating units, consisting of seven gas/No. 6 fuel oil-fired steam electric units (numbered 1 through 7) and two gas/diesel fuel oil-fired gas turbine units (numbered GT 1 and GT 2). Units 1 through 4 are rated at 7.5 MW (nominal, the output varies slightly with weather and fuel conditions) each. They were placed in operation between 1952 and 1954 and are now being retired. Units 5 and 6 are rated at 22 MW (nominal) and were placed in operation in 1958 and 1961, respectively. The gas turbines are each rated at 12.5 MW (nominal) and were installed in 1961 (GT 1) and 1966 (GT 2). Unit 7, rated at 44 MW (nominal), became operational in June of 1966.

The units were all installed with once-through cooling systems using water from the St. Marks River and have operated under a National Pollutant Discharge Elimination System (NPDES) wastewater discharge permit since the inception of the NPDES permitting program and a state-issued Industrial Wastewater (IWW) permit. An intake flume and discharge canal were constructed along with Units 1 through 4. The St. Marks River was dredged and a fuel oil barge unloading terminal was installed at the same time. A second discharge canal was installed with Unit 6 and an intake canal was installed with Unit 7. Ground water from on-site or near-site wells has been used as the source of boiler water makeup. Units 1 through 4 are now being retired, while Units 5 through 7, GT 1 and GT 2 are presently used for meeting peak load requirements.

1.5.1.2 Existing Plant Description and Setting

The existing plant consists of the retired steam electric units 1-4, the active steam electric units 5-7 and their associated facilities, and the GT Units 1 and 2. Figure 1-2 depicts the locations of the existing units. The steam electric units, which can fire either natural gas or number 6 fuel oil, are located south of the intake canal. Units 5 and 6 share a common stack and Unit 7 has its own 180-foot stack. A new, small auxiliary boiler is presently in the process of being permitted. The two discharge canals are located south of these units with the main oil storage area between them. The oil barge unloading facility is located on the east side of the main oil storage area. The plant access road runs east-west and separates the generating units from the large oil storage area, which is used to store number 6 fuel oil for the steam electric units.

The wastewater treatment system (for low volume wastewater and metal cleaning wastes) includes two wastewater treatment ponds and lies west of the generating units and north of the plant access road. The plant switchyard lies to the west of the wastewater treatment ponds. The plant warehouse is south of the wastewater treatment ponds and south of the plant access road. West of the warehouse is an elevated water tower, presently used to store well water prior to its treatment for use as boiler makeup. A diesel oil tank for the gas turbines is west of the water tank. The gas turbines which can fire either natural gas or diesel (number 2 fuel) oil, are enclosed in a building west of the diesel oil tank and south of the plant access road.

The Purdom Station switchyard is scheduled to be refurbished in the next several years. Construction on the refurbishment is scheduled to be completed no later than the summer of 1999. This work was planned independently of the Unit 8 installation and is intended to replace obsolete equipment and upgrade the switchyard design and functionality.

1.5.2 Proposed Unit 8

The proposed Unit 8, the location of which is also depicted in Figure 1-2, consists of a combined cycle unit rated at a nominal 250 MW. The combined cycle unit includes an advanced combustion turbine (a device similar to a jet aircraft engine) that turns an electrical generator, a waste heat recovery steam generator (which uses the hot exhaust gases from the combustion turbine to make steam), and a steam turbine which turns another electrical generator (see Figure 1-3). The combined cycle configuration is the most efficient type of fossil-fueled power plant currently available. This means that the largest amount of power can be generated from the smallest amount of fuel, and a correspondingly smaller amount of air pollutants will be emitted for the amount of power generated.

Chapter 3.0 of the SCA will contain a detailed description of the proposed new combined cycle unit and ancillary facilities.

1.5.2.1 Design Philosophy

The proposed project design reflects an appreciation for the environment in Wakulla County and attempts to protect that environment while providing for the growing electricity needs of the Tallahassee area. Commitments incorporated into the preliminary design include special protections for air quality, water resources and habitat, taking into account the Purdom Station's proximity to the St. Marks National Wildlife Refuge and its location along the St. Marks River.

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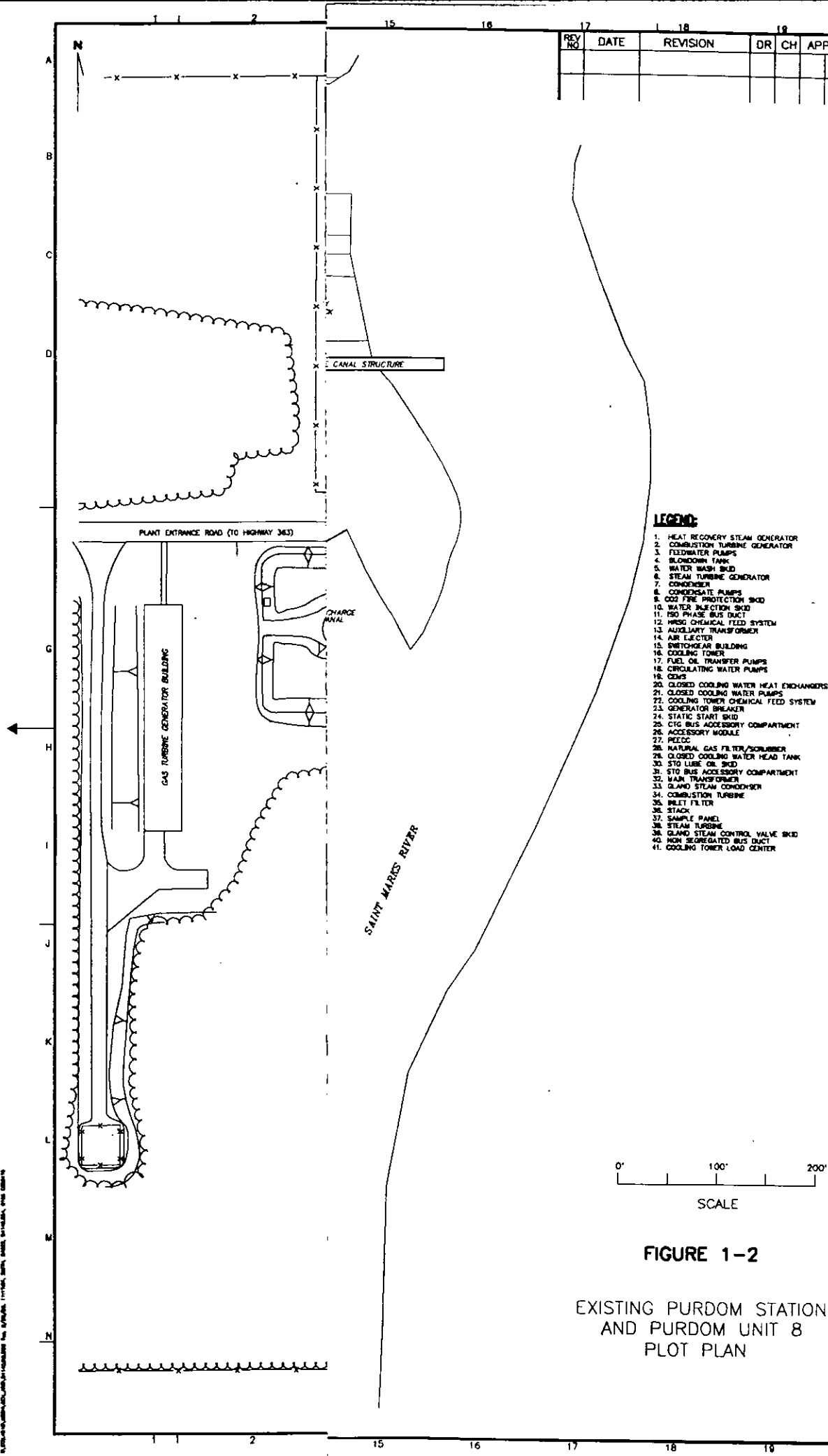
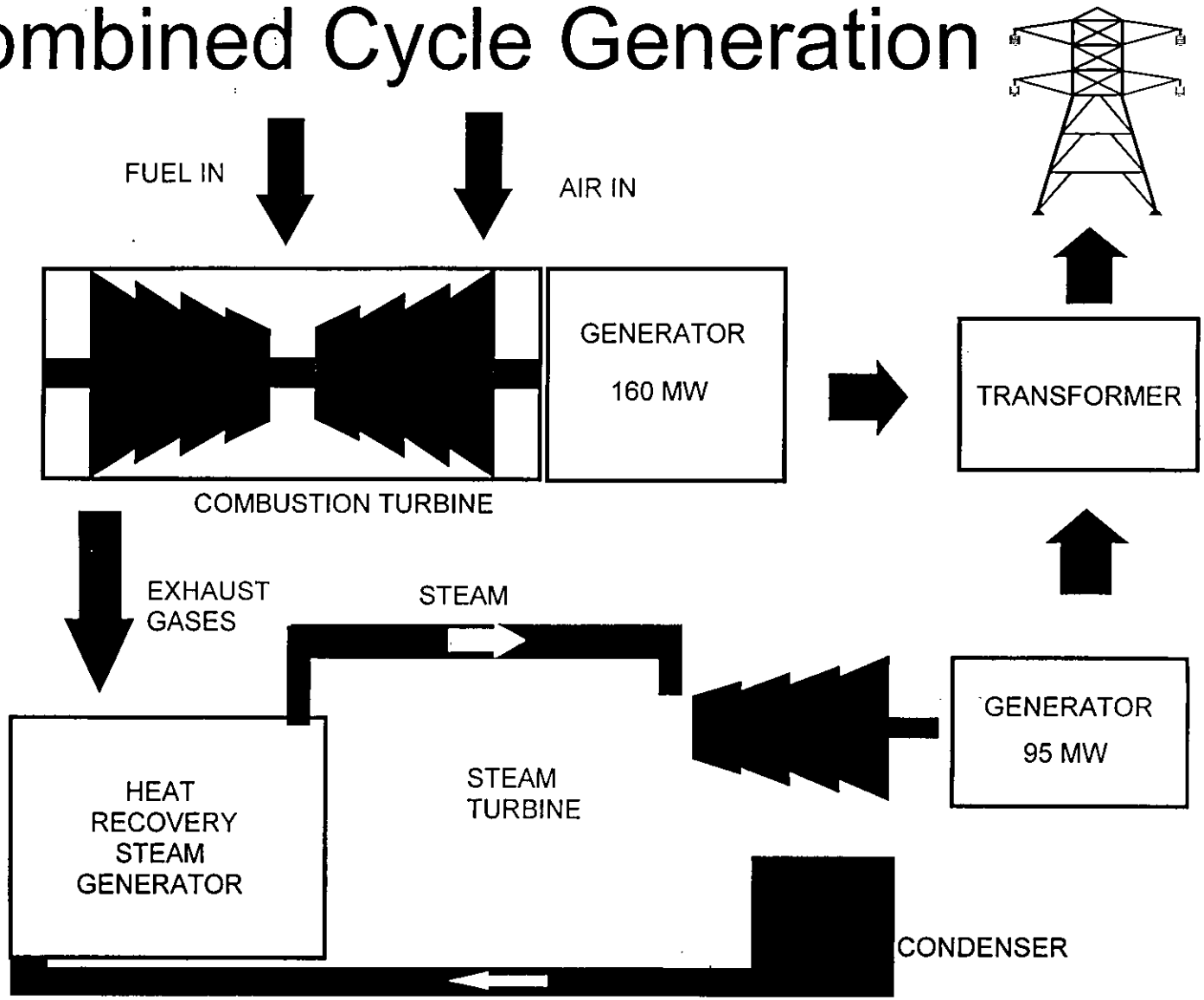


REV NO	DATE	REVISION	DR	CH	APPROVED

FIGURE 1-2

EXISTING PURDOM STATION
AND PURDOM UNIT 8
PLOT PLAN

Combined Cycle Generation



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COMBINED CYCLE PLANT GRAPHIC

CITY OF TALLAHASSEE - PURDOM UNIT 8 PROJECT
ST MARKS, FLORIDA

Figure
1-3

For example, through the selection of a clean fuel, the installation of advanced combined cycle technology, and the retirement of older units at the Purdom Generating Station, increases in air emissions will be minimized even though generating capacity at the station will increase by about 200 percent. Water use will be minimized through water recycling in the zero discharge system and reuse of treated wastewater, both from the City of St. Marks' sewage treatment plant and the Purdom Station's own waste streams. The zero discharge system will also eliminate the need for discharges to the St. Marks River from the new power plant, the chemical waste treatment system of the existing plant, or the City of St. Marks' sewage treatment plant. Wetland impacts have been avoided through careful site layout, and aesthetics along the St. Marks River shoreline will be improved through landscaping in accordance with the City of St. Marks land development regulations and the removal of the outdoor portions of Units 1 through 4.

Existing infrastructure will be used to connect the new unit to the City of Tallahassee electric grid. Only the conductors on the existing transmission lines between the Purdom Station and Tallahassee will have to be replaced. Similarly, the Purdom Station is presently served by an existing Florida Gas Transmission pipeline. That pipe will be enlarged to accommodate fuel delivery for the new unit. Transport of the City of St. Marks treated effluent from the treatment plant to the Purdom Station will be via a new pipeline, less than a mile in length, expected to be installed along City streets. Oil storage at Purdom Generating Station will be reduced due to the retirement of Units 5 and 6.

The following paragraphs provide some additional detail on the project's key design features.

1.5.2.2 Air Quality

The proposed Unit 8 will burn clean natural gas as the primary fuel, and will burn only low sulfur fuel oil when natural gas is not available or not economical. The installation of the new combined cycle power plant will be accompanied by the retirement of Units 5 and 6, the oldest and least efficient steam units in the City of Tallahassee's system. Additionally, the City of Tallahassee expects to keep the annual emissions of sulfur dioxide (SO_2) and oxides of nitrogen (NO_x) from Unit 7, Unit 8 and the auxiliary boiler at or below recent levels from Units 5, 6 and 7, even though the plant electrical generating capacity will nearly triple.

Best available control technology (BACT) is a concept created by the Environmental Protection Agency (EPA) and adopted by DEP. It was conceived to make sure that new units incorporated any technological advances that would reduce air pollutant emissions if they are environmentally and economically reasonable. The proposed Unit 8 is expected to have emission rates of air pollutants that are BACT.

1.5.2.3 Water Use

Condenser cooling for the steam turbine is provided by a closed cycle mechanical draft cooling tower. This closed cycle cooling system is a zero discharge system because the water that would traditionally be discharged (or "blown down") to remove dissolved solids from the cooling tower water will instead be treated and recycled. Only the relatively small volume of dissolved solids, in solidified form, will be disposed of by beneficial reuse or at an appropriately licensed site. The

recycled water will be used for boiler makeup, allowing the retirement of the present well system.

The primary source of makeup to the cooling tower will be surface water from the St. Marks River. This water will be withdrawn using the existing Unit 7 intake structure, eliminating the need for any construction within the river. Additional makeup water sources will include the wastewater discharge (OSN 005 and 006, see Section 1.5.3) from the existing steam electric units, the effluent from the City of St. Marks sewage treatment plant, and any recycled water from the treatment of cooling tower blowdown in excess of the need for boiler makeup.

Retirement of Purdom Units 5 and 6 in conjunction with the installation of the proposed Unit 8 will reduce the volume of the once-through cooling water withdrawal from the river, and subsequent thermal (heated water) discharge, from about 90,000 gpm to about 42,000 gpm.

1.5.2.4 Site Design

Unit 8 is proposed to be installed on the west side of the westernmost discharge canal, south of the plant access road (Figure 1-2). The combustion turbine/heat recovery steam generator and the combustion turbine-generator will be oriented north-south adjacent to the canal and the steam turbine-generator and other equipment will be adjacent to the west. The cooling tower will be west of the steam turbine-generator. The zero discharge wastewater treatment system will be just north of the access road. A stormwater retention swale will be added to the southwest of the new unit to percolate as much stormwater as possible into the ground water and to release the remainder as a sheet flow to the southwest, as it presently flows. Other storm water will use the existing storm water outfalls.

The combustion turbine/heat recovery steam generator will utilize a stack (chimney) that meets state requirements for Good Engineering Practice (GEP) and it will be lighted and marked in accordance with Federal Aviation Administration (FAA) requirements, if applicable. Although the GEP stack height has not yet been finalized, it is expected to be between 150 and 213 feet tall.

The proposed unit will utilize the existing natural gas pipeline (after it is upgraded) for fuel delivery, and will similarly transmit the new power over the existing transmission lines (after they are reconductored). The existing diesel oil storage tank near the ~~gas~~existing combustion turbines will be used for the storage of backup fuel. One of the ~~large~~ number 6 fuel oil storage tanks will be converted to be a wastewater storage tank to facilitate recycling all of the plant's wastewaters. This oil storage tank will be closed in accordance with the procedures of Florida Administrative Code 62-762 prior to being converted to be a wastewater storage tank.

1.5.2.5 Local Infrastructure

The existing station is connected to the City of St. Marks' potable water system and sewage collection and treatment system. These connections will be kept with the addition of Unit 8. Because of the retirement of Units 5 and 6, fewer personnel will be required to operate the station; therefore, the existing water and sewer service will be adequate. Similarly, the existing plant access road and access to Leon Drive (State Road 363) are expected to be adequate.

A new pumping station and pipeline will be installed to deliver the effluent from the City of St. Marks' sewage treatment plant to the Purdom Station for reuse. The pipeline will follow city rights-of-way, and will be located to avoid wetlands.

1.5.3 Current Plant Permits and Emissions

The Purdom Station ~~currently~~has recently operated under three DEP air permits. Permit No. A065-24827 establishes operating, testing, recordkeeping, and reporting requirements for ~~Gas~~Combustion Turbines 1 and 2, and limits maximum annual hours of operation for each turbine. This permit does not establish any specific limitations on allowable emission rates. ~~Although Boilers 1 through 4 are in the process of being retired, their operation had been authorized under~~ Permit No. AO65-242828, which authorized the operation of Boilers 1 through 4 ~~which had~~has ~~not yet~~recently been surrendered. ~~However, since t~~These units were not included in the recently filed Title V Application for the Purdom Station, and their operation is no longer permitted. Permit No. AO65-242831 establishes operating, testing, recordkeeping and reporting requirements for Boilers 5, 6 and 7; establishes allowable emission rates for PM and SO_2; and provides for continuous operation of the boilers. Particulate matter is not to exceed 0.1 lb/mmBtu during normal operation and 0.3 lb/mmBtu during certain operating conditions when firing fuel oil. No PM limit applies to the firing of natural gas. The maximum allowable emission rate for SO_2 is 1.87 lb/mmBtu. The Title V Operating Permit Application, submitted in June 1996, requests an SO_2 emission limit of 1.3 lb/mmBtu for Units 5 and 6.

Table 1-1 presents the permitted (allowable) emission rates in tons per year for Boilers 5 through 7 in accordance with the PM and SO_2 limitations contained in the respective operating permits. This table also presents past actual annual emissions of PM, SO_2, NO_x, carbon monoxide (CO), volatile organic compounds (VOC), and lead (Pb), which are known as the "criteria" and "ozone precursor" pollutants, as well as the other pollutants covered by the PSD regulations (Rule 17-212.400 F.A.C.). The table includes emissions generated by the three boilers and two combustion turbines based on actual operation and fuel usage data averaged over the last two years. ~~Emissions generated by the two combustion turbines (GT1 and GT2) are not included as these emissions are not expected to change in any way as a result of the Unit 8 Project.~~

The Purdom Plant currently operates under NPDES Permit Number FL0025526 and Industrial Waste Water (IWW) permit number IO65-188446. Although these permits were due to expire, they have been indefinitely extended by the timely and sufficient submittal of an application for a new NPDES permit. Discharges are permitted from four outfalls (designated Outfall Serial Numbers or OSN 001, 002, 005 and 006). OSN 001 includes once-through cooling water and auxiliary equipment cooling water from Units 1-5 discharged to the St. Marks River via the easternmost discharge canal. (Note that Units 1-4 are in cold standby mode and in the process of being retired.) OSN 002 includes once-through cooling water and auxiliary equipment cooling water from Units 6 and 7 and cooling water from GT Units 1 and 2, discharged to the St. Marks River via the westernmost discharge canal. The design condition for OSN 001 is about 24,000 gallons per minute (gpm) at a 13° F. temperature rise (Unit 5 only). The average winter discharge temperature was reported in 1992 to be 78.8° F and the corresponding average summer temperature was 80.6° F. The design condition for OSN 002 is similar except that the design flow rate is about 66,000 gpm (Units 6 and 7).

	UN		UNITS 5, 6 & 7 & GTs	
Pollutant	Actual Fuel Oil	Actual Nat. Gas	Actual Totals	Allowable Totals[1]
Particulate Matter [2][3]	0.01	1.19	~~9.87~~10.85	668.60[18]
PM_{10}	0.01	1.19	~~9.87~~10.85	668.60[18]
Sulfur Dioxide [5]	0.30	0.23	~~80.64~~82.19	~~8,520.00~~9207.61
Nitrogen Oxides[6]	0.05	65.53	~~452.30~~459.75	NR
Carbon Monoxide[7]	0.01	9.53	~~62.10~~63.86	NR
Volatile Organic Compounds[8]	0.00	0.34	~~2.44~~2.83	NR
Lead[9]	0.00	~~0.00~~NA	~~0.01~~0.011	NR
Asbestos	NA	NA	NA	NR
Beryllium[10]	0.00	~~0.00~~NA	0.0003	NR
Mercury[11]	0.00	~~0.0002~~2.0E-7	~~0.003~~0.002	NR
Vinyl Chloride	NA	NA	NA	NR
Fluorides[12]	0.001	~~0.00~~NA	0.31	NR
Sulfuric Acid Mist[13]	0.01	~~0.00~~0.03	~~2.40~~2.57	NR
Hydrogen Sulfide	NA	NA	NA	NR
Total Reduced Sulfur	NA	NA	NA	NR
Reduced Sulfur Compounds	NA	NA	NA	NR

Period of Record: August 1994-July 1996

NR - No restrictions

NA - No emissions information available or no emissions exp

(1) Allowable totals based on emissions limitations contained

(2) It is assumed that all PM emissions are that of PM_{10}.

(3) Actual PM emissions from the boilers for fuel oil are base boilers for natural gas are based on an AP-42 factor and a

(4) Allowable SO_2 emissions based on requested SO_2 emissio

(5) Actual SO_2 emissions for fuel oil are based on an AP-42 fc and the actual natural gas usage.

(6) Actual NO_x emissions for fuel oil and natural gas for Units

(7) Actual CO emissions are based on AP-42 factors and actua

(8) Actual VOC emissions are based on AP-42 factors and act

(9) Actual lead emissions are based on AP-42 factors and actu

(10) Actual beryllium emissions are based on AP-42 factors an

(11) Actual mercury emissions for fuel oil are based on AP-42

(12) Actual fluoride emissions for boilers are based on availabl

(13) Actual sulfuric acid mist emissions for boilers on fuel oil dioxide and actual fuel usage.

(14) Actual emissions are based on current estimates and emiss

(15) The CEMS data on which actual NO_x emissions are based

(16) Actual fuel oil and natural gas emission rate values reflect

(17) Actual emissions are based on AP-42 factors and actual fu

(18) Allowable totals shown do not include the particulate emi

The existing NPDES permit acknowledges that the operation of the plant intake system meets the federal requirements that the location, design, construction, and capacity of intake structures reflect the best technology available for minimizing environmental impacts, and that the thermal discharge meets appropriate state thermal limits.

OSN 005 and 006 physically discharge to the same location, a pipe from the wastewater treatment ponds to a location adjacent to the Unit 7 intake structure at the west end of the intake canal. OSN 005 includes air preheater wash (non-chemical metal cleaning waste) and chemical metal cleaning wastes (chemical cleaning rinse waters from boiler cleaning). OSN 006 consists of flows which EPA calls "low volume wastes", including boiler blowdown, demineralizer regeneration wastewaters, laboratory sampling wastewaters, and floor drains.

In addition to the industrial wastewater NPDES permit described above, the Purdom Plant also operates under the EPA General Permit for storm water discharges. Under this permit, there are two additional outfalls identified for storm water not associated with industrial activity. They are OSN 007 which discharges to the west end of the intake canal, and OSN 008, which discharges to the west side of the westernmost discharge canal.

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2.0 KEY STUDY OBJECTIVES

2.1 AMBIENT AIR QUALITY/METEOROLOGY

2.1.1 Introduction

One of the key objectives of the study is to determine the impact of the proposed project on ambient air quality. This is especially important because of the presence of two environmentally sensitive areas in the site vicinity, the St. Marks Wilderness Area and the Bradwell Bay Wilderness Area. Both of these have been designated as "Class I" areas under the PSD regulations, which means that those areas are afforded special protection under the regulations. As a consequence, the project design includes the reduction of emissions from existing units to offset the emissions of some of the pollutants associated with the new unit, to the maximum extent practicable, in order to provide this special protection. In fact, a federally enforceable emissions cap (for SO_2 and NO_x) covering the proposed Unit 8, existing Unit 7, the existing combustion turbines, and new small auxiliary boiler will be sought, as allowed under ~~Chapter~~Rule 62-213.415 F.A.C. This "facility-wide cap" ~~or~~ ~~"bubble"~~ will require annual emissions of SO_2 and NO_x to remain at or below recent ~~emissions~~levels of those pollutants from Units 5, 6, and 7 and from this combustion turbines (GT1 and GT2).

Under the federal and Florida PSD regulations, all major new sources and major modifications of existing sources must undergo the following analyses for each pollutant whose emissions increase in significant quantities: (1) a control technology analysis; (2) an air quality impacts analysis; and (3) an additional impacts analysis. The control technology analysis is required to ensure that the project includes what is determined to represent the "Best Available Control Technology (BACT)," which considers energy, economic, and environmental factors. The air quality impacts analysis must demonstrate that the project will not cause or contribute to violations of the ambient air quality standards (designed to project public health and welfare) or of the allowable PSD increments (designed to prevent deterioration of air quality in presently clean areas). The additional impacts analysis must demonstrate that impacts to visibility, vegetation and soils will not be significant. The City of Tallahassee must make all of these demonstrations in order to receive an air quality PSD permit for the proposed project.

The ambient air quality/meteorological studies will:

- Characterize the site meteorology and identify appropriate meteorological data to be included in Section 2.3.7.1 (Meteorology) of the SCA, and in air quality impact assessments;
- Characterize the baseline ambient air quality and identify the baseline concentrations to be included in Section 2.3.7.2 (Ambient Air Quality) of the SCA, which in turn, are needed for evaluation of air quality impacts;
- Assess the available emission controls, determine the emission levels which represent BACT, and report the results in Section 3.4 of the SCA.

- Describe and assess in SCA Sections 4.5 (Air Quality Impacts From Construction), and 5.6 (Air Quality Impacts From Operation), any air quality impacts which may result from construction and operation of the project after the application of emission controls;
- Assess in Section 5.6 of the SCA any other impacts resulting from construction and operation of the project on soils, vegetation, visibility, etc.; and
- Present a proposed operational air quality emissions monitoring program which will be described in Section 5.6.2 of the SCA.

A PSD permit application will be included as part of the SCA in Section 10.1.5. Information on air quality and meteorology contained in Sections 2.3 and 5.6 of the SCA will be a summary of the more detailed data presented in the PSD application. A Title V Operating Permit modification application will be filed together with the PSD permit application in accordance with the requirements of ~~Chapter~~Rule 62-213.400 F.A.C. As the new unit will be considered an "Acid Rain Unit," a Title IV Acid Rain Permit application will be included in the SCA as well.

2.1.2 Characterization of Existing Conditions

2.1.2.1 Historical Data

Regional Climatology

The climate in the Purdom Site area is mild and moist and characteristic of the Gulf States. The nearest National Weather Service office is located at the Tallahassee Regional Airport. Data recorded at the Tallahassee Regional Airport should be reasonably representative of the conditions at the site since the terrain is similar and the site is relatively close to the airport (approximately 30 km). However, as the Purdom Site is closer to the coast than Tallahassee, the meteorological data from the Apalachicola Municipal Airport (about 90 km southwest) will also be examined for applicability to the site. For air quality dispersion modelling purposes, five years of Tallahassee Regional Airport surface weather data will be used since only four years of Apalachicola surface weather data are available.

Unlike Florida's southern peninsula, Tallahassee experiences four definitive seasons with considerable winter rainfall and diminished winter sunshine. During the winter, topographic effects and cold air drainage from higher elevations to the north produce a wide variation of low temperatures on cold, clear and calm nights. The Tallahassee area climatic data summary is presented in Table 2-1. A wind rose for Tallahassee is shown in Figure 2-1.

Regional Air Quality

There are no air monitoring stations located in Wakulla County but some representative data are available from nearby Leon and Gadsden Counties. The data presented below are the most recent data available for each parameter for the years 1992-1995. According to Rule 62-204.240, F.A.C., Wakulla County is an "attainment" or "unclassifiable/attainment" area for all National and Florida Ambient Air Quality Standards (NAAQS/FAAQS). Attainment is achieved when the maximum concentration of a pollutant for a specified averaging time does not exceed the NAAQS/FAAQS. The "unclassifiable/attainment" designation means that no data exist which would indicate that the area is not in compliance with the standards. Other areas of the country

Table 2-1
Tallahassee Regional Airport Climatic Summary

:STA 722140 | KTLH | TALLAHASSEE WSO AP ,FL,US
:LAT 30 23N :LONG 084 22W :ELEV 55(ft) 17(m) :TYPE NOAA SMOS V2.1 07021992

37 - STATION CLIMATIC SUMMARY

POR: (HOURLY): 1948-1990 (43 years for most parameters)

	TEMPERATURE (DEG F)					PRECIPITATION (INCHES) (^)							REL HUM		VAP	DEW	PR	WIND (KTS)				MEAN NO. OF DAYS WITH (&)									
	MEANS			EXTREME		PRECIP.				SNOWFALL (@)			PERCENT		PR	PT.	ALT				SKY	PRECIP.	SNOW-					TEMP (DEG F)			
									24H			24H	(LST)		IN.	(F)	FT.	PREVAIL			CVR	INCHES	FALL(")			TH	FOG				
	MAX	MIN	AVG	MAX	MIN	MEAN	MAX	MIN	MAX	MEAN	MAX	MAX	AM	PM	HG.		$	DIR	SPD	GST	+	>=	>=	>=	>=	STM	*	>=	>=	<=	<=
													07	16								.01	.50	.10	1.5			90	70	32	10
JAN	64	40	52	83	6	4.2	11.7	.2	3.3	T	T	T	86	54	.27	42	35	N	7	46	OVR	9	3	0	0	2	17	0	10	10	#
FEB	67	42	55	89	14	5.1	11.5	.8	5.6	T	3	2	87	51	.29	44	45	N	8	44	OVR	9	3	#	#	2	16	0	12	6	0
MAR	73	48	61	90	20	6.0	16.5	1.0	7.1	T	T	T	88	49	.35	49	45	S	9	44	OVR	9	3	#	0	4	18	#	22	2	0
APR	80	53	67	95	29	4.2	13.1	.4	4.9	0	0	0	89	46	.43	55	40	S	9	47	CLR	7	2	0	0	4	17	1	28	#	0
MAY	86	62	74	102	34	4.5	11.7	T	4.5	0	0	0	89	50	.57	62	30	S	8	46	SCT	8	3	0	0	8	18	8	31	0	0
JUN	90	69	80	103	46	6.8	17.4	2.1	6.7	0	0	0	91	58	.72	69	25	S	7	66	SCT	12	4	0	0	14	17	19	30	0	0
JUL	91	71	81	103	57	8.8	20.1	2.3	8.2	0	0	0	93	66	.80	72	20	S	6	40	BRK	17	5	0	0	19	17	22	31	0	0
AUG	91	72	81	102	61	7.1	15.7	2.4	7.1	0	0	0	94	64	.79	72	20	E	5	46	BRK	14	5	0	0	16	18	21	31	0	0
SEP	88	68	78	99	40	5.7	20.3	.1	8.9	0	0	0	93	60	.71	69	30	ENE	7	72	SCT	10	3	0	0	8	17	13	30	0	0
OCT	81	57	69	94	30	2.9	12.3	T	5.5	0	0	0	90	51	.49	58	30	N	6	43	CLR	5	2	0	0	2	15	2	29	#	0
NOV	72	47	60	88	13	3.5	10.4	.4	4.9	0	0	0	89	52	.36	50	35	N	7	59	CLR	6	2	0	0	2	16	0	20	3	0
DEC	66	41	54	84	10	4.5	12.6	.9	5.0	T	1	1	87	55	.29	44	30	N	7	37	OVR	8	3	#	0	2	16	0	12	8	#
ANN	79	56	68	103	6	63.3	104.	31.0	8.9	T	3	2	90	55	.47	57	35	N	7	72	OVR	114	77	#	#	83	202	86	286	31	#
POR	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	19	43	43	43	43	43	43	43	43	43	43	43

T = TRACE AMOUNTS (< .05 < .5 INCHES)
# = MEAN NO. DAYS < .5 DAYS
$ = PRESSURE ALTITUDE IN TENS OF FEET (I.E. 50 = 500 FEET)
@ = *NAVY STATIONS REPORT HAIL AS SNOWFALL; ALSO NWS FROM JULY,1948 - DEC.,1955*
+ = THE PREDOMINANT SKY CONDITION\PRECIP > LISTED AMOUNT AND < NEXT WHOLE INCH
* = VISIBILITY IS NOT CONSIDERED
& = ANN TOTALS MAY NOT EQUAL SUM OF MONTHLY VALUES DUE TO ROUNDING
^ = 24 HR MAX PRECIP AND SNOWFALL ARE DAILY TOTALS (MID-NIGHT TO MID-NIGHT)
I = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED
" = INCHES

----------FEDERAL CLIMATE COMPLEX ASHEVILLE----------

Source: National Climatic Data Center. 1992. International Station Meteorological Climate Summary. Asheville, NC.

Table 2-1 (Continued)
Tallahassee Regional Airport Climatic Summary

----------INTERNATIONAL STATION METEOROLOGICAL CLIMATE SUMMARY----------

:STA 722140 | KTLH | TALLAHASSEE WSO AP ,FL,US
:LAT 30 23N :LONG 084 22W :ELEV 55(ft) 17(m) :TYPE NOAA SMOS V2.1 07021992
41 - STATION CLIMATIC SUMMARY (CONTINUED)

POR: (HOURLY): 1948-1990 (43 years for most parameters)

	MEAN NO. OF DAYS WITH (&)								
	PRECIPITATION					OBSTR TO VISION			
	R/DZ	FRZ R/DZ	SNOW	HAIL /SLT	PRCP	SMOK HAZE	BLOW SNOW	DUST SAND	OBS VIS
JAN	12	#	#	0	12	8	0	0	19
FEB	11	0	#	#	11	9	0	0	19
MAR	12	0	#	#	12	9	0	#	20
APR	9	0	0	#	9	8	0	0	19
MAY	11	0	0	#	11	11	0	#	20
JUN	16	0	0	#	16	10	0	#	19
JUL	21	0	0	#	21	9	0	0	18
AUG	18	0	0	#	18	11	0	#	20
SEP	13	0	0	#	13	11	0	0	19
OCT	8	0	0	0	8	9	0	0	17
NOV	9	0	0	0	9	8	0	0	18
DEC	11	#	#	0	11	8	0	#	18
ANN	151	#	1	1	151	111	0	#	226
POR	42	42	42	42	42	42	42	42	42

& = ANN TOTALS MAY NOT EQUAL SUM OF MONTHLY VALUES DUE TO ROUNDING
I = EXCESSIVE MISSING DATA - VALUE NOT COMPUTED
# = MEAN NO. DAYS < .5 DAYS
----------FEDERAL CLIMATE COMPLEX ASHEVILLE----------
Source: National Climatic Data Center. 1992. International Station Meteorological Climate Summary. Asheville, NC.

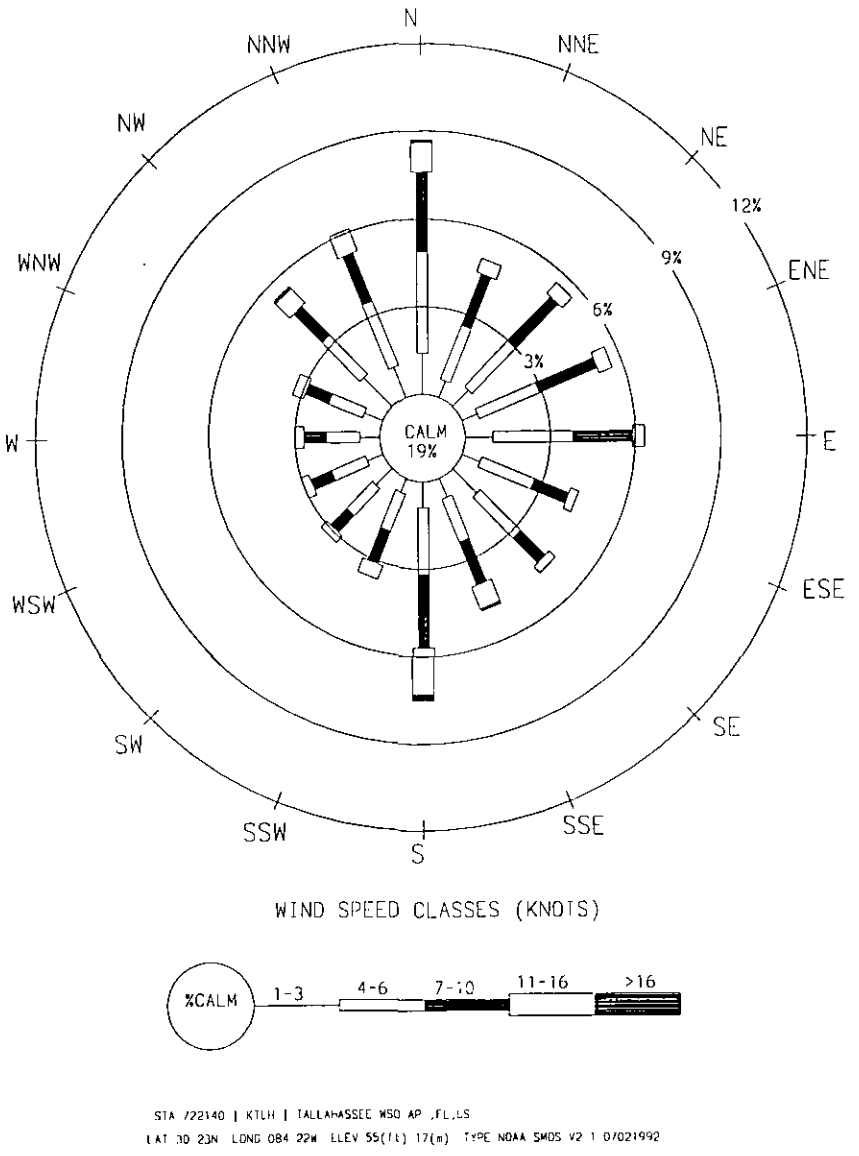

Figure 2-1
Wind Rose
Tallahassee Regaional Airport, FL (1948-1990)

Source: National Climatic Data Center. 1992. International Station Meteorological Climatic Summary. Asheville, NC.

are classified as "non-attainment" for a specific pollutant. However, there are no such areas within Wakulla County or surrounding counties.

Ozone is monitored in Leon County, the most populous county of the region. Thus, Leon County data may be considered to over predict ozone levels for the project location. The air quality standard for ozone (O_3) is 0.12 ppm (235 $\mu g/m^3$). This is a daily maximum one hour concentration, which is not to be exceeded an average of more than one day per year, according to Rule 62-204.240(4), F.A.C. In 1995, the second highest one-hour value observed in Leon County was approximately 80 percent of the standard at 0.096 ppm (188 $\mu g/m^3$). Data available for previous years show similar concentrations.

The FAAQS for NO_2 is 100 $\mu g/m^3$ averaged over the entire year. The average concentration monitored in Gadsden County in January to June 1992 was 7 $\mu g/m^3$ or 7 percent of the standard.

Respirable PM_{10} and SO_2 are not monitored by DEP in Wakulla, Leon, Jefferson, Taylor, or Gadsden Counties. The nearest monitoring locations for those pollutants are in Hamilton and Bay Counties, which are roughly 70 miles east and west of the site, respectively. In fact, the Hamilton and Bay County monitors are located near major air pollutant sources and the use of concentrations monitored there would result in overestimates of "background" concentrations in the St. Marks area.

The FAAQS for PM_{10} is 50 $\mu g/m^3$ annual arithmetic mean, with a maximum of 150 $\mu g/m^3$, averaged over a 24-hour period, according to Rule 62-204.240(2), F.A.C. The second highest short-term concentration measured in 1995 in Hamilton County was 48 $\mu g/m^3$ or 32 percent of the standard. The annual arithmetic mean was 23 $\mu g/m^3$ or 46 percent of the standard. Data are also available for Bay County where similar concentrations have been observed.

The FAAQS for SO_2 is 1300 $\mu g/m^3$ for a 3-hour average, 260 $\mu g/m^3$ for a 24-hour period and 60 $\mu g/m^3$ for an annual average. The second highest 3-hour average recorded in 1995 in Hamilton County was 318 $\mu g/m^3$ or 24 percent of the standard. The second highest 24-hour average for 1995 was 102 $\mu g/m^3$ or 39 percent of the standard. The annual average concentration for 1995 was 13 $\mu g/m^3$ or 22 percent of the standard.

No data are available for lead (Pb) and carbon monoxide (CO) in northwest Florida. Concentrations for both of these pollutants would be expected to be low due to the limited number of emission sources.

2.1.2.2 Data Search/Literature Survey

The data available from the meteorological and air quality monitoring locations described above will be summarized in the PSD Application (SCA Section 10.1.5) and SCA Section 2.3.7. Additional meteorological data will be sought from the National Climatic Data Center, DEP, and the U.S. Fish and Wildlife Service (FWS), and air quality data will be sought from the EPA, DEP, the FWS, the U.S. Forest Service, and others. The subjects and types of information sought to satisfy meteorological data requirements include:

- Mean and extreme values of temperature, precipitation, humidity, wind, atmospheric stability, and summaries of stagnation episodes and severe storm occurrences;

- Joint frequencies of wind directions, wind speeds, and atmospheric stability; and
- A detailed listing of hourly sequential surface meteorological data for Tallahassee combined with upper air data for Apalachicola for the years 1985 through 1989 to be used as input to the dispersion modelling analysis.

For air quality data requirements, the subjects and types of information sought include:

- Background ambient air quality data for the criteria pollutants from official monitoring stations in the area and/or background concentration recommendations from DEP; and
- Information on significant emission sources in the area (permitted pollutant emission rate, stack height, stack diameter, stack exit velocity, and stack exit temperature).

These data will be summarized to describe the existing climate, ambient air quality, emissions, and regulatory environment of the area, and will be included in SCA Section 2.3.7.

2.1.2.3 Monitoring Exemption Request

A PSD preconstruction ambient air quality/meteorology monitoring exemption request is being developed separately to satisfy PSD requirements. It is believed that an exemption from the monitoring requirements will be appropriate as predicted ambient impacts from the proposed Purdom Plant modification are expected to be below the De Minimis Ambient Impacts in Table 212.400-3 of ~~Chapter~~Rule 62-212.400 F.A.C.

2.1.3 Impact Assessment

2.1.3.1 Construction Impacts

A qualitative discussion of the potential for air pollutant emissions during site preparation operations will be provided. Dust generation by construction vehicles will be estimated. Control technology to be used, particularly in the suppression of fugitive dust, will be described. Emissions from construction vehicles will be minor and also will be treated qualitatively. Results will be used to address the requirements of SCA Section 4.5.

2.1.3.2 Operation Impacts

The first objective of this task is to demonstrate that the proposed Unit 8 will apply Best Available Control Technology (BACT), where required, in accordance with Rule 62-212.400 F.A.C. Although not required for pollutants whose emissions will not be significantly increased by the proposed modification (including the addition of Unit 8, and the shutdown of Units 5 and 6), it is the City of Tallahassee's intent to present a BACT analysis for all pollutants expected to be emitted by Unit 8 in significant quantities. The BACT analysis will be included in detail in the PSD application and will be summarized in Section 3.4.3 of the SCA.

The other objective of this task is to define the probable air quality impacts which will occur during the operation phase of the proposed project, taking into account both the emissions increases and decreases. The City will determine the worst-case emission scenario from the ~~bubbled~~ capped emission units (Boiler 7, new Unit 8, existing combustion turbines and the new

auxiliary boiler). Based on these emissions and the emission decreases resulting from the retirement of Units 5 and 6, the City will consider the impacts of the "proposed project". When used in this section and in Appendix B, "proposed project" will refer to the ~~bubbled~~ units to be included in the facility-wide cap and decreases from Units 5 and 6. ~~It does not include the existing gas turbines (GT1 and GT2).~~ Impacts of the criteria pollutants will be predicted and compared with applicable PSD increments, and, together with existing concentrations, with applicable FAAQS. Impacts of trace element emissions will be predicted, and air toxics concentrations will be evaluated with respect to DEP's Draft Florida Ambient Reference Concentrations (FARCs).

The air quality impact of the proposed project will be evaluated quantitatively using EPA and DEP accepted dispersion modelling techniques to predict future concentrations of the pollutants of interest. Impact assessment methods will be consistent with the instructions of the EPA Guideline on Air Quality Models (40 CFR 51 Appendix W), the EPA Draft New Source Review Workshop Manual (U.S. EPA, 1990), Section 5.6 of the DEP SCA Instruction Guide [Section 62-1.211(1), F.A.C.], and DEP Prevention of Significant Deterioration, Preconstruction Review Requirements [Sections 62-212.400, F.A.C.].

The air quality assessment will consist of the following:

- Performance of single and multiple source dispersion modelling using the Industrial Source Complex Short Term (ISCST3) model to evaluate short-term and annual average concentrations at off-site receptors for specific pollutants emitted from the proposed project;
- Performance of multiple-source dispersion modelling using the ISCST3 model to evaluate interactions between the proposed project and other nearby sources for those pollutants whose off-site impacts are significant;
- Determination of background concentrations for all applicable pollutants and averaging periods based upon regional monitoring data or minor source modelling analysis;
- A screening level visibility impact analysis on the Class I area using VISCREEN;
- Assessment of single and multiple source modelling results in terms of compliance with Class I PSD increments at the nearest Class I areas, the St. Marks and Bradwell Bay Wilderness Areas, if the impacts from the proposed project are significant;
- Assessment of single and multiple source modelling results in terms of compliance with FAAQS if the impacts from the proposed project and the existing gas turbines are significant;
- A qualitative assessment of the expected air quality impacts of criteria pollutants and regulated non-criteria pollutants on vegetation and soils, to be conducted in conjunction with the ecology tasks; and
- An assessment of selected air toxics impacts due to the proposed project and existing gas turbines versus DEP Draft FARC levels. Included will be all air toxics for which project specific emissions data are available.

A detailed air quality modelling protocol is included in this Plan of Study as Appendix B.

2.2 ST. MARKS RIVER HYDROLOGY/WATER QUALITY/HABITAT

2.2.1 Introduction

The St. Marks River is designated Class III in the vicinity of the Purdom Generating Station. Upstream of Rattlesnake Branch and downstream of the confluence with the Wakulla River, the St. Marks River is designated an Outstanding Florida Water.

The river has a history of oil spills from the 1970s and presently receives the discharge from the City of St. Marks sewage treatment plant. Although the Apalachee Regional Planning Council reports that "...the river has good to excellent water quality, except for the portion adjacent to the industrial complex of the town of St. Marks" (Apalachee Strategic Regional Policy Plan, 1996), there have never been any long-term water quality stations established on the St. Marks River. Available river surveys have been focused on problems relating to oil spills and sewage effluents, and whether the river meets Class III standards has never been documented.

The U.S. Geological Survey (USGS) maintained a flow station on the St. Marks River, near Newport, from October 1956 through September 1994. Based on a preliminary assessment of those records, the 7-day, 10-year low flow is about 330 cubic feet per second (cfs). The average tidal flow is about 360 cfs based on mean tidal ranges. Field measurements indicate that the fresh water flow rides above a salt water wedge in the vicinity of the Purdom Station. The existing station flow from Units 5-7 is on the order of 200 cfs. Based on these flows, it is unlikely that the plant's thermal plume ever recirculates back to its intake.

Based on the design and configuration of the plant discharge structures and the configuration of the intake structures, it is believed that the plant uses only the fresh water layer in the upper river for cooling. The EPA and the DEP have indicated through the plant NPDES and IWW permits that the Purdom Plant thermal discharge does not "...increase the temperature of the Receiving Body of Water (RBW) so as to cause substantial damage or harm to the aquatic life or vegetation therein or interfere with beneficial uses assigned to the RBW." The actual extent of the thermal plume from the station has not been documented to date.

The West Indian manatee (*Trichechus manatus*) is listed as an endangered species by both the FWS and the Florida Game and Fresh Water Fish Commission (FGFWFC). This species has been observed in the St. Marks River and in the vicinity of the Purdom Station. The primary issue to be evaluated involves the potential impact of thermal discharge reductions into the St. Marks River with Purdom Unit 8 Project development and the associated shutdown of Units 5 and 6. Of particular interest is the effect of changes in project operations during cold weather months on manatee migration patterns.

2.2.2 Baseline Characterization

The baseline characterization proposed for the St. Marks River includes a literature search to obtain all available public information from such sources as the USGS, Florida Geological Survey, EPA and the NWFWMD, and a three-pronged field program as follows:

- Episodic river profiling for current velocity and direction, conductivity, salinity, temperature, pH, dissolved oxygen, and bathymetry to document the salt wedge and the thermal plume;
- Long-term continuous recording of salinity at two depths, and water level, in the existing Unit 7 intake area; and
- Water quality sampling and laboratory analysis for all Class III constituents, and other constituents which may be required for performance of speciation modelling, at two different times in the vicinity of the proposed intake area. Table 2-2 lists the constituents for which analyses will be performed.

Baseline manatee habitat data collection will focus specifically on manatee occurrence in the site vicinity, existing thermal discharge data over the course of a year, and ambient water temperature data. Manatee population baseline data will be obtained from the Manatee Watch Program, Florida Natural Areas Inventory, and other appropriate data sources. Manatee habitat data and thermal preferences will be obtained from published information and the FWS. Data sources regarding St. Marks River temperatures and existing thermal discharges include existing published data, existing Purdom Station data, and site-specific investigations to be conducted as part of proposed Unit 8 site certification studies. The existing situation with respect to manatees will be documented in SCA Section 2.3.6.

2.2.3 Impact Assessment

The impact assessment on the St. Marks River will be performed to compare the existing baseline condition against the proposed improved condition. The existing condition includes withdrawal of water by Units 5-7, the thermal and chemical discharges from Units 5-7, and the discharge of secondary effluent from the City of St. Marks. The proposed condition includes the thermal discharge from Unit 7 only, the elimination of the use of water for once-through cooling by Units 5 and 6 (about 48,000 gpm), the addition of a withdrawal for Unit 8 for closed cycle cooling system makeup (estimated at about 1,000 gpm), and the elimination of both the chemical discharge from Units 5-7 and the discharge from the City of St. Marks sewage treatment plant. Results will be documented in Sections 5.1, 5.2, 5.3, and 5.5 of the SCA.

The river was originally dredged from the mouth to Newport to accommodate navigation. The existing condition includes the use of the river for delivery of fuel oil by barge to the Seminole Refinery, the Purdom Plant, and the McKenzie oil storage area. Based on the projected differential in price between fuel oil and natural gas, the proposed project is expected to reduce the amount of fuel oil delivered to the power plant and its associated barge traffic.

Because of the project, thermal discharges into the St. Marks River will be reduced. In terms of manatee use of the area, the impact assessment will focus on the existing station conditions compared with the proposed conditions, including the reduction in thermal discharges which currently attract manatees during cold winter months. The existing thermal moderation of river temperatures from upstream springs will be evaluated relative to manatee water temperature preferences. Although manatees may not be as attracted to the Purdom Station after the project is implemented, the net effect of the Purdom Unit 8 Project on the river's ecology is expected to be positive. Projected impacts will be documented in Section 5.1.

Table 2-2
Water Quality Sampling Constituents

Type of Constituent	Constituent	Class III Limit in St. Marks River at Purdom Station (if applicable)
Physical	pH	Within 1 unit of natural background & between 6 and 8.5, or not less than natural nor more than 1 unit above natural if natural <6 and not more than natural nor less than 1 unit below natural if natural > 8.5
	Dissolved Oxygen	5 mg/l (minimum)
	Temperature	see 62-302.520
	Total Dissolved Gases	110% of saturation value
General Inorganics	Total Suspended Solids	tested for modelling
	Total Dissolved Solids	tested for modelling
	Hardness (as CaCO3)	required for calculating trace metal limits, abbreviated as H
	Alkalinity (as CaCO3)	20 mg/l as $CaCO_3$(minimum)
	Nitrate (as N)	not to imbalance natural populations
	Nitrite (as N)	not to imbalance natural populations
	Ammonia (as N)	.02 mg/l (un-ionized) and not to imbalance natural populations
	Total Phosphorus (as P)	not to imbalance natural populations
	Silica (as SiO2)	tested for modelling
	Cyanide (as CN)	.0052 mg/l
	Aluminum	tested for modelling
	Sulfides	tested for modelling
	Total Residual Chlorine	.01 mg/l
Major Cations	Calcium	Tested for modelling
	Magnesium	Tested for modelling
	Sodium	Tested for modelling
	Potassium	Tested for modelling
Minor/Trace Elements	Antimony	4.3 mg/l
	Arsenic	.050 mg/l
	Beryllium	.00013 mg/l (at ann avg flow)
	Cadmium	e^(.7852[ln H]-3.49) µg/l
	Copper	e^(.8545[ln H]-1.465) µg/l
	Iron	1.0 mg/l
	Lead	e^(1.273[ln H]-4.705) µg/l
	Mercury	.000012 mg/l
	Nickel	e^(0.846[ln H]+1.1645) µg/l
	Selenium	0.005 mg/l
	Silver	0.00007 mg/l
	Thallium	0.048 mg/l
	Zinc	e^(0.8473[ln H]+0.7614) µg/l
Major Anions	Chloride	Tested for modelling
	Bicarbonate	Tested for modelling
	Carbonate	Tested for modelling
	Sulfate	Tested for modelling

Type of Constituent	Constituent	Class III Limit in St. Marks River at Purdom Station (if applicable)
Microbiologicals	Fecal coliform	Multiple requirements
	Total coliform	Multiple requirements
Organics	Benzene	.07128 mg/l (at ann avg flow)
	Phthalate Esters	0.003 mg/l
	PCBs	0.000000045 mg/l (ann avg flow) & 0.000014 mg/l
	Tetrachloroethylene	0.00885 mg/l (ann avg flow)
	1, 1, 1-Trichloroethane	173 mg/l
	Trichloroethene	0.0807 mg/l (ann avg flow)
	Carbon Tetrachloride	.00442 mg/l (ann avg flow)
	1,1-dichloroethylene (1,1-dichloroethene)	.0032 mg/l (ann avg flow)
	dichloromethane (methylene chloride)	1.58 mg/l (ann avg flow)
	2,4-dinitrotoluene	.0091 mg/l (ann avg flow)
	Bromoform	0.360 mg/l (ann avg flow)
	Chlorodibromomethane	0.034 mg/l (ann avg flow)
	Chloroform	0.4708 mg/l (ann avg flow)
	Chloromethane (methyl chloride)	0.4708 mg/l (ann avg flow)
	Dichlorobromomethane	0.022 mg/l (ann avg flow)
	Hexachlorobutadiene	0.0497 mg/l (ann avg flow)
	Pentachlorophenol	0.0082 mg/l (ann avg flow) & e^(1.005[pH]-5.29) µg/l & 0.030 mg/l
	Polycyclic aromatic hydrocarbons (PAHs, see Note 1)	0.000031 mg/l (ann avg flow)
	Anthracene	110 mg/l
	Fluorene	14 mg/l
	Pyrene	11 mg/l
	Fluoranthene	0.370 mg/l
	Acenaphthene	2.7 mg/l
	1,1,2,2-tetrachloroethane	0.0108 mg/l (avg ann flow)
Pesticides & Herbicides	Aldrin	0.003 mg/l & 0.00000014 mg/l (ann avg flow)
	Dieldrin	0.00000014 mg/l (ann avg flow) & 0.0000019 mg/l
	Chlordane	0.00000059 mg/l (ann avg flow) & 0.0000043 mg/l
	Demeton	0.0001 mg/l
	Endosulfan	0.000056 mg/l
	Endrin	0.0000023 mg/l
	Guthion	.00001 mg/l
	Heptachlor	.00000021 mg/l (ann avg flow) & 0.0000038 mg/l
	Lindane (g-benzene hexachloride)	0.000063 mg/l (ann avg flow) & 0.00008 mg/l
	Malathion	0.0001 mg/l
	Methoxychlor	0.00003 mg/l
	Mirex	0.000001 mg/l
	Parathion	0.00004 mg/l
	Toxaphene	0.0000002 mg/l

Type of Constituent	Constituent	Class III Limit in St. Marks River at Purdom Station (if applicable)
	Beta-hexachlorocyclohexane (b-BHC)	0.000046 mg/l (ann avg flow)
	DDT	0.00000059 mg/l (ann avg flow) & 0.000001 mg/l
Biological Integrity	Shannon-Weaver diversity index	75% of background levels
	Transparency	Not to be reduced more than 10% of natural

Source: Florida Administrative Code 62-302, August 1996

Note (1): PAH includes the following:
Acenaphthylene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(ghi)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Indeno(1,2,3-cd)pyrene
Phenanthrene

2.3 ECONOMIC IMPACT

2.3.1 Introduction

Due to the limited availability of goods and services, the economic impact of the project in Wakulla County is likely to be small. Except for the short-term impact on eating and drinking establishments and temporary housing during the construction phase of the project, most goods and services supportive of power plant construction and operation will probably be purchased in Leon County and elsewhere. Leon County is by far the dominant economy of the region. For example, employment in Leon County in 1990 was almost 15 times greater than in Wakulla County, nearly 22 times greater than in Jefferson County and more than six times greater than in Gadsden County. While jobs, goods and services are more abundant in Leon County, Wakulla County is prized for its natural qualities and recreational amenities, which are appreciated and used by residents of Leon and other surrounding counties. Consequently, there exists a complementary relationship between Leon County, as the economic center of the region, and surrounding counties, including Wakulla, where a more natural, less developed rural environment is enjoyed by residents and visitors alike.

Accordingly, the City of Tallahassee has committed, with the Purdom Unit 8 Project, to spend significant project resources not only to avoid adversely impacting the environment at the Purdom Station, but to improve it. By eliminating wastewater and reducing cooling water discharges to the St. Marks River, maintaining air quality, and improving the aesthetics of the Purdom Station along the St. Marks River shoreline, the project will protect and enhance the chief economic asset of Wakulla County, its natural beauty and environmental character.

In terms of the more traditional analysis of economic impact, the SCA will focus primarily on the impact of project construction on the local economy (i.e., the City of St. Marks and Wakulla

County) and the long-term impact on the City of Tallahassee's fiscal resources. During project construction, there will be a temporary impact on the City of St. Marks and Wakulla County as the more specialized construction crafts are expected to temporarily relocate near the Purdom Station. Permanent employment at Purdom will be maintained at a higher level than could be expected without the project but will be reduced from present levels. The proposed construction of Unit 8 is expected to lower production costs for the City of Tallahassee electric system. The resulting economic benefit could be in the form of reduced electric rates, an increase in municipal revenues, or a combination of the two.

2.3.2 Baseline Characterization

Socioeconomic information to be gathered will include historic, current and projected population figures available from the University of Florida Bureau of Economic and Business Research and Wakulla County, as well as employment by sector and income data from the Florida Department of Labor and Employment Security. Other data to be gathered will include availability of temporary housing, existing housing stock, and building activity in Wakulla County. Housing data will be obtained from the 1990 Census and Wakulla County. Information on public services and facilities, including schools, medical facilities, fire fighting and police facilities, recreation facilities, potable water, sanitary sewer and solid waste facilities will be gathered from the City of St. Marks and Wakulla County. Information on these facilities will include their locations, capacities and current and projected usage.

2.3.3 Impact Assessment

2.3.3.1 Construction Impacts

The construction impact assessment will estimate the effect of project construction on the regional economy. Factors to be assessed include construction employment and payroll, spending for construction materials and supplies, and spending of construction employees. Regional Input-Output Modelling System (RIMS II) multipliers, available from the State of Florida, will be used to estimate the indirect effects of project construction on other sectors of the regional economy.

The size of the construction workforce, the duration of the construction period, and construction payroll will be estimated based on the plant design and construction schedule. The number of construction workers who commute to the site daily from surrounding counties and those who temporarily relocate will be estimated. These estimates will be based on construction workforce availability and commuting routes, and the availability of temporary housing near the construction site. It is expected that there will be some temporary relocation for crafts that are unique to power plant construction and are not available in the local labor force.

The information developed from the impact assessment will be included in Sections 4.6, 4.10 and 7.0 of the SCA.

2.3.3.2 Operation Impacts

This section of the analysis will assess the impact that operation of the project will have on the socioeconomic environment of the area. The impact on Wakulla County employment and payroll

will be estimated. Since the project will involve the addition of a new, very efficient combined cycle unit and the retirement of older units at the site, permanent employment and payroll are expected to decrease from present levels. However, employment levels will be higher than they would be if the project were not built.

The reduction in production costs for the electric utility will result in an increase in revenues to the City of Tallahassee, an opportunity to decrease (or avoid increasing) electric rates for City of Tallahassee customers, or both. This economic benefit to the City of Tallahassee will be estimated, assuming that 100 percent of the cost reduction will be applied to: (1) rate reduction or, (2) increasing transfers to the City of Tallahassee's General Fund, recognizing that the decision to do either or both will be the Tallahassee City Commission's to make in the future.

The impact assessment will also address the potential for impact on City of St. Marks and Wakulla County services and facilities as compared to any in-kind services or fees-for-services paid by the City of Tallahassee in connection with the Purdom Unit 8 Project.

Information on the impact of project operation on the socioeconomic environment will be included in Section 7.0 of the SCA.

2.4 ECOSYSTEM MANAGEMENT

2.4.1 Introduction

The Purdom Unit 8 Project has been designed to be consistent with the themes and principles of DEP's Ecosystem Management program. Specifically, the project design recognizes the sensitivity of the project site as well as the protection and enhancement of the existing site environment. With the use of natural gas, a clean fuel, and adaptation/retrofit of an existing facility, the project emphasizes pollution prevention as well as pollution control. In addition, the installation of advanced, highly efficient generating technology will serve to conserve scarce energy resources. The PPSA permitting process will allow for multi-disciplinary, coordinated review of the project. Finally, the City of Tallahassee has committed to a public involvement program which will allow citizens to participate in the decision-making process as the project moves through permitting.

The Ecosystem Management program identifies "stewardship" as its overarching theme. The City of Tallahassee, through its design approach, will practice stewardship by upgrading an existing facility and leaving the environment "better off". At the same time, the fiscal and economic health of the community of Tallahassee will be strengthened with the addition of new, efficient and cost effective electric generating capacity.

The following paragraphs briefly discuss the project in terms of the four cornerstones of the Ecosystem Management Program, highlighting those recommendations that the project is expected to help implement in the St. Marks River basin.

2.4.2 Place-Based Management

The Purdom Unit 8 Project is proposed to be located at the existing Purdom Station on the St. Marks River in St. Marks, Florida. The generating station was first developed in 1952, and there

are presently seven different steam generating units plus two combustion turbines located on the site. Units 1 through 4 are not operating and are scheduled for demolition. Units 5 and 6 will be retired in the future. With the installation of Unit 8, the retirement of those units will be accelerated. Unit 7 is planned to remain operational following the installation of Unit 8, although at a reduced load factor.

The Ochlockonee and St. Marks River Basins, which includes the Purdom Station, have been identified as an Ecosystem Management Area (EMA). Also, the beauty and the natural, rural character of the area are recognized as important local economic assets. The City of Tallahassee was mindful of that when it considered the Purdom Unit 8 Project. A specific up-front commitment was made, despite the importance of economics in the competitive bidding process, to spend resources to protect and enhance the environment at Purdom, thereby protecting the "sense of place".

Among the specific DEP Ecosystem Management recommendations in "The Ecosystem Management Strategy," dated September 1995, that the Purdom Unit 8 Project would help implement are the following:

Recommendation P-3

> ***Have teams undertake an action-oriented planning process for EMAs and component places. The goal of this planning process is not to produce additional plans, but rather to stimulate strategic actions necessary for ecosystem management. Planning and subsequent actions will focus on achieving:***
>
> > ***b. voluntary participation of private landowners and applicants in improving resource stewardship on public and private lands within the EMA.***

The City of Tallahassee has made the following design commitments related to the protection of habitat and air and water resources in and around the Purdom Station:

- The commitment to natural gas as the primary fuel;
- The installation of advanced combined cycle technology to replace older, less efficient technology to improve the overall efficiency of the City of Tallahassee's generating system and conserve energy resources, reduce production costs, and minimize air emissions;
- The commitment to maintain ~~air~~SO_2 and NO_x emissions at or near existing levels even with the installation of Unit 8 (which will increase the electrical generating capacity at Purdom by 200 percent) by retiring Units 5 and 6 early;
- The installation, at considerable additional expense to the project, of a zero discharge facility which will eliminate the need for thermal discharges to the St. Marks River for the new unit;
- The reuse of Purdom's treated waste streams and the City of St. Marks' sanitary effluent in the proposed cooling system, which will eliminate the discharge of these treated wastewaters to the St. Marks River; and

- Avoidance of wetland impacts at the Purdom Station site through careful site layout.

g. success in addressing priority management issues such as control of exotics, protection of submerged lands, prescribed burning, restoration, reduction of air emissions, co-location of public infrastructure in common corridors, public access needs, management of cultural resources, and pollution prevention.

Pollution prevention is accomplished through the use of a clean fuel (natural gas) and the installation of highly efficient, combined cycle technology to replace older, less efficient units. The result is that generating capacity will be increased substantially but air emissions will remain at or near current levels. Oil storage at the Purdom Station will likely be reduced. The additional electricity to be generated at Purdom can be transmitted over existing lines that will require only conductor replacement. The natural gas will be transported to the site along an existing Florida Gas Transmission right-of-way. The existing pipe will only have to be increased in size. The City of St. Marks' treated sanitary effluent will be transported to the Purdom Station via a new pipeline to be installed along existing city streets.

h. integration of land management with water management issues relating to flow alterations, operation of control structures, pollution load reductions, water conservation, groundwater use and recharge, siting of well fields, and beach and inlet management.

With the retirement of Units 5 and 6, which will occur earlier than planned because of the Purdom Unit 8 Project, withdrawals from the St. Marks River for cooling water will be reduced by 50 percent. Water reuse through the proposed zero discharge system and the use of City of St. Marks' effluent and other treated wastewaters for make-up to the cooling system will minimize withdrawals for cooling and process water at the station, allowing on-site and near-site groundwater wells to be retired from use. As mentioned above, currently permitted thermal and chemical discharges to the St. Marks River will be reduced or eliminated.

2.4.3 Cultural Change

Cultural change, as a cornerstone of ecosystem management, refers to the need to recognize a shared responsibility for protection of the environment. As a municipal electric utility serving the state capital and with a generating station in another county's jurisdiction, the City of Tallahassee is keenly aware of the need to avoid adversarial relationships and work together to achieve common goals.

The Purdom Unit 8 Project will be permitted through a coordinated review process provided for under the PPSA. That process fosters coordination and cooperation among regulatory agencies to develop a single permit, or certification, with a consistent and coordinated set of conditions. In addition, the City of Tallahassee has voluntarily undertaken a public involvement and public information program to inform Tallahassee, St. Marks, and Wakulla County citizens about the project and seek their input. To begin the process, a series of public meetings will be held in Tallahassee and St. Marks in September 1996. The City of Tallahassee hopes to conduct the permitting for the Purdom Unit 8 Project in an atmosphere of trust and mutual respect and to understand and take into account the views of citizens, environmental groups and regulators as the two-year, multi-step permitting process moves forward.

2.4.4 Common-Sense Regulation

This cornerstone of ecosystem management emphasizes solutions that are:

- Consensus-based within the framework of the law rather than adversarial and entrenched;
- Based on pollution prevention instead of end-of-pipe control; and
- Flexible, rather than rigid ways to meet environmental standards.

The Purdom Unit 8 Project will be permitted under the PPSA which provides for coordinated review. Because the process results in a single permit, called the site certification, it lends itself to consensus-based decision-making and reconciliation of conflicting regulatory approaches and standards. There is a strong tradition in power plant siting cases of developing an agreed upon set of conditions and concluding with an administrative hearing that usually is not adversarial. The opportunity exists in the power plant siting process for, and the City of Tallahassee would welcome, a consensus-based rather than an adversarial approach toward resolution of permitting issues and development of the conditions of certification. Toward that end, the City of Tallahassee is sponsoring opportunities for early "scoping" of issues and identification of potential solutions in concert with the regulatory agencies, environmental groups, local governments and citizens. Also, as discussed above, the City of Tallahassee made an early commitment to environmental protection which is reflected in the proposed design of the project in order to set the stage for a consensus-based approach.

The choice of a clean efficient fuel, such as natural gas, shows an emphasis on pollution prevention over "end-of-pipe" control. Fuel choice is perhaps the most important factor in project economics. The City of Tallahassee has taken advantage of recent trends toward greater competition in the natural gas market to obtain very competitive, guaranteed natural gas pricing and has looked for opportunities in facility sharing and existing site utilization to provide attractive project economics while protecting the environment.

Finally, there may be some flexibility needed in the application of regulatory standards. For example, actual historical air emissions against which project emissions will be compared are lower than allowed under the City of Tallahassee's permits because the City of Tallahassee has chosen to burn a lower sulfur fuel than it is permitted to burn. At existing sites which are candidates for repowering or expansion, disincentives are created for burning fuels that will generate fewer emissions than allowed by permit when these types of comparisons are made. Perhaps there is an opportunity to reward or credit the City of Tallahassee for voluntarily reducing emissions in the past so that they are not penalized when comparisons of projected emissions are made to actual historical emissions to determine the net environmental impact of the project.

Among the specific DEP Ecosystem Management recommendations that the Purdom Unit 8 Project would help implement are the following:

Recommendation R-1

> ***Pursue pilot implementation of alternative regulatory processes that include voluntary participation, applicant incentives, and net ecosystem benefit.***

The PPSA is an example of an alternative regulatory process. The standards under the statute are consistent with the concept of net ecosystem benefit. There are some ways in which the process is "streamlined" because there is coordinated agency review and enforceable statutory timeframes that can ensure that a project stays "on track".

Recommendation R-2

> ***Initiate team permitting through creation of multi-disciplinary, cross-media (air, water, wildlife, land use, etc.) review teams within DEP headquarters and district offices.***

Again, the PPSA does provide for coordinated review similar to what is called for in this recommendation. A single hearing officer hears testimony and evidence and issues a recommended order on the entire range of project-related issues. The Governor and Cabinet also act on that order as a whole, so the opportunity exists through the PPSA process for this multi-disciplinary, cross-media permitting approach to be taken.

2.4.5 Foundations of Ecosystem Management

This cornerstone addresses several additional aspects of the ecosystem management program that do not fall under the other categories of place-based management, common sense regulation or cultural change. Particularly applicable to the Purdom Unit 8 Project are the recommendations dealing with Public Linear Infrastructure Planning and Science and Technology.

Recommendation F-5

> ***Co-location of public linear infrastructure should be encouraged wherever economically feasible, safe and reasonably practicable, based on the results of further study conducted with input from affected interests and the general public.***

First of all, because of the project's location at the existing Purdom Station no new electric transmission lines will need to be built. Conductor replacement is all that will be required to tie the new unit into the electric grid. Similarly, the right-of-way for the natural gas pipeline already exists and there will be only the need to enlarge the pipe and install a new metering station at the Purdom Station. A new pipeline for delivery of the City of St. Marks' treated effluent to the Purdom Station for use as make-up to the cooling system will be installed along existing city streets.

Recommendation F-7

> ***At the Ecosystem Management Area level, create and coordinate an aggressive statewide monitoring program to determine ecological health, status, and trends for all pertinent ecosystem components state-wide. This should be coupled with an inventory of biologic, hydrologic, geologic, air and anthropogenic resources.***

In meeting the requirements of the DEP site certification application guidelines, certain baseline data collection will be required. These data include inventories of resources within a specified radius of the proposed project which could provide a portion of the comprehensive data base for the Ochlockonee-St. Marks Ecosystem Management Area called for in this recommendation.

2.4.6 Conclusion

Although the Purdom Unit 8 Project will be permitted through the PPSA as a specific project, there are many ways in which individual projects can further the goals of the Department's ecosystem management program and serve as examples of the ecosystem management approach. Based on the proposed project design and the City of Tallahassee's commitment to a collaborative permitting process, the Purdom Unit 8 Project presents an opportunity to implement several of the key recommendations of the Ecosystem Management Implementation Strategy. The Purdom Unit 8 Project is proposed to address the twin goals of improving the environment and the economy simultaneously without seeking "trade offs" of one for the other. It represents a common sense approach to meeting the economic needs of the community while preserving the environment so that the long term interests of Florida, the City of Tallahassee, Wakulla County and the City of St. Marks are served.

3.0 OTHER STUDY OBJECTIVES

3.1 SURFICIAL HYDROLOGY

Other surficial hydrology items to be addressed, in addition to the St. Marks River characteristics described in 2.2 above, include the site water budget and area water users, on-site water bodies, and hydrological characteristics of the proposed effluent pipeline corridor. Also, as a consequence of the zero discharge system, a solid waste will be produced (solidified mineral salts from the river water) that will be either reused or disposed of off site. These items are all required by the SCA guidelines.

The baseline characterization for site water budget will include a discussion of rainfall, air temperatures, evaporation and evapotranspiration, runoff, and groundwater recharge. The characterization for area users will include a list of permitted water users and a map of their locations. On-site water bodies will discuss the intake canal, the two discharge canals, existing storm water swales, and any on-site wetlands. Characteristics of the proposed effluent pipeline corridor will be determined observed by field reconnaissance.

The impact assessment will deal primarily with the lessening of impacts that will be achieved with the proposed project. No impacts are projected to on-site water bodies, except for the addition of a recharge swale to compensate for the slight increase in impermeable surface that will result from plant construction. Impacts to water users will be positive due to the cessation of pumpage of groundwater from the City of Tallahassee's existing well field and the retirement of those wells. Preliminary observation of the expected effluent pipeline corridor indicates that it will not have to cross any significant hydrological features. The predicted impacts will be discussed in Sections 4.2, 5.1, 5.3, 5.4, and 6.2 of the SCA.

3.2 GROUNDWATER HYDROLOGY/GEOLOGY

The geohydrologic setting and the potential impacts from operation and construction of the proposed Unit 8 will be presented and described in the SCA. The SCA guidelines require that the following sections and topics be included:

- Section 2.3.1 - Geohydrology.
- Section 4.1.4 - Topography and Soil.
- Section 4.3 - Groundwater Impacts.
- Section 5.3.2 - Impacts on Groundwater Supplies.

The baseline characterization of the site will include a complete description of both the local and regional geology and hydrology. The NWFWMD, the DEP, Bureau of Geology, and the USGS will each be contacted to obtain information on the local and regional resources for descriptive purposes. Existing plant records concerning wells, borings and excavations will be reviewed and correlated to the information obtained from these agencies to prepare an accurate and up-to-date description of the plant's geohydrologic setting.

A phased investigation of local karst features, including estimates of the probability of sinkhole formation, will be conducted. Initially, plant records of borings and well drilling will be reviewed

for any evidence of karst features. In addition, black and white and infared spectrum aerial photographs will be reviewed for evidence of lineaments or lineations to determine the possible location and incidence of karst related features. This information can be used to conduct a non-invasive geophysical investigation, if warranted.

Existing soil boring logs will be reviewed to provide current information regarding bearing strength of the soil and rock units in the areas planned to undergo construction.

The primary objective of the impact assessment is to describe any construction-related alteration of the site topography or soils, and the effects such alterations will have on site runoff, percolation rates, subsidence, bearing strength, soil stability, aesthetics, and viewshed. The second objective is to describe any effects that construction-related activities will have on the surficial aquifer and nearby water wells. Based on a preliminary assessment of the potential impacts, construction and operation of the project will have no foreseeable adverse impacts to groundwater resources in the study area. Groundwater usage by the plant will be eliminated, which will have a positive impact and will help to preserve the limited fresh groundwater resources which are available locally. A simple groundwater model will be used to predict the change in local groundwater conditions resulting from this elimination of groundwater usage by the plant.

The proposed location of Unit 8 has been used in the past as a temporary stockpile for used plant equipment and materials prior to their disposal offsite. The proposed project will most likely be supported by augured cast-in-place concrete piles. Installation of these piles will result in bringing sub-surface soils and some ground water to the surface. Some soil and ground water samples will be analyzed to establish the baseline conditions. The proposed locations where samples will be collected are shown on Figure 3-1.

Because of the past storage of used plant equipment and materials, the analysis will include testing for the RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), asbestos, and PCBs. Because of the site history of petroleum product storage, an organic vapor analyzer (OVA) will be used to field-screen each boring. Depending on the field-screening results, selected samples may be analyzed for the Kerosene Analytical Group. At least four soil samples and four groundwater samples will be analyzed for these parameters.

3.3 AQUATIC ECOLOGY

The focus of the aquatic ecology studies will be on important species that are:

- Listed as endangered or threatened by the FWS;
- Listed as endangered, threatened or species of special concern by the FGFWFC; or
- Listed freshwater game or sport fish in Florida Admin. Code Rule 39-1.

An objective of this activity is to gather information concerning aquatic ecology, including water quality, and the extent and quality of local aquatic habitats. Aquatic ecological data will be obtained from a review of published information from the FGFWFC and from knowledgeable personnel and academic studies. Existing data will be used to document important interspecific relationships and food chains.

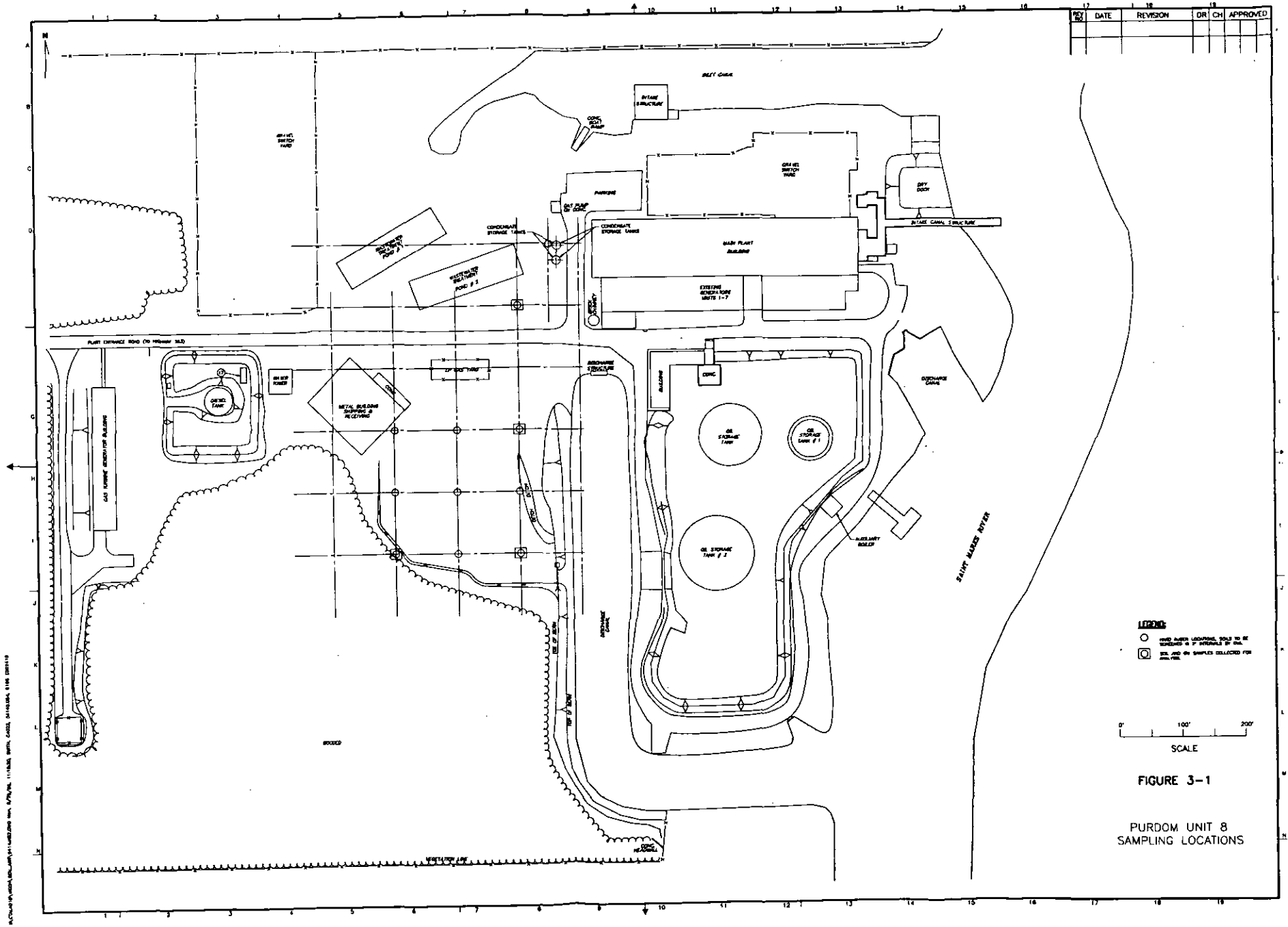

FIGURE 3-1

PURDOM UNIT 8
SAMPLING LOCATIONS

The DEP conducted benthic macroinvertebrate studies in the St. Marks River in the site area during 1995. The field program proposed for this project will be limited to verification of the conditions found in the DEP study. Because of manatee and alligator occurrences in the river, no field fisheries sampling program will be undertaken. Given that the effects on the river system will be positive with development of this project (zero discharge and reduced withdrawals), fisheries field data acquisition needs are not significant enough to warrant use of netting or electroshocking because of the potential risks to these species.

Limited sampling in site aquatic habitats will be conducted to confirm benthic macroinvertebrates present in earlier studies conducted by the City of Tallahassee. This will be done with the use of Hester-Dendy samplers which are artificial substrates. These samplers will be left in the river at selected locations for 25 days and then retrieved. Invertebrates growing on the samplers will be identified to the lowest practicable taxonomic level and counted. Qualitative methods will be used to estimate the extent of use. These studies, together with the existing data, will be used to estimate the relative abundance of important species found and to provide data on habitat quality.

Fisheries use of the river will be determined from consultations with agency personnel and contacts with organizations and institutions, such as Florida State University, which have collections of fish from the river.

The proposed approach to data analysis and impact assessment will be to analyze the data resulting from the literature survey and field studies and formulate a description of the existing aquatic biota, including endangered and threatened species status. The impact assessment will address the effects of construction and operation of the project on the affected aquatic biota, which are expected to be positive due to the reduction of plant withdrawals and wastewater discharges. The results will be presented in Sections 4.4, 5.1 and 5.2 of the SCA.

3.4 TERRESTRIAL AND WETLANDS ECOLOGY

Project impacts to terrestrial and wetland resources will be limited because very little land and no wetlands will be used by the project. The land which will be used has already been disturbed. As a result, only minimal treatment of these issues will be included in the SCA.

In order to be responsive to the SCA guidelines, some terrestrial and wetlands resources data will be compiled from literature surveys and field programs and organized in a baseline description (SCA Section 2.3.6) from which the impacts of the proposed Unit 8 Project can be assessed.

The objective of the literature review is to obtain varied types of ecological information which can be used to develop an existing site and vicinity terrestrial and wetlands ecology data base. This database will be aid in the assessment of any limited effects resulting from the construction and operation of the proposed power plant and associated facilities. Reclaimed water pipeline route and on- or near-site information will include:

- Vegetation descriptions and maps;
- Lists and ecological reports of birds, mammals, reptiles, and amphibians common to the area;
- Wetlands within and adjacent to the power plant site and reclaimed water pipeline;

- Interspecific relationships and food chains of important species;
- Locations of rare, threatened or endangered species or critical habitats of these species in the project area; and
- Occurrence of pre-existing stresses.

Several data sources will be used in the preparation of the impact assessment as related specifically to wetlands. As a minimum these include soil maps, site surveys, aerial photography and historical maps.

Field inspections of the project area will be conducted. These inspections will be used to update information on the major plant communities and habitat types so that site conditions can be compared with results of previous characterization studies. Additionally, updating of land cover maps for Level III site area land uses/cover greater than five acres in size will be undertaken.

The possible effects of the project on the terrestrial and wetlands resources are limited. The approach to assessing any limited impacts will be to (1) identify the magnitude or the extent of the effect or area affected, (2) estimate the potential of the effect to occur, and (3) determine what portion of the resource would be affected from a local and regional perspective. Results will be presented in Sections 4.4 and 5.8 of the SCA.

3.5 CULTURAL RESOURCES

A number of previously recorded archeological sites exist in close proximity to the City of Tallahassee property on which the Purdom Station is located, and there is a possibility that previously unrecorded cultural resources may be located on the parcel owned by the City of Tallahassee. However, the actual project area associated with the proposed Unit 8 is believed to have undergone extensive prior ground disturbance associated with plant construction and operation. The Florida Division of Historical Resources (DHR) was contacted in 1992 for information on the site. At that time, DHR indicated that it was their opinion "that future development of the facility site would have no effect on historic properties listed, or eligible for listing, in the *National Register of Historic Places*." They further indicated that "[d]evelopment in this portion of the ~~[City of Tallahassee property]~~site would be able to proceed."

~~Contact will be initiated with the DHR to confirm this earlier opinion and determine whether any additional documentation is necessary to meet agency requirements.~~The City of Tallahassee contacted DHR again in 1996. DHR confirmed their earlier evaluation and stated that a "review of the Florida Site File indicates that no significant archaeological or historical sites are recorded for or likely to be present within the area of the proposed Purdom Unit 8." The DHR also concluded the project will have no effect on historic properties, provided that any new off-site pipelines which may be part of the project be constructed within the limits of existing road prisms.

3.6 NOISE

The Purdom Station has been an integral part of the City of St. Marks for more than 40 years. Noise produced by the proposed new generating unit will not be perceived by the town residents as significantly different in character or level. Close coordination between the licensing team and

the design engineer will ensure that noise issues are addressed and appropriate mitigation measures are included in the plant design.

A comprehensive environmental noise survey was performed at the Purdom Station in October, 1994. Units 5, 6 and 7 plus both gas turbines were run for the test. Since no significant changes have occurred in St. Marks in terms of new noise sources or noise-sensitive receptors, the results of the survey are still valid and will provide the basis for the baseline characterization (SCA Section 2.3.8).

There are no applicable noise ordinance limits for the site, but there are several guideline or suggested limits available. The most stringent of these is the EPA's recommended day/night limit (Ldn) of 55 dBA at any residence. Thus, in order to minimize noise impacts, the new unit will be designed such that total noise from the site, including existing noise from Unit 7, will not exceed an Ldn of 55 dBA. Expected noise levels at the nearest residences will be determined through computer modelling using the NoiseCalc model. Source noise levels will be obtained from equipment manufacturers or from noise specifications determined by the design engineer. Potential noise levels at the nearest residences during construction will also be evaluated using a computer model. Construction equipment noise levels will be obtained from the literature. A worst-case impact assessment will be performed by using the types and quantities of equipment in use during the most intensive period of construction. Construction and operation impacts will be discussed in Sections 4.6 and 5.7, respectively.

3.7 LAND USE

Use of the Purdom Station site for a power plant is consistent with the City of St. Marks' Future Land Use Map and zoning. As a result, no plan amendment or rezoning will be required. Existing conditions will be documented in Section 2.2 of the SCA.

In addition to future land use and zoning information, baseline information on the sociopolitical environment will include information on governmental jurisdictions in the area; surrounding land use; and easements, title and agency works.

Maps will be prepared which show governmental jurisdictions within a one-mile radius, and within a five-mile radius of the site at the scales required by DEP guidelines. Land use and land cover information will be mapped using the Florida Land Use and Cover Classification System (FLUCCS), or equivalent, Level II data. In addition, any of the following areas located within a five-mile radius of the site will be identified on a map of 1:126,720 scale:

- National Parks;
- National Forests;
- National Wildlife Refuges;
- National Wilderness Areas;
- National Memorials or Monuments;
- Roadless Area Review and Evaluation Areas (RAREs);
- National Wild and Scenic Rivers;

- Areas of Critical State Concern;
- Conservation and Recreation Lands (CARLs);
- Save Our Rivers Lands;
- State Archaeological Landmarks or Landmark Zones;
- Properties listed on or nominated to the National Register of Historic Places;
- State Outstanding Florida Waters;
- State Scenic and Wild Rivers;
- Parks;
- Special Management Areas; and
- Major Private Landholdings for Environmental Protection.

A larger scale map (1:24,000) will indicate any of the areas listed above within a one-mile radius of the project site.

The aesthetics of the site are expected to improve. Changes in the appearance of the facility as seen from a key vantage point will be documented using an artist's rendering or photographic simulation.

3.8 TRAFFIC

Baseline traffic data to be collected will include current traffic counts, roadway classifications, current levels of service (LOS), projected traffic data, scheduled improvements, and adopted levels of service. These data will be collected from Wakulla County and the Florida Department of Transportation (DOT). The results of this data gathering effort will be presented in Section 2.2.7 of the SCA.

The impacts of construction on the transportation system will be evaluated based on the size of the workforce, the amount of truck traffic expected, information on occupancy rates of workers' vehicles, the number of shifts expected to be used, and commuting patterns of the workforce. The impact on the area's road network will be evaluated based on data such as current traffic counts, projected traffic counts and the projected number of trips generated during construction of the project.

Trip generation will be based on construction traffic for the construction phase and will be determined using the ITE Trip Generation Manual (latest edition) or other accepted data. The study area boundary will be delineated by the degree of traffic distribution required by typical traffic impact studies in the applicable jurisdiction. Wakulla County typically requires traffic to be traced until the traffic loading is less than three percent of the service volume at the adopted LOS. For example, a 700-vehicle per hour roadway would require trips to be traced from the site until fewer than 21 peak hour trips remain on that particular roadway section. Leon County requires one percent of the capacity to be traced from the site, thus requiring seven trips or more to be accounted for on the same type roadway.

To the extent the existing Purdom workforce is present during construction, they will be added to the daily and peak hour estimates of trips to and from the site. For the operational phase which follows construction, the permanent workforce at the plant is expected to be reduced from pre-construction levels. Therefore, the long-term impact to the roadway system due to the project is expected to be reduced from the current level.

Level of service analyses will be performed based on the Florida DOT LOS Manual. Standard look-up tables will be used unless more detailed analysis becomes necessary. The more detailed analysis will be performed using the computer programs provided with the Florida DOT LOS Manual. Level of service standards will be those identified in the Comprehensive Plan for each jurisdiction. Work programs for the implementing agencies of Florida DOT, Leon County and Wakulla County will be reviewed to determine all planned capital improvements to the area roadway system.

3.9 ASSOCIATED LINEAR FACILITIES

3.9.1 Electric Transmission Line

No new transmission lines are required to be constructed for the project. Only an upgrade of the existing lines connecting the Purdom Station to Tallahassee will be necessary. The upgrade will involve the replacement of the existing conductor with a new, larger diameter conductor. Although certification is unnecessary, SCA Section 6.1 will provide a description of the activities required to make this change and document compliance with Chapter 62-814 F.A.C. regarding electric and magnetic fields. Noise levels generated by the line in both decibel (dB) and A-weighted decibel (dBA) scales will also be presented.

3.9.2 Reclaimed Water Pipeline

The project will entail the construction of a reclaimed water pipeline from the St. Marks Water Treatment Plant to the power plant site. The pipeline will be about 0.9 miles in length.

A general description of the project will be presented. Topics discussed will include:

- Project purpose;
- Termination points;
- Width of right-of-way needed; and
- Pipeline capacity.

Information provided by this discussion will be incorporated into SCA Section 6.2.

The preferred pipeline route will be delineated on a 1:4,800 base map. Major geographic features will be shown on the map including communities and major water courses. Results of these discussions and the map will be presented in SCA Section 6.2.

Pipeline design characteristics will be described, including line capacity and typical pipeline design parameters and geometry. Illustrations of typical pipeline structures will be presented. No new access roads will be needed.

The socio-political environment of the corridor area will also be presented in the SCA within Section 6.2. Easements or title which must ordinarily be obtained from any government agency will be identified. Known scenic, cultural or natural landmarks in the preferred corridor and within one-half mile will be shown on the 1:4,800 scale maps. Text discussions characterizing these areas will be presented. Bio-physical environmental considerations of the corridor area will be presented.

The quantity of land to be disturbed by construction will be estimated. Typical steps in construction will be discussed, including right-of-way preparation, trench excavation, and installation. Special construction techniques or practices to be employed in sensitive areas will also be identified and described. Potential erosion problems associated with construction activities will be discussed along with mitigation measures which would be used as necessary to prevent water quality degradation.

Descriptions of the types and quantities of solid wastes generated by right-of-way preparation and pipeline construction will be presented. Methods of disposal such as mulching, burning, and site removal will be discussed.

Project construction impacts on ecological resources will be limited because roads and other disturbed areas will be used. If applicable, based on the route proposed for certification, discussions will include terrestrial, wetland, and aquatic ecology impacts on important species. The focus will be on any significant habitat change which may be brought about by clearing of vegetation and pipeline placement. The potential impact of pipeline construction and right-of-way preparation on human populations and their proximity to the preferred corridor will be discussed. General discussions regarding inconveniences to traffic and other local functions will be provided.

3.9.3 Natural Gas Pipeline Lateral

Expansion of the existing natural gas pipeline lateral supporting the site will be permitted by the Florida Gas Transmission Company. Although certification of the existing Florida Gas Transmission right-of-way is unnecessary, SCA Section 6.1 will provide a general description of the anticipated pipeline expansion and its impacts.

4.0 QUALITY ASSURANCE PROGRAM

A Quality Assurance (QA) Program will be designed and implemented to meet the specific needs of the Purdom Unit 8 Project. This QA Program will be developed to establish the guidelines for licensing and field sampling and monitoring activities performed during site certification activities. The program will meet Federal, State, and local requirements. The objectives and elements of the QA Program are summarized below. A detailed QA Program will be developed and expanded as the scope of the technical procedures evolve.

4.1 PROGRAM OBJECTIVES

The QA Program is designed and will be administered to meet the following objectives:

- Ensure that administration of the QA Program is supportive of licensing requirements, yet independent of the project management, thus guaranteeing that QA standards are not compromised when meeting project deadlines or other objectives;
- Ensure that the project team properly follows the established lines of authority and responsibility;
- Ensure that all project personnel are properly qualified to perform their assigned tasks;
- Ensure that data collected in field activities are obtained and documented by proper methods and procedures;
- Ensure that information developed for use in permit and license documents is appropriately prepared, reviewed, and filed;
- Ensure that sample analysis is performed by a laboratory with a DEP-approved Comprehensive QA Plan (the City of Tallahassee analytical laboratory has such a CompQAP); and
- Ensure that site development and engineering activities are conducted in accordance with accepted standards and procedures including reviews, checks, and approvals.

4.2 PROGRAM ELEMENTS

To achieve the stated objectives, the QA Program consists of both comprehensive and project-specific DEP Quality Assurance Plans.

The DEP Quality Assurance Rule (Chapter 62-160, F.A.C.) requires that a Comprehensive QA Plan (CompQAP) describe all sampling and analysis capabilities of an organization which are pertinent to DEP programs and rules. Foster Wheeler Environmental and the City of Tallahassee analytical laboratories both have approved CompQAPs. Raytheon Engineers & Constructors has submitted a CompQAP to DEP Quality Assurance Section and is awaiting approval. A QA Project Plan (QAPP) will be submitted in compliance with Section 62-160.300 (9)(c), F.A.C., which requires a QAPP for sampling and analysis activities for special surface water studies such as those to be conducted during preparation of an SCA. The QAPP will be prepared to reflect limitations and requirements of the PPSA and this POS.

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APPENDIX A
SITE CERTIFICATION APPLICATION CROSS-REFERENCE

The following SCA format is based on the 1983 Instruction Guide for Certification Applications DEP Form 62-1.211(1). SCA chapters and sections are cross-referenced below to appropriate POS sections.

SCA Chapter/Section and Title	*Cross-Reference to POS Section*
1.0 Need for Power and the Proposed Facilities	1.2
2.0 Site and Vicinity Characterization	1.5
2.1 Site and Associated Facilities Delineation	1.5
2.2 Sociopolitical Environment	2.3, 3.7
2.2.1 Governmental Jurisdictions	3.7
2.2.2 Zoning and Land Use Plans	3.7
2.2.3 Demography and Ongoing Land Use	3.7
2.2.4 Easements, Title, Agency Works	3.7
2.2.5 Regional, Scenic, Cultural and Natural Landmarks	3.5, 3.7
2.2.6 Archeological and Historic Sites	3.5, 3.7
2.2.7 Socioeconomics and Public Services	2.3, 3.7, 3.8
2.3 Biophysical Environment	2.0, 3.0
2.3.1 Geohydrology	3.2
2.3.2 Subsurface Hydrology	3.2
2.3.3 Site Water Budget and Area Users	2.2, 3.1
2.3.4 Surficial Hydrology	2.2, 3.1
2.3.5 Vegetation/Land use	2.4, 3.4
2.3.6 Ecology	2.2, 2.4, 3.3, 3.4
2.3.7 Meteorology and Ambient Air Quality	2.1
2.3.8 Noise	3.6
2.3.9 Other Environment Features	3.0
3.0 The Project and Directly Associated Facilities	1.0
3.1 Background	1.5
3.2 Site Layout	1.5.2
3.3 Fuel	1.5.2
3.4 Air Emissions and Controls	1.5.2.2
3.4.1 Air Emission Types and Sources	1.5.2.2
3.4.2 Air Emission Controls	1.5.2.2
3.4.3 Best Available Control Technology	1.5.2.2
3.4.4 Design Data for Control Equipment	1.5.2.2
3.4.5 Design Philosophy	1.5.2.1, 1.5.2.2
3.5 Project Water Use	1.5.2.3
3.5.1 Heat Dissipation System	1.5.2.3
3.5.2 Domestic/Sanitary Wastewater	1.5.2.3
3.5.3 Potable Water Systems	1.5.2.3, 1.5.2.5
3.5.4 Process Water Systems	1.5.2.3, 1.5.2.5

SCA	*Chapter/Section and Title*	*Cross-Reference to POS Section*
	3.6 Chemical and Biocide Waste	1.5.2.5
	3.7 Solid and Hazardous Waste	1.5.2.4, 3.1
	3.7.1 Solid Waste	1.5.2.3, 3.1
	3.7.2 Hazardous Waste	1.5.2.3, 1.5.2.4
	3.8 On-Site Drainage System	1.5.2.4
	3.9 Materials Handling	1.5.2.4
4.0	Effects on Site Preparation, and Project and Associated Facilities Construction	2.0, 3.0
	4.1 Land Impact	2.0, 3.0
	4.1.1 General Construction Impacts	2.0, 3.0
	4.1.2 Roads	3.8
	4.1.3 Flood Zones	2.2, 3.1
	4.1.4 Topography and Soils	3.2
	4.2 Impact on Surface Water Bodies and Uses	2.2
	4.2.1 Impact Assessment	2.2.3, 3.1
	4.2.2 Measuring and Monitoring Programs	2.2, 3.1
	4.3 Groundwater Impacts	3.2
	4.4 Ecological Impacts	2.2, 2.4, 3.3, 3.4
	4.5 Air Impact	2.1.3
	4.6 Impact on Human Populations	2.3, 3.5, 3.6, 3.7, 3.8
	4.7 Impact on Landmarks and Sensitive Areas	3.7
	4.8 Impact on Archeological and Historic Sites	3.5
	4.9 Special Features	3.7
	4.10 Benefits from Construction	2.3, 3.7
	4.11 Variances	See Note 1
5.0	Effects on Project Operation	2.0, 3.0
	5.1 Effects of the Operation of the Heat Dissipation System	See Note 2
	5.1.1 Temperature Effect on Receiving Body of Water	2.2.3
	5.1.2 Effects on Aquatic Life	2.2, 3.3
	5.1.3 Biological Effects of Modified Circulation	2.2, 3.3
	5.1.4 Effects of Offstream Cooling	2.2.3, 3.3
	5.1.5 Measurement Program	2.2.3
	5.2 Effects of Chemical and Biocide Discharges	See Note 2
	5.2.1 Industrial Wastewater Discharges	2.2.3
	5.2.2 Cooling Tower Blowdown	2.2.3
	5.2.3 Measurement Programs	2.2.3
	5.3 Impacts on Water Supplies	2.2, 3.1, 3.2
	5.3.1 Surface Water	2.2, 3.1
	5.3.2 Groundwater	3.2
	5.3.3 Drinking Water	2.2, 3.2
	5.3.4 Leachate and Runoff	3.1
	5.3.5 Measurement Programs	3.1

SCA Chapter/Section and Title			*Cross-Reference to POS Section*
	5.4	Solid/Hazardous Waste Disposal Impacts	1.5.2.3, 3.1, 3.2
		5.4.1 Solid Waste	1.5.2.3, 3.1, 3.2
		5.4.2 Hazardous Waste	3.1, 3.2
	5.5	Sanitary and Other Waste Discharges	See Note 2
	5.6	Air Quality Impacts	2.1, 2.4, 3.4
	5.7	Noise	3.6
	5.8	Changes in Non-Aquatic Species Populations	2.2, 3.4
	5.9	Other Project Operation Effects	2.0, 3.0
	5.10	Archeological Sites	3.5
	5.11	Resources Committed	2.0, 3.0
	5.12	Variances	See Note 1
6.0	Linear Facilities		3.9
	6.1	Electric Transmission Line	3.9.1
	6.2	Reclaimed Water Pipeline	3.9.2
	6.3	Natural Gas Pipeline Lateral	3.9.3
7.0	Economic and Social Effects of Project Construction and Operation		2.3
	7.1	Socioeconomic Benefits	2.3
	7.2	Socioeconomic Costs	2.3
		7.2.1 Temporary External Costs	2.3
		7.2.2 Long-Term External Costs	2.3
8.0	Site and Design Alternatives		See Note 3
9.0	Coordination		See Note 4
10.0	Appendices		
	10.1	Federal Permit Applications or Approvals	
		10.1.1 316 Demonstrations	See Note 5
		10.1.2 NPDES (Stormwater) Application/Permit	See Note 5
		10.1.3 Hazardous Waste Disposal Application/Permit	See Note 5
		10.1.4 Section 10 or 404 Application/Permit	See Note 6
		10.1.5 Prevention of Significant Deterioration Application/Permit	See Note 7
		10.1.6 Coastal Zone Management Certifications	See Note 5
		10.1.7 Federal Aviation Administration	See Note 8
	10.2	Zoning Descriptions	3.7
	10.3	Land Use Plan Descriptions	3.7
	10.4	Existing State Permits (including NPDES (Industrial))	1.5.3
	10.5	Monitoring Programs	2.0, 3.0
	10.6	Mathematical Calculations	2.0, 3.0

1. If known at the time of application, any anticipated variance from applicable standards will be discussed in the SCA, with appropriate justification. None are currently anticipated
2. The Purdom Unit 8 Project will not discharge wastewater or cooling water to waters of the State or the U.S. The heat dissipation system is a zero discharge system.

3. Current project plans do not involve permits or activities which are expected to require an Environmental Impact Statement under the National Environmental Policy Act (NEPA). Therefore, there is no need to present analysis of alternatives required by NEPA, and there will be no such presentations in either this POS or the SCA.
4. A record of government communications will be made and will form the basis of this section of the SCA.
5. Any Federal permit application or approved documentation will be contained in this Appendix. If a particular permit is not required, a statement to that effect will be contained in this Appendix.
6. A Section 404 permit application will be included if any wetland under the jurisdiction of the U.S. Army Corps of Engineers is to be affected. No permitting under Section 10 is anticipated.
7. A Prevention of Significant Deterioration (PSD)/Title V Operating Permit application will be prepared and included as an Appendix to the SCA. Its format and content will be in accordance with DEP guidelines. Information on background air quality, air quality impact assessment techniques, and air pollution control technology, as described in POS Section 2.1 will provide input to the PSD permit application.
8. An FAA Notice of Proposed Construction or Alteration may be required for the proposed stack; if so, a copy of the notice will be included here.

APPENDIX B

AIR QUALITY MODELLING PROTOCOL

Introduction

The development of and agreement on a modelling protocol is suggested by U.S. Environmental Protection (EPA) and the Florida Department of Environmental Protection (DEP) prior to embarking on any major air quality modelling exercise. This protocol describes, in some detail, the models (and model options) which will be used, the meteorological and emissions data which will be input to the model, the receptor grids which will be utilized, and the analyses which will use the model results. Unlike the remainder of this Plan of Study, this modelling protocol is being submitted for formal DEP approval.

Netting Analysis

The proposed project will be a major modification of a major existing source for the criteria pollutants. In accordance with Rule 62-212.400, F.A.C., and the Draft New Source Review Workshop Manual (EPA, 1990), a modification is subject to PSD review only if the net emissions increase of any pollutant emitted by the source, as a result of the modification, is "significant." Typically, this means that the net emissions increase is greater than the PSD Significant Emission Rates (Table 212.400-2 in 62-212.400 F.A.C.). However, since the Purdom Plant is within 10 km of a Class I area, any net increase in a regulated pollutant which will cause an increase of 1 $\mu g/m^3$ (24-hour average) in the Class I area is considered significant. Prior to commencing the modelling analysis described in this protocol, a netting analysis will be conducted in accordance with the procedures in the PSD Workshop Manual. The PSD regulations indicate that modelling analyses need to be conducted for only those pollutants with significant net increases resulting from the modification. However, in the interest of providing a more complete picture of project impacts, the City of Tallahassee intends to model the proposed project impacts for all PSD regulated pollutants and Florida Draft Ambient Reference Concentrations (FARCs) for which the project will have quantifiable emissions.

General Modelling Approach

General Modelling Approach - The air quality impact assessment will consist of a proposed source significant impact area analysis, a PSD increment consumption analysis, an ambient air quality standards impact analysis, and an additional impacts analysis. In addition, the need for ambient monitoring will be evaluated. These analyses are discussed in greater detail below. The modelling approach will follow EPA and DEP modelling guidelines for determining compliance with applicable PSD increments and ambient air quality standards (AAQS). EPA modelling guidance is provided in the Guideline on Air Quality Models (40 CFR 51, Appendix W) as well as the Draft New Source Review Workshop Manual (EPA, 1990). DEP guidance on conducting the analyses is provided in Rule 62-212.400 F.A.C.

Based on current EPA and DEP policies, the highest annual average and highest second-high short-term (i.e., 24 hours or less) predicted concentrations (critical concentrations) will be selected for comparison to applicable AAQS and PSD increments. However, the highest short-term predicted concentrations will be used for comparison to significance levels. The use of a

five-year meteorological data base in the modelling analysis, as proposed below, allows a comparison of the predicted highest second-high short-term concentration to applicable short-term PSD increments and ambient air quality standards. The highest second-high concentration is calculated for a receptor field by:

- Eliminating the highest concentration predicted at each receptor;
- Identifying the second-high concentration predicted at each receptor; and
- Selecting the highest concentration among those second-high concentrations.

This approach is consistent with the air quality standards and PSD increments which permit one short-term average exceedance per year at each receptor.

The general modelling approach for each air quality impact analysis will commence with a significant level impact phase. Then, if indicated, screening and refined multi-source modelling phases will be conducted for those pollutants having a significant impact. The major difference between the two latter phases is the receptor grid used when predicting concentrations and the number of meteorological data periods evaluated. In general, concentrations for the screening phase will be predicted using a coarse mesh receptor grid and a five-year meteorological data base. The screening phase will identify the critical receptors associated with the highest and highest second-high short-term concentrations for all applicable pollutants and averaging periods. The predicted concentrations at those critical receptors will be evaluated in greater detail in the refined phase of the analysis.

The refined phase of the analysis will be performed by predicting concentrations using a fine mesh receptor grid centered over each of the critical receptors identified in the screening phase of the modelling analysis. Several critical receptors will be evaluated for each year of meteorological data containing the meteorological conditions which caused the critical concentrations identified in the screening phase analysis. This approach will be used to ensure that valid highest second-highest (critical) short-term concentrations will be obtained for comparison to applicable air quality standards and PSD increments.

Model Selection and Use

The most current version of Industrial Source Complex (ISC) dispersion model will be used to evaluate the emissions from the proposed units. As of the date of this protocol, this is ISC3 (Version ~~9525~~96113). This model has been downloaded from the EPA Technology Transfer Network (TTN), Support Center for Regulatory Air Models (SCRAM) bulletin board. The model and its use are covered in ~~a~~the Users Guide (EPA, 1995a). The ISC3 model was selected primarily for the following reasons:

1. EPA and DEP have approved the general use of the model for air quality dispersion analysis because the model assumptions and methods are consistent with those in the Guideline on Air Quality Models.
2. The ISC3 model is capable of predicting the impacts from stack, area, and volume sources that are spatially distributed over large areas and located in flat or gently rolling terrain.

3. The results from the ISC3 model are appropriate for addressing compliance with AAQS and PSD increments since the model can predict the highest as well as the highest second-high concentration and period of occurrence for 1-hour, 3-hour, 8-hour and 24-hour averaging periods at each receptor for each full year of hourly meteorological data used. The short-term or long-term versions of the ISC3 model can be used for annual averages.

4. The ISC3 model has several options and features that allow it to handle certain situations in a variety of ways. For this analysis, the EPA regulatory default options will be used to predict the maximum impacts from the facility.

Area Classification

The ISC3 model has rural and urban options which affect the wind speed profile exponent law, dispersion rates, and mixing-height formulations used in calculating ground-level concentrations. The criteria used to determine when the rural or urban mode is appropriate are based on land use near the proposed plant's surroundings (Auer, 1978). If the land use is classified as heavy industrial, light-moderate industrial, commercial, or compact residential for more than 50 percent of the area within a 3 km radius circle centered on the proposed source, the urban option should be selected. Otherwise, the rural option is more appropriate.

Based on the use of USGS topographic maps, it has been preliminarily concluded that the land use is consistent with the use of the rural rather than urban options.

GEP Stack Height/Downwash Considerations

If the stack for the proposed unit or existing units are less than Good Engineering Practice (GEP), then the potential for building downwash based upon the dimensions of nearby buildings must be considered in the modelling analysis. The procedures used for addressing the effects of building downwash are those recommended in the ISC3 Dispersion Model User's Guide and are incorporated into the ISC3 model. The effective height and effective width of structures are input to the model and are used to modify the dispersion parameters. The Unit 8 stack is planned for GEP height; however, the stacks of the existing units are believed to be less than GEP.

The possibility of on-site structures influencing off-site concentrations due to the structures creating a cavity recirculation region will be evaluated. The first level of screening will be performed to determine if a structure is within 3H of the property line (where H = structure height). Structures greater than 3H from the property line are not expected to have an off-site cavity. Structures which are within 3H of the property line will be further evaluated using the method presented in the SCREEN3 Model User's Guide (EPA, 1995b) to determine the cavity height, length and concentration. The results of these calculations will be used in subsequent analyses.

Plant Loads/Ambient Temperatures

Operating load can affect emission parameters, and therefore ground-level impacts, because exit temperature and velocity change along with source emission rate. Three Unit 8 operating load cases will be analyzed before the significant impact area analysis using ISC3 and one year of meteorological data. These loads will be selected to cover the range of normal plant operations (probably ~~60%~~55%, ~~80%~~75% and 100%). The Unit 8 load case shown in the analysis to cause

the highest impacts will be used in the subsequent analyses. The new unit will also be modelled at three ambient temperatures (20°F, 59°F and 95°F) to determine which produces the highest impacts. Thus, with three loads and three ambient temperatures to consider, a matrix of at least nine cases will be evaluated.

Meteorological Data

The air quality modelling analysis will use hourly preprocessed National Weather Service (NWS) surface meteorological data from Tallahassee, Florida and concurrent twice-daily mixing heights from Apalachicola, Florida for the years 1985 to 1989. These are the locations and years recommended by DEP. The preprocessed hourly meteorological data file for each year of record used in the analysis obtained from DEP will contain randomized wind direction, wind speed, ambient temperature, atmospheric stability using the Turner (1970) stability classification scheme, and mixing heights. The anemometer height of 6.7 meters, to be used in the modelling analysis, was obtained from NWS Local Climatological Data summaries for Tallahassee.

Emission Inventory

Emissions and stack parameters of the proposed project for the significant impact area analysis as well as subsequent analyses will be generated from the most current engineering information available at the time the modelling is performed. Emissions data will be obtained for SO_2, NO_x, PM_{10}, lead (Pb) and CO.

For those pollutants for which the project will have a significant impact, it will be necessary to consider other sources in the AAQS and PSD increment consumption analyses. The sources to be considered will be determined in accordance with guidance in EPA's Guideline on Air Quality Models and Draft New Source Review Workshop Manual. Sources located beyond the significant impact area of the proposed source will be screened based on the "Screening Threshold" method (North Carolina DNR, 1985) to determine whether they should be included in the modelling analysis. Source information will be obtained from DEP and from other recent air quality modelling studies for the area. Maximum allowable emission rates will be used in all modelling analyses involving other sources (and the existing Purdom units). A listing of sources in the inventory will be submitted to DEP for review and concurrence prior to the initiation of any detailed multi-source modelling effort. Existing sources will be categorized as increment consuming PSD sources, PSD increment expanding sources, or non-PSD affecting sources depending upon whether their emissions have increased or decreased from their "baseline" emissions and whether they commenced construction before or after the PSD baseline date for the area, which also will be obtained from DEP.

Stacks which have similar emission parameters will be modelled as co-located sources to simplify the analysis. Further, stacks which have similar stack gas compositions will be modelled using a unit emission rate and the results scaled to get the impacts for each separate pollutant.

Receptor Locations

Receptors will be placed at locations considered to be "ambient air," which EPA has defined as "that portion of the atmosphere, external to buildings, to which the general public has access" [40 CFR 50.1(e)]. All of the site will not be ambient air because access to it is restricted. Therefore, the closest receptors will be on the site property lines. A plot plan showing the plant boundary

and areas where public access is precluded will be provided, as will a description of the measures taken to prohibit public access (e.g., fences, signs along the river).

The significant impact area analysis will use a polar receptor grid centered over the proposed source. The polar receptor grid will consist of 36 radials, each separated by 10 degree increments and extending out from the plant boundary line in all 36 directions. The length of the radials will depend upon the distance at which the proposed source impacts reach the significant impact levels as defined for each applicable pollutant in the PSD regulations, but will be no more than 50 km.

The screening phase for the air quality impact analysis will use a coarse mesh polar receptor grid (0.50 km distance between rings with radials spaced 10 degrees apart out to 6 km and then at 1.0 km spacing out to at least 10 km) centered over the proposed source. The receptor grid will begin coverage at the plant boundary line and extend outward in all directions. The receptor grid will provide sufficient receptor coverage to determine the locations of all critical concentration receptors to be evaluated in the refined phase of the analysis.

The refined phase of the air quality impact analysis will use a fine mesh cartesian receptor grid (0.10 km grid resolution) composed of 121 discrete receptors within a 1.0 km square grid centered over each critical receptor.

The Class I areas will be modelled using receptors locations provided by and/or approved by DEP. This receptor set will include receptors spaced 75 meters apart on the northern most boundary of the St. Marks Wilderness Area. After the screening modelling, additional receptors will be placed at 15 meter intervals (four on each side of the maximum impact location to ensure that the maximum concentration and its location are identified.

Background Concentrations

To analyze impacts relative to AAQS, estimates of background pollutant concentrations will be needed. Background concentrations should include contributions from sources not included in the modelling analyses as well as contributions from natural sources. Since it is anticipated that no on-site monitoring program will be required, background concentrations will be obtained from DEP.

The Guideline on Air Quality Models provides some guidance regarding the determination of background concentrations. The data collected as part of the DEP monitoring network will be interpreted following this guidance. For pollutants not monitored in the area, recommendations regarding representative background concentrations will be obtained from DEP.

Proposed Analyses

Proposed Source Significant Impact Area Analysis - The proposed project will be modelled using the SO_2, NO_x, PM_{10}, and CO emissions data discussed above. The significant impact area will be defined on a pollutant-specific basis for all applicable averaging periods according to the significant impact levels defined in the PSD regulations. Highest rather than highest second-high short-term values will be used in this analysis. The greatest significant impact area resulting from an analysis of all applicable averaging periods for a given pollutant will be the significant impact

area for that pollutant. The significant impact area will be used to determine the source interaction zone for the screening phase of the air quality impact analysis.

Ambient Air Monitoring Requirements Analysis - The results of the significant impact area analysis will be compared to "de minimis" monitoring concentrations in Table 212.400-3 in Rule 62-212.400 F.A.C. to determine if ambient air monitoring is required or if a monitoring exemption will be granted. While the City of Tallahassee does not anticipate the need for ambient air monitoring, a monitoring plan will be prepared if the modelling results demonstrate a need.

PSD Increment Consumption Analysis

The Purdom Site is in a Class II PSD area. However, two Class I areas are located nearby, the St. Marks Wilderness Area (as close as 0.875 km south, southeast, and southwest of the site) and the Bradwell Bay Wilderness Area (28 km west of the site). The next closest Class I areas are the Okefenokee Wilderness Area in Georgia (about 170 km east-northeast of the site) and the Chassahowitzka Wilderness Area in Florida (about 200 km southeast of the site); these are too far away to warrant consideration in the analysis. The Class II PSD increment consumption analysis will consist of modelling the PSD source inventory for those PSD pollutants projected to have a significant off-site impact using the ISC3 model and comparing the highest second-highest short-term average and highest annual average impacts to the appropriate Class II PSD increments. For the Class I PSD increment consumption analysis, the ISC3 model will be used to assess whether the net proposed project impact will be "significant," with significance defined both by the EPA in the recently proposed New Source Review Reform Regulations (61 FR 38,249, dated July 23, 1996) and by the National Park Service/Fish and Wildlife Service. ~~If the net proposed project impacts are predicted to be significant,~~ Regardless of the results of this assessment, the City of Tallahassee will conduct multi-source modelling using an agreed upon inventory of sources whose emissions would impact the Class I areas for the pollutant or pollutants of concern.

Ambient Air Quality Standards Impact Analysis - The area around the Purdom site is attainment or unclassifiable for all of the criteria pollutants. The ambient air quality standards impact analysis will consist of modelling all appropriate (permitted) and existing sources identified on the emissions inventory for each criteria air pollutant (SO_2, NO_2, CO, PM_{10}, and Pb) for which the proposed project will have a significant impact. The highest second-high short-term and highest annual average impacts will be combined with appropriate background concentrations for each applicable air pollutant and averaging time and compared to the appropriate state and federal ambient air quality standards to determine whether the ambient air quality standards are exceeded. The background concentrations for each applicable air pollutant will be determined using the procedures described above. No modelling of proposed project impacts on ozone (O_3) concentrations is planned as it is not considered to be feasible for single source impact analysis.

Additional Impacts Analysis -Additional impacts analysis will be performed for those criteria and non-criteria PSD regulated air pollutants emitted in significant quantities to determine air pollution impacts on soils and vegetation caused by emissions from the proposed project and emissions resulting from associated growth. Specifically, a growth projection analysis including population growth projection and industrial growth project data will be performed. The impacts

of this growth on air quality will be estimated. Modelled concentrations and/or depositions will be used to determine if there will be any significant impacts on soils or vegetation. The need for an Air Quality Related Values (AQRV) analysis for the St. Marks and Bradwell Bay Wilderness Areas will be determined after further discussions with the DEP and the Federal Land Managers. A screening (level-l) visibility impact analysis will be conducted for the nearest Class I areas using the technical guidance provided in the Workbook for Plume Visual Impact Screening and Analysis (EPA, 1988b). A Background Visual Range of 65 km will be used for this analysis. Should the results of the Level-1 screening analysis indicate a visible plume, additional discussions will be held with DEP and the Federal Land Managers on the need for additional analyses.

FARC Analysis

The analysis of hazardous air pollutants (HAPs) will follow the DEP guidelines. The maximum impacts from the proposed project for those HAPs regulated under the Clean Air Act Amendments and on the DEP Draft FARC list will be predicted and compared with the guidelines.

References

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Florida Department of
Environmental Protection

Memorandum

TO: Power Plant Siting Review Committee

FROM: Buck Oven, Siting Coordination Office BSO

DATE: November 12, 1996 97-36 ?

SUBJECT: Purdom Unit 8, PA 96-35, Module 8046
Proposed Plan Of Study

Attached please find a copy of the City of Tallahassee's responses to comments on their proposed Plan of Study (POS) to prepare an application for certification of a new generating system at the Purdom Power Plant. Please review and comment on the POS and return your comments as soon as practical but no later than December 9, 1996.

Attach:

To: Cleve
Marty

As Kim E-Mailed earlier please look over Tallahassee Purdom 8 POS and send any comments to Buck through me.

Thanks
Al

CITY OF TALLAHASSEE

CITY HALL
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JOHN PAUL BAILEY
Commissioner
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Commissioner
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Commissioner

STEVEN C. BURKETT
City Manager
ROBERT B. INZER
City Treasurer-Clerk

JAMES R. ENGLISH
City Attorney
RICARDO FERNANDEZ
City Auditor

November 6, 1996

Certified Mail #P230 286 978

Mr. Hamilton S. Oven, Jr.
Siting Coordination Office
Department of Environmental Protection
2600 Blair Stone Road MS480
Tallahassee, FL 32399

Dear Mr. Oven:

Subject: Purdom Unit 8 Project
Responses to Comments of the Proposed Plan of Study and Air Quality Modelling Protocol

Thank you for forwarding agency comments on the Proposed Plan of Study and Air Quality Modelling Protocol which we distributed to you and others during our meeting of September 10, 1996. We have discussed the comments with various individuals at the various agencies and have modified the Plan of Study accordingly. Attached please find a compilation of the comments received and our responses to them. In many cases, agencies had no comments.

Also attached are ten copies of the Final Plan of Study and Air Quality Modelling Protocol for your use and distribution. This document reflects the revisions made in response to the agency comments received, as well as minor editorial or clarifying changes. Revisions are clearly marked for your convenience. Although we have not requested a formal Binding Written Agreement, we believe that we now have agency concurrence on the studies which we will perform. This revised document will form the basis of our approach to preparing the Site Certification Application.

Please call me at (904) 891-8850 should you have any questions on either attachment. We would be pleased to meet with you or any other agency personnel at any time to clarify the project plans or our approach to the SCA.

Sincerely,

Jennette Curtis

Jennette Curtis
Environmental Administrator

Attachments

JC/ns

cc: Department of Transportation
Department of Community Affairs
U.S. Fish & Wildlife Service
Northwest Florida Water Management District
Apalachee Regional Planning Council
Game and Fresh Water Fish Commission
Department of State
Wakulla County
U. S. Forest Service
City of St. Marks
Leon County

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PURDOM UNIT 8
PLAN OF STUDY COMMENTS/RESPONSES

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - AIR QUALITY

Comment:

The Bureau of Air Regulation has conducted a preliminary review of the Proposed Plan of Study (POS) and Air Quality Modelling Protocol for the planned Purdom Unit 8 Project Site Certification and PSD Permit application. Based on the information received, it appears that the POS insures that all of the key concerns which we foresee will be addressed.

Response:

No response or changes to the POS required.

Comment

The approach to a determination of Best Available Control Technology (BACT) for nitrogen oxides (NO_x) from the combustion turbine appears sound. Our most recent BACT emission limits have ranged from 12-15 parts per million. We understand that the City is working with the turbine manufacturer to achieve even lower emissions. This will result in relatively low NO_x emissions, which are less than the emissions from the existing units during recent years, and will establish limits where there are presently none. Similarly, with respect to sulfur dioxide (SO_2), the use of clean fuels will insure that emissions remain below those of recent years and will reduce the permitted limits by roughly 99 percent. Our view of the project with respect to the rest of the pollutants is similar although we understand that emissions of carbon monoxide and particulate matter will increase but will be permitted at levels well below existing limits.

Response:

No response or changes to the POS required.

Comment:

We recommend that the City include in the POS a review of requirements under the Title IV Federal Acid Rain Program. These are given in Rule 62-214, F.A.C. and 40 CFR 72. In reviewing the POS, we also note that the request to set emission limits for SO_2 at 1.3 pounds per million Btu heat input ($lb/10^6$ Btu) for existing Units 5 and 6 cannot be accomplished under Title V.

Response:

The City has revised the POS to include a review of Title IV requirements. It is the City's intent to file a Title IV Acid Rain Permit application together with the SCA. With respect to the Title V requested SO_2 emission limit of 1.3 lbs/mmBtu, it is understood, based on a 10/15/96 meeting with DEP, that the emission limit can be accomplished through the Title V process.

Comment:

Attached are comments that we received from the Department of Interior Fish and Wildlife Service following the September 25 meeting and their review of the POS. These are consistent with what their representative from the Denver office stated at the meeting. We consider the

Modelling Protocol to be acceptable following incorporation of those comments into a revised POS.

Response:

Please see the attached responses to the individual comments from the U.S. Fish and Wildlife Services. As the City has addressed all of their comments, it is understood that the Modelling Protocol is now acceptable to the DEP.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - SITING

Comment:

Information on the length and location of the FGT natural gas line that has to be upgraded to serve the plant should be provided. While this work is not included in the siting application, the impacts of this work will be secondary impacts of the Purdom project and therefore needs to be identified and reviewed.

Response:

Expansion of the existing natural gas line will be permitted by the Florida Gas Transmission Company. SCA Section 6.1 will provide a general description of the anticipated pipeline expansion and its impacts including information, to the extent available, on the length and location of the line to be upgraded. No revision to the POS is required.

Comment:

The water quality standards identified to be used in the baseline survey included the freshwater standards for heavy metals. Sampling for heavy metals in the water column is usually done one foot above the bottom, which may be within the saltwater wedge in the river. Salinity should be checked at the same time and depth that the heavy metal samples are taken. Which standard to use for the data should be determined on the bases of the salinity.

If the salt wedge proves to be a distinct and relatively constant feature in the river, the applicant should consider doing baseline sampling both above and within the wedge.

Response:

The permitting history of the Purdom Station and F.A.C. 62-302.200(20) are quite consistent and clear that the "receiving" body of water is considered to be fresh water. As the intake will be near the surface, the sampling will be near the surface as well. Also, as a result of the zero discharge design, we expect to have no impact on the salt wedge. Thus, there is no need to revise the POS.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER QUALITY

Comment:

I see they are planning to use Hester-Dendy (HDs) samplers instead of the 20-dip net sweeps that we developed, this is probably because HDs are still in the rule. However, they might want to consider using the dip nets since we are moving to this gear type. We should check with Russ. I am not familiar with this kind of permitting scenario, but I wanted my comment to be put forth in case it proves relevant to the ones managing this project.

Response:

HD samples were collected during August 1996. At that time, no dip net sweeps were conducted and, due to the depths of the channel, there are only limited habitats available in which to conduct sweeps. Benthic macronivertebrates studies were based on studies previously conducted at the Purdom Plant and the St. Marks River by the FDEP, Dames & Moore and others. Typically, these studies did not include dip net sweeps. Currently, HD sample collections are required by the rule as the appropriate method for sampling benthic macroinvertebrates. As a result, there are no plans to include dip net sweeps in the Foster Wheeler Work Plan. If, at a later date, the State should require that dip net sweeps be conducted, these samples can be collected by field personnel at the site and shipped to us. No changes in the POS are required.

Comment:

I looked briefly at the Tallahassee proposal from the perspective of reuse. It probably will come as no surprise but I strongly support the use of reclaimed water for cooling purposes at the power plant.

Please note, that Part VII of Chapter 62-610, F.A.C. regulates industrial uses of reclaimed water from domestic wastewater sources. Current rules require only basic disinfection and secondary treatment for such a reuse activity. We are proposing to add the full Part III requirements (including filtration high-level disinfection, Class I reliability, minimum size, and others) for use of reclaimed water in open cooling towers. This will be part of the Phase II rulemaking which should be completed in early 1998. If this change is made in Phase II, it would apply to wastewater projects having complete permit applications submitted after the effective date of the Phase II revisions.

Response:

Should Part VII of Rule 62-610 F.A.C. be modified in the future, and should the modified rule be applicable to the project, the City would expect to be able to demonstrate that equivalent or superior treatment is being applied. For instance, discontinuance of dechlorination at the St. Marks Treatment Plant would result in greater disinfection than is currently achieved. In any case, no change to the POS appears warranted.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - SOLID WASTE

No comments.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - PROTECTED SPECIES

No comments.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - MARINE RESOURCES

No comments.

U.S. FISH AND WILDLIFE SERVICE - AIR QUALITY BRANCH

Comment:

Place modelling receptors at 75-meter intervals along the nearest Class I area boundary (boundary length approximately 1.8 km) for all analyses. After initial screening identifies the receptor with the maximum concentration value, bracket this receptor with additional receptors at 15-meter intervals (four on each side) to pinpoint the maximum concentration value. We recommend this because of the proximity of the source to the Class I area boundary and the need, therefore, for ensuring the maximum concentration value and its location are identified.

Response:

The POS will be revised to include receptors at 75-meter intervals along the northern most boundary of the St. Marks Wilderness Area. Additional receptors will be placed around the receptor with the maximum impact (determined during the screening level modelling). These receptors will be spaced at 15-meter intervals (four on each side of the maximum impact receptor).

Comment:

Employ the FWS/National Park Service (NPS) significant impact levels to assess contribution to Class I increment consumption. FDEP has routinely required PSD applicants to apply these levels.

Response:

The City of Tallahassee does not agree that the FWS/NPS Significant Impact Levels (SILs) are the appropriate values to use for determining whether the project will have a significant impact on any Class I areas. The City believes that the Class I SILs proposed by the U.S. Environmental Protection Agency (EPA) in the July 23, 1996, Federal Register are more appropriate especially since it is understood that DEP has decided to use these EPA values in the ongoing Chassahowitzka Study. However, since the City plans to do multiple source modelling of Class I area impacts regardless of whether the project's impact are considered "significant", the importance of the question of which set of SILs to use is considerably diminished. Therefore, the POS has been modified to indicate that project impacts will be compared to both sets of SILs.

Comment:

Conduct a visible plume impact analysis using a background visual range at 65 km. When emissions estimates are finalized, consult with our office on the need for a regional haze analysis.

Response:

The visibility screen impact analysis will be conducted using VISCREEN and a background visual range of 65 km. The FWS will be provided with the final emission estimates when available.

Comment:

Consult with our office on the need for additional air quality related values analyses if final emissions estimates indicate that PSD review is required for pollutants besides PM and CO (i.e., sulfur dioxide, nitrogen oxides).

Response:

Although projected emission rates are not yet finalized, it is still the City's intent to "net out" for SO_2 and NO_x. However, for purposes of general understanding, the City would like to know the AQRVs which the Fish and Wildlife Service deems significant vis-à-vis SO_2 and NO_x emissions for the St. Marks Wilderness Area.

U.S. FISH & WILDLIFE SERVICE - ST. MARKS NWR

Comment:

As you know, the Purdom facility is not immediately connected to lands and waters of the St. Marks National Wildlife Refuge. The connection is only through air and water flow. The water connector, the St. Marks River, is State of Florida waters, so I will not presume to provide comments on the State's jurisdiction. I am comfortable that if the Purdom Unit 8 Project meets the State of Florida requirements for clean water, then the Refuge's interest through this water way will be protected. The same is basically true with Ellen Porter's clean air comments. If the Purdom Unit 8 Project satisfies Ms. Porter's clean air concerns/feedback, then St. Marks NW Refuge's concerns will have been addressed.

Other than clean air and water concerns, the Purdom Unit 8 project appears to be a neutral factor as far as St. Marks NW Refuge's concerned, and the Refuge will neither benefit or lose by its presence.

Response:

The project's zero discharge wastewater design will ensure that the State of Florida clean water requirements will be met. In fact, several wastewater streams currently discharging to the St. Marks River will be eliminated thus enhancing water quality. As indicated in other responses, the City has addressed Ellen Porter's [U.S. Fish & Wildlife Service air Quality Branch] clean air comments. No additional changes in the POS are required.

U.S. FOREST SERVICE

Comment:

As discussed earlier, the air quality related values (AQRV) of Bradwell Bay Wilderness, a CAA Class I area under Forest Service management, are fresh air (lack of odor) and vegetation. Upon learning that preliminary emission estimates project no net increase in emissions of sulfur or nitrogen, our concern regarding impacts on these values (AQRVs) diminished greatly.

Response:

No response or changes in the POS required.

Comment:

Even though visibility (regional haze) need not be considered as a Bradwell Bay AQRV, there is some concern regarding possible impacts of a plume from Purdom No. 8 that might be visible near the Wilderness. In as much as plume visual impact screening analysis must be done, regardless of the presence of a Class I area, I'd appreciate it if you would include a viewpoint within the Wilderness when you run the screening model. During the meeting, representatives of

the USDA Fish and Wildlife Service said their data showed that a background visual range of 65 km should be used in these screening models. We agree with that determination.

Response:

The Air Quality Modelling Protocol has been modified to indicate the use of a 65 km background visual range for visual plume screening. The visibility analyses will include a viewpoint in the Bradwell Bay Wilderness Area for your information.

Comment:

With earlier correspondence, we sent a copy of *Foliar Ozone Injury Surveys (1995) In National Forests in Alabama, Florida and Mississippi* (Chappelka, 1996). It reported only slight injury at Bradwell Bay, typical of the five years over which this inventory was repeated. During discussion of this topic, the presence of an ozone monitor, managed by the National Dry Deposition Network, near the town of Sumatra was mentioned. Data from this monitor may be helpful in evaluating rural ozone conditions in the Florida panhandle. Information from this ozone monitor may be obtained from Mr. Ralph Baumgardner, US-EPA, Office of Research & Development (919-541-4625).

Response:

The search for background air quality data will include a call to Mr. Baumgardner regarding the availability of ozone data from the Sumatra Area.

FLORIDA GAME AND FRESH WATER FISH COMMISSION

Comment:

The Office of Environmental Services of the Florida Game and Fresh Water Fish Commission has reviewed the referenced POS and finds that it adequately addresses fish and wildlife issues of interest to our agency.

Response:

No response or changes in the POS required.

APALACHEE REGIONAL PLANNING COUNCIL

Comment:

The Council staff has several issues of concern which should be addressed in the final study. First, it is the understanding of Council staff that the project is located in the floodplain of the St. Marks River. Discussion should be added concerning what will happen in the event of a flood. Similarly, the facility is located in a hurricane evacuation zone. The continued operation of the facility during and after a major storm should be addressed. For instance, are there circumstances in which the facility would close? What happens if access roads are unusable?

Response:

SCA Section 2.3.4 will address the 100-year flood levels at the site which is located in the flood plain. Section 3.8 will address the on-site drainage system and its performance during floods. The ability of the facility to operate during storms and/or floods will also be addressed in this section. Section 4.2 will discuss project impacts on flooding levels.

Comment:

Second, there is no discussion of what happens if there is a fire onsite. Will the town of St. Marks fire department need additional equipment? Will other area departments be called? Are there any special risks involved? Please add discussion of this concern to the study.

Response:

Since the Purdom Generating Station is an existing power plant, fire protection measures and equipment are already in place. Existing practices for fire protection and fire fighting at the plant will be described in Section 2 of the SCA. In addition, any further needs for equipment, cooperative service arrangements, etc. that could involve local governments or volunteer fire departments in the area will be identified and discussed in the SCA in Section 7.

Comment:

Council staff has already had discussions with Hall Planning and Engineering concerning the traffic study for this project. The proposed POS appears adequate. It also appears that sufficient information is proposed concerning potential impacts to the water quality of the St. Marks River and the air quality within the St. Marks National Wildlife Refuge.

Response:

No response or changes to the POS required.

FLORIDA DEPARTMENT OF TRANSPORTATION

Comment:

Map(s) showing the location of the Florida Gas Transmission Pipeline relative to the State Highway System (SHS), including locations where the pipeline will be enlarged, locations where the pipeline will cross the roadways and roadway rights-of-way and any locations where the pipeline will be replaced.

Response:

The existing gas pipeline system will be upgraded and will be permitted by the Florida Gas Transmission Company. Although not required, the SCA Section 6.1 will provide a general description of the anticipated pipeline expansion (which is expected to occur within the existing right-of-way) and its associated impacts including, to the extent available, the maps requested. No changes in the POS are required.

Comment:

If there are any SHS roadway or associated right-of-way crossings by the pipeline, please identify the method which will be used to install the pipeline in these locations. In addition, the traffic management plans to be used during this construction should be outlined.

Response:

Permitting of the natural gas pipeline upgrade will be handled by Florida Gas Transmission through the normal permitting procedures of the Florida Department of Transportation (FDOT), including submittal (as normally required by FDOT) of drawings and/or a description of pipeline installation methods and Traffic Control Plans called for in this comment. Florida Gas

Transmission is the best source of this information since they are quite experienced at pipeline construction in relation to road rights-of-way in Florida and will be directly responsible for the work. To the extent available from FGT at the time of SCA preparation, the requested information will be provided in the SCA.

With regard to the water reuse pipeline connecting the City of St. Marks' treatment plant to the Purdom Generating Station, it is expected that the pipeline will cross or use primarily local road rights-of-way within the City of St. Marks. Any state highway system, county or city road rights-of-way to be used or crossed for water reuse pipeline construction will be identified in the SCA. The SCA will also include a description of pipeline installation methods. Pipeline installation methods and traffic control plans will be in conformance with FDOT Traffic Control Plan Standards for state highway system road rights-of-way, if any are crossed or used. For local road rights-of-way crossed or used, construction plans will implement local permit requirements to ensure public safety and convenience.

Comment:

The height of the Unit and any attendant structures should be indicated in the description of the Unit and the relationship of these structures to the flight paths of any published approach to the Tallahassee Regional Airport should be defined.

Response:

The height of the Unit has been added to the description. The project is not expected to pose a hazard to air navigation and this will be addressed in the Site Certification Application. If necessary, a "Notice of Proposed Construction or Alteration" will be filed with the FAA.

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Comment:

The District's primary concerns with this project will be its potential impacts to surface water resources (St. Marks River) and associated biota. We expect the study to fully address net loss of water in the system relative to low flow and any impacts which might result under such conditions. Such impacts would likely be related to an increase in the extent of saltwater intrusion up the river, among other possibilities. Although details concerning number and locations of samples or river profile stations are not provided in the POS, we feel that the proposed study (assuming appropriate sample sizes and locations are used) will provide information appropriate for our review needs.

We found some of the statements concerning reduction of water withdrawals and "zero discharge" to be somewhat confusing in terms of the overall changes in water use which will result from construction of Unit 8. Although actual withdrawals may be reduced, a net loss of water would occur in the St. Marks River because the discharge of once-through cooling water would be eliminated. It would be helpful if you could prepare some simple graphics showing the current and proposed water budget for the Purdom Plant so one can easily be compared to the other. This would help reviewers and interested citizens to better understand the water use impacts of the proposed changes.

Response:

The SCA will fully address the potential project impacts to surface water resources including the minor net loss of water in the system relative to low flow and associated impacts. This results from the selection of Best Conventional Pollutant Control Technology (closed cycle cooling towers) for cooling at Unit 8. These minor impacts will be included in Chapter 5, Sections 5.1.2 and 5.3.1. Simplified flow diagrams for the Purdom Station water use will be presented as part of SCA Sections 2.3.3 and 2.3.4 for the existing station, and 3.5.1 and 3.5.4 for conditions with the proposed project. No changes to the POS are required.

FLORIDA DEPARTMENT OF STATE - DIVISION OF HISTORICAL RESOURCES

Comment:

A review of the Florida Site File indicates that no significant archaeological or historical sites are recorded for or likely to be present within the area of the proposed Purdom Unit 8. We also note that a new pipeline, constructed along existing streets, will be necessary to delivery fuel to the new unit. The new pipeline may proceed without further involvement from our agency if project activities do not entail construction of lines that are located outside existing road prisms (the ditch-to-ditch or curb-to-curb area). Therefore, conditioned upon the construction of the new pipeline within existing road prisms, it is the opinion of this office that the proposed project will have no effect on historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical or architectural value.

Response:

The City of Tallahassee contacted DHR again in 1996. DHR confirmed their earlier evaluation and stated that a "review of the Florida Site File indicates that no significant archaeological or historical sites are recorded for or likely to be present within the area of the proposed Purdom Unit 8." The DER also concluded the project will have no effect on historic properties, provided that any new off-site pipelines (i.e., the water reuse pipeline) which may be part of the project be constructed within the limits of existing road prisms. Therefore, no changes to the POS are required.

FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS

No comments.

WAKULLA COUNTY

No comments.

LEON COUNTY

No comments.

CITY OF ST. MARKS

No comments.

FLORIDA PUBLIC SERVICE COMMISSION

No comments.